



**PEBBLE PROJECT  
ENVIRONMENTAL BASELINE DOCUMENT  
2004 through 2008**

**CHAPTER 14.  
WETLANDS AND WATERBODIES  
Bristol Bay Drainages**

PREPARED BY:  
THREE PARAMETERS PLUS, INC.  
HDR ALASKA, INC.

# TABLE OF CONTENTS

TABLE OF CONTENTS.....	14-i
LIST OF TABLES.....	14-iii
LIST OF FIGURES.....	14-iii
ACRONYMS AND ABBREVIATIONS.....	14-v
14. Wetlands and Waterbodies.....	14-1
14.1 Wetlands and Waterbodies—Mine Study Area.....	14-1
14.1.1 Introduction.....	14-1
14.1.2 Study Objectives.....	14-2
14.1.3 Study Area.....	14-2
14.1.4 Previous Studies.....	14-3
14.1.5 Scope of Work.....	14-4
14.1.6 Methods.....	14-5
14.1.6.1 Literature Review.....	14-5
14.1.6.2 Field Data Collection.....	14-7
14.1.6.3 Data Entry.....	14-18
14.1.6.4 Digital Mapping.....	14-18
14.1.7 Results and Discussion.....	14-20
14.1.7.1 Climate.....	14-21
14.1.7.2 Wetland Determinations.....	14-22
14.1.7.3 Waterbodies.....	14-22
14.1.7.4 Disturbance.....	14-23
14.1.7.5 Mapping.....	14-23
14.1.8 Summary.....	14-24
14.1.9 References.....	14-25
14.1.10 Glossary.....	14-27
14.2 Wetlands and Waterbodies—Transportation-corridor Study Area.....	14-29
14.2.1 Introduction.....	14-29
14.2.2 Study Objectives.....	14-29
14.2.3 Study Area.....	14-30
14.2.4 Previous Studies.....	14-30
14.2.5 Scope of Work.....	14-30
14.2.6 Methods.....	14-30
14.2.6.1 Literature Review.....	14-30
14.2.6.2 Field Data Collection.....	14-31
14.2.6.3 Data Entry.....	14-31
14.2.6.4 Digital Mapping.....	14-31



14.2.7	Results and Discussion .....	14-32
14.2.7.1	Climate.....	14-32
14.2.7.2	Wetland Determinations .....	14-32
14.2.7.3	Waterbodies .....	14-33
14.2.7.4	Disturbance.....	14-33
14.2.7.5	Mapping.....	14-33
14.2.8	Summary .....	14-34
14.2.9	References.....	14-35
14.2.10	Glossary .....	14-35

## LIST OF TABLES

Table 14.1-1, U.S. Fish and Wildlife Service, National Wetlands Inventory Mapping Groups, Acreage in the Mine Mapping Area

Table 14.1-2, Precipitation at Iliamna Airport, Alaska

Table 14.1-3, Enhanced National Wetlands Inventory Classifications, Acreage in the Mine Mapping Area

Table 14.1-4, Enhanced National Wetlands Codes Used in the Mine Mapping Area

Table 14.1-5, Wetlands Mapping Summary, Mine Mapping Area

Table 14.1-6, Hydrogeomorphic Classifications, Acreage in the Mine Mapping Area

Table 14.2-1, U.S. Fish and Wildlife Service, National Wetlands Inventory Mapping Groups, Acreage in the Transportation-corridor Mapping Area

Table 14.2-2, Comparison of Historical Average Precipitation at Iliamna Airport and Iniskin Bay, Alaska

Table 14.2-3, Wetland Mapping Unit Summary, Transportation-corridor Mapping Area

Table 14.2-4, Enhanced National Wetlands Inventory Classifications, Acreage in the Transportation-corridor Mapping Area

Table 14.2-5, Enhanced National Wetlands Inventory Codes for the Transportation-corridor Mapping Area

Table 14.2-6, Hydrogeomorphic Classifications, Acreage in the Transportation-corridor Mapping Area

## LIST OF FIGURES

Figure 14.1-1, Field Plot Locations Overview, Mine Study Area, 2004-2008

Figure 14.1-2, U.S. Fish and Wildlife Service, National Wetlands Inventory Mapping for the Mine Study Area

Figure Series 14.1-3, Wetlands Mapping, Mine Study Area, 2004-2008, Overview and Detail Tiles

Figure Series 14.1-4, Enhanced National Wetlands Inventory Mapping, Mine Study Area, 2004-2008, Overview and Detail Tiles

Figure Series 14.1-5, Hydrogeomorphic Classification Mapping, Mine Study Area, 2004-2008, Overview and Detail Tiles

Figure Series 14.2-1, Field Plot Locations, Transportation-corridor Study Area, Overview and Detail Tiles

Figure 14.2-2, U.S. Fish and Wildlife Service, National Wetlands Inventory Mapping for the Transportation-corridor Study Area

Figure Series 14.2-3, Wetlands Mapping in the Transportation-corridor Mapping Area, Overview and Detail Tiles

Figure Series 14.2-4, Enhanced National Wetlands Inventory Mapping, Transportation-corridor Mapping Area, Overview and Detail Tiles

Figure Series 14.2-5, Hydrogeomorphic Classification Mapping, Transportation-corridor Mapping Area, Overview and Detail Tiles

## ACRONYMS AND ABBREVIATIONS

3PPI	Three Parameters Plus, Inc.
CWA	Clean Water Act
ENWI	Enhanced National Wetlands Inventory
FA	functional assessment
FAA	Federal Aviation Administration
FAC	facultative (indicator plant species category)
FACU	facultative upland (indicator plant species category)
FACW	facultative wetland (indicator plant species category)
GIS	geographic information system
GPS	global positioning system
HDR	HDR Alaska, Inc.
HGM	hydrogeomorphic
LIDAR	light detection and ranging
NI	no indicator (indicator plant species category)
NL	not listed (indicator plant species category)
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	obligate wetland
PDA	personal data assistant
PI	prevalence index
QC	quality control
RDI	Resource Data, Inc.
RU	representative upland
RW	representative wetland
SC	stream crossing
SH	shrub height
UPL	obligate upland (indicator plant species category)
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WB	waterbody
WD	wetland determination

## 14. WETLANDS AND WATERBODIES

### 14.1 Wetlands and Waterbodies—Mine Study Area

#### 14.1.1 Introduction

Section 14.1 summarizes the effort to characterize wetlands and waterbodies, and their locations and extent, in the mine study area. The section is an overview of the work done in the mine mapping area (Figure 14.1-1) to characterize and map wetlands, waterbodies, and non-wetlands based on U.S. Army Corps of Engineers (USACE) definitions and procedures.

The study areas and mapping areas were scaled to provide coverage of potential development areas and alternative development areas as well as additional surrounding area to provide comparative context. The U.S. Supreme Court has determined that some isolated wetlands that had previously been regulated under the Clean Water Act were no longer subject to USACE jurisdiction. Some of the ponds, lakes or wetlands described within this document may not be hydrologically, physically, or chemically connected to other wetlands, however, this EBD study is limited to baseline characterization of wetlands and does not address jurisdictional determination of the wetlands and waters.

Aerial photography was reviewed by wetland scientists who drew polygons around areas of similar visual vegetation signatures on the maps. Vegetation signatures are recognized by color/tone, texture, site location, aspect and shadow. Study sites were selected in the field to sample each type of aerial photograph vegetation signature (Chapter 13) across the full range of landscape positions in the study area. These study sites provided additional field information to determine which combinations of vegetation signature and landscape comprise wetlands and which do not. Wetland and non-wetland areas were investigated and data related to vegetation, soils, and hydrology were recorded on field plot forms to facilitate this determination. A less detailed field form and photographs were used to document vegetation in large, dense stands of shrubs. Photos were also taken in the field (photo points) to document additional sites in similar vegetation signatures as a supplement to the more detailed-field plot forms. Stream crossings and waterbodies were also documented and limited water chemistry information was collected.

Wetland status was assigned to a mapping polygon after careful review of field plot forms, vegetation, photo points, site photos, and other available data interpreted from the polygon. If a field plot was determined to be a wetland, then functional assessment data were gathered to provide information regarding habitat, flood control, water quality and other wetland functions. The data collected for the functional analyses were also used to supplement and strengthen the wetland mapping results presented here.

During field data collection and wetland mapping, all wetlands were classified according to several classification systems. These included the Hydrogeomorphic (HGM) classification system (Brinson, 1993), which is based on characteristics of the landscape, water source and hydrodynamics of the water. Wetlands and other aquatic habitats/waters were also classified using an enhanced National Wetlands Inventory (ENWI) Code. This classification is based on the principles of the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979) and *National Wetland Inventory Mapping Conventions* (USFWS, 1995).

These data and the related determinations for each signature type were then applied to any similar polygons mapped based on the aerial photography for the study area. When assigning wetland status to polygons that were not evaluated in the field, data from field plots in nearby or similar polygons were also evaluated.

In some cases, vegetation types within the mine study area are not always consistently associated with wetlands or non-wetlands. Further, in many areas a single polygon of a Project Vegetation Type may have areas that are both wetland and non-wetland as the micro- and macro-topography changes across the site. In either of these situations, the polygons are mapped as mosaic mapping units.

The information presented here builds on the vegetation information presented in Chapter 13. The wetlands and waterbodies study overlaps with and relies on results of the vegetation study (Chapter 13), and the vegetation study is integral to the wetlands and waterbodies study. The vegetation work generates the data used to evaluate the presence of hydrophytic vegetation at individual study plots and describes and maps vegetation types, some of which are strong indicators of the presence of either wetlands or non-wetlands. The vegetation mapping is used as the basis for wetland mapping, and the vegetation descriptions are used to help characterize wetland types.

Information on the soils in the mine study area is in Chapter 5. Information on the chemistry and characteristics of waterbodies in the mine study area can be found in the section of Chapter 9 pertaining to surface water quality in the mine study area. Descriptions of the climate and the physiography in the mine study area can be found in Chapters 2 and 4, respectively.

Investigators completed field work in the mine study area between 2004 and 2008 and scientists are using those studies to determine the locations of wetlands and waterbodies in 249,413.6 acres of the mine study area. In addition to wetlands, investigators are mapping and describing streams, lakes, and ponds in the study area. This section is based on a subset of those data, because quality control (QC) review of the data has not been completed for the entire mine study area.

### **14.1.2 Study Objectives**

Some of the objectives of the wetlands and waterbodies study in the mine study area were as follows:

- Determine the location and extent of wetlands and waterbodies using methods consistent with other mining projects in Alaska.
- Describe the types of wetlands and waterbodies in the mine mapping area.
- Depict the location, extent, and type of wetlands and waterbodies in the mapping area.
- Map the extent of existing human-caused soil or vegetation disturbance.

### **14.1.3 Study Area**

The eastern edge of the Upper Talarik Creek watershed serves as the dividing line between the transportation-corridor study area (Section 14.2) and the 249,413.6 acre mine study area (Figure 14.1-1). The study area follows the Upper Talarik Creek watershed south until it drains into Iliamna Lake. The southwestern boundary continues along the South Fork Kokuti River watershed and the headwater areas of Kaskanak Creek. The northern boundary of the study area is set by the northern border of the North Fork Kokuti watershed. The western boundary ends approximately 4 miles downstream of the

confluence of the North Fork and South Fork Kokuli Rivers. The 29,429.7-acre mine mapping area (wetlands mapping area), within the mine study area (Figure 14.1-1), is the area for which the data have been reviewed for quality and mapped.

Land within the mine study area is owned by the State of Alaska and several Native corporations. Landowners granted access for data collection.

#### **14.1.4 Previous Studies**

Before initiating field studies, 3PPI completed a search for any existing documents with relevance to wetland mapping in the mine study area. (Previous vegetation mapping is described in the Previous Studies section of the Chapter 13.)

The mine study area is located at the southern end of both the Yukon-Kuskokwim Highlands Major Land Resource Area (USDA NRCS, 2004) and the Lime Hills Ecoregion (Nowacki et al., 2001). The predominant vegetation in the Yukon-Kuskokwim Highlands includes many vegetation types similar to those in the mine study area. These types include white spruce forests and woodlands, mixed forests, tall alder shrub, tall and low willow scrub, and low ericaceous shrub. In the peatlands and mineral soils are black spruce woodlands and low ericaceous and shrub birch scrub, often with tussock-forming sedges or various sedges and grasses. Dwarf alpine scrub with considerable lichen cover and bare ground is common in the higher elevations with shallow soils (USDA NRCS, 2004). The vegetation of the Lime Hills region is notable for the predominance of tall and low shrub communities consisting of birch, willow, and alder. Forests and woodlands generally are restricted to valley bottoms and toe slopes (Nowacki et al., 2001).

The only previous wetland mapping in the mine study area is preliminary National Wetlands Inventory (NWI) mapping by the U.S. Fish and Wildlife Service (USFWS) (USDOI, Various). The non-digital NWI mapping that includes the mine study area is still classified as preliminary (i.e., draft), and supplemental map information (such as the map user notes) has not been developed for this area. The majority of the 29,429.7-acre mine mapping area lies within portions of the following NWI maps (U.S. Geological Survey [USGS] quadrangle maps).

- Iliamna D-6.
- Iliamna D-7.

Portions of the mine study area have not been mapped by the NWI program, and no other wetland mapping is available. Areas not mapped include the following USGS quadrangle maps:

- Iliamna C-6.
- Iliamna C-7.
- Iliamna D-8.

The NWI program mapped all but 1,046 acres (3.6 percent) of the mine mapping area (Table 14.1-1). The unmapped area falls within USGS quadrangle map Iliamna D-8 and comprises the western portion of the mine mapping area (Figure 14.1-2).

The preliminary NWI maps were prepared using 1:65,000-scale, color-infrared aerial photography that was acquired in August 1978. Generally, the maps show larger, more obvious wetlands and aquatic systems, but do not include many transitional areas that are also regulated under the CWA. Because of the small scale of photography used, NWI maps generally do not show many smaller wetlands (i.e., less than 2 to 4 acres in size), and they also may exclude some forested wetland types (Smith, 1991).

The NWI mapping covered 96.4 percent of the mine mapping area. According to the NWI mapping for those areas, approximately 19.8 percent of the mine mapping area is wetlands. The NWI also mapped 589.5 acres, or approximately 2.0 percent, of the mine mapping area as open-water habitats, i.e., ponds, lakes, and rivers and their associated gravel bars (Table 14.1-1 and Figure 14.1-2). In addition to wetlands and open-water habitats, the NWI identified 21,970.0 acres, or approximately 74.7 percent, of the mine mapping area as uplands (i.e., non-wetlands). The majority of wetlands in the mine mapping area are classified as shrub-type wetlands. This class of wetlands constitutes 5,036.4 acres, or approximately 86.5 percent, of the NWI-mapped wetlands. The second most common class of wetlands as identified by NWI is the herbaceous type of wetlands. This class constitutes 787.8 acres, or approximately 13.5 percent, of the NWI-mapped wetlands.

#### **14.1.5 Scope of Work**

Similar to the vegetation study (Chapter 13), the wetlands and waterbodies work has been completed by two firms working in a coordinated effort, Three Parameters Plus, Inc. (3PPI) and HDR Alaska, Inc. (HDR). 3PPI collected data in the mine study area and in the transportation-corridor study area west of the Newhalen River. HDR collected data in part of the transportation-corridor study area east of the Newhalen River and along the lower end of Upper Talarik Creek (in the mine study area). Although there was some overlap between the areas where the two companies collected data, the data for the mine study area are presented in this section prepared by 3PPI, and the data for the transportation-corridor study area are presented in Section 14.2 prepared by HDR, regardless of who collected the data. 3PPI scientists conducted field work for this study from 2004 through 2008 and have continued to analyze data and prepare maps and reports for the mine study area.

Collection of field data was conducted according to the 1987 *Corps of Engineers Wetlands Delineation Manual* (USACE, 1987). Wetlands and non-wetlands were sampled at representative study sites across the mine mapping area. In addition, photographs were collected at additional points in wetlands and non-wetlands to supplement the more in-depth data collection at the study plots. To further assist in the vegetation and wetlands studies, representative stream crossings and waterbodies were documented, and water chemistry information was collected to determine water source and to assist with the small pools study. In addition, features such as soil disturbance, habitat observations, or cultural sites, if encountered, also were documented with photographs to assist in the larger project efforts.

Data collected in the field were entered into a project database. Aerial photography and contour data in a geographic information system (GIS) were used to supplement the field data.

Digital maps of the mine mapping area were drawn and coded using the files of field data downloaded from the project database and other digital resources listed in Section 14.1.6.1.



### 14.1.6 Methods

Wetlands and waterbodies analysis and mapping involved several major steps including evaluation of existing data, field work, data entry and QC review, digital mapping (line work and coding), and characterization of wetlands in the mine study area. The aerial-photo-based identification of wetland polygons required interpretation of the three main parameters used for wetland determinations: vegetation type, soil type, and hydrological characteristics.

In 2004 and 2005, data for the mine study area were collected and analyzed using the criteria and methods found in the 1987 Corps of Engineers Wetland Delineation Manual (USACE, 1987). According to that manual, sites that are considered wetlands under normal circumstances typically must have positive indicators of all three parameters: hydrophytic vegetation, wetland hydrology, and hydric soils (USACE, 1987). During 2006 and 2007 field seasons, additional data were collected and analyzed in accordance with the 2006 interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (USACE, 2006). This data included prevalence index (PI) calculations for vegetation, additional hydrological indicators, and additional hydric soils indicators. During the 2008 field season, additional hydrological and soils indicators were collected in accordance with the 2007 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0).

Investigators used wetlands determinations made at the field-sampling level as the basis for assigning wetland status throughout the mine study area as they completed baseline mapping. Throughout the mine study area, scientists projected their conclusions from sampled study sites to polygons used in digital mapping, based on similarities in the landscape and photo signatures.

#### 14.1.6.1 Literature Review

##### *Data and Imagery Used for Wetlands Mapping*

Scientists sought literature and data at libraries, government agencies, and online sources to identify technical documents and digital data relevant to vegetation and wetlands in the mine study area. Resource Data, Inc. (RDI) imported existing data sets and digitized relevant hardcopy data (including aerial photography) and compiled it into the GIS for digital presentation and review. These data cover the area between Cook Inlet and the upper Kaktuli River watershed.

The review of existing data resulted in the creation of project specific GIS layers of the mine study area. In addition, Pebble Partnership commissioned several captures of aerial imagery. The following data sets were compiled by RDI for digital presentation and review for this study:

- NWI mapping from USFWS, orthorectified and digitized by RDI from paper maps.
- USGS topographic mapping.
- Earth Resources Observation System land-cover mapping, and vegetation and land-cover types from the USGS.
- Vegetation mapping and cover classes found on the National Park Service's Lake Clark National Park and Preserve web site.

- Exploratory soil survey data (U.S. Department of Agriculture, Natural Resources Conservation Service [NRCS]).
- Color infrared photography from the National Aeronautics and Space Administration, orthorectified by Aero-Metric, Inc., at a photo scale of 1:60,000. Dates of the imagery are August 1978 and August 1982, depending on the location.
- Aerial photography acquired by Aero-Metric, Inc., in October of 2004 and 2005, captured at a scale of 1:8,000 for the mine study area. This aerial photography was orthorectified at a scale of 1.5-foot pixels and used for analysis and interpretation in the Pebble Project GIS.
- Color aerial photos acquired by Eagle Mapping at 1:20,000 for the mine study area. This aerial photography was orthorectified at a scale of 1.5-foot pixels.
- Light detection and ranging (LIDAR) imagery acquired by Aero-Metric, Inc., in October 2004, October 2005, and August 2008 and used to produce a layer of 4-foot contour lines for the mine study area. The Eagle Mapping data also included 2-foot interval LIDAR imagery.
- Aerial photography of the mine study area acquired in September 2008. The aerial photography (1:20,000) was acquired and orthorectified by Dudley Thompson Mapping Corporation Inc. at a scale of 1.0-foot pixels. A more detailed version was also produced (1:4,800 at a scale of 0.25-foot pixels) for the southern portion of the mine study area.

The non-digital, preliminary maps from the USFWS NWI program were digitized by RDI into a shapefile. Acreages and percentages for the NWI categories in the mine mapping area were derived from the digitized map products produced by RDI for presentation here. The digitized maps are not recognized by the USFWS NWI program as published digital data; however, the processes used to digitize the maps are consistent with industry standards and a QC review was completed to ensure correct NWI coding and alignment. The NWI mapping groups were color-coded (Figure 14.1-2). Although user notes for this mapping area have not yet been prepared by the USFWS, NWI mapping conventions are well documented. (NWI user notes are developed by the USFWS to correlate the Cowardin classification system [Cowardin et al., 1979] with local wetland community types. Essentially, the NWI user notes provide community information on the dominant plants within the dominant vegetation stratum. They often also include less dominant species and information on the species composition of the underlying strata.)

### ***Climate Data***

Scientists compiled climate data to help determine whether the aerial photography used for project reference and mapping was captured during a period of normal climate conditions. Climate data also were used to determine whether the conditions observed during field work represented normal soil moisture conditions. Monthly precipitation totals and historical averages of precipitation and air temperature recorded at Iliamna airport are available for April 1941 to February 2010 (WRCC, n.d.). The Iliamna airport is approximately 18 miles southeast of the center of the mine mapping area. Field work was conducted from June through September in 2004 through 2008, and aerial photography used for the mapping base was acquired in July and September of 2004 and 2005.

In order to assess normal conditions for the 2004 to 2008 field seasons, scientists evaluated monthly precipitation levels from the Iliamna airport for a period preceding these years and compared those

monthly averages to historical averages for the airport. Scientists calculated winter snow storage by summing monthly precipitation for the winter months of October through April. The snow storage data were used to determine whether the snowmelt available at the start of the summer was within the average range.

#### **14.1.6.2 Field Data Collection**

##### ***Study Site Selection***

Study sites (study plots and photo points) were selected to sample each photo signature and each Project Vegetation Type across the full range of landscape positions and soil types. In later study years, priority was given to study sites in areas where vegetation signatures were unclear on photographic imagery or were underrepresented during past sampling events, in areas with complex wetland and non-wetland boundaries, and in areas where multiple sample points could efficiently be accessed.

##### ***Types of Study Sites***

At each type of study site (field plots) listed below, investigators followed the protocols for the designated type of data collection. Selection of the appropriate protocol(s) was based on conditions found at each site. If a field plot was determined to be a wetland, then the functional assessment data were gathered to supplement and strengthen the wetland mapping results presented here.

- **Wetland Determination (WD) Plots.** At these plots investigators recorded detailed descriptions of vegetation, hydrology, soils, and—at wetlands plots—indicators of wetland functions. Data forms for the WD plots were based on standard forms in the 1987 wetlands-delineation manual (USACE, 1987), but were expanded to record additional supporting data and were refined over the course of the study. The full suite of vegetation parameters are described below and in Chapter 13, while the hydrology and soils data collected at WD plots is described below under *Data Collection and Interpretation*. Wetlands status for these plots was determined and recorded after the field data collection for the plots was completed.
- **Functional Assessment (FA) Plots.** Functional assessment data were collected when sites were clearly wetland (as indicated by the presence of primary indicators for vegetation, soil, and hydrology) and the wetland type had already been sufficiently sampled with detailed WD plots to characterize the vegetation and soil types. At these plots investigators recorded detailed data on vegetation and limited data on hydrology and soils.

**Shrub Height (SH) Plots.** Shrub height forms were used in lieu of full WD field data collection in some shrub communities. Shrub height forms were developed to provide additional data collecting opportunities in large stands of shrubs. The distinction between alder and willow was difficult to determine using the aerial imagery. It was also difficult to determine if shrub stands were greater than five feet tall (tall shrubs) or less than five feet tall (low shrubs). This distinction was important for the project habitat analysis. In most of these areas it was also difficult to determine if these areas were wetlands or non-wetlands due to the inability to see through the shrub canopy. Many streams were also found that originate under the shrub canopies that were not visible on the aerial photography.

Shrub height plots were developed to rapidly collect a limited suite of data at each field site. This process was designed specifically for the mine study area so more data could be safely and efficiently collected during each field day. The process allowed abrupt wetland and non-wetland boundaries in the shrubs to be identified (a considerable help during mapping), and quicker movement through the dense vegetation with bear guards allowed for safer work conditions, particularly during salmon spawning season and hot sunny days when larger mammals often seek shade in these areas. In a few cases the brush was so dense, and the stands so large that to collect data in the center of them would be dangerous, because in a medical emergency there was no expedient evacuation route. In these few instances, helicopters were used to hover over the areas and gather as much data as possible.

Scientists assigned to Shrub Height crews targeted large willow and alder patches on hillsides and floodplains to rapidly determine the Project Vegetation Type and collected data for an abbreviated suite of hydrology and soils variables. The dominant types and heights of shrubs were recorded, but data on understory plants in the plot were not. SH plots were assigned a wetlands status based on the data collected, if the data were conclusive. If data for the plots were not conclusive, a note was placed in the database.

- **Representative Upland (RU) and Representative Wetland (RW) Photo Points.** Photographs were taken when scientists encountered vegetation communities and landscape positions that were clearly wetland (as indicated by the presence of primary indicators for vegetation, soil, and hydrology) or non-wetland (i.e., upland; as indicated by the absence of one or more indicators for vegetation, soil, or hydrology). Photographs also were used to document notable plant species and incidental observations of cultural resources, new ground disturbance, and wildlife-habitat features. In 2004 and 2005, photo-point data collection did not include assigning landform or macro- and microtopography in the field. Scientists assigned these attributes after the field season for points photographed in 2004 and 2005.
- **Waterbody (WB) and Representative Stream Crossing (SC) Plots.** Photographs also were taken when the scientists encountered streams, rivers, ponds, and lakes. Photographs of the streams and rivers were taken looking upstream, downstream, and across. Two photographs, showing two views in different directions, were taken at nonflowing waterbodies (ponds and lakes). Starting in late 2005, pH and electrical conductivity also were recorded at SC and WB plots. Waterbodies and representative stream crossings that had been evaluated in 2004 and early 2005 were revisited in 2007 and 2008 to collect these two data types. In the database, for SC plots, scientists recorded the Project Vegetation Type adjacent to streams or rivers if it could be determined by viewing the photographs and if the area adjacent to the stream was determined to be wetlands. For WB plots, the Project Vegetation Type recorded in the database represents the aquatic vegetation within the waterbody, not adjacent to it. If a WB plot did not have substantial aquatic vegetation, its Project Vegetation Type was listed as “Open Water, BARE” (shorelines or drawn down seasonal ponds), or “Partially Vegetated” (for seasonal ponds or shorelines that had some revegetation or colonization during drawdowns).

### ***Field Technology***

At each study site, scientists determined and recorded the global positioning system (GPS) coordinates for the site; took photographs of the dominant vegetation, soils, and landscape features; entered key site attributes into a digital recording device; marked the site location on a field map; and recorded other key

information on hardcopy data forms. From 2004 through 2007, scientists used imaging systems equipped with digital cameras and GPS units (accuracy less than 50 feet) to record a subset of the field data, to watermark pictures with latitude and longitude, and to provide a direct interface to the GIS. In 2008, 3PPI researchers began using personal data assistant (PDAs) with a custom ArcPad script to capture the most critical data types needed at each plot type. The PDAs are technologically advanced units with GPS (accuracy less than 3 feet) and cameras and capable of full integration with GIS products via an ArcPad platform. RDI developed downloading procedures to efficiently process these data into the existing web-based database application.

Beginning in 2007, HDR scientists used an alternative system for capture of digital data in part of the study area (see Section 14.1.5). They used cameras equipped with a built-in GPS unit (accuracy 3 to 15 feet) for capture of photographs and later watermarking with location data. They collected site data in hand-held computers linked to GPS receivers by Bluetooth technology, providing accuracy within 6.5 to 16 feet. The hand-held computers were equipped with ArcPad 7.1 and linked with ArcGIS software for downloading to office computers.

Investigators from both firms used backup digital cameras, GPS units, and hand-recorded field notes if their primary systems failed.

### ***Data Collection and Interpretation***

**Vegetation Data.** Many plant species are specifically adapted to wetland or non-wetland areas, others may be found in both habitats. Certain vegetation communities comprised of these species therefore may be indicative of wetland or nonwetland status. As described in detail in Chapter 13.1, vegetation data were collected at approximately 16,947 field plot locations in the mine study area. These locations represent the points for which scientists have data available for assigning vegetation type, wetland status, and several other attributes to mapping polygons for the mine study area. The distribution of vegetation types, wetlands, waterbodies, and non-wetlands, as indicated by the mapped points, should not be interpreted as representing a random sample.

For WD and FA data plots, investigators collected vegetation data to determine whether the vegetation was hydrophytic. Whether vegetation was hydrophytic or not was determined at the scale of a single study plot, not for the vegetation type as a whole. Detailed information was recorded for 1/10th-acre plots within representative stands of vegetation. Vegetation data collected at each plot generally included absolute percent coverage of all observed vascular plant species and estimated tree height and diameter at breast height. (Absolute percent coverage is the percentage of the ground surface that is covered by the leaves and stems of a plant species when viewed from above. Because of overlapping plant canopies, the sum of the absolute cover values for all species in a community or stratum may exceed 100 percent [USACE, 2007].) Absolute coverage for each vascular plant species was determined by visual estimation; species with less than 3 percent cover were recorded as trace. In many plots, total cover estimates for mosses and lichens also were recorded, along with their names, if known. Numerous taxonomic references and field guides were used to identify trees, shrubs, forbs, and graminoids over the course of field surveys (see Chapter 13, methods section).

The USFWS has assigned each plant species a wetland indicator status in the 1988 *National List of Plant Species that Occur in Wetlands: Alaska (Region A)* (Reed, 1988). The indicator status categories are as follows:

- **Obligate Wetland (OBL).** Almost always occur in wetlands (estimated probability greater than 99 percent).
- **Facultative Wetland (FACW).** Usually occur in wetlands (estimated probability 67 to 99 percent), but occasionally found in non-wetlands.
- **Facultative (FAC).** Equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66 percent).
- **Facultative Upland (FACU).** Usually occur in non-wetlands (estimated probability 67 to 99 percent), but occasionally found in wetlands (estimated probability 1 to 33 percent).
- **Obligate Upland (UPL).** Almost always occur in non-wetlands (estimated probability greater than 99 percent).
- **No Indicator (NI).** Insufficient information available to determine an indicator status. Species with NI status should be excluded from hydrophytic vegetation calculations according to the USACE guidance (Lichvar, pers. comm., 2007, and USACE, 2007).
- **Not listed (NL).** Plant species not included on the 1988 national list. These species are treated as UPL species (USACE, 2007).

A plant community is considered hydrophytic when more than 50 percent of dominant species are categorized as OBL, FACW, or FAC (USACE, 1987). Dominant species typically are determined for each vegetation stratum based on the “50/20” rule recommended in the on-line version of the 1987 wetlands-delineation manual and the current industry standard. 3PPI modified the standard “50/20” rule for determining dominance for Pebble Project, and in June 2004 the USACE approved this modification, referred to throughout this document as the “50/20/20” rule. The “50/20/20” rule, in addition to those steps below, declares all species with absolute percent coverage values greater than 20 percent to be dominant. The 50/20/20 rule for calculating dominant species and then determining whether the vegetation is hydrophytic includes the following steps:

1. Assign indicator status and stratum to each species within the 1/10-acre plot. The strata used for the mine study area include tree, shrub (includes saplings), and herb (definitions of these strata are included in the glossary).
2. Visually estimate the absolute percent coverage of each species.

For each stratum, perform the following steps:

1. Sum the absolute percent coverage values for each species in a stratum to obtain the total percent coverage for that stratum.
2. Determine 20 percent and 50 percent of this total percent coverage value.
3. Assign dominant species status to the following
  - Species with absolute percent coverage values greater than 20 percent of the total percent coverage value for that stratum.
  - Species with absolute percent coverage values greater than 20 percent (this is the additional step which changes the “50/20” rule to the “50/20/20 rule”).

4. Determine whether additional species must be included as dominants, as follows:

If the sum of the absolute percent coverage values for all dominant species within a stratum is greater than 50 percent of the total percent coverage value for that stratum, then no other species are included as dominants in that stratum.

If the sum of the absolute percent coverage values for all dominant species within a stratum is less than 50 percent of the total percent coverage value for that stratum, then additional species must be designated as dominants. Include species within that stratum in decreasing order of absolute percent coverage incrementally until the sum of the absolute percent coverage for dominant species within that stratum exceeds 50 percent of the total percent coverage value for that stratum.

5. Combine the lists of dominant species for all strata. Note that a species may be dominant in more than one stratum (e.g., a tall woody species may be dominant in both the tree and shrub strata). Calculate the percentage of species that are categorized as FAC, FACW, or OBL. If that percentage exceeds 50 percent, then the vegetative community is hydrophytic.

Below is an example of a determination of whether a vegetation community is hydrophytic under the 50/20/20 rule:

<u>Stratum</u>	<u>Species</u>	<u>Wetland Indicator Status</u>	<u>Absolute Percent Coverage</u>	<u>Dominant?</u>
<b>Herb</b>	<i>Sanguisorba stipulata</i>	FACW	40	Yes
	<i>Carex nesophila</i>	FACW	20	Yes
	<i>Equisetum arvense</i>	FACU	10	No
	<i>Gymnocarpium dryopteris</i>	FACU	10	No
	<i>Polemonium acutiflorum</i>	FAC	10	No
	<i>Calamagrostis canadensis</i>	FAC	5	No
	<i>Dryopteris dilatata</i>	FACU	5	No
	<i>Epilobium angustifolium</i>	FACU	5	No
	<i>Lycopodium annotinum</i>	FAC	5	No
Total Percent Cover: 110%				
50% of total cover = 55%				
20% of total cover = 22%				
<b>Shrub</b>	<i>Salix alaxensis</i>	FAC	80	Yes
	<i>Populus balsamifera</i>	FACU	10	No
	<i>Alnus sinuata</i>	FAC	10	No
Total Percent Cover: 100%				
50% of total cover = 50%				
20% of total cover = 20%				
<b>Tree</b>	<i>Populus balsamifera</i>	FACU	10	Yes
Total Percent Cover: 10%				
50% of total cover = 5%				
20% of total cover = 2%				

Three of four, or 75 percent of, the dominant species above are OBL, FACW, or FAC; therefore, this vegetation community is hydrophytic under the 50/20/20 rule.

In the 2006 interim supplement to the wetlands determination manual, USACE recommended the PI method for determining whether vegetation is hydrophytic (USACE, 2006). The PI, as described in the 2006 and 2007 supplements (USACE, 2006 and 2007), also has been calculated in the Pebble Project database for each plot, but the hydrophytic vegetation determination is based on the 50/20/20 method.

As part of the data collection and mapping inventory for the wetlands and waterbodies study, wetlands, other aquatic habitats, and non-wetlands were classified by Enhanced National Wetlands Inventory (ENWI) classifications. Pebble researchers developed the ENWI classifications based on *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979) and the *Photointerpretation conventions for the National Wetlands Inventory* (USFWS, 1995). During field data collection, ENWI classifications were applied to the vegetation communities at study plots. The ENWI classifications also were applied to every vegetation- and waterbody-mapping unit during mapping. ENWI classifications differ from NWI classifications by acknowledging non-wetland inclusions in predominantly wetland mapping units and wetland inclusions in predominantly non-wetland units. Also, in NWI mapping, large wetland systems of different vegetation types may be grouped together in a single mapping unit. During mapping of ENWI classifications for Pebble Project, mapping units were first separated by Project Vegetation Types (see Chapter 13).

**Hydrology Data.** Hydrology is the parameter required for wetlands determinations that can be most influenced by short-term or transient conditions. In many wetland types, the saturation necessary to produce anaerobic conditions characteristic of wetlands is typically not present throughout the entire growing season in all years. Therefore, when deciding whether wetland hydrology exists at a site, field investigators must consider the normal seasonal patterns of precipitation and other climatic variables and their effects on soil moisture, as well as normal variations in climate among years. Soil moisture during the growing season may be influenced by factors as remote as the depth of snow cover during the preceding autumn (Section 14.1.7.1) when air temperatures fell below freezing.

At WD, FA, and SH plots data collection for wetland-hydrology indicators included surface observations and subsurface observations of the soil profile in the pits dug for collection of soils data (see below). At least one primary indicator or two secondary indicators are required to confirm the presence of wetland hydrology at an observation point.

Primary indicators of wetland hydrology include:

- Inundation—the observation of surface water from ponding or flooding.
- Saturated soil—all soil pore spaces are temporarily or permanently filled with water.
- Surface sediment deposits—plants and other surface objects that have a thin layer of mineral or organic material on them after inundation.
- Watermarks—stains on trees, bridges or other fixed objects that reflect the highest extent of recent inundation.
- Drift lines—deposition of debris in a line on the surface indicating the extent of recent flooding, found adjacent to streams, lakes or other sources of water.
- Drainage patterns—surface evidence of drainage flow into or through an area, including overland flooding or movement of water over the ground surface.



Secondary indicators of wetlands hydrology include:

- Water-stained leaves—evidence of inundation.
- Oxidized roots within 12 inches of the mineral soil surface—evidence of reducing conditions in the soil for some portion of the year.
- Local soil survey hydrology data for identified soils—detailed soils surveys for an area are reviewed.
- Fac-neutral test of the vegetation—a mathematical calculation which determines if the majority of dominant plants found at a plot are designated as hydrophytes.

Wetlands determinations are most straightforward when direct observation of primary wetland-hydrology indicators occurs at the time of data collection. Primary indicators of wetland hydrology are most likely to be observed at the beginning of the growing season and during the summer rainy season, although in drier-than-normal years, they may not be observed even at these times. Secondary indicators of wetland hydrology may be considered in the absence of direct observation of primary wetland-hydrology indicators.

The primary and secondary indicators are listed and further described in the 1987 wetlands-determination manual (USACE, 1987). Additional hydrology indicators described in the 2006 and 2007 supplements (USACE, 2006 and 2007) were considered together as a single valid secondary indicator as described under “Other” in the hydrology section of the 1987 manual.

**Soils Data.** Soils data provide insight into the hydrology of an area and to whether or not a soil is sufficiently wet during the growing season to develop anaerobic conditions (hydric soil), one of three key indicators that help determine wetland status. Many of the methods for sampling and documenting soils followed the *Field Book for Describing and Sampling Soils* (Shoeneberger et al., 2002). Soils were examined by digging a pit approximately 20” wide at least 24” deep and recording the following data for each soil horizon:

- Thickness/depth —
- Horizon designation—as described in Shoenberger et al. (2002).
- Matrix color (hue, value, chroma) and percent abundance – based on Munsell color charts for moist soils.—
- Redoximorphic features and other mottles or inclusions—
- Texture for the fine earth fraction (2 millimeters or less)—
- Coarse fragments—percentages by volume of gravels, cobbles, stones, and boulders.
- Structure—the naturally occurring arrangement of soil particles into aggregates.—
- Presence of plant roots—
- Soil pH.
- Presence of ferrous iron in soils (FE++) as determined by response to alpha, alpha-dipyridyl solution.

Other soil data, described below, were recorded based on observations from the entire pit or applicable horizons, not necessarily every soil horizon:

- Total depth of all organic horizons in the pit.
- Depth to permafrost or seasonal frost, where applicable.
- Soil temperature
- Oxidation-reduction potential (ORP)—
- Restrictive layer—such as permafrost, a layer of clay or silt, or dense glacial till.
- Special soil characteristics pertinent to engineering or interpretation of hydric soil indicators.—

Investigators interpreted the data collected to obtain the following additional information:

- Soil drainage class, ranging from Excessively Drained to Very Poorly Drained, was determined in the field based on guidance provided in a Natural Resources Conservation Service technical note (USDA NRCS, 2003a).
- From 2004 through 2008, soil taxonomy was determined for most plots based on the interpretation of soil characteristics observed within the upper 18 to 24 inches of the soil profile, or less if there was seasonal frost in the profile. The determinations were based on guidance provided in the 10th edition of *Keys to Soil Taxonomy* (USDA NRCS, 2006b).
- The presence and applicability of hydric-soil indicators (USACE, 1987) are subject to interpretation and best professional judgment by the investigator based on the conditions at the time of sampling and all other information available to the investigator. The following methods were used for Pebble Project:
  - The reducing-conditions indicator was considered to be met under any of three conditions observed in the upper 12 inches of mineral soil: a positive response to alpha, alpha-dipyridyl (a test to detect ferrous iron, an indicator of reduction); results from measurements of oxidation-reduction potential that indicated reduction; or sulfidic odor.
  - In 2007 the aquic moisture regime indicator was linked to reducing conditions (Wakeley, pers. comm., 2007), and the database was changed retroactively for plots sampled in prior years. In short, for the aquic moisture regime indicator to be positive, an indicator of reducing conditions must have been present.
  - Scientists interpreted the “gleyed and low-chroma” soil indicators in light of NRCS data showing that some soils in Alaska that meet the description of this indicator in the 1987 wetland-delineation manual (USACE, 1987) are not hydric. In particular, if soils had only a low-chroma parent material or contained substantial organic matter, and no other soil or hydrology indicators were present, investigators did not consider the soils to be hydric.
- In each year of field study, investigators determined whether each soil profile had any hydric-soil indicators described in the then most current NRCS publication on field indicators of hydric soils (USDA NRCS, 2003b, 2004, 2006a). A soil with one or more of these indicators was not considered hydric unless it also had a hydric soil indicator described in the 1987 wetland-delineation manual (USACE, 1987).
- In 2006 and later, field investigators noted whether a soil would be hydric based on the indicators and procedures described in the 2006 and 2007 Alaska-region supplements to the wetland-delineation manual (USACE, 2006, 2007). Again, a soil that would be considered hydric under

those procedures was considered hydric for Pebble Project only if it also had a hydric soil indicator described in the 1987 manual (USACE, 1987). Some soil profiles collected before 2006 were not deep enough to fully evaluate indicators from the 2006 and 2007 supplements.

**Additional Data.** Elevation was determined at WD, FA, and SH plots with a GPS unit and also a barometric altimeter. Field investigators also collected data on slope gradient, aspect, and slope shape (linear, convex, or concave, described across slope and down slope). Stream gradients were recorded for SC plots. Major landforms, macrotopography, and microtopography were determined on the ground at all study plots using the definitions in the *Northern Dynasty Mines Inc. Pebble Project Draft Mine Site Photo Signature Guide* (3PPI, 2007) and the *Pebble Project Vegetation Type Photo Signature Guide Draft Report* (3PPI, 2008).

**Wetland Status.** Sampling points were considered to be in a wetland when criteria for all three wetland parameters—hydrophytic vegetation, wetland hydrology, and hydric soils—were clearly met. Sampling points were considered to be in a non-wetland when the criterion for at least one wetland parameter was not met. The term “transitional wetland” was used when criteria for all three wetland parameters were met, but one or more of the parameters was weak, e.g., only secondary hydrology indicators were used. The term “transitional non-wetland” generally was used when at least two of the wetland parameters were positive and the third parameter was negative or on the line between being positive and negative, e.g., a score of 50 percent for the percent dominance test for hydrophytic vegetation. The designation “transition areas” was used to alert mappers that the sampling points were possibly near a wetland/non-wetland boundary.

**Problem-area Wetlands and Difficult Situations.** Problem-area wetlands “are wetland types in which wetland indicators of one or more parameters may be periodically lacking due to normal seasonal or annual variations in environmental conditions that result from causes other than human activities or catastrophic natural events” (USACE, 1987). Some of the wetlands in the study area may be problem areas by this definition; however, confidence in determinations was enhanced by the opportunity to observe these systems over five field seasons which allowed for repeated visits to many of the most difficult sites. Also, Alaska wetlands are challenging because of their diversity and the current limitations in the scientific information on these ecosystems and some of the wetland indicators. Some of the challenges are described as “difficult wetland situations” in the 2007 supplement to the wetland-delineation manual (USACE, 2007). The field investigators made their wetlands determinations based on the 1987 manual (USACE, 1987) and the best information available to them, interpreted through personal experience and knowledge of the ecology of the region.

### ***Hydrogeomorphic Classification***

During the collection of field data at wetland sites, all wetlands were also classified according to the hydrogeomorphic (HGM) classification system (Brinson, 1993). HGM classification is a wetland classification system developed, in part, to characterize the primary water source, or hydrology, of wetland systems. In addition, this system is being used to classify each wetland and waterbody identified during the mapping phase. The following HGM types have been identified in or near the mine study area:

- Riverine Wetlands.
- Slope Wetlands.

- Depressional Wetlands.
- Flat Wetlands.
- Lacustrine Fringe Wetlands.
- Lacustrine Waters.
- Riverine Channel Waters.

The first five types (primary types) are standard HGM classes that are recognized and widely used in HGM-based wetland functional assessment methods throughout the United States. In order to classify all mapped wetlands and waterbodies using a consistent system, two additional classes (lacustrine waters and riverine channels) have been added for the Pebble Project.

HGM classification is based on the following characteristics of the wetland (Brinson, 1993):

- Position in the landscape or geomorphic setting.
- Dominant source of water.
- Hydrodynamics of the water in the wetland.

The purpose of HGM classification is to provide a mechanism by which to account for the natural variation inherent to wetlands, particularly when wetland functions are being assessed. For example, a riverine wetland will generally have a much higher opportunity to export organic carbon than will an isolated depressional wetland. The following are definitions for the seven HGM types for the Pebble Project.

**Riverine Wetlands.** Riverine wetlands occur in active floodplains and riparian corridors in association with stream channels. Dominant water sources are overbank flow from the channel or subsurface hydraulic connections between the stream channel and wetlands. Additional water sources may include groundwater discharge from surficial aquifers, overland flow from adjacent uplands and small tributaries, and precipitation. Riverine wetlands lose surface water by flow into the channel after flooding and during precipitation events. They lose subsurface water by discharge to the channel, movement to deeper groundwater, and evapotranspiration.

In Alaska, riverine wetlands range from broad floodplains along large meandering river channels (such as the Yukon and Kuskokwim Rivers) to narrow, temporarily flooded zones bordering higher-gradient rivers and streams. Extremely large riverine wetland complexes can be found on deltas, such as the Yukon-Kuskokwim delta, the Copper River delta, and the Stikine River delta.

**Slope Wetlands.** Slope wetlands normally occur where there is a discharge of groundwater to the land surface. They usually exist on sloping land surfaces ranging from steep slopes to nearly level terrain. Slope wetlands are usually incapable of depressional storage. Principal water sources are groundwater flow that reaches the surface or near-surface, shallow subsurface or surface flow from surrounding non-wetlands, and precipitation. Hydrodynamics are dominated by downslope unidirectional flow. Slope wetlands can occur in nearly level landscapes if groundwater discharge to the wetland surface is a dominant water source. Slope wetlands lose water by subsurface and surface flows and by evapotranspiration.

Examples of slope wetlands in Alaska include patterned fens, hillside seeps, spring-fed wetlands, and wetlands at the base of bluffs or toe slopes where groundwater is discharged near the surface. Some of the largest slope wetlands are string bogs (a patterned bog composed of bog ridges and wet hollows) on the broad glacial outwash plain west of the Parks Highway between Willow and Trapper Creek, Alaska.

**Depressional Wetlands.** Depressional wetlands occur in topographic depressions on a variety of geomorphic surfaces. Dominant water sources are precipitation, groundwater discharge, and shallow subsurface or surface flow from adjacent uplands. The direction of flow is normally from surrounding non-wetland areas toward the center of the depression. Elevation contours are closed, allowing the accumulation of surface water. Depressional wetlands may have any combination of inlets and outlets or may lack them completely. Dominant hydrodynamics are vertical fluctuations, primarily on a seasonal basis. Depressional wetlands lose water through intermittent or permanent flow from an outlet, evapotranspiration, or contribution to groundwater.

Depressional wetlands are common in glacial landscapes in Alaska, particularly in the form of kettles in moraine areas. Other common depressional wetlands include abandoned oxbows on river terraces, swales in coastal dune complexes in areas such as the Chukchi Sea coast, and the thousands of ponds on the Arctic coastal plain.

**Flat Wetlands.** The water source of flat wetlands is dominated by precipitation. Flats are most common on land positioned between streams or rivers, extensive relic lake bottoms, and terraces above active river floodplains. They receive virtually no groundwater discharge, which distinguishes them from depressions and slopes. Flats are often divided into two types: mineral soil flats and organic soil flats. Most flats in the mine study area are mineral soil flats. Organic soil flats occur when the surface accumulation of organic matter exceeds 16 inches in depth. Dominant hydrodynamics in either type of flat wetlands are vertical fluctuations. They lose water by evapotranspiration, overland flow, and seepage to underlying groundwater. Flats are characterized by low lateral drainage, usually as a result of low hydraulic gradients.

In Alaska, flat wetlands cover vast areas where shallow permafrost tables perch precipitation at or near the surface. These flat wetlands may occur on sloping terrain such as the millions of acres of tussock tundra dominated by *Eriophorum vaginatum* (cottongrass) on the low, rolling hills of the North Slope region. *Picea mariana* (black spruce)-dominated hillside forests and woodlands in interior Alaska are generally considered to be flat wetlands if permafrost occurs at a shallow depth. Large flat wetlands also can be found on broad glacial outwash terraces and in parts of valley bottoms where there are very broad, shallow basins that do not exhibit lateral water movement.

**Lacustrine Fringe Wetlands.** Lacustrine fringe wetlands occur adjacent to lakes where the water elevation of the lakes maintains the water tables in the wetlands. Waterbodies are considered lakes when they are 20 acres or larger in size or greater than 6.6 feet in depth in the deepest part of the basin. (These size and depth requirements follow the definition of the lacustrine ecological system in the Classification of Wetlands and Deepwater Habitats of the U.S. [Cowardin et al., 1979]). Smaller or shallower waterbodies and their fringing wetlands are generally considered to be depressional. In some cases, lacustrine fringe wetlands consist of a floating mat of vegetation attached to land. Additional sources of water are precipitation and groundwater discharge. Surface flow is bidirectional, usually controlled by water-level fluctuations, such as when large precipitation events raise the water level in the adjoining lake. Lacustrine fringe wetlands lose water by flow returning to the lake after flooding and by

evapotranspiration. Dead plant material (organic matter) normally accumulates in areas of the wetland that are protected from shoreline wave erosion. Examples of lacustrine fringe wetlands include lakeside marshes and nearly level peatlands surrounding lakes.

**Lacustrine Waters.** While lacustrine fringe wetlands occur adjacent to lakes, the lakes themselves are classified as lacustrine water in the HGM classification system for the Pebble Project.

**Riverine Channel Waters.** Small wetlands and flowing “Waters of the U.S.” (i.e., waters protected under the Clean Water Act) contained within an active channel are classified as riverine channel waters in the HGM classification system for Pebble Project. This class includes bare sand and gravel bars, bars supporting pioneer vegetation, channel areas with non-persistent vegetation or aquatic vegetation (e.g., submerged plants), and unvegetated flowing water. Riverine channel waters are bounded on the landward side by upland, by the channel bank, or by wetland dominated by trees, shrubs, herbs, mosses, or lichens. Adjacent wetlands dominated by persistent vegetation are usually in the riverine wetlands HGM class.

#### **14.1.6.3 Data Entry**

Data recorded in the field either electronically or on wetland determination field forms (WD, FA, SH) and in field notebooks were uploaded or entered by hand into a web-based relational database and related to the plot location in the project GIS, managed by RDI. As plot locations were generated in the GIS upon uploading, some fields of the database were autopopulated by drawing from geographic information already in the database, such as quadrangle names and section numbers. Upon completion of the data entry and applicable QC processes, data were made available in the GIS for use in vegetation and wetland mapping.

#### **14.1.6.4 Digital Mapping**

Five maps were created to provide an overview of the wetlands mapping effort for the mine mapping area:

- Figure 14.1-1 shows the Field Plot Locations overview and is displayed at a 1:170,000 scale. This map shows the type of field plot and the location where the field plot data was collected.
- Figure 14.1-2 shows the National Wetlands Inventory (NWI) Mapping and is displayed at 1:180,000 scale. The NWI mapping is described in section 14.1.4.
- Figure 14.1-3 shows the Wetlands Mapping and is displayed at 1:140,000 scale. The Wetlands Mapping coding is described in section 14.1.7.5.
- Figure 14.1-4 shows the Enhanced National Wetlands Inventory (ENWI) Mapping and is displayed at 1:140,000 scale. The ENWI Mapping is described in section 14.1.7.5.
- Figure 14.1-5 shows the Hydrogeomorphic (HGM) Classification Mapping and is displayed at 1:140,000 scale. The HGM Classification is described in section 14.1.6.1, and the HGM results in section 14.1.7.5.

Figure 14.1-3 through Figure 14.1-5 are also presented in 77 additional maps per overview figure to show the mapping detail at 1:7,500 scale. The 77 additional maps per subject (Wetlands Mapping, NWI, ENWI) are numbered as tiles 1A-77A. The A indicates the maps represent the mine mapping area, as opposed to tiles with a B that indicated the transportation- corridor, Bristol Bay drainages study area, or a C which indicates Cook Inlet study area.

The detailed map numbering sequence is the same for all three detailed map series. The numbering starts at tile 1A at the northwest corner of the main body of the mine mapping area and follows a south to north to south pattern as it moves from west to east and ends at tile 31A.

Mapping tiles 32A-42A display Upper Talarik Creek, from north to south. Mapping tiles 43A-58A displays the North Fork Koktuli River, from east to west. Mapping tiles 59A-74A display the South Fork Koktuli River, from north to southwest. Mapping tiles 75A-77A display additional plots to the east of Upper Talarik Creek. Aerial imagery was acquired several times during collection of baseline data (see Section 14.1.6.1). The 2004 and 2005 orthophotography with 4-foot contours, derived from the aerial photography and LIDAR imagery, became the base map for the vegetation and wetland studies.

The vegetation map, upon which the wetland mapping is based (Chapter 13), was drawn to a scale of approximately 1:1,200, and open water was drawn at 1:400 in ArcGIS. The mean polygon size is 1.0 acre.

### ***Interpretation of Aerial Photographs***

Topographic clues derived from topographic contours were used to assist in determining wetlands. Topographic depressions, toe slopes, or flat areas were indications of potential wetlands, while convex slopes were indicative of potential well-drained non-wetlands. Topographic patterns also were used to assess hydrologic connectivity between wetlands and streams, land surface elevations relative to nearby water surfaces, and potential locations of groundwater seeps.

### ***Characterization of Vegetation-community Types***

Final project vegetation codes were assigned to the mapping polygons using a combination of the draft photo signature guides (3PPI, 2006, 2007, 2008) and available field data, including site photography.

Field data were accessible via a relational database during mapping to assist in interpreting and assigning Project Vegetation Types to polygons. Scientists determined Project Vegetation Types in the photographs using the project photo signature guides (3PPI, 2006, 2007, 2008), data collected from points within a given mapping polygon, or data from sampling points in nearby polygons with similar photo signatures and landscape positions. At individual sites, the data collected in the field may not always have matched the final vegetation type assigned to that area. This is the result of heterogeneity of vegetation that cannot always be reliably detected or practically mapped on aerial photographs, or the sample point was located in a small inclusion of another type of vegetation within a larger vegetation-mapping unit.

### ***Wetland Status***

Wetland status was assigned to each mapping polygon after careful review of WD, FA, and SH field forms, site photos, and other available data for the study sites within the polygon. Data from plots in nearby or similar polygons also were evaluated when assigning wetland status. If plot data or the best professional judgment of the investigator suggested that a particular Project Vegetation Type was consistently associated with either non-wetlands or wetlands, then this information also was considered. Wetland status assigned by investigators was based on criteria found in the 1987 wetlands-delineation manual (USACE, 1987), not on subsequent court cases pertaining to surface water connections (referred to as “jurisdictional wetlands”).

### ***Enhanced National Wetland Inventory***

ENWI classification recommendations for mapping of the various Project Vegetation Types, along with conventions for assigning water regime modifiers, are included in the project photo signature guide (3PPI, 2008). (ENWI is described under *Data Collection* in Section 14.1.6.2.)

### ***Hydrogeomorphic Classification Characterization***

HGM mapping was completed for the entire mine mapping area. HGM map coding was based on *A Hydrogeomorphic Classification for Wetlands* (Brinson, 1993). Detailed descriptions and examples of the HGM types are described in Section 14.1.6.2.

Wetland status was assigned based on review of photos and other data, as described above. When polygons were designated as a complex of wetlands and uplands, the HGM designation applied only to the wetland portion of the mapped polygon.

### ***Waterbodies***

Waterbodies that were mapped include unvegetated ponds, lakes, streams, and rivers, including gravel bars and shorelines. Ponds and lakes were mapped based on interpretation of aerial photos of standing waterbodies. Perennial and intermittent streams were mapped by examining aerial photos for direct evidence of surface water and also by examining the contour data sets for topographic evidence of a channel. Shorelines and gravel bars were mapped through interpretation of aerial photos.

### ***Disturbance***

Disturbance to soil and/or vegetation was noted in the mapping, both human caused and natural, if there was evidence from field data or if the disturbance was visible on aerial photos.

## **14.1.7 Results and Discussion**

Between 2004 and 2008, investigators from 3PPI and HDR collected data (field plots) at approximately 16,947 locations in the mine study area. The wetlands chapter is based on a subset of the data from the mine study area, specifically, data for the mine mapping area (Figure 14.1-1). Within the mine mapping area, 3PPI and HDR collected data for the wetlands and vegetation studies at approximately 3,664 locations (ABR, Inc., collected habitat data from an additional 83 plots, and those data also were used in vegetation mapping.). The numbers of locations where 3PPI and HDR collected each type of data within the mine mapping area are as follows:

- 865 WD plots.
- 194 wetland FA plots.
- 639 SH plots.
- 669 RU photo points.
- 529 RW photo points.
- 360 SC plots.



- 375 WB plots.
- 33 various additional photo points.

#### **14.1.7.1 Climate**

The climate in the mine study area is discussed in detail in Chapter 2. The following analysis pertains only to years for which aerial photographs were obtained and/or during which field data were collected in the mine study area (i.e., 1978, and 2004 through 2008). Scientists compared monthly precipitation totals recorded at the Iliamna airport for October through April of the pertinent years to the historical average precipitation (WRCC, n.d.) to determine whether the snow storage in winters preceding the summers of 1978 and 2004 through 2008 was approximately normal (Table 14.1-2). (As previously noted, the weather data from the Iliamna airport are the only data considered for this study.)

During the winter preceding the summer of 1978, when color infrared photography was taken, winter storage was substantially lower than the historical average (34 percent below average; Table 14.1-2). For the winter that ended in 2004 winter storage was 36 percent above the historical average. For the winter that ended in 2005, winter storage was 22 percent above the historical average. The winter storage preceding the 2006 field season was 18 percent below average. The winter storage preceding the 2007 field season was 96 percent below average, and the winter storage preceding the 2008 field season was 7 percent below average. Based on the concept that winter storage is indicative of subsequent moisture levels in soils, spring soil conditions in 2004 and 2005 may have been wetter than average, and spring soil conditions in 2006 through 2008 may have been drier than average.

Interpretation of the meteorological data from the six monitoring stations in the mine study area generally showed more precipitation in the mine study area during August, September, and October than during other months (Chapter 2). However, the conclusion drawn in Chapter 2 is that variation and missing data in the precipitation record existing at the time the chapter was written impeded data comparisons among and within stations.

According to Chapter 2 the temperature pattern in the mine study area was similar to the pattern at the Iliamna airport, although temperatures in the mine study area were usually lower. The results confirm the stronger effect from Iliamna Lake on the Iliamna station. (See Chapter 2 for details.)

The Iliamna airport is closer to Iliamna Lake than the mine mapping area is and, at 172 feet in elevation, is generally lower in elevation than most of the mine mapping area. A database query of the data for field plots with recorded elevations indicated that only 4.3 percent of these plots had elevations below 500 feet, 86.5 percent had recorded elevations between 500 and 1500 feet, and 8.3 percent had elevations between 1,500 and 2,000 feet.

The winter snow storage described above characterizes conditions in the lower-elevation flats that are near and/or have conditions similar to the airport. Further meteorological data collection will be necessary before normal weather conditions in the mine study area can be assessed and the weather's effects on the data collected during 2004 through 2008 can be determined.

#### **14.1.7.2 Wetland Determinations**

Within the mine mapping area, data were collected at 3,664 locations (Figure 14.1-1). Data were collected from 865 WD plots. Of these WD plots, 335 (38.7 percent) were determined to be wetlands, and 53 (6.1 percent) were considered transitional wetlands. Three hundred sixteen WD plots (36.5 percent) were determined to be non-wetlands, and 161 (18.6 percent) were considered transitional non-wetlands.

Data were collected at 194 FA plots, and photos were taken at 529 RW photo points. All of these plots and points were considered wetlands at the time of data collection.

Data were collected at 639 SH plots. Of these SH plots, 105 plots (16.4 percent) were determined to be wetlands, and 33 (5.2 percent) were considered transitional wetlands. An additional 358 (56.0 percent) were determined not to be wetlands, and 89 (13.9 percent) were considered transitional non-wetlands. Fifty-four (8.5 percent) of SH plots were classified as NOCODE, meaning that there were insufficient data collected for these plots to make a conclusive wetlands determination. Because data-collection procedures for SH plots were designed to be rapidly conducted by junior staff collecting a limited suite of data, all soil indicators were not examined, nor were understory plants recorded. However, these NOCODE plots were still useful in determining Project Vegetation Types.

Photos were taken at 669 RU photo points in areas that did not meet the criteria to be considered wetlands.

Photos were taken at 360 SC photo points and 375 WB photo points.

Of the 33 various additional photo points (not shown on Figure 14.1-1), 13 were considered to be in non-wetlands, six were determined to be wetlands, and for 14 there were not sufficient data to make a determination.

#### **14.1.7.3 Waterbodies**

The mine study area crosses three large watersheds that feed Iliamna Lake and Bristol Bay—Upper Talarik Creek, the North Fork Koktuli River, and the South Fork Koktuli River.

Waterbodies in the mine mapping area include ponds, lakes, rivers, and streams, including their active shorelines and gravel bars. Perennial ponds or lakes that were classified as vegetated were usually partially covered by emergent, non-persistent, or aquatic herbaceous vegetation. Seasonal ponds classified as vegetated tended to have colonizing plants or water-tolerant species on the water's edge. Some seasonal ponds hold water briefly during the season, or may hold water only during years with higher-than-average precipitation. These seasonal ponds may have established communities of scattered willows, grasses, sedges and mosses. These waterbodies do not meet the definition of “wetlands” used by USACE because they lack soil and/or abundant vegetation. Rivers and streams mapped in the study area include both perennial and intermittent streams. Ponds and lakes were mapped throughout the mine mapping area, and ponds were characterized as either seasonal or perennial.

Photos were taken at all 375 waterbodies evaluated in the mine mapping area, and using these data combined with the aerial photography, the waterbodies at 308 of the WB plots were classified as lakes or perennial ponds. Of these 308 waterbodies, 95.1 percent were classified as open water, with the remaining

4.9 percent classified as vegetated. According to the HGM classifications, 45.4 percent of these ponds and lakes were depressional, 30.9 percent were slope, 19.1 percent were riverine, and 4.6 percent were lacustrine.

Of the remaining waterbodies evaluated, 67 were classified as seasonal ponds or the drawdown areas of perennial ponds, with 57.6 percent of these 67 plots classified as open water, 13.6 percent as barren, and 28.8 percent as vegetated. The HGM classifications of the seasonal ponds were 87.9 percent depressional, 10.6 percent slope, and 1.5 percent riverine.

Seeps are addressed by this study only by being documented as part of the wetlands functional assessment. (See Chapter 9 for more information on seeps and springs.)

#### **14.1.7.4 Disturbance**

Human-caused soil or vegetation disturbance in the mine study area was minimal and appeared to be limited to four-wheeler trails or campsites. These disturbances, when found, were noted in the digital mapping but did not affect vegetation or soils enough to raise questions regarding the wetlands status or Project Vegetation Type. A disturbance at one plot was recorded in the field as a new disturbance; however, this plot was the location of a meteorological station installed for the Pebble Project studies.

#### **14.1.7.5 Mapping**

##### ***Wetlands Mapping***

Figure Series 14.1-3 shows the wetlands mapping for the mine mapping area. Mapping designations and associated acreages are shown in Table 14.1-5. Under the protocols for determining boundaries of mapping units, areas of mixed wetlands and uplands were assigned codes that acknowledge inclusions of wetlands in primarily upland areas or of uplands in primarily wetland areas. For example, a unit mapped as primarily upland, but with up to 20 percent of its area composed of wetlands, would be assigned a code (U\_20) that reflects those wetland inclusions (see mapping unit codes in Table 14.1-5). The units were defined in a way that generally avoided the creation of units with approximately equal proportions of wetlands and uplands (i.e., units that would fall somewhere between the U\_40 designation and the W\_40 designation). If there was uncertainty about whether uplands or wetlands were more prevalent in a given mapping unit, the unit would be designated conservatively as W\_40. All wetlands information presented on the maps is based on the criteria set forth in the 1987 wetlands-delineation manual (USACE, 1987).

In total, 29,429.7 acres were mapped in the mine mapping area depicted on the overview map for Figure Series 14.1-3. Of that mapping area, 9,825.7 acres, or approximately 33.4 percent, were mapped as wetlands or waters (Table 14.1-5). Of the wetlands and waters, 8,650.4 acres, or 29.4 percent of the mine mapping area, were mapped as wetlands, and 1,175.3 acres, or approximately 4.0 percent of the mine mapping area, were mapped as open-water habitats. In addition, 19,604.0 acres, or approximately 66.6 percent of the mine mapping area, were mapped as uplands (i.e., non-wetlands).

For the Project Vegetation Types that were not consistently associated with only wetlands or only non-wetlands, scientists considered additional information such as landform and macrotopography to characterize the relevant mapping polygons as wetland or non-wetland.

### ***Enhanced National Wetlands Inventory Mapping***

The majority of wetlands in the mine mapping area are classified in the ENWI system as shrub-type wetlands (overview map for Figure Series 14.1-4). This class of wetlands comprises approximately 6,648.5 acres, or 76.9 percent, of the ENWI-mapped wetlands in the mine mapping area (Table 14.1-3). The second largest class of wetlands as identified through ENWI is the herbaceous-type wetlands, which comprise approximately 1,991.3 acres, or 23.0 percent, of the ENWI-mapped wetlands. Open-water habitats such as lakes and streams comprised 1,175.2 acres, or approximately 4.0 percent, of the mine mapping area. Details of the ENWI mapping are depicted on the individual tiles in Figure Series 14.1-4.

### ***Hydrogeomorphic Mapping***

The HGM mapping for the mine mapping area is presented on Figure Series 14.1-5. The HGM categories depicted on the maps include areas that are complexes of wetlands and non-wetlands. Areas classified as slope or riverine wetlands comprised 84.6 percent of the area mapped as wetlands or waters. Of the wetland and waterbody acreage, 6,188.3 acres, or approximately 63.0 percent, were mapped as slope (Table 14.1-6). The riverine HGM class comprised 2,120.4 acres, or approximately 21.6 percent of the wetland and waterbody acreage, primarily along the north and south forks of the Koktuli River and Upper Talarik Creek. The precipitation-driven flat class covered 469.8 acres, or approximately 4.8 percent of the wetland and waterbody acreage. The riverine channel class—which includes the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek, along with many smaller streams—covered 511.1 acres, or 5.2 percent of the wetland and waterbody acreage. The remaining HGM classes combined comprised 5.5 percent of the wetland and waterbody acreage.

#### **14.1.8 Summary**

Scientists determined the locations of wetlands and waterbodies in a 29,429.7-acre mine mapping area within the larger mine study area (Figure 14.1-1). Field investigators collected data at approximately 3,664 sites within the mine mapping area. Wetland determinations were made according to the 1987 wetlands-delineation manual (USACE, 1987). In addition to wetlands, investigators mapped streams, lakes, and ponds in the mine mapping area.

Within the mine mapping area, data were collected at 3,664 locations. Of the 865 WD plots, 335 (38.7 percent) were determined to be wetlands, and 53 (6.1 percent) were considered transitional wetlands. Data were collected at 194 FA plots, and photos were taken at 529 RW photo points. All of these plots and points were considered wetlands at the time of data collection. Data were collected at 639 SH plots, of which 138 (21.6 percent) were considered to be wetlands and 33 (19.6 percent) were considered to be transitional wetlands.

Of the 865 WD plots, 316 plots (36.5 percent) were determined to be non-wetlands, and 161 (18.6 percent) were considered transitional non-wetlands. Of the 639 SH plots, 447 (70.0 percent) were determined not to be wetlands, and 89 (19.9 percent) were considered transitional non-wetlands.

Photos were taken at 360 SC photo points and 375 WB photo points. Lakes and perennial ponds were found at 308 WB points, and seasonal ponds and drawdown areas were found at 67 WB points.

Approximately 33.4 percent of the 29,429.7 acre mine mapping area was mapped as wetlands and waters. The only previous wetlands mapping of the mine mapping area was done by the USFWS NWI. The NWI mapping covered 96.4 percent of the mine mapping area. NWI mapped 19.8 percent of the mine mapping area as wetlands and 2.0 percent as waters.

ENWI mapping showed that shrub-type classifications were the predominant wetland types mapped in the mine mapping. Herbaceous types were also found throughout the mine mapping area.

Slope and riverine HGM classes comprised 84.6 percent of the mapped wetlands and waters in the mine mapping area. The riverine HGM class comprised approximately 21.6 percent of the wetland and waterbody acreage, primarily along the north and south forks of the Koktuli River and Upper Talarik Creek.

Maps and tables in this chapter show wetland status, ENWI classifications, and HGM classifications for the mine mapping area.

### **14.1.9 References**

- Brinson, M.M. 1993. A Hydrogeomorphic Classification for Wetlands. Wetlands Research Program Technical Report WRP-DE-4. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS. August.
- Cowardin L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C.
- Lichvar, R. 2007. U.S. Army Corps of Engineers. Personal communication. Email correspondence with Cheryl Moody, 3PPI. October 20, 2007.
- Nowacki, G.J., P. Spencer, T. Brock, M. Fleming, and T. Jorgenson. 2001. Ecoregions of Alaska and Neighboring Territories. U.S. Geological Survey, Reston VA.
- Reed, P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands: Alaska (Region A). U.S. Department of Interior, Fish and Wildlife Service, National Wetlands Inventory Center, St. Petersburg, FL.
- Shoeneberger, P.J., D.A. Wysocki, E.C. Benham, and W.D. Broderson. 2002. Field Book for Describing and Sampling Soils, Version 2.0. U.S. Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.
- Smith, G.S. 1991. NWI Maps Made Easy: A User's Guide to National Wetlands Inventory Maps of the Northeast Region. U.S. Fish and Wildlife Service.
- Three Parameters Plus, Inc. (3PPI). 2008. Pebble Project Vegetation Type Photo Signature Guide Draft Report. Anchorage, AK. May.

- . 2007. Northern Dynasty Mines Inc. Pebble Project Draft Mine Site Photo Signature Guide. Version XIb. Palmer, AK. June.
- . 2006. Northern Dynasty Mines Inc. Pebble Project Draft Mine Site Vegetation Type Photo Signature Guide. Version VII. Palmer, AK. April.
- U.S. Army Corps of Engineers (USACE). 2007. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0). U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- . 2006. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- . 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2007. Technical Note #11. National Technical Committee for Hydric Soils.
- . 2006a. Field Indicators of Hydric Soils in the United States, Version 6.0. G.W. Hurt and L.M. Vasilas (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- . 2006b. Keys to Soil Taxonomy, Tenth Edition. Washington, DC.
- . 2004. Field Indicators of Hydric Soils in Alaska, Draft. USDA, NRCS, AK.
- . 2003a. Alaska Guide to Soil Drainage Classes. National Soil Information System, Technical Notes AK-8. Palmer, AK.
- . 2003b. Field Indicators of Hydric Soils in Alaska. Excerpted from Field Indicators of Hydric Soils in the United States, Version 5.01. USDA, NRCS, AK.
- U.S. Department of Interior (USDOI). Various. National Wetlands Inventory draft maps. Quadrangles Iliamna D-6 and D-7.
- U.S. Fish and Wildlife Service (USFWS). 1995. Photointerpretation conventions for the National Wetlands Inventory. National Wetlands Inventory Center, St. Petersburg, FL.
- Wakeley, J. 2007. U.S. Army Corps of Engineers. Personal communication. Email correspondence with Cheryl Moody, 3PPI. October, 2007.
- Western Regional Climate Center (WRCC). n.d. Iliamna FAA Airport, Alaska (503905), Period of Record Monthly Climate Summary, Average Total Precipitation. <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?akilia>. (Accessed 5/5/2010).

### 14.1.10 Glossary

Aquic moisture regime—“a mostly reducing soil moisture regime nearly free of dissolved oxygen due to saturation by ground water, or its capillary fringe, and occurring at periods when the soil temperature at 19.7 in. is greater than 5 degrees Celsius” (USACE, 1987).

Chroma—a measure of the purity or strength of spectral color in soil.

Evapotranspiration—the loss of water to the atmosphere through evaporation and plant transpiration.

Geomorphology—the study of landforms and the processes that shape them.

Gleyed soils—“a soil condition resulting from prolonged soil saturation, which is manifested by the presence of bluish or greenish colors through the soil mass or in mottles (spots or streaks) among other colors. Gleying occurs under reducing soil conditions resulting from soil saturation, by which iron is reduced predominantly to the ferrous state.” (USACE, 1987)

Herb (as a vegetation stratum)—a plant whose stem does not produce woody, persistent tissue and that generally dies back at the end of each growing season.

Hydric soil—“soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic [i.e., lacking oxygen] conditions in the upper part” (as defined by the U.S. Dept. of Agriculture Soil Conservation Service as cited in USACE, 2007).

Hydrophytic vegetation—vegetation that is typically adapted for life in saturated soil conditions.

Hydrogeomorphic classification—a land classification system based on the relationship between hydrology, geomorphology, and wetland function.

Lacustrine—of or related to lakes.

Macrotopography—overall shape of the land surface in the assessment area from a scale that includes more than the vegetation or cover type sampled. Macrotopography in the study area is either concave, convex, flat, hummocky, rolling, or undulating (3PPI, 2008).

Microtopography—very small-scale variations in the height and roughness of the ground surface in which a sampled vegetation or cover type is growing. Microtopography in the study area is either flat, hummocky, tussocky, or undulating (3PPI, 2008).

Mineral soils—soils that do not satisfy the criteria for classification as organic soils.

Non-wetlands—uplands and lowland areas that are neither aquatic habitats, wetlands, nor other special aquatic sites. Non-wetlands are seldom or never inundated, or if frequently inundated, they have saturated soils for only brief periods during the growing season, and if vegetated, they normally support a prevalence of vegetation typically adapted for life only in aerobic soil conditions.

Organic soils (or histosols)—soils where either more than half of the upper 32 inches of soil is organic or organic soil material of any thickness rests on rock or on fragmental material that has interstices filled with organic materials.

Orthophotography (orthophotos)—digital imagery that has been orthorectified (see below); orthorectified photos have already been processed.

Orthorectify—to rectify digital imagery by removing distortion resulting from camera angle and topography, thus equalizing the distances represented on the image.

Perennial pond—has continuous (permanent) surface water all year round during years of normal precipitation.

Perennial stream (or river)—a stream or river that has continuous (permanent) surface flow in parts of its bed all year round during years of normal rainfall.

Photo signature—a unique texture, pattern, or color that vegetation has when captured in photographs taken from an airplane.

Polygon—shape drawn in the GIS and represented on maps; for purposes of this study, a polygon delineates the boundaries of areas of homogeneous vegetation types with similar hydrogeomorphology, wetlands status, ENWI designations, and other characteristics.

Project Vegetation Type—an Alaskan vegetation classification system developed specifically for the Pebble Project.

Reduction—the chemical process by which an element gains electrons.

Soil profile—a soil profile consists of various soil layers described from the surface downward. Most soils have two or more identifiable horizons.

Sapling (as a vegetation stratum)—an immature or small-statured tree that is less than 3 inches in diameter at breast height. Saplings and shrubs are combined into one vegetation stratum.

Shrub (as a vegetation stratum)—a woody plant of relatively low height with several stems arising from the base and lacking a single trunk. The stems average less than 3 inches at breast height. A plant with a shrubby growth form but an average stem diameter greater than 3 inches at breast height is considered a tree in terms of vegetation strata. Saplings and shrubs are combined into one vegetation stratum.

Stratum (vegetation)—a layer of vegetation in a plant community, usually of the same or similar height. Plural is strata.

Sulfidic odor—an odor of rotten eggs that is due to the presence of hydrogen sulfide. Sulfidic odor is a primary hydric soil indicator.



Transitional non-wetland—a wetland determination plot status used when at least two of the wetland parameters were positive and the third parameter was negative or on the line between being positive and negative, e.g., a score of 50 percent for the percent dominance test for hydrophytic vegetation

Transitional wetland—a wetlands determination plot status used when criteria for all three wetland parameters were met, but one or more of the parameters was weak, e.g., only secondary hydrology indicators were used.

Tree (as a vegetation stratum)—a tall, perennial, woody plant with a main trunk and branches that form a distinct elevated crown. In terms of strata used for wetland determination, a tree's main stem is greater than 3 inches diameter at breast height (a tree with a smaller diameter at breast height is considered a sapling). A shrub with an average diameter at breast height greater than 3 inches is classified in the tree stratum.

Water table—"the upper surface of groundwater or that level below which the soil is saturated with water. [The water table] is at least 6 inches thick and persists in the soil for more than a few weeks" (USACE, 1987).

Vegetation signature—see photograph signature.

Wetlands—those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas.

## 14.2 Wetlands and Waterbodies—Transportation-corridor Study Area

### 14.2.1 Introduction

Section 14.2 summarizes the wetlands and waterbodies study for the part of the transportation-corridor study area that lies within the Bristol Bay drainages (hereafter called the transportation-corridor study area; the study for the Cook Inlet drainages is discussed in Chapter 39). The study objectives, scope of work, and methods for the wetlands and waterbodies study in the transportation-corridor study area are essentially the same as those for the mine study area (Section 14.1). The sections below identify differences between the studies in the mine study area and the transportation-corridor study area and present the results for the transportation-corridor study area.

The vegetation study, which is described in Chapter 13, is integral to the wetlands and waterbodies study.

### 14.2.2 Study Objectives

The objectives for the transportation-corridor study area are the same as those for the mine study area (Section 14.1.2). The primary objective is to document and map wetlands and waterbodies in the transportation-corridor study area.

### **14.2.3 Study Area**

The transportation-corridor study area extends from the mine study area to the boundary between the Bristol Bay drainages and the Cook Inlet drainages; it generally parallels the north shore of Iliamna Lake (see overview map in Figure Series 14.2-1). Data have been collected throughout the study area, but mapping has been completed only for an approximately 2,000-foot-wide corridor within the study area, referred to as the “transportation-corridor mapping area” (see overview map in Figure Series 14.2-1). Wetland scientists consider the information gathered outside the mapping area to be useful for characterizing the environment surrounding the mapping area, and so data collected from all sites remain part of the study data set. The wetlands study area is identical to the vegetation study area described in Chapter 13.

### **14.2.4 Previous Studies**

Relevant past work on wetlands mapping in and near the study area is the National Wetlands Inventory (NWI) mapping developed by the U.S. Fish and Wildlife Service (USFWS) (USDOJ, Various), as described in Section 14.1.4. NWI mapping exists for the entire transportation corridor mapping area (USGS quadrangle maps Iliamna C-2, C-3, D-3, D-4, D-5, and D-6) and is depicted on Figure 14.2-2. The acreages of NWI-mapped wetland and waterbody types are shown in Table 14.2-1. In the transportation-corridor mapping area, the NWI maps show 1,256 acres of wetlands and 568 acres of open-water habitats, comprising 6.3 percent and 2.9 percent of the mapping area, respectively. The remaining 18,093 acres (90.8 percent) are uplands (i.e., neither wetlands nor waterbodies).

### **14.2.5 Scope of Work**

The scope of work for the transportation-corridor study area is identical to the scope of work for the mine study area (Section 14.1.5), with the exception of the study area. Field work for the transportation-corridor study area was conducted primarily in 2004 and 2005, with additional work in the area west of the Newhalen River conducted in 2006 through 2008.

### **14.2.6 Methods**

The general methods for the transportation-corridor study area were the same as those described in Section 14.1.6.

#### **14.2.6.1 Literature Review**

##### ***Data and Imagery Used for Wetlands Mapping***

The literature review and data compilation for the wetlands and waterbodies mapping in the transportation-corridor study area were the same as those for the mine study area (Section 14.1.6.1).

##### ***Climate Data***

Scientists studying wetlands in the transportation-corridor study area analyzed climate data for the Iliamna airport, as described for the mine study area (Section 14.1.6.1). Wetland scientists assumed that the Iliamna airport data are representative of at least the western part of this study area. Scientists also

compared historical weather data available for Iniskin Bay of Cook Inlet—near the eastern end of the study area—to the historical Iliamna airport data to understand the difference between the western and eastern ends of the study area.

#### **14.2.6.2 Field Data Collection**

The methods for field data collection for the transportation-corridor study area were the same as those for the mine study area (Section 14.1.6.2), except as described below. Because field work in the transportation-corridor study area was done primarily in 2004 and 2005, most changes in methods that were implemented after 2005 are not pertinent to study sites east of the Newhalen River.

The types of study sites for the transportation-corridor study area were the same as those for the mine study area (see Section 14.1.6.2); however, shrub height plots were limited to the area west of the Newhalen River. Collection of water quality data (pH and electrical conductivity) and collection of functional assessment data at waterbodies began late in 2005 or later, so those protocols were not implemented in areas east of the Newhalen River where data collection was completed in 2004 and 2005.

#### **14.2.6.3 Data Entry**

Entry of data collected for the transportation-corridor study area was accomplished using the same methods as for the mine study area (Section 14.1.6.3).

#### **14.2.6.4 Digital Mapping**

Digital mapping methods used for the mine study area (Section 14.1.6.4) and the transportation-corridor study area were the same, except for some of the aerial imagery. For the segment of the transportation-corridor generally west of the Newhalen River, the imagery was the same as that used for the mine study area. That imagery extended only a short distance east of the Newhalen River, however; therefore, the following additional data were obtained for the transportation-corridor study area:

- Color aerial photography was captured in October 2004, and supplemented in October 2005 and September 2008, at a scale of 1:8,000. Together, this photography covered the mapping area and some additional outlying areas. This aerial photography was orthorectified at a scale of 1.5-foot pixels and was used for interpretation and mapping in the geographic information system (GIS).
- Light detection and ranging (LIDAR) imagery was acquired in October 2004 and was used to produce a layer of 4-foot contour lines for the mapping area and some additional outlying areas.
- IKONOS (GeoEye) satellite imagery was captured in July 2004 of most of the transportation-corridor study area east of the Newhalen River. The imagery covered the northern part of the study area from Iliamna Lake to the Bristol Bay drainages/Cook Inlet drainages boundary where field investigations occurred. It did not cover part of the mapping area between the Iliamna River and the Bristol Bay/Cook Inlet drainages boundary. Field investigators used this imagery for some basemaps in 2004 and 2005.

## **14.2.7 Results and Discussion**

The results presented below are based on data for the transportation-corridor study area, which extends from the mine study area to the boundary between the Bristol Bay drainages and the Cook Inlet drainages. The data-collection locations relevant to the transportation-corridor study area are depicted on Figure Series 14.2-1.

Between 2004 and 2008, investigators collected data at 1,126 locations in the transportation-corridor study area (in areas both east and west of the Newhalen River). These locations comprised the following types of study sites:

- 526 wetland determination (WD) plots.
- 3 shrub height (SH) plots
- 71 functional assessment (FA) plots.
- 197 representative upland (RU, non-wetland) photo points.
- 192 representative wetland (RW) photo points.
- 100 stream crossing (SC) photo points.
- 37 waterbody (WB) photo points.

The data from these study sites were used in assigning vegetation type, wetland status, and several other attributes to mapping polygons for the transportation-corridor study area.

### **14.2.7.1 Climate**

The details of the climate study for the Bristol Bay drainages are discussed in Chapter 2. As described in Section 14.1.7.1., the winter precipitation (winter storage) for the winters that preceded the summers of both 2004 and 2005 was above the historical average so early-summer soil moisture in those years may have been wetter than normal. Winter storage preceding the 2006, 2007, and 2008 field seasons was below average; therefore, spring soil conditions in those years may have been drier than normal.

Analysis of limited climate data for the Iniskin Bay area on the west side of Cook Inlet (near the east end of the study area) for the period November 1954 to March 1962 (WRCC, n.d.[b]) indicates that monthly precipitation is approximately 3 times as high there as in Iliamna (Table 14.2-2; WRCC, n.d.[a]). Given this difference, precipitation is likely higher at the eastern end of the study area—particularly in the Chinkelyes Creek and upper Iliamna River drainages—than at Iliamna.

### **14.2.7.2 Wetland Determinations**

Field teams collected data at 527 WD plots, where complete vegetation, hydrology, and soils data were recorded. Of the 527 plots, 220 plots were determined to be wetlands and 307 plots were non-wetlands, based on the three wetland criteria: hydrophytic vegetation, wetland hydrology, and hydric soils.

### **14.2.7.3 Waterbodies**

The transportation-corridor study area crosses approximately 20 watersheds that feed Iliamna Lake, plus numerous narrow watersheds drained by steep mountainside creeks in the central portion of the study area.

Waterbodies mapped in the transportation-corridor study area include ponds, lakes, rivers, and streams, including their active shorelines and gravel bars. Perennial ponds or lakes that were classified as vegetated were usually partially covered by emergent, non-persistent, or aquatic herbaceous vegetation. Seasonal ponds classified as vegetated tended to have colonizing plants or water-tolerant species on the water's edge. Some seasonal ponds hold water briefly during the season, or may hold water only during years with higher-than-average precipitation. These seasonal ponds may have established communities of scattered willows, grasses, sedges and mosses. These waterbodies do not meet the definition of "wetlands" used by USACE because they lack soil and/or abundant vegetation. Rivers and streams mapped in the study area include both perennial and intermittent streams. Ponds and lakes were mapped throughout the mine mapping area, and ponds were characterized as either seasonal or perennial.

### **14.2.7.4 Disturbance**

Human-caused soil or vegetation disturbance in the study area is limited. Disturbance is limited to four-wheeler trails, roads, and building pads along the Iliamna-Nondalton Road, between that road and Roadhouse Mountain, at the community of Pedro Bay, and along the road from Pile Bay to Williamsport.

### **14.2.7.7 Mapping**

Wetland mapping is complete for the transportation-corridor mapping area. The mapping depicts waterbodies, boundaries between wetland types, and boundaries between wetlands and non-wetlands, as described in further detail below.

#### ***Project Wetlands Mapping***

Figure Series 14.2-3 shows the wetland mapping for the transportation-corridor study area. Mapping designations and associated acreages are shown in Table 14.2-3. Under the protocols for determining boundaries of mapping units, areas of mixed wetlands and uplands were assigned codes that acknowledge inclusions of wetlands in primarily upland areas or of uplands in primarily wetland areas. For example, a unit mapped as primarily upland, but with up to 20 percent of its area composed of wetlands, would be assigned a code (U\_20) that reflects those wetland inclusions (see mapping unit codes in Table 14.2-3). The units were defined in a way that generally avoided the creation of units with approximately equal proportions of wetlands and uplands (i.e., units that would fall somewhere between the U\_40 designation and the W\_40 designation). If there was uncertainty about whether uplands or wetlands were more prevalent in a given mapping unit, the unit would be designated conservatively as W\_40. All wetland information presented, including that in tables and on maps, is based on the criteria set forth in the 1987 wetlands-delineation manual (USACE, 1987).

In the transportation-corridor mapping area, 2,426 acres, or approximately 12 percent of the total mapping area, were mapped as wetlands and waters (Table 14.2-3). Areas mapped as wetlands comprised 1,783 acres, or approximately 9 percent of the transportation-corridor mapping area. Also mapped were 643

acres of open-water habitats (including associated gravel bars), or approximately 3 percent of the transportation-corridor mapping area. In addition to wetlands and open-water habitats, 17,491 acres, or approximately 88 percent of the transportation-corridor study area, were mapped as uplands (non-wetlands). For the Project Vegetation Types that were not consistently associated with only wetlands or only non-wetlands, scientists considered additional information such as landform and macrotopography to characterize each mapped polygon as wetland or non-wetland.

### ***Enhanced National Wetlands Inventory Mapping***

Table 14.2-4 summarizes the Enhanced National Wetlands Inventory (ENWI) wetland and waterbody groups for Pebble Project and the acreage mapped for each in the transportation-corridor mapping area. Table 14.2-5 describes the ENWI codes for the transportation-corridor mapping area. The ENWI mapping is shown on Figure Series 14.2-4. The majority of wetlands within the mapping area were classified as shrub wetlands. This class of wetlands comprised approximately 1,245 acres, or 6 percent of the mapping area (Table 14.2-4). The second largest ENWI class of wetlands was the herbaceous wetlands. This class comprised approximately 495 acres, or 2.5 percent of the transportation-corridor mapping area.

### ***Hydrogeomorphic Mapping***

The hydrogeomorphic (HGM) mapping for the transportation-corridor mapping area is presented in Figure Series 14.2-5, and the acreage of each HGM type is listed in Table 14.2-6. The slope HGM class comprised the largest proportion of the wetlands and waters mapped in the transportation-corridor mapping area. This class comprised 943 acres, or 39 percent of the total wetland and waterbody acreage. The other HGM classes each comprised less than 18 percent of the total wetland and waterbody acreage.

## **14.2.8 Summary**

Scientists determined the locations of wetlands and waterbodies in a 2,000-foot-wide mapping area within the transportation-corridor study area. Field investigators collected data at 1,126 sites in the transportation-corridor study area. Using data collected during field investigations and from aerial photographs, wetland determinations were made according to the 1987 Army Corps of Engineers wetlands-delineation manual (USACE, 1987). In addition to wetlands, investigators mapped streams, lakes, and ponds in the mapping area.

Determination of wetlands was based primarily on three parameters: vegetation type, soil type, and hydrological characteristics. Within the transportation-corridor mapping area, wetland scientists mapped 1,783 acres as wetlands and 643 acres as waterbodies. These constitute 9 percent and 3 percent of the mapping area, respectively. Most of the wetlands in the mapping area fall into the shrub group under the ENWI classification system used for Pebble Project. Under the HGM classification system, most of the wetlands are of the slope type.

### 14.2.9 References

- Three Parameters Plus, Inc. (3PPI). 2008. Pebble Project Vegetation Type Photo Signature Guide Draft Report. Unpublished.
- U.S. Army Corps of Engineers (USACE). 2007. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0). U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- . 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
- U.S. Department of Interior (USDOI). Various. National Wetlands Inventory draft maps. Quadrangles Iliamna C-2, C-3, D-3, D-4, D-5, and D-6.
- Western Regional Climate Center (WRCC). n.d.[a]. Iliamna FAA Airport, Alaska (503905), Period of Record Monthly Climate Summary, Average Total Precipitation and Average Minimum and Maximum Temperature. <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?akilia>. (Accessed November 13, 2008).
- . n.d.[b]. Iniskin, Alaska (503925), Period of Record Monthly Climate Summary. Average Total Precipitation. <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ak3925>. (Accessed February 3, 2011).

### 14.2.10 Glossary

Geomorphology—the study of landforms and the processes that shape them.

Hydric soil—soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (as defined by the U.S. Dept. of Agriculture Soil Conservation Service as cited in USACE, 2007).

Hydrophytic vegetation—vegetation that is typically adapted for life in saturated soil conditions.

Hydrogeomorphic classification—a land classification system based on the relationship between hydrology, geomorphology, and wetland function.

Macrotopography—overall shape of the land surface in the assessment area from a scale that includes more than the vegetation or cover type sampled. Macrotopography in the study area is either concave, convex, flat, hummocky, rolling, or undulating (3PPI, 2008).

Non-wetlands—uplands and lowland areas that are neither deepwater aquatic habitats, wetlands, nor other special aquatic sites. Non-wetlands are seldom or never inundated, or if frequently inundated, they have saturated soils for only brief periods during the growing season, and if vegetated, they normally support a prevalence of vegetation typically adapted for life only in aerobic soil conditions.

Perennial pond—has continuous (permanent) surface water all year round during years of normal precipitation.

Perennial stream (or river)—a stream or river that has continuous (permanent) surface flow in parts of its bed all year round during years of normal rainfall.

Polygon—shape drawn in the geographic information system and represented on maps; for purposes of this study, a polygon delineates the boundaries of areas of homogeneous vegetation types with similar hydrogeomorphology, wetlands status, ENWI designations, and other characteristics.

Project Vegetation Type—an Alaskan vegetation classification system developed specifically for the Pebble Project.

Wetlands—those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas.



## TABLES



TABLE 14.1-1.

U.S. Fish and Wildlife Service, National Wetlands Inventory Mapping Groups,  
Acreage in the Mine Mapping Area

NWI Group	Number of Acres <sup>a</sup>	Percent of Mapping Area <sup>a</sup>
Forested	0	0
Forested/Scrub Shrub	0	0
Scrub Shrub/Forested	0	0
<b>Total Forest Types</b>	<b>0</b>	<b>0</b>
Scrub Shrub	148.5	0.5
Flooded Shrublands	14.4	0
Scrub Shrub/Herbaceous	2,974.0	10.1
Herbaceous/Scrub Shrub	1,899.5	6.5
<b>Total Shrub Types</b>	<b>5,036.4</b>	<b>17.1</b>
Herbaceous	595.2	2.0
Emergent Herbaceous	146.0	0.5
Aquatic Herbaceous	46.6	0.2
<b>Total Herbaceous Types</b>	<b>787.8</b>	<b>2.7</b>
<b>TOTAL WETLANDS</b>	<b>5,824.2</b>	<b>19.8</b>
Freshwater Ponds	285.8	1.0
Riverine (Rivers/Streams)	43.1	0.1
Lacustrine (Lakes)	260.6	0.9
<b>Total Waters</b>	<b>589.5</b>	<b>2.0</b>
<b>TOTAL WETLANDS/WATERS</b>	<b>6,413.7</b>	<b>21.8</b>
Uplands (Non-wetlands)	21,970.0	74.7
No NWI Coverage	1,046.0	3.6
<b>TOTAL MAPPING AREA</b>	<b>29,429.7</b>	<b>100.0</b>

a. Apparent inconsistencies in sums within or between tables are the result of rounding.

NWI = National Wetlands Inventory. Source: U.S. Department of Interior (USDOI). Various. National Wetlands Inventory draft maps. Quadrangles Iliamna D-6 and D-7.

**TABLE 14.1-2**  
**Precipitation at Iliamna Airport, Alaska**

Year	Precipitation (inches)												Winter Storage Oct- April <sup>a</sup>
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1977	1.53	1.55	0.90	2.44	1.87	2.58	1.06	3.58	5.91	3.47	0.17	0.63	15.22
1978	0.52	1.56	0.41	0.78	1.65	2.91	3.20	3.00	2.83	4.13	3.13	3.74	7.54
2003	0.03	2.26	0.23	1.54	1.49	1.92	3.09	5.05	1.6	4.88	6.03	0.56	14.38
2004	0.37	1.30	0.98	1.49	1.41	1.47	1.74	1.34	7.34	3.96	3.81	1.95	15.61
2005	1.90	0.79	0.89	0.70	0.27	2.54	3.63	4.52	8.23	2.94	0.89	1.74	14.00
2006	0.07	1.72	1.29	0.75	0.51	2.28	1.07	7.72	0.21	0.26	0.05	0.00	9.40
2007	0.00	0.00	0.00	0.12	0.00	1.65	2.66	2.52	7.98	3.07	2.64	2.06	0.43
2008	1.64	0.36	0.19	0.68	1.03	0.70	2.85	1.44	7.13	3.41	1.18	0.85	10.64
<b>Historical Average</b>													
1939- 2005	1.34	1.18	1.15	1.08	1.21	1.50	2.63	4.62	4.32	3.09	2.03	1.61	11.48

**Notes:**

- a. Values in this column are the total precipitation for October of the previous year through April of the given year (i.e., value for 1977 is the precipitation for October 1976 through April 1977).

Source for monthly precipitation totals and historical averages: WRCC, n.d., monthly precipitation listings and general climate summary tables for Iliamna FAA Airport, Alaska (503905).

TABLE 14.1-3.  
Enhanced National Wetlands Inventory Classifications, Acreage in the  
Mine Mapping Area. Pebble Wetlands Studies, 2004-2008

ENWI Group	ENWI Code <sup>a</sup>	Number of Acres <sup>b</sup>	Percent of Mapping Area <sup>b</sup>
Deciduous Forests	PFO1	5.0	0.0
	PFO1/SS1	3.2	0.0
	PSS1/FO1	1.9	0.0
Coniferous Forests	PSS1/FO4	0	0.0
<b>Total Forest</b>		<b>10.1</b>	<b>0.0</b>
Shrubs	PSS1	2,704.4	9.2
	PSS1/US	0.5	0.0
	PSS1/ML1	35.0	0.1
Shrub/Herbaceous	PSS1/EM1	2,959.6	10.1
Herbaceous/Shrub	PEM1/SS1	949.0	3.2
<b>Total Shrub</b>		<b>6,648.5</b>	<b>22.6</b>
Herbaceous	PEM1	1,599.2	5.4
	PEM1/ML1	381.8	1.3
	PEM1/2	1.6	0.0
	PEM1/US	0.4	0.0
	PUS/EM1	0.6	0.0
	PEM2	8.2	0.0
<b>Total Herbaceous</b>		<b>1,991.8</b>	<b>6.8</b>
<b>TOTAL WETLANDS</b>		<b>8,650.4</b>	<b>29.4</b>
Aquatic Herbaceous	PEM1	1.6	0.0
	PAB	4.3	0.0
	PEM1/US	0.9	0.0
	PUS/EM1	4.0	0.0
	R3AB	0	0.0
	R3EM	0	0.0
Lakes	L	285.7	1.0
Ponds	PUB	339.7	1.2
	PUS	40.6	0.1
Rivers/Streams	R3UBH	390.8	1.3
	R3US	101.3	0.3
	R4	6.3	0.0
<b>Total Waters</b>		<b>1,175.2</b>	<b>4.0</b>
<b>TOTAL WETLANDS/WATERS</b>		<b>9,825.6</b>	<b>33.4</b>
Uplands (Non-wetlands)	U	19,604.1	66.6
<b>TOTAL MAPPING AREA</b>		<b>29,429.7</b>	<b>100.00</b>

Notes:

a. See Table 14.1-4 for explanation of codes.

b. Apparent inconsistencies in sums within or between tables are the result of rounding.

**TABLE 14.1-4**  
**Enhanced National Wetlands Inventory Codes Used in the Mine Mapping Area**

Group	Code	Description
<b>WETLANDS</b>		
Deciduous Forest Dominated	PFO1	Broad-leaved Deciduous Forested Wetland
	PFO1/SS1	Broad-leaved Deciduous Forested/Shrub Wetland
	PSS1/FO1	Broad-leaved Deciduous Shrub/Forested Wetland
Coniferous Forest Dominated	PSS1/FO4	Deciduous Shrub/Needle-leaved Evergreen Forested Wetland
Scrub Shrub Dominated	PSS1	Broad-leaved Deciduous Shrub Wetland
	PSS1/US	Broad-leaved Deciduous Shrub/Unconsolidated Shore Wetland
	PSS1/ML1	Broad-leaved Deciduous Shrub/Moss Wetland
Scrub Shrub/Herbaceous Dominated	PSS1/EM1	Broad-leaved Deciduous Shrub/Persistent Emergent Wetland
Herbaceous/ Scrub Shrub Dominated	PEM1/SS1	Persistent Emergent/ Broad-leaved Deciduous Shrub Wetland
Herbaceous Dominated	PEM1	Persistent Emergent Wetland
	PEM1/ML1	Persistent Emergent/Moss Wetland
	PEM1/2	Persistent/Non-persistent Emergent Wetland
	PEM1/US	Persistent Emergent/Unconsolidated Shore Wetland
	PUS/EM1	Unconsolidated Shore/ Persistent Emergent Wetland
	PEM2	Non-persistent Emergent Wetland
<b>WATERS</b>		
Aquatic Herbaceous	PEM1	Persistent Emergent Deep Marsh
	PAB	Aquatic Beds (submerged and/or floating-leaved)
	PEM1/US	Persistent Emergent Shallow Marsh/Non-permanent Water
	PUS/EM1	Non-permanent Water/Shallow Marsh
	R3AB	Riverine Aquatic Beds (submerged and/or floating-leaved)
	R3EM	Riverine Emergent Wetland
Lacustrine (Lakes)	L	Lacustrine Habitats
Ponds	PUB	Palustrine Unconsolidated Bottom (pond)
	PUS	Palustrine Unconsolidated Shore (seasonal pond)
Riverine (Rivers/Streams)	R3UBH	Riverine Unconsolidated Bottom (river/stream channel)
	R3US	Riverine Unconsolidated Shore (river bars/flats)
	R4	Intermittent Stream
<b>NON-WETLANDS</b>		
Uplands	U	Non-wetland Habitat

TABLE 14.1-5.  
Wetlands Mapping Summary, Mine Mapping Area  
Pebble Wetlands Studies, 2004-2008

Mapping Units	Mapping Unit Code	Number of Acres <sup>a</sup>	Percent of Mapping Area <sup>a</sup>	Percentage That Is Wetlands or Waters	Acres of Wetlands or Water <sup>a, b</sup>
Uplands (less than 1% wetland inclusions)	U	14,614.8	49.7	0	0
Uplands (up to 10% wetland inclusions)	U_10	2,781.3	9.4	10	278.1
Uplands (up to 20% wetland inclusions)	U_20	1,812.1	6.2	20	362.4
Uplands (up to 40% wetland inclusions)	U_40	592.6	2.0	40	237.0
Wetlands (up to 40% upland inclusions)	W_40	694.8	2.4	60	416.9
Wetlands (up to 20% upland inclusions)	W_20	1,409.2	4.8	80	1,127.4
Wetlands (up to 10% upland inclusions)	W_10	1,207.9	4.1	90	1,087.1
Wetlands (less than 1% upland inclusions)	W	5,141.5	17.5	100	5,141.5
<b>Total</b>		<b>28,254.2</b>			<b>8,650.4</b>
<b>Percent of Mapping Area</b>		<b>96.0%</b>			<b>29.4%</b>
Waters of the U.S. <sup>c</sup> , Navigable	WAT1	574.0	2.0	100	574.0
Waters of the U.S. <sup>c</sup> , Non-navigable	WAT2	436.1	1.5	100	436.1
Probable Waters of the U.S. <sup>c</sup>	PWAT	165.2	0.6	100	165.2
<b>Total Waters</b>		<b>1,175.3</b>			<b>1,175.3</b>
<b>Percent of Mapping Area</b>		<b>4.0%</b>			<b>4.0%</b>
<b>TOTAL MAPPING AREA</b>		<b>29,429.7</b>	<b>100.00</b>		<b>9,825.7</b>
					<b>33.4%</b>

## Notes:

- Apparent inconsistencies in sums within or between tables are the result of rounding.
- Calculated based on percentage in preceding column.
- "Waters of the U.S." means waters protected under the Clean Water Act.

TABLE 14.1-6.  
Hydrogeomorphic Classifications, Acreage in the Mine Mapping Area  
Pebble Wetlands Studies, 2004-2008

Classification	Number of Acres <sup>a</sup>	Percent of Mapping Area	Percent of Wetlands/ Waters
Slope	6,188.3	21.0	63.0
Riverine	2,120.4	7.2	21.6
Riverine Channel	511.1	1.7	5.2
Flat	469.8	1.6	4.8
Lacustrine	282.5	1.0	2.9
Depressional	222.3	0.8	2.3
Lacustrine Fringe	31.1	0.1	0.3
<b>Total Wetlands and Waters</b>	<b>9,825.5</b>	<b>33.4</b>	
Total Non-wetland	19,604.2	66.6	
<b>TOTAL MAPPING AREA</b>	<b>29,429.7</b>	<b>100.0</b>	

a. Apparent inconsistencies in sums within or between tables are the result of rounding.



TABLE 14.2-1

U.S. Fish and Wildlife Service, National Wetlands Inventory Mapping Groups,  
Acreage in the Transportation-corridor Mapping Area

NWI Group	Number of Acres <sup>a</sup>	Percent of Mapping Area <sup>a</sup>
Forested	7.5	0.0
Forested/Scrub Shrub	24.9	0.1
Scrub Shrub/Forested	0.0	0.0
<b>Total Forest Types</b>	<b>32.4</b>	<b>0.2</b>
Scrub Shrub	125.2	0.6
Flooded Shrublands	5.2	0.0
Shrub/Herbaceous	260.4	1.3
Herbaceous/Scrub Shrub	395.5	2.0
<b>Total Shrub Types</b>	<b>786.4</b>	<b>3.9</b>
Herbaceous	262.6	1.3
Emergent Herbaceous	165.6	0.8
Aquatic Herbaceous	9.4	0.0
<b>Total Herbaceous Types</b>	<b>437.6</b>	<b>2.2</b>
<b>TOTAL WETLANDS MAPPED</b>	<b>1,256.5</b>	<b>6.3</b>
Freshwater Ponds	131.4	0.7
Riverine (Rivers/Streams)	176.8	0.9
Lacustrine (Lakes)	259.9	1.3
<b>Total Waters Mapped</b>	<b>568.1</b>	<b>2.9</b>
<b>TOTAL WETLANDS/WATERS</b>	<b>1,824.6</b>	<b>9.2</b>
Uplands (Non-wetlands)	18,092.6	90.8
<b>TOTAL MAPPING AREA</b>	<b>19,917.1</b>	<b>100.0</b>

Notes:

a. Apparent inconsistencies in sums are the result of rounding.

NWI = National Wetlands Inventory. U.S. Department of Interior (USDOI). Various. National Wetlands Inventory draft maps. Quadrangles Iliamna C-2, C-3, D-3, D-4, D-5, and D-6.



**TABLE 14.2-2**  
**Comparison of Historical Average Precipitation at Iliamna Airport and Iniskin Bay, Alaska**

Year	Average Precipitation (inches)												Annual
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Iliamna Airport 1939-2005	1.34	1.18	1.15	1.08	1.21	1.50	2.63	4.62	4.32	3.09	2.03	1.61	25.77
Iniskin Bay 1954-1962	5.23	3.18	4.78	4.73	7.14	3.89	6.41	8.22	10.44	7.10	5.61	5.89	72.64

Sources: Iliamna airport data from WRCC, n.d.[a]; Iniskin Bay data from WRCC, n.d.[b].



TABLE 14.2-3

Wetland Mapping Unit Summary, Transportation-corridor Mapping Area, Pebble Wetlands Studies, 2004-2008

Mapping Units	Mapping Unit Code	Number of Acres <sup>a</sup>	Percentage of Mapped Area <sup>a</sup>	Percentage That Is Wetlands or Waters	Acres of Wetlands/ Water <sup>a, b</sup>
Uplands (less than 1% wetland inclusions)	U	17,294.9	86.8	0	0
Uplands (up to 10% wetland inclusions)	U_10	133.5	0.7	10	13.4
Uplands (up to 20% wetland inclusions)	U_20	51.5	0.3	20	10.3
Uplands (up to 40% wetland inclusions)	U_40	23.4	0.1	40	9.4
Wetlands (up to 40% upland inclusions)	W_40	27.5	0.1	60	16.5
Wetlands (up to 20% upland inclusions)	W_20	27.9	0.1	80	22.3
Wetlands (up to 10% upland inclusions)	W_10	46.8	0.2	90	42.2
Wetlands (less than 1% upland inclusions)	W	1,668.9	8.4	100	1,668.9
<b>Total Area</b>		<b>19,274.4</b>			<b>1,782.9</b>
<b>Percent of Mapping Area</b>		<b>96.8%</b>			<b>9.0%</b>
Waters of the U.S. <sup>c</sup> , Navigable	WAT1	418.2	2.1	100	418.2
Waters of the U.S. <sup>c</sup> , Non Navigable	WAT2	216.8	1.1	100	216.8
Probable Waters of the U.S. <sup>c</sup>	PWAT	7.7	0.0	100	7.7
<b>Total Waters</b>		<b>642.8</b>			<b>642.8</b>
<b>Percent of Mapping Area</b>		<b>3.2%</b>			<b>3.2%</b>
<b>TOTAL MAPPING AREA</b>		<b>19,917.1</b>	<b>100.0</b>		<b>2,425.6</b> <b>12.2%</b>

Note:

- a. Apparent inconsistencies in sums are the result of rounding.
- b. Calculated based on percentages in previous column.
- c. "Waters of the U.S." means waters protected under the Clean Water Act.



TABLE 14.2-4

Enhanced National Wetlands Inventory Classifications, Acreage in the  
Transportation-corridor Mapping Area, Pebble Wetlands Studies, 2004-2008

ENWI Group	ENWI Code <sup>a</sup>	Number of Acres <sup>b</sup>	Percent Mapped Area
Deciduous Forests	PFO1	0.6	0.0
	PFO1/SS1	7.8	0.0
	PSS1/FO1	1.1	0.0
Coniferous Forests	PFO4	2.8	0.0
	PFO4/SS1	0.1	0.0
	PSS1/FO4	14.3	0.1
Mixed Forests	PFO1/4	13.4	0.1
	PFO4/1	3.2	0.0
<b>Total Forest Types</b>		<b>43.5</b>	<b>0.2</b>
Shrubs	PSS1/4	100.5	0.5
	PSS1	376.2	1.9
	PSS1/EM2	77.2	0.4
	PSS1/ML1	0.2	0.0
	PSS1/US	2.3	0.0
	PSS3	1.6	0.0
	PSS4	51.7	0.3
	PSS4/1	0.2	0.0
Shrub/Herbaceous	PSS1/EM1	559.3	2.8
Herbaceous/Shrub	PEM1/SS1	75.6	0.4
<b>Total Shrub Types</b>		<b>1,244.9</b>	<b>6.3</b>
Herbaceous	PEM1	446.6	2.2
	PEM1/ML1	29.2	0.1
	PEM1/2	1.3	0.0
	PEM1/US	12.4	0.1
	PEM2	0.5	0.0
	PEM2/1	0.4	0.0
	PUB/EM	0.1	0.0
	PUS/EM1	4.0	0.0
<b>Total Herbaceous Types</b>		<b>494.5</b>	<b>2.5</b>
<b>TOTAL WETLANDS</b>		<b>1,782.9</b>	<b>9.0</b>
Lakes	L	268.0	1.3
Ponds	PUB	141.6	0.7
	PUS	3.0	0.0
Rivers/Streams	R3UB	198.4	1.0
	R3US	31.8	0.2
<b>Total Waters</b>		<b>642.8</b>	<b>3.2</b>
<b>TOTAL WETLANDS/WATERS</b>		<b>2,425.6</b>	<b>12.2</b>
Uplands (Non-wetlands)	U	17,491.5	87.8

ENWI Group	ENWI Code <sup>a</sup>	Number of Acres <sup>b</sup>	Percent Mapped Area
TOTAL MAPPING AREA		19,917.1	100.0

Notes:

- a. See Table 14.2-5 for explanation of codes.
- b. Apparent inconsistencies in sums are the result of rounding.



**TABLE 14.2-5**  
**Enhanced National Wetlands Inventory Codes for the Transportation-corridor Mapping Area**

Group	Code	Description
<b>WETLANDS</b>		
Deciduous Forest	PFO1	Broad-leaved Deciduous Forested Wetland
	PFO1/SS1	Broad-leaved Deciduous Forested/Shrub Wetland
	PSS1/FO1	Broad-leaved Deciduous Shrub/Forested Wetland
Coniferous Forest	PFO4	Needle-leaved Evergreen Forested Wetland
	PFO4/SS1	Needle-leaved Evergreen Forested/Deciduous Shrub Wetland
	PSS1/FO4	Deciduous Shrub/Needle-leaved Evergreen Forested Wetland
Mixed Forest	PFO1/4	Broad-leaved Deciduous/Needle-leaved Evergreen Forested Wetland
	PFO4/1	Needle-leaved Evergreen/ Broad-leaved Deciduous Forested Wetland
Shrub	PSS1/4	Broad-leaved Deciduous/ Needle-leaved Evergreen Shrub Wetland
	PSS1	Broad-leaved Deciduous Shrub Wetland
	PSS1/EM2	Broad-leaved Deciduous Shrub/Non-persistent Emergent Wetland
	PSS1/ML1	Broad-leaved Deciduous Shrub/Moss Wetland
	PSS1/US	Broad-leaved Deciduous Shrub/ Unconsolidated Shore Wetland
	PSS3	Broad-leaved Evergreen Shrub Wetland
	PSS4	Needle-leaved Evergreen Shrub Wetland
	PSS4/1	Needle-leaved Evergreen/ Broad-leaved Deciduous Shrub Wetland
	PSS1/EM1	Broad-leaved Deciduous Shrub/Persistent Emergent Wetland
	PEM1/SS1	Persistent Emergent/ Broad-leaved Deciduous Shrub Wetland
Shrub/Herbaceous	PEM1	Persistent Emergent Wetland
Herbaceous/ Shrub	PEM1/ML1	Persistent Emergent/Moss Wetland
Herbaceous	PEM1/2	Persistent/Non-persistent Emergent Wetland
	PEM1/US	Persistent Emergent/Unconsolidated Shore Wetland
	PEM2	Non-persistent Emergent Wetland
	PEM2/1	Non-persistent/Persistent Emergent Wetland
	PUB/EM	Unconsolidated Bottom/Emergent Wetland
	PUS/EM1	Unconsolidated Shore/ Persistent Emergent Wetland
<b>WATERS</b>		
Lacustrine (Lakes)	L	Lacustrine Habitats
Ponds	PUB	Palustrine Unconsolidated Bottom (pond)
	PUS	Palustrine Unconsolidated Shore (seasonal pond)
Riverine (Rivers/Streams)	R3UB	Riverine Unconsolidated Bottom (river channel)
	R3US	Riverine Unconsolidated Shore (river bars/flats)
<b>NON-WETLANDS</b>		
Uplands	U	Non-wetlands/Non-waters Habitat



**TABLE 14.2-6**  
**Hydrogeomorphic Classifications, Acreage in the Transportation-corridor Mapping Area, Pebble Wetlands Studies, 2004-2008**

<b>Classification</b>	<b>Number of Acres <sup>a</sup></b>	<b>Percent of Mapping Area</b>	<b>Percent of Wetlands/Waters</b>
Slope	942.9	4.7	38.9
Depressional	430.5	2.2	17.7
Riverine	317.5	1.6	13.1
Flat	263.3	1.3	10.9
Lacustrine	259.4	1.3	10.7
Riverine Channel	199.5	1.0	8.2
Lacustrine Fringe	12.4	0.1	0.5
<b>Total Wetlands and Waters</b>	<b>2,425.6</b>	<b>12.2</b>	
Total Non-wetland	17,491.5	87.8	
<b>TOTAL MAPPING AREA</b>	<b>19,917.1</b>	<b>100.0</b>	

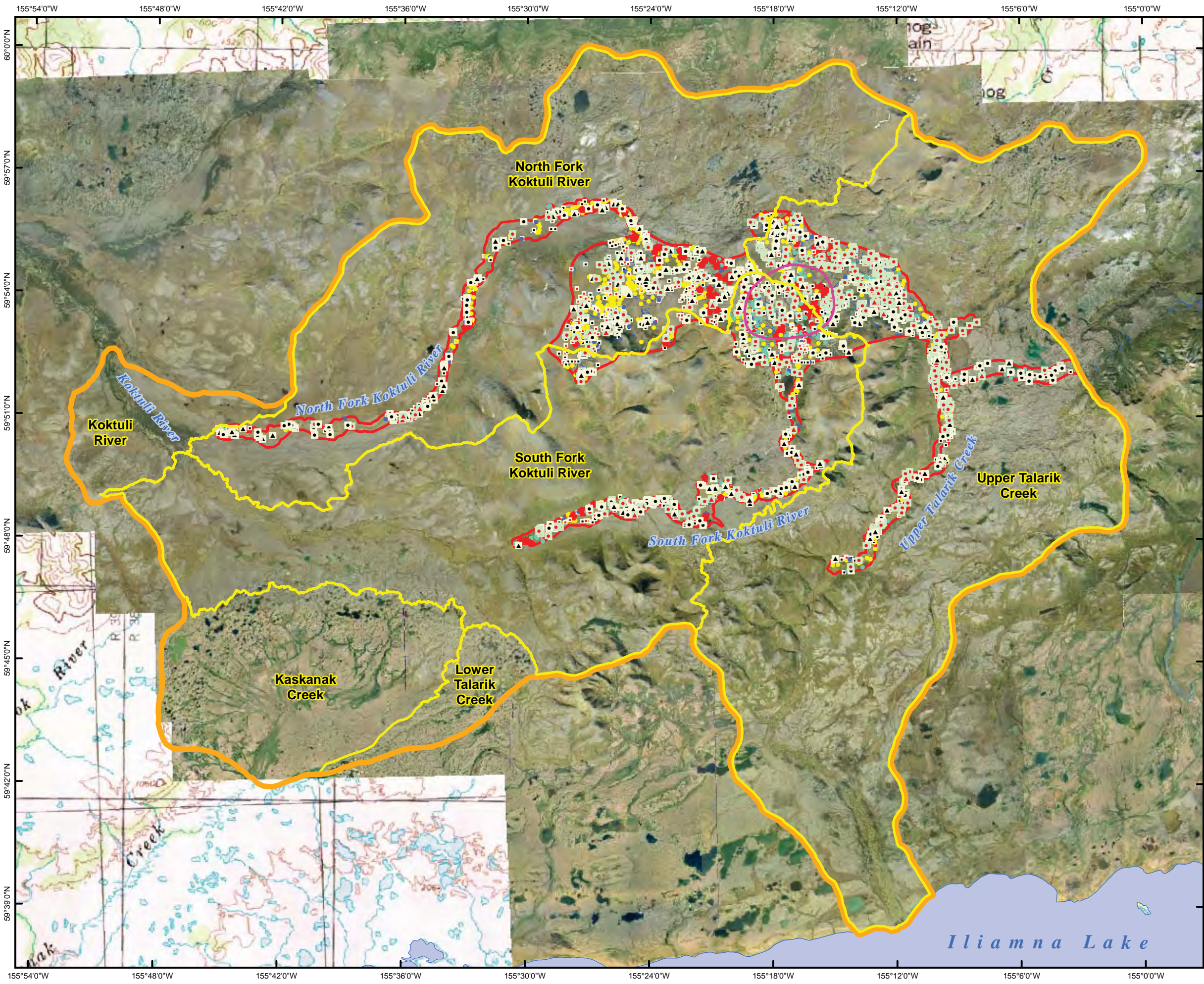
Note:

a. Apparent inconsistencies in sums are the result of rounding.



## FIGURES





**Figure 14.1-1**  
**Field Plot Locations Overview**  
**Mine Study Area,**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- Watershed Boundary
- General Deposit Location
- Wetland Determination Plot Type (Count)
  - Wetland (335)
  - ▲ Transitional Wetland (53)
  - Non-wetland (316)
  - ▲ Transitional Non-wetland (161)
- Other Plot/Photo Point Type (Count)
  - ◆ Functional Assessment (194)
  - Stream Crossing (360)
  - Waterbody (375)
  - Shrub Height (639)
  - Representative Upland (669)
  - Representative Wetland (529)

Note: The watershed boundaries are an approximate representation.

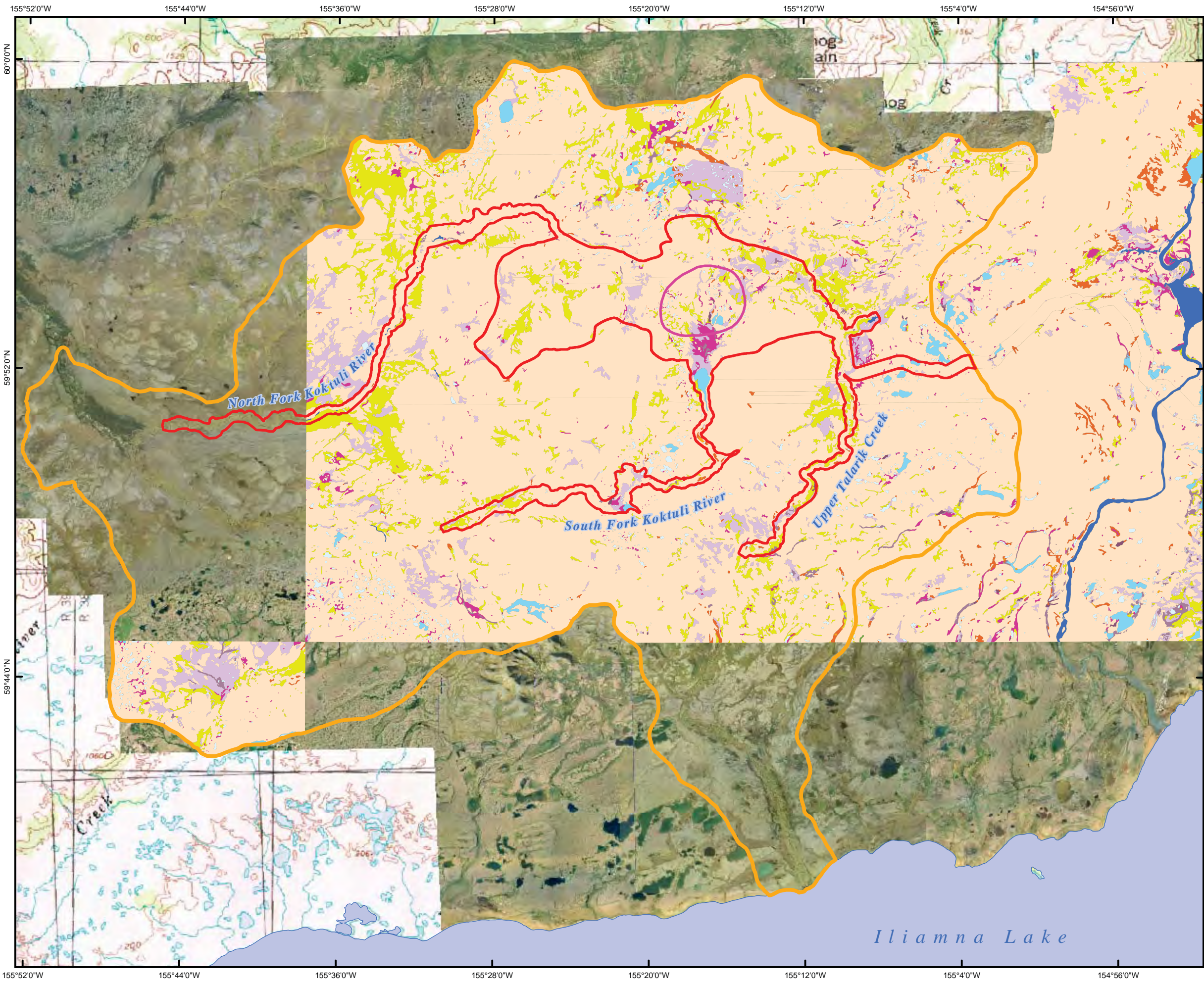


0 1 2 3 4 5 Miles  
0 1 2 3 4 5 Kilometers  
Scale 1:170,000  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD fldplots_Fig14.1-1_11X17L_1 of1_D05.mxd	Date: July 20, 2011
Version: 5	Author: RDI-LS



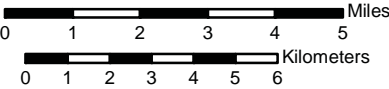


**Figure 14.1-2**  
**U. S. Fish and Wildlife Service**  
**National Wetlands Inventory Mapping**  
**for the Mine Study Area**

**Legend**

- Pebble Project Mine Mapping Area
- Pebble Project Mine Study Area
- General Deposit Location
- USFWS National Wetlands Inventory Group
  - Forested
  - Forested/Scrub Shrub
  - Scrub Shrub/Forested
  - Scrub Shrub Dominated Wetlands
  - Flooded Shrublands
  - Scrub Shrub/Herbaceous Dominated Wetlands
  - Herbaceous/Scrub Shrub Dominated Wetlands
  - Herbaceous Dominated Wetlands
  - Emergent Herbaceous Dominated Wetlands
  - Aquatic Herbaceous Dominated Wetlands
  - Freshwater Ponds
  - Lacustrine (Lakes)
  - Riverine (Rivers/Streams)
  - Non-wetlands

Note: Based on non-digital National Wetlands Inventory maps (USDOI, Various) obtained from the U.S. Fish and Wildlife Service (USFWS) in 2004.



Scale 1:180,000

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



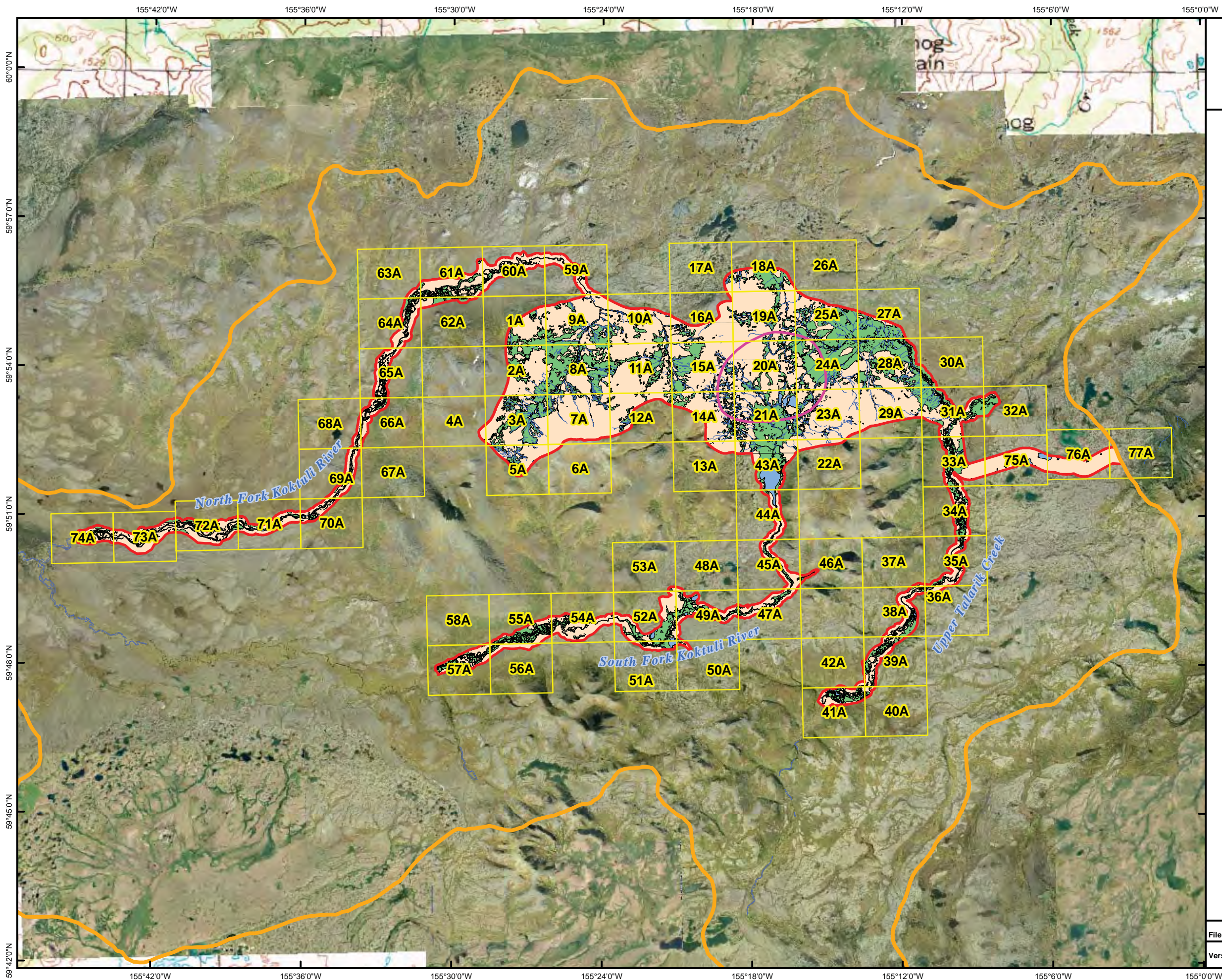
File: RDI\_3PP\_EBD\_Fig14.1-2\_NWI\_11X17L\_1of1\_D05.mxd

Date: August 16, 2011

Version: 5

Author: RDI- LS





**Figure 14.1-3  
Overview  
Wetlands Mapping, Mine Study Area  
2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
-  Grid for Detailed Mapping Tiles
- Wetlands Mapping Classification**
-  Majority Wetlands
-  Majority Non-wetlands
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

Note: For detailed wetlands mapping, see individual tiles in this figure series.



0 1 2 3 4 5 Miles  
0 1 2 3 4 5 Kilometers

Scale 1:140,000

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

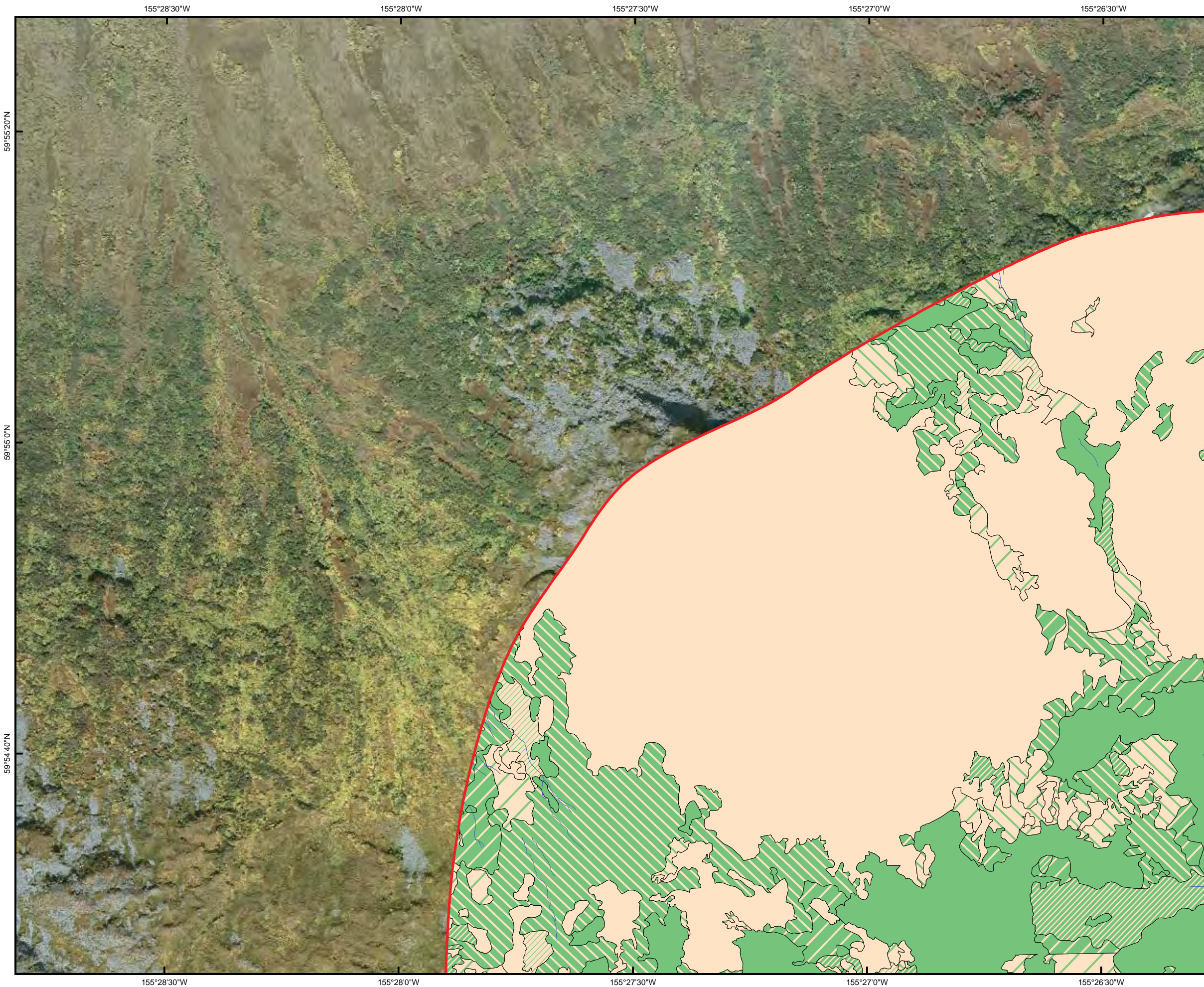
File: RDI\_3PP\_EBD\_Fig14.1-3\_JDWET\_11X17L\_1of1\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

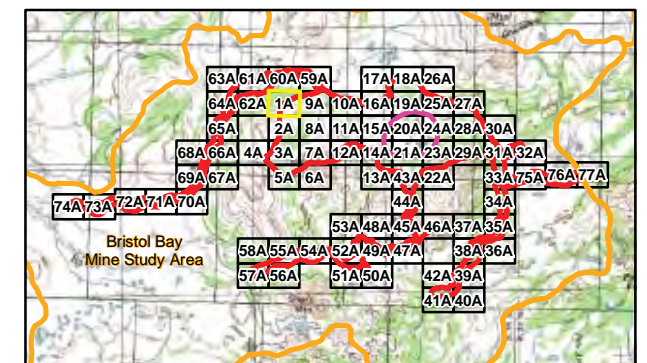




**Figure 14.1-3**  
**Tile 1A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



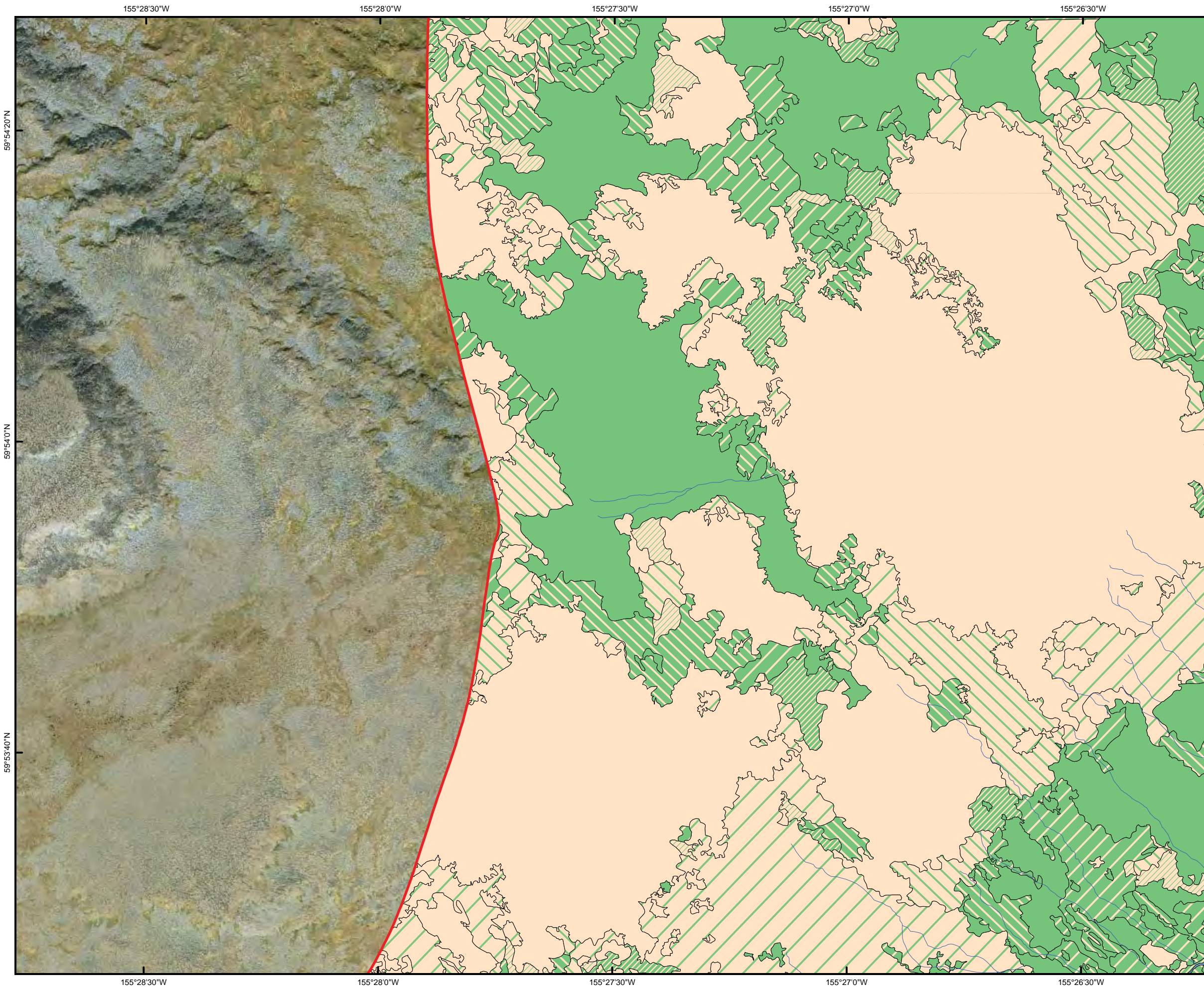
0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

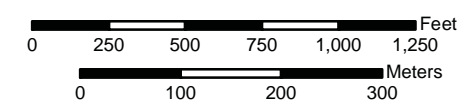
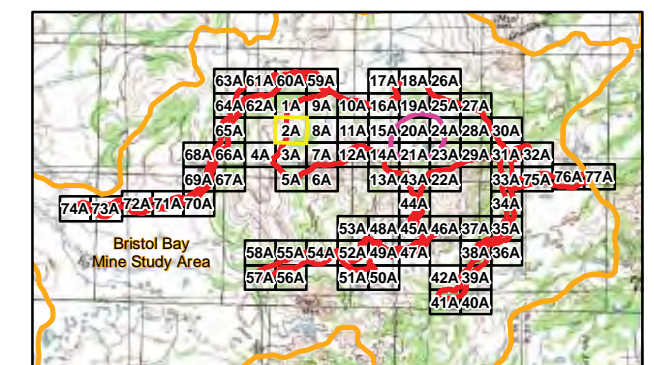




**Figure 14.1-3**  
**Tile 2A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

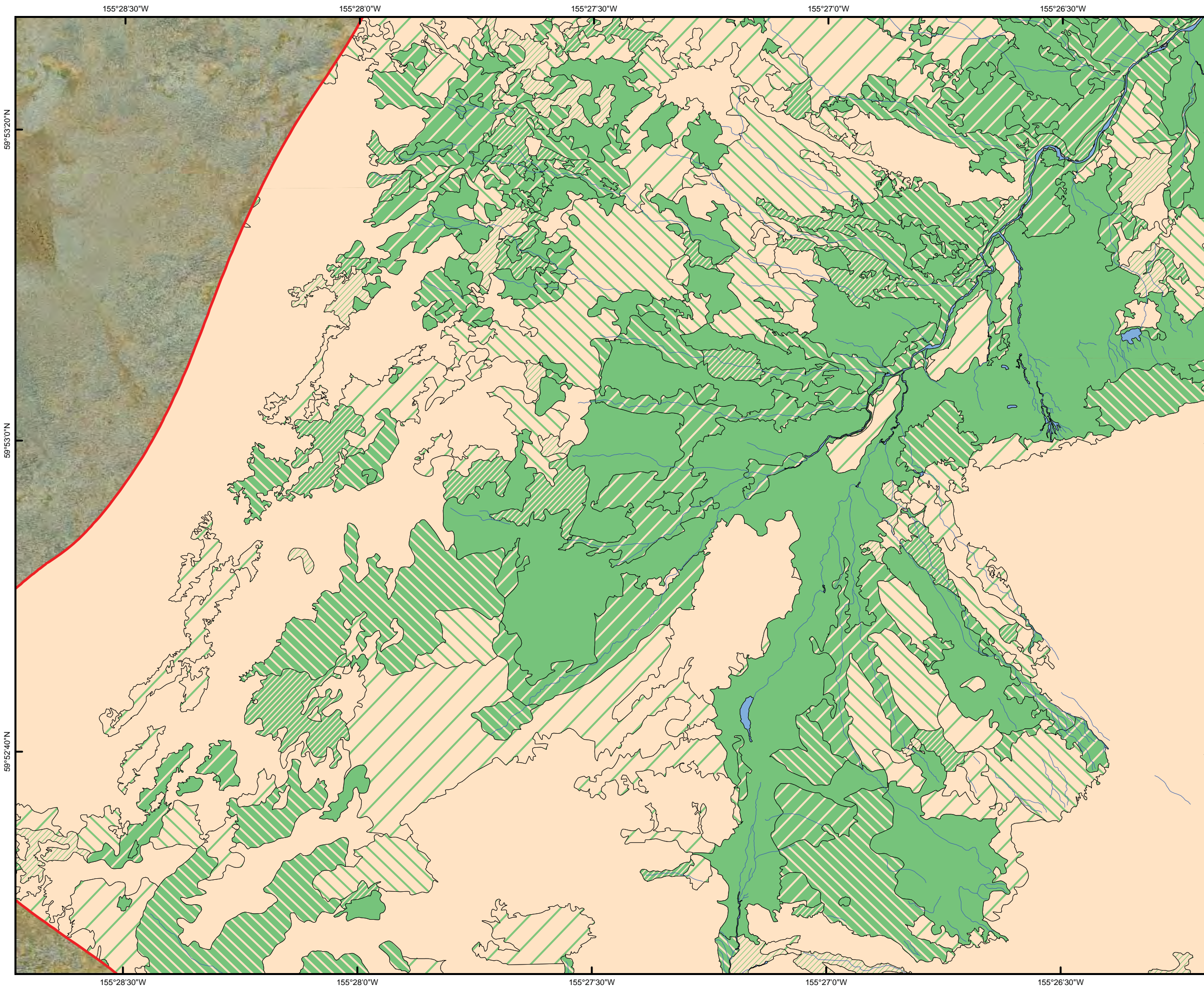
-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

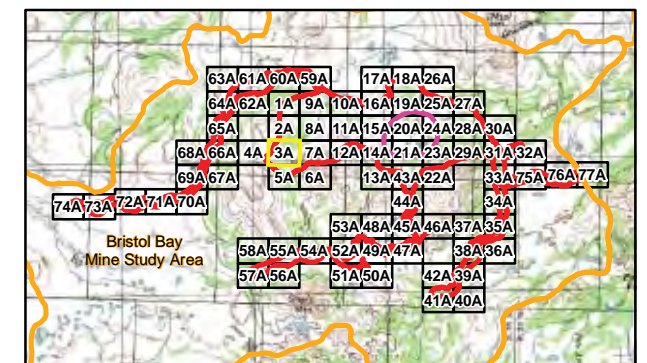




**Figure 14.1-3**  
**Tile 3A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

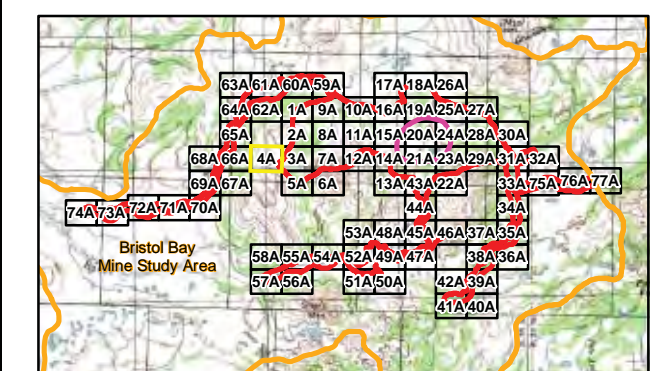




**Figure 14.1-3**  
**Tile 4A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



Scale 1:7,500

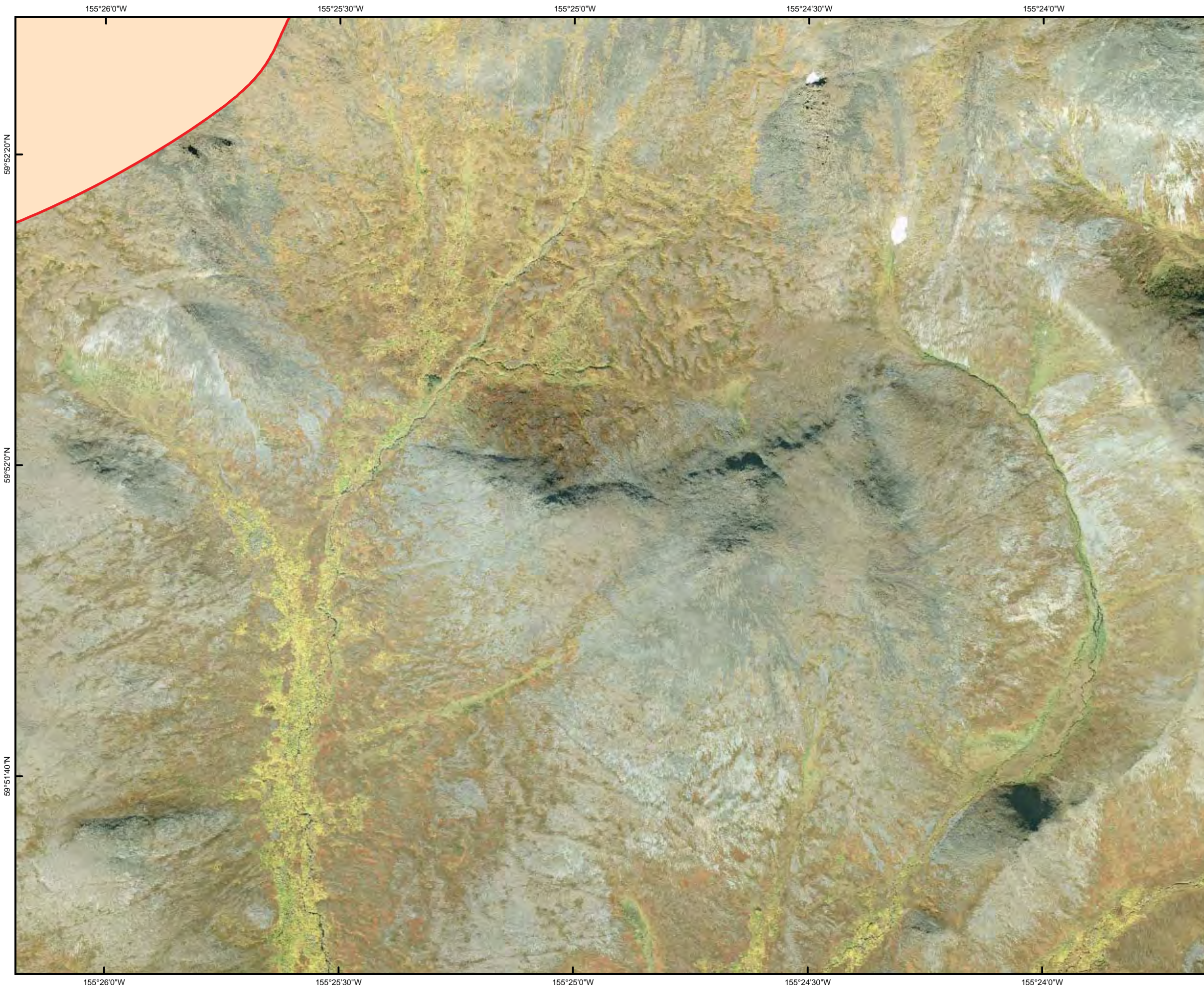
Alaska State Plane Zone 5 (units feet)

1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

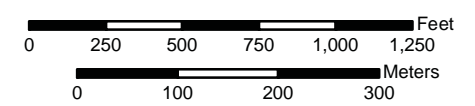
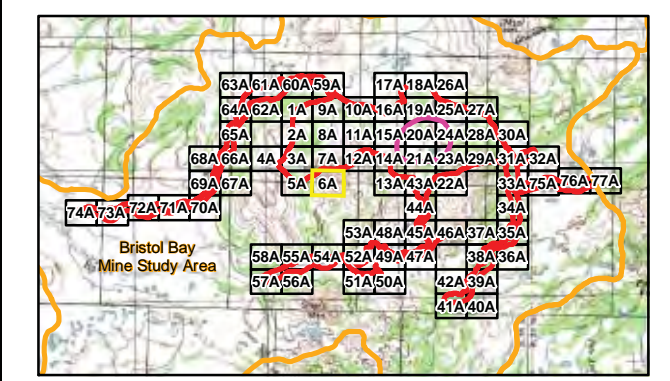




**Figure 14.1-3**  
**Tile 6A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

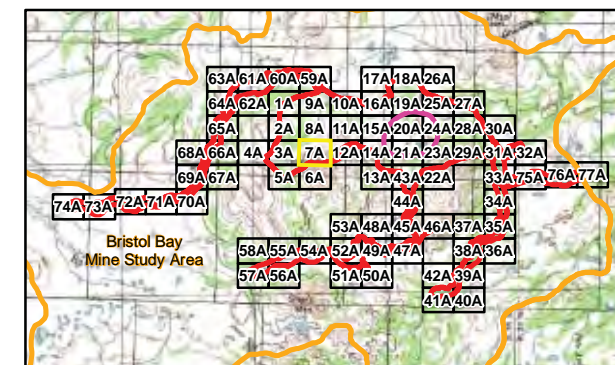




**Figure 14.1-3**  
**Tile 7A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



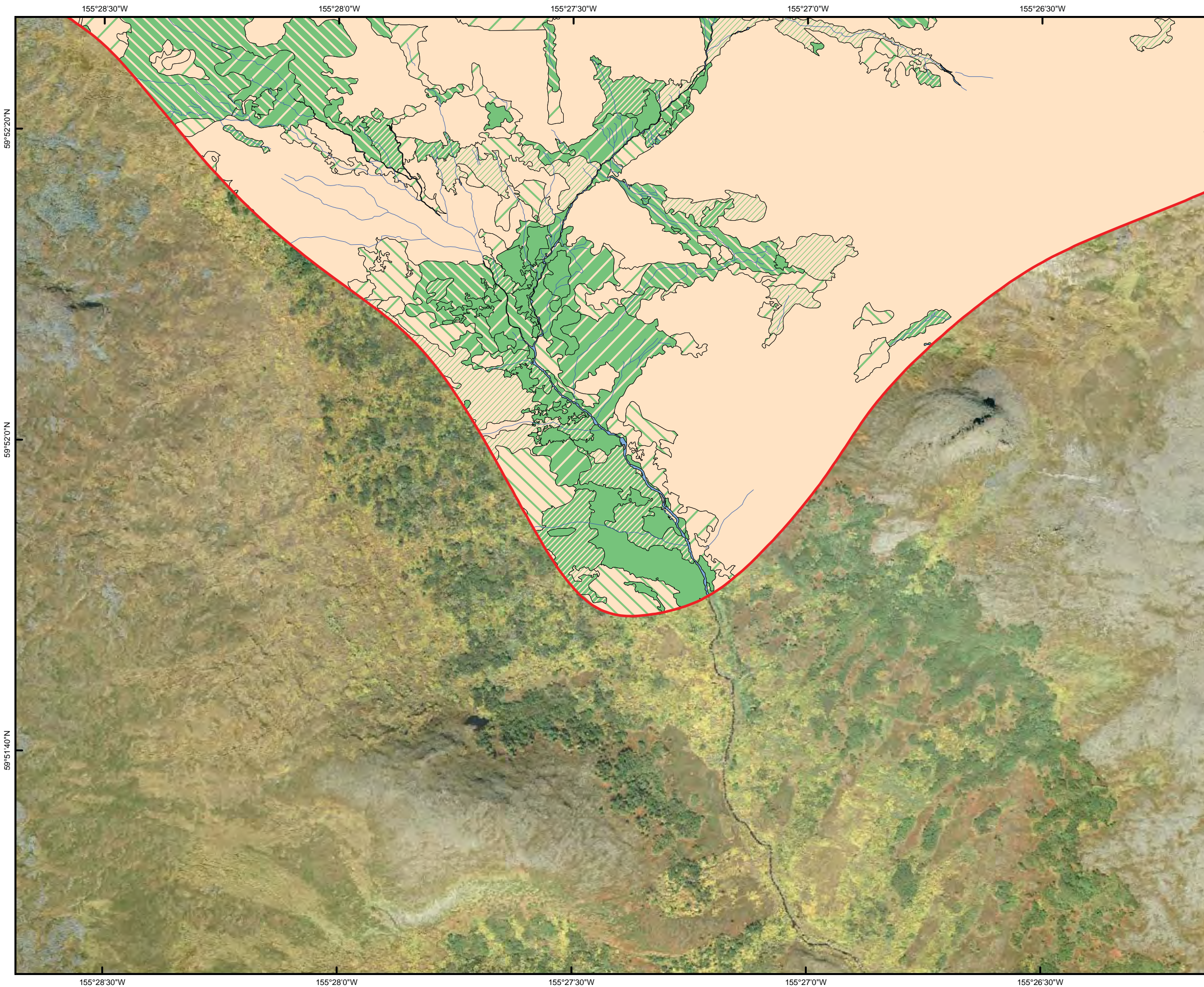
File: RDI\_3PP\_EBD\_Fig14.1-3\_JDWET\_Tiled\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3














Author: RDI-LS

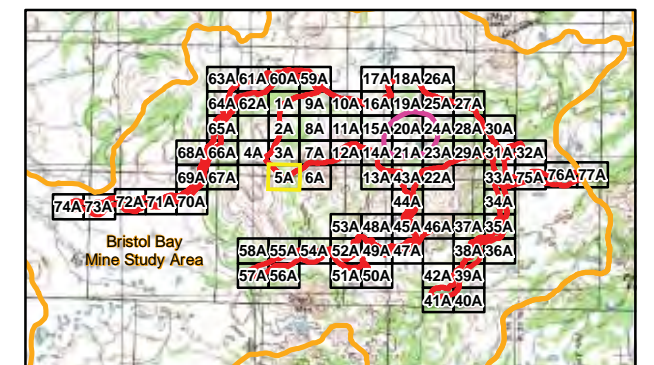




**Figure 14.1-3**  
**Tile 5A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



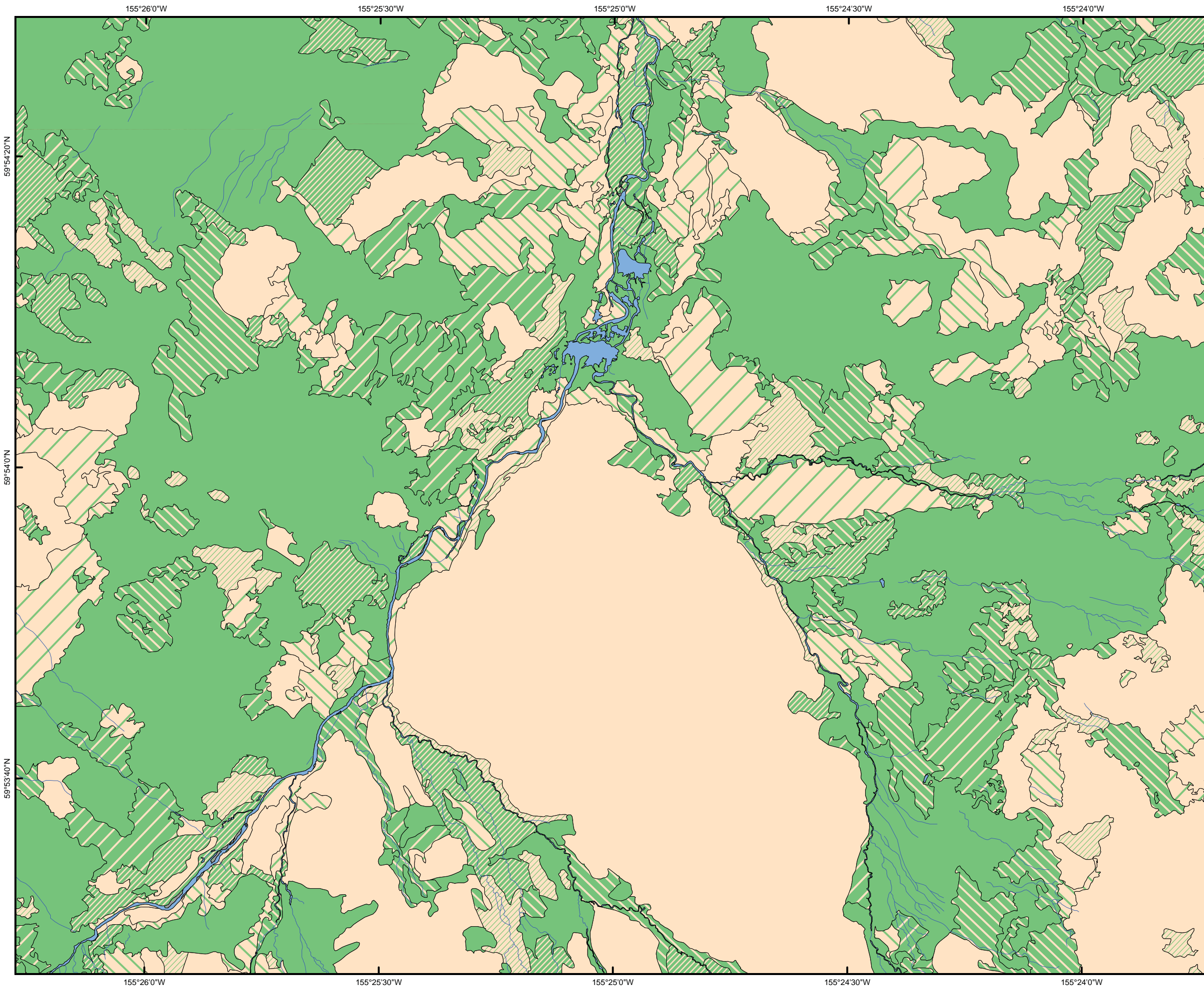
File: RDI\_3PP\_EBD\_Fig14.1-3\_JDWET\_Tiled\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3














Author: RDI-LS

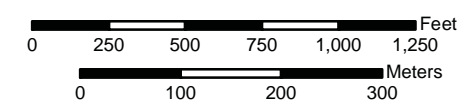
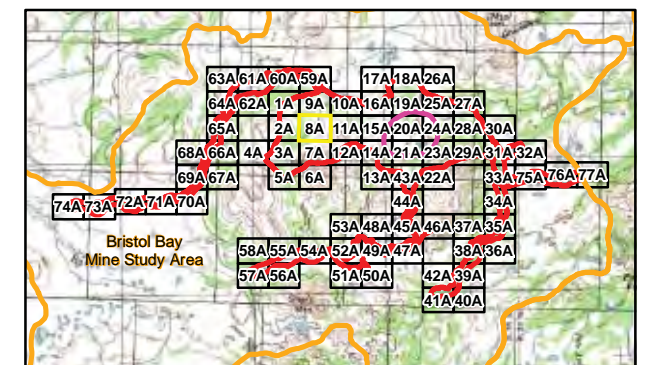




**Figure 14.1-3**  
**Tile 8A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

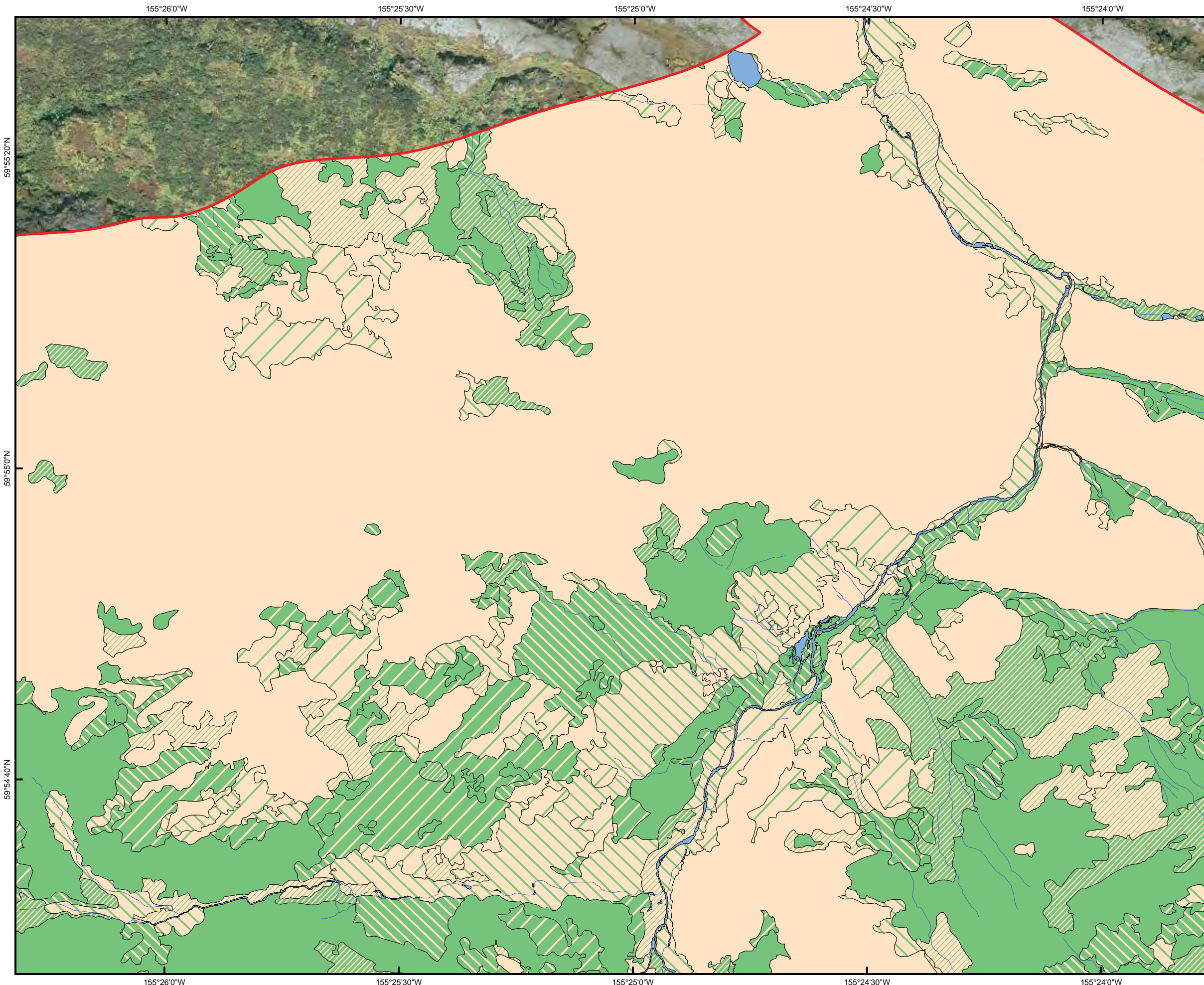


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

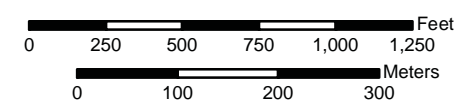
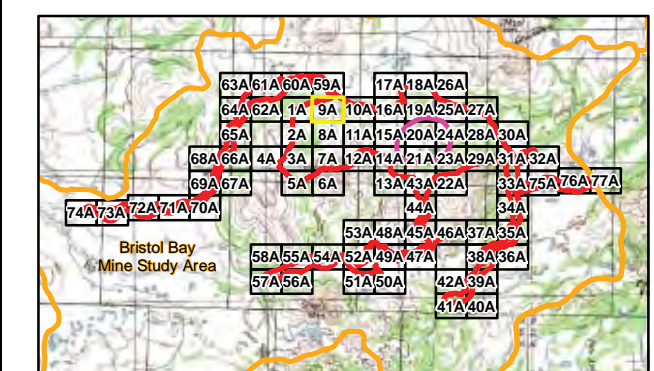




**Figure 14.1-3**  
**Tile 9A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds

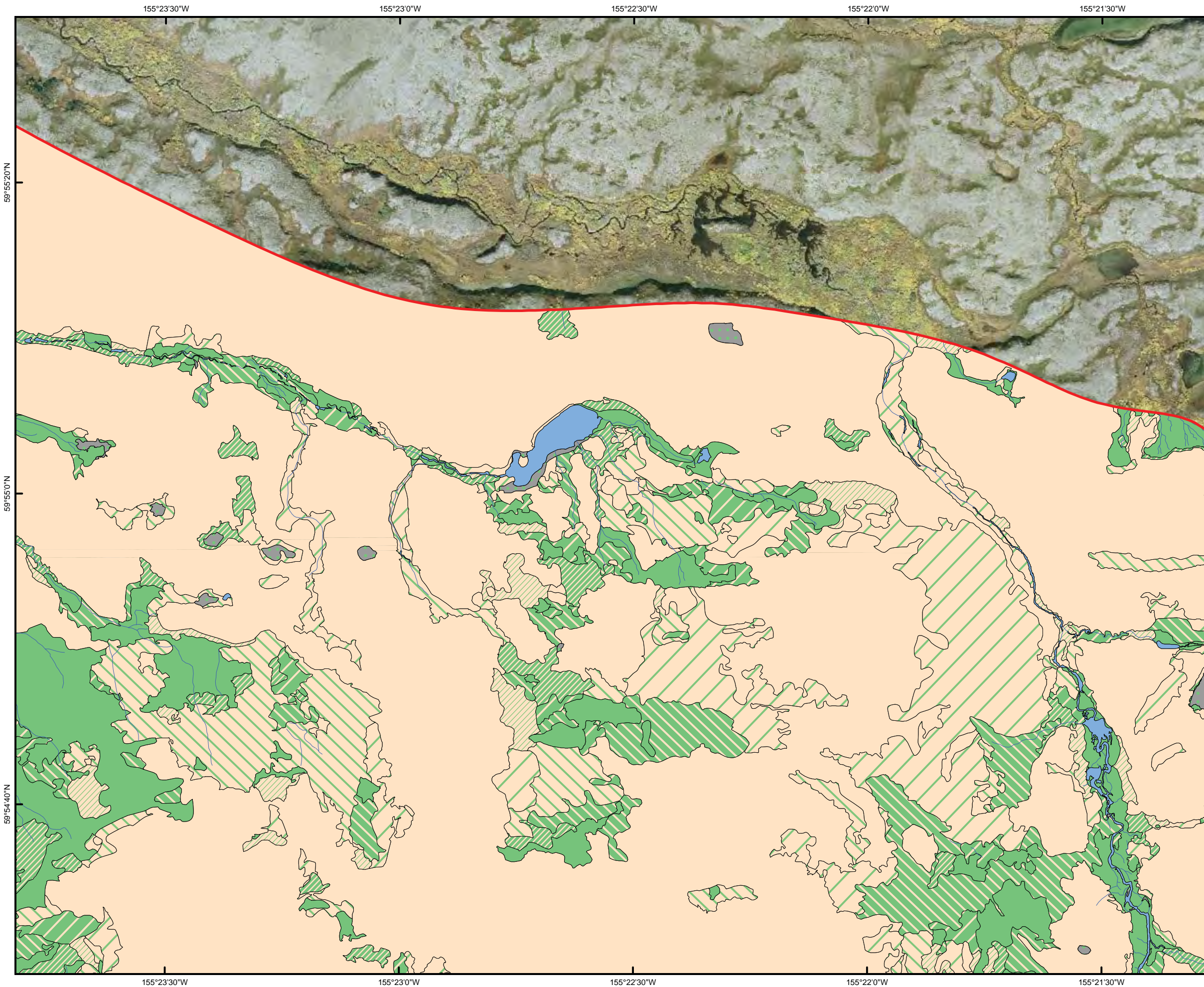


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





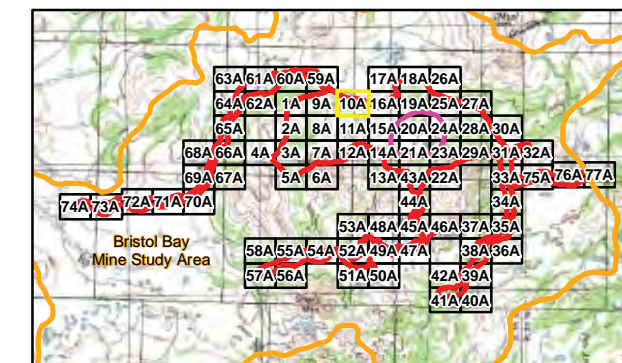
**Figure 14.1-3**  
**Tile 10A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location

**Wetlands Mapping Classification**

- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



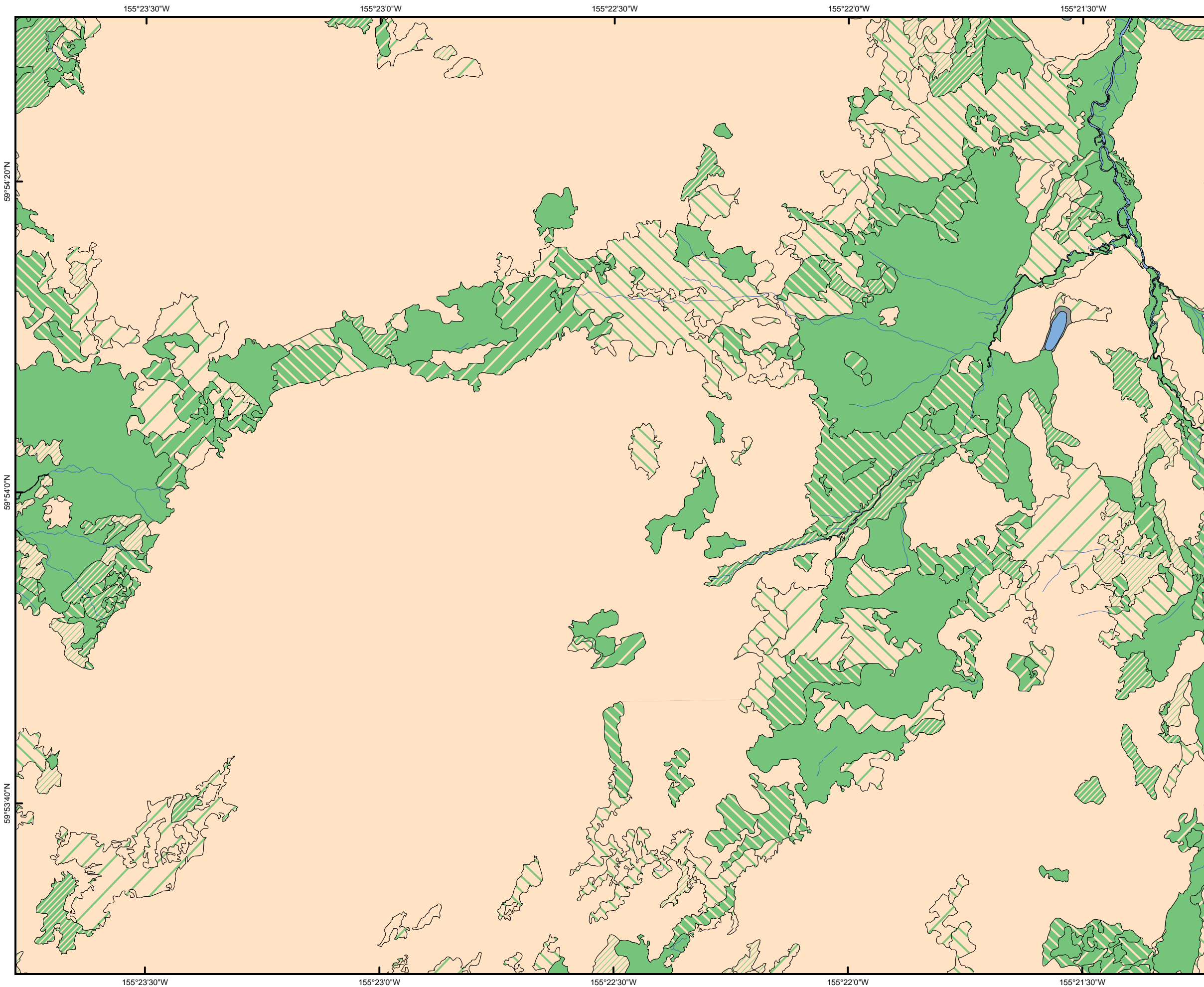
File: RDI\_3PP\_EBD\_Fig14.1-3\_JDWET\_Tiled\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





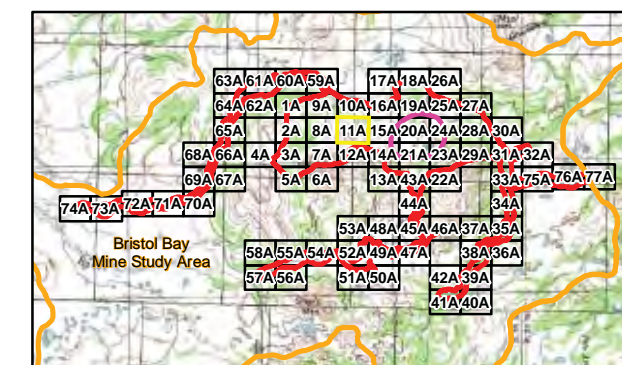
**Figure 14.1-3**  
**Tile 11A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location

**Wetlands Mapping Classification**

- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**



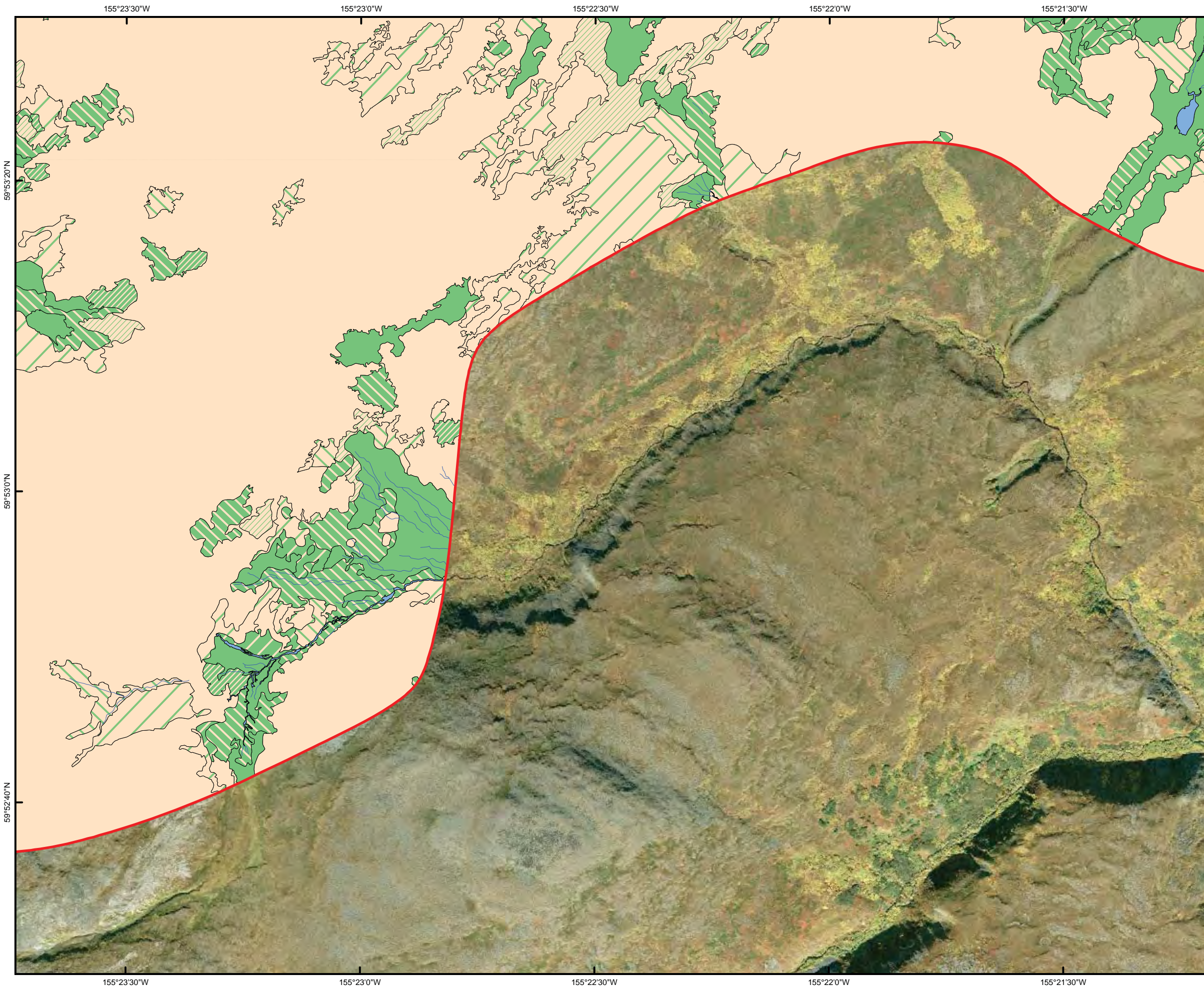
File: RDI\_3PP\_EBD\_Fig14.1-3\_JDWET\_Tiled\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3














Author: RDI-LS

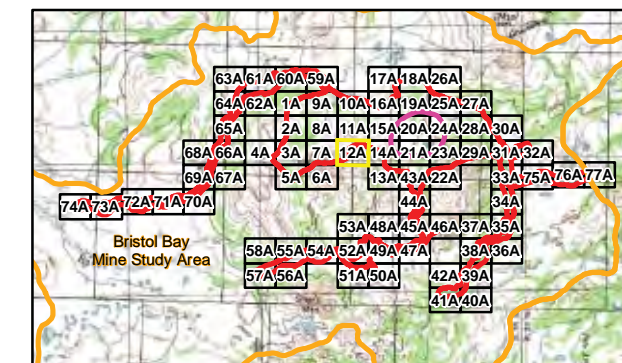




**Figure 14.1-3**  
**Tile 12A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



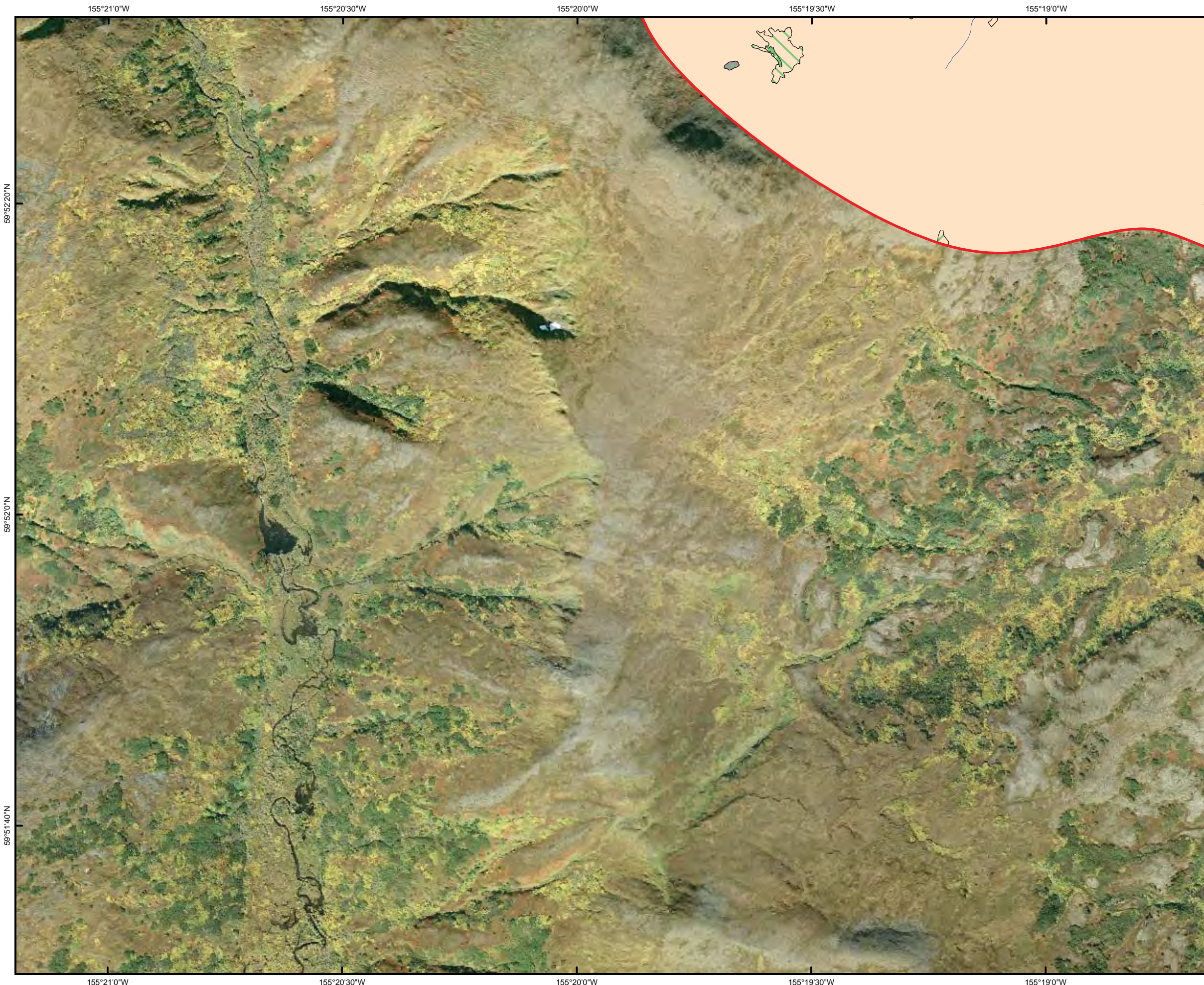
File: RDI\_3PP\_EBD\_Fig14.1-3\_JDWET\_Tiled\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3














Author: RDI-LS

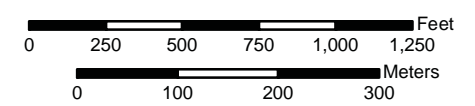
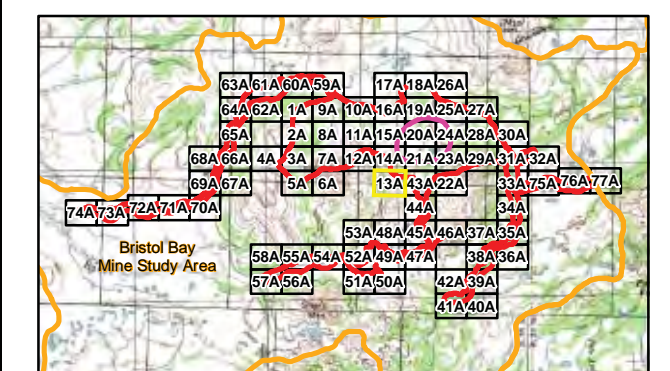




**Figure 14.1-3**  
**Tile 13A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

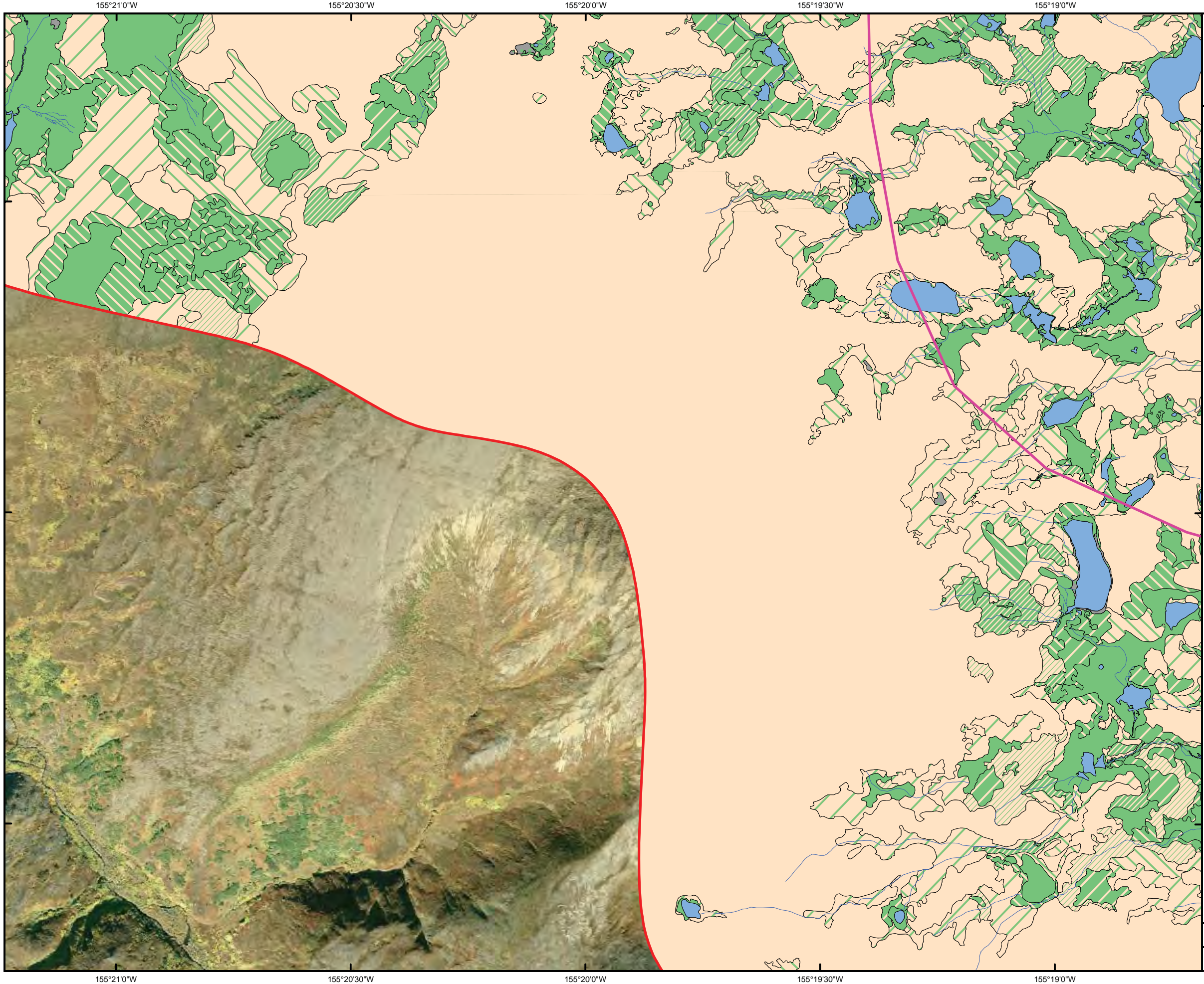


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

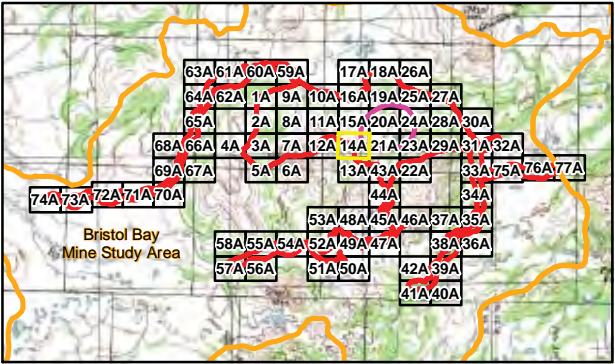




**Figure 14.1-3**  
**Tile 14A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

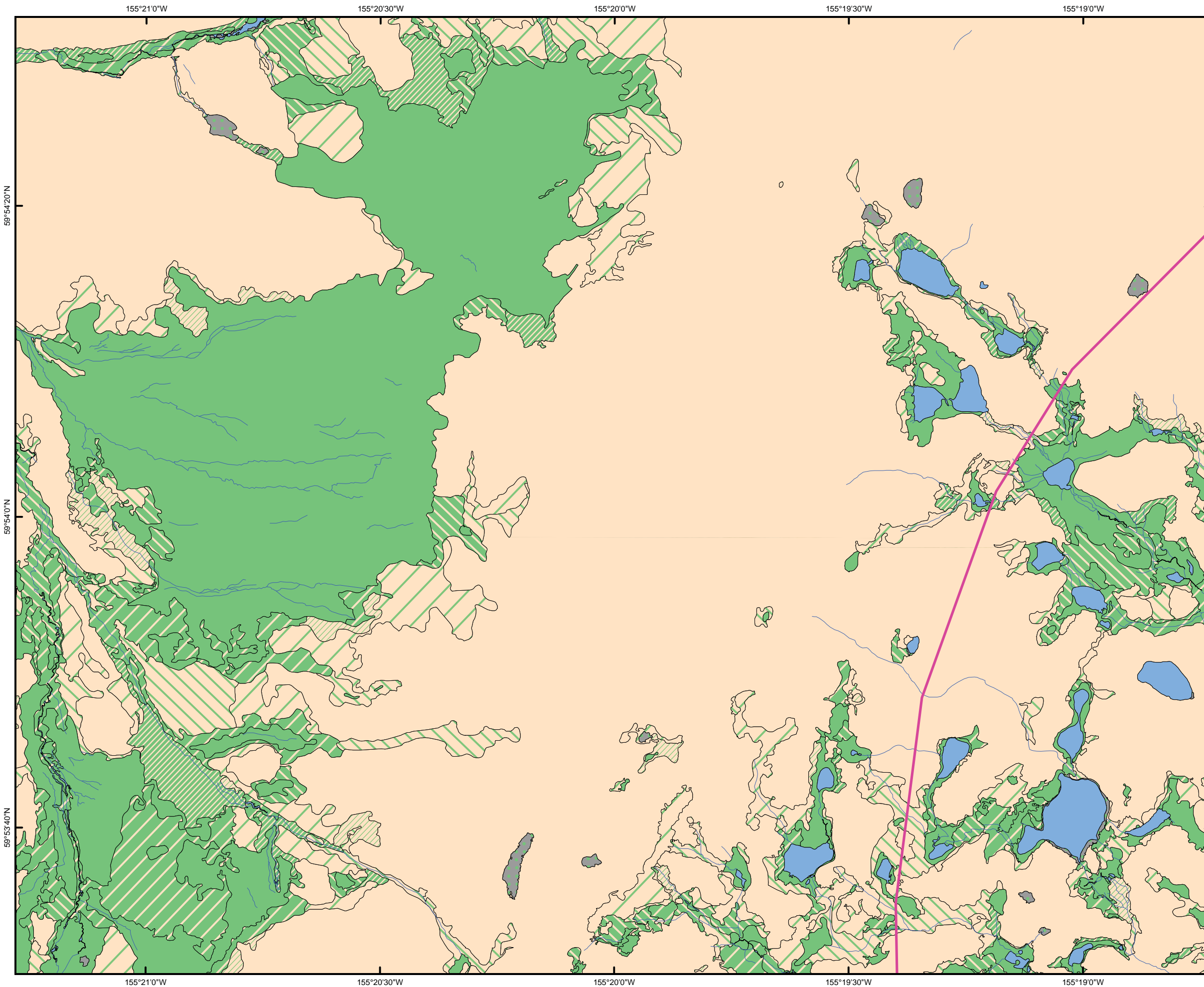
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

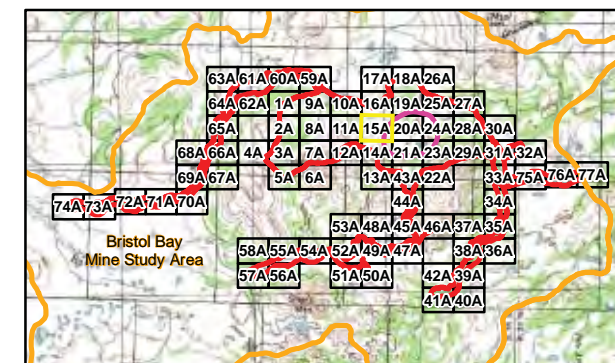




**Figure 14.1-3**  
**Tile 15A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

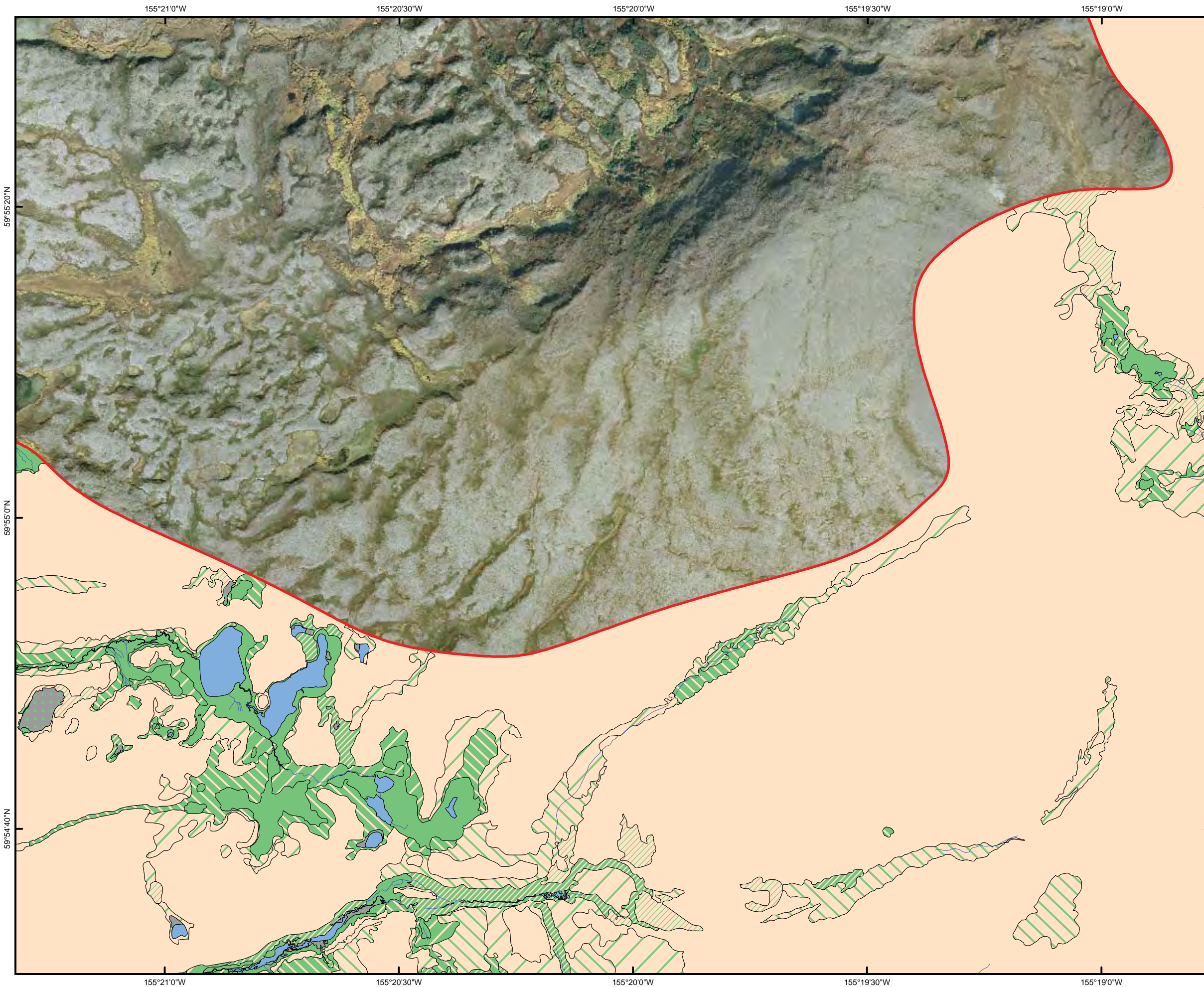
Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

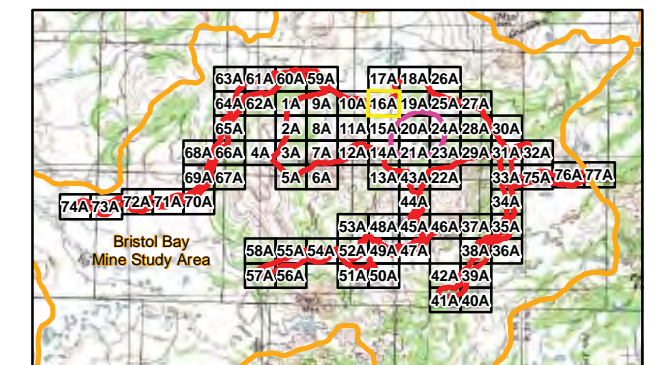




**Figure 14.1-3**  
**Tile 16A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

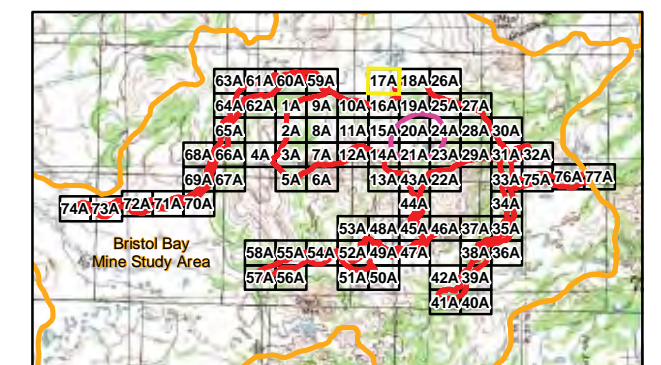




**Figure 14.1-3**  
**Tile 17A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

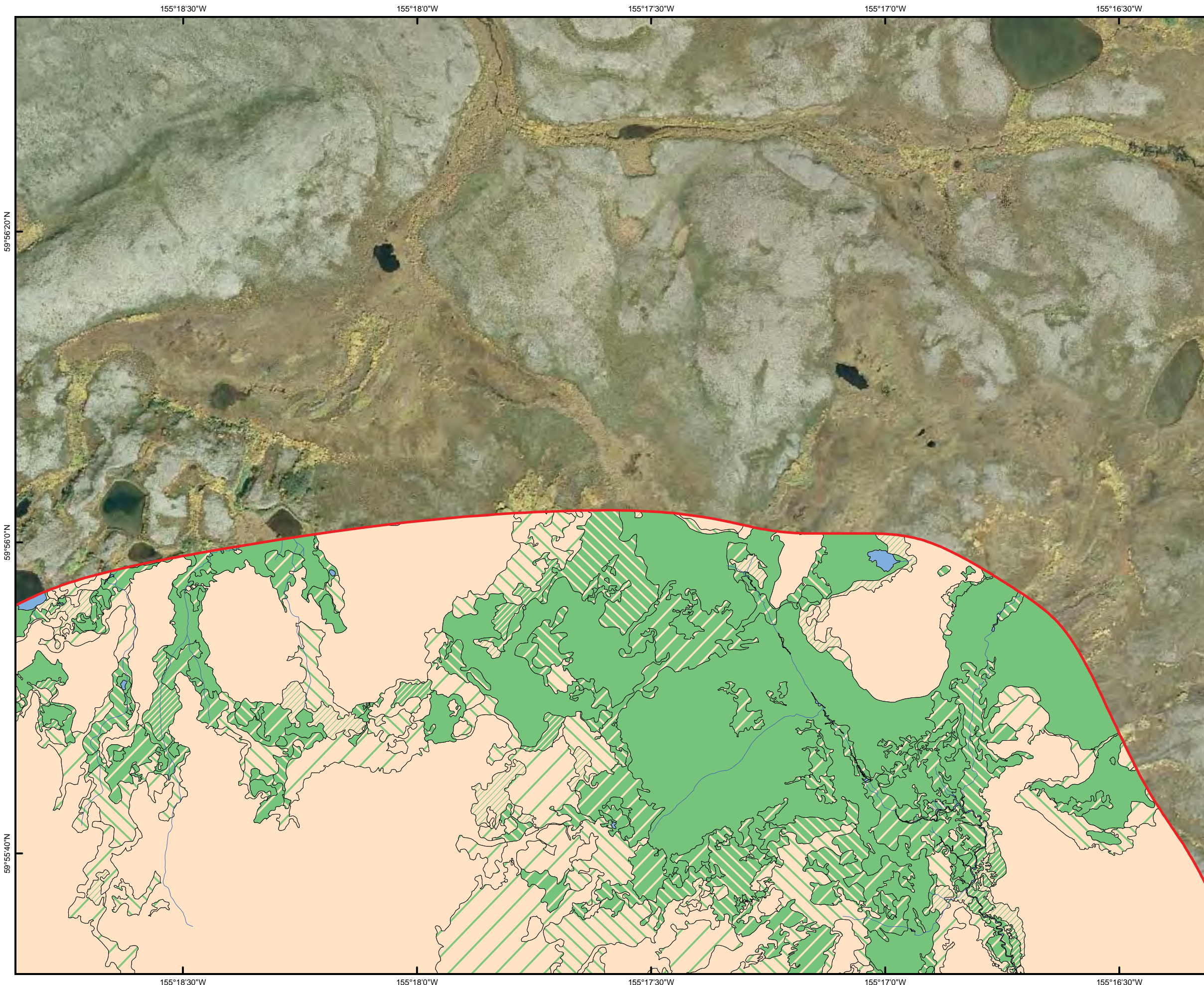


0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

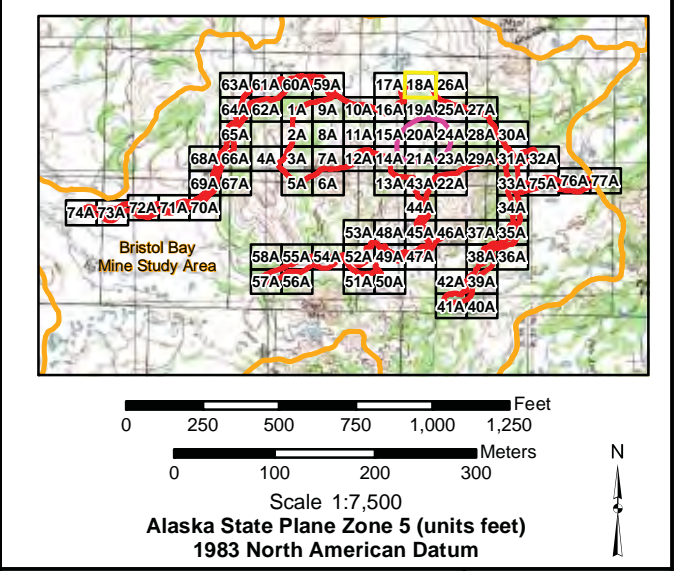




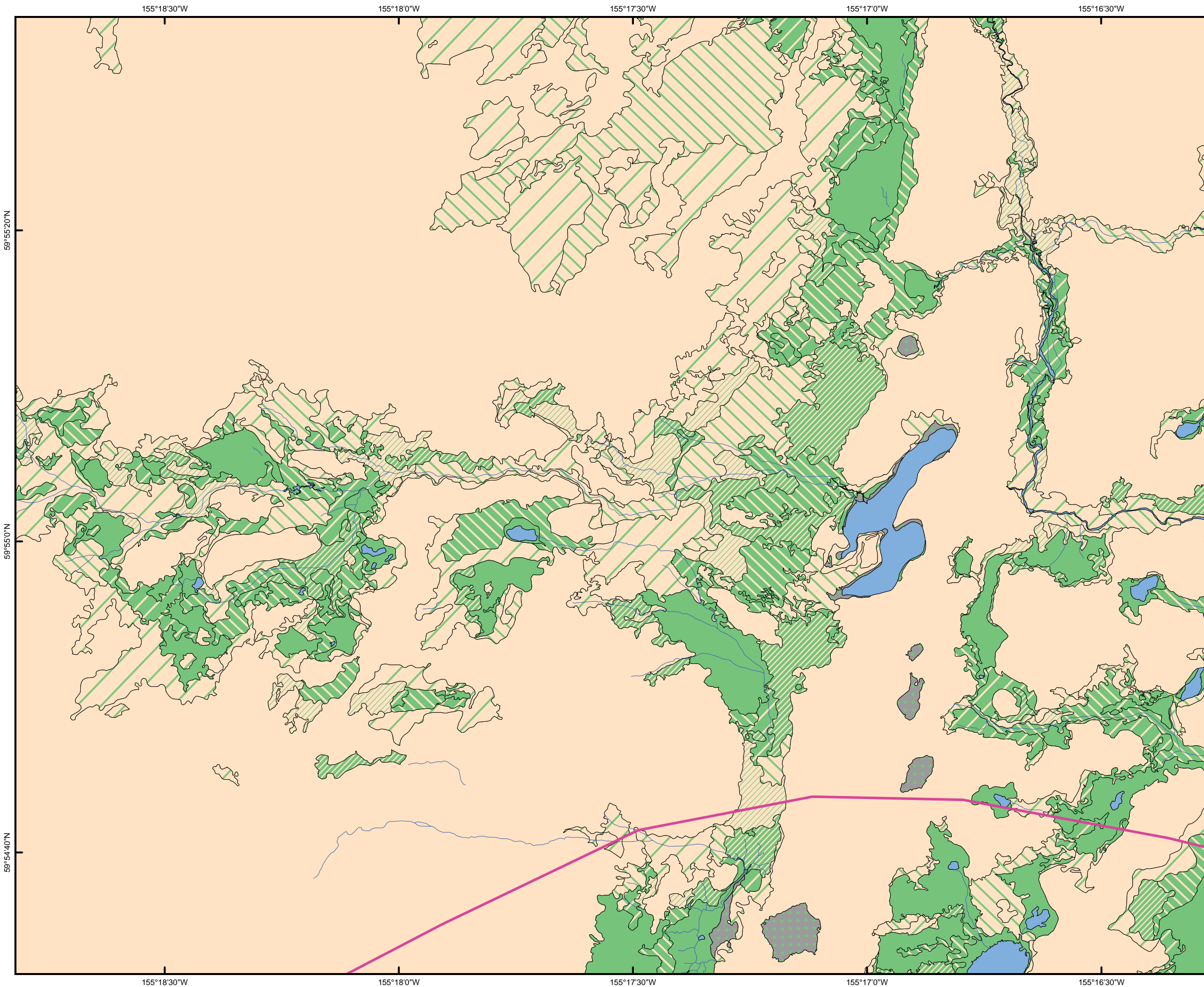
**Figure 14.1-3**  
**Tile 18A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds
















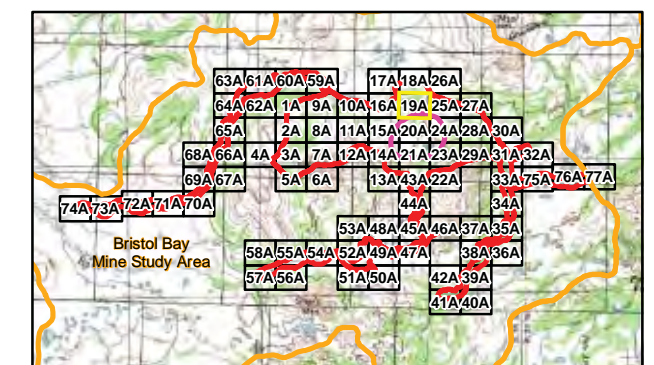




**Figure 14.1-3**  
**Tile 19A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

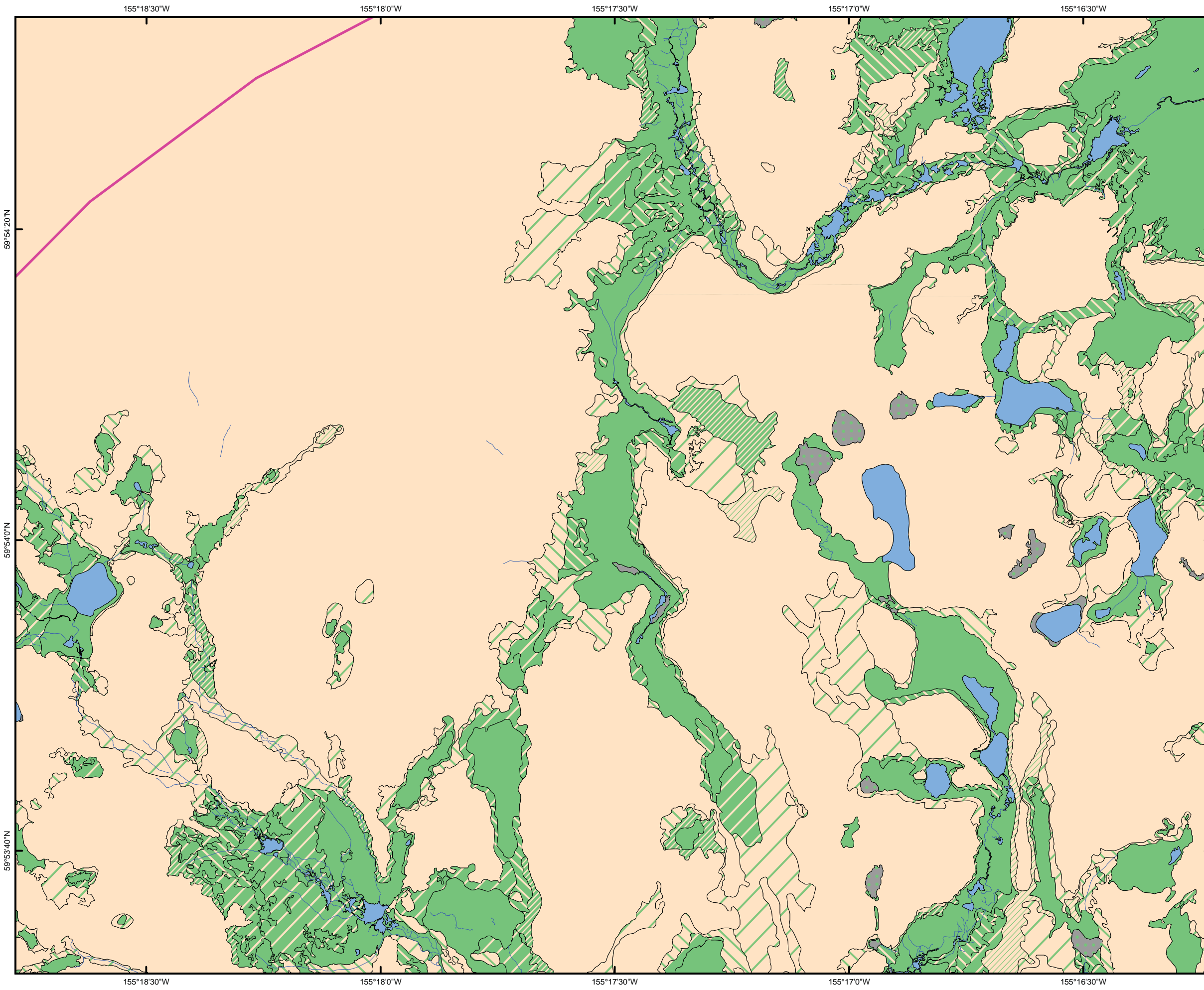
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

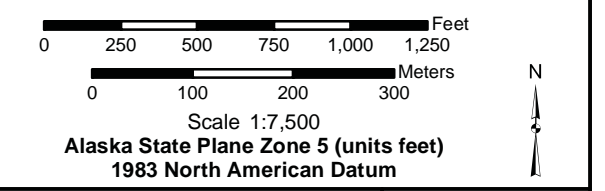
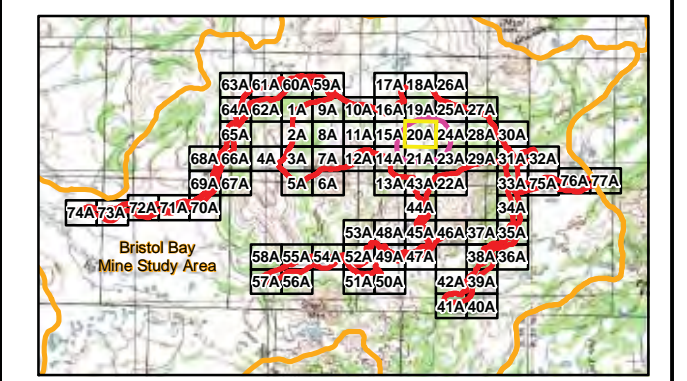




**Figure 14.1-3**  
**Tile 20A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

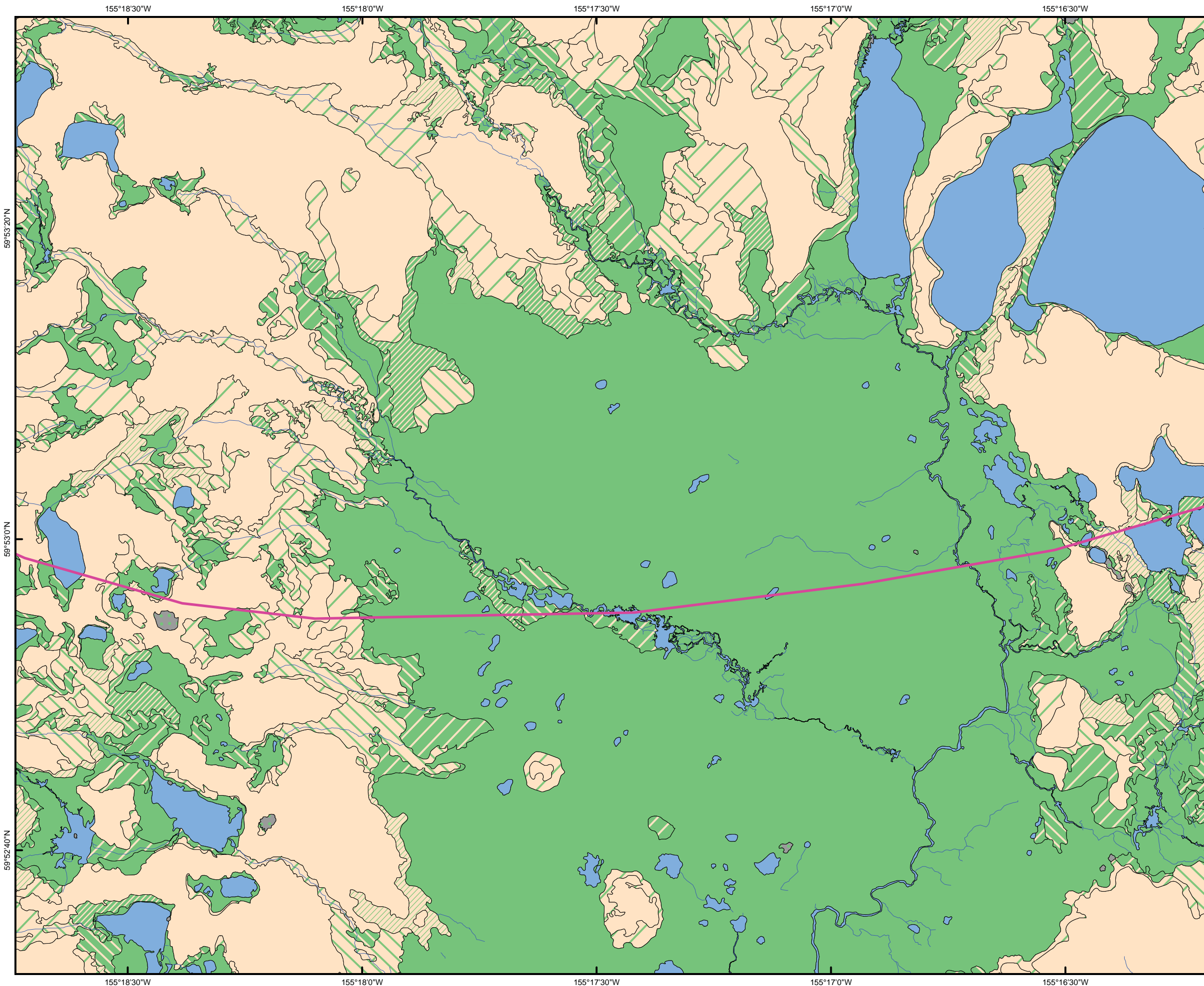
**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

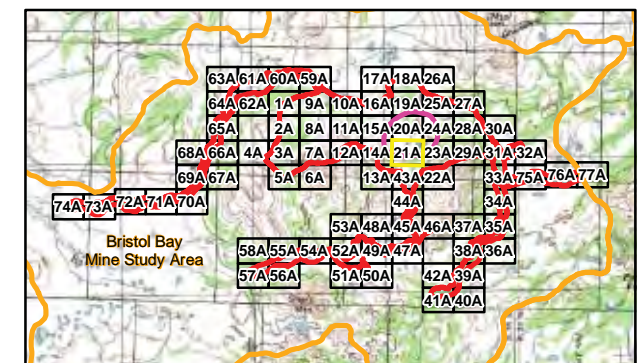




**Figure 14.1-3**  
**Tile 21A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



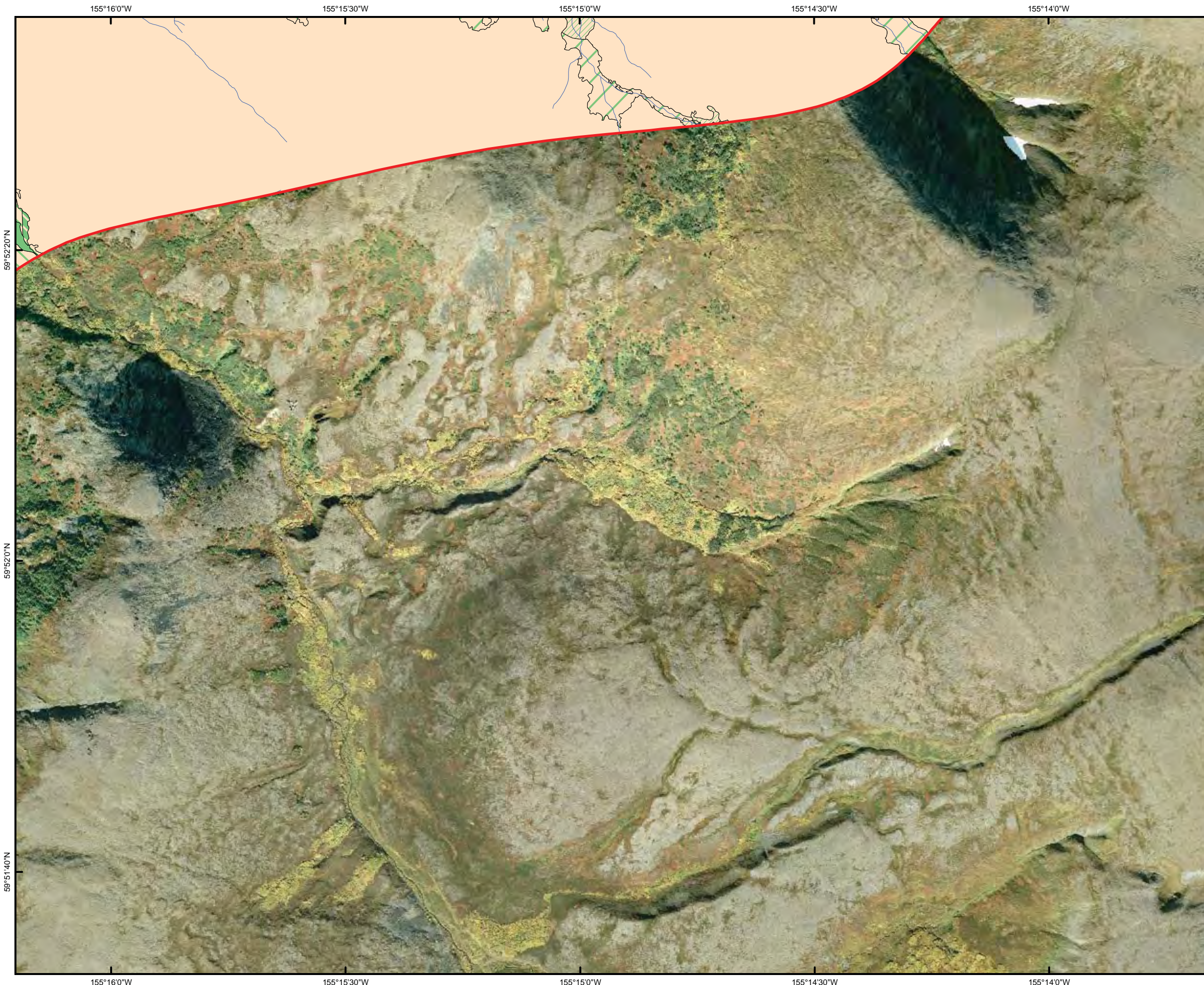
0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

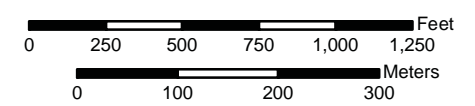
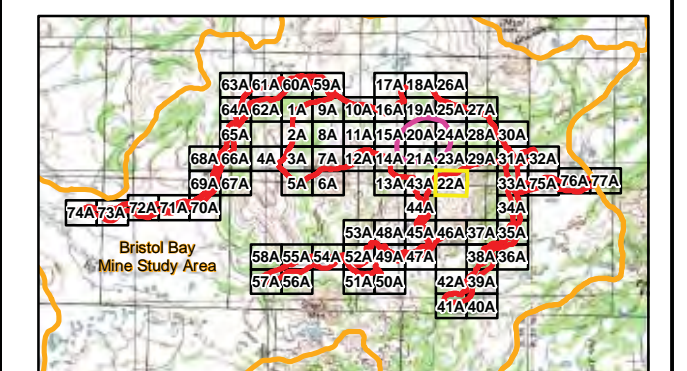




**Figure 14.1-3**  
**Tile 22A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

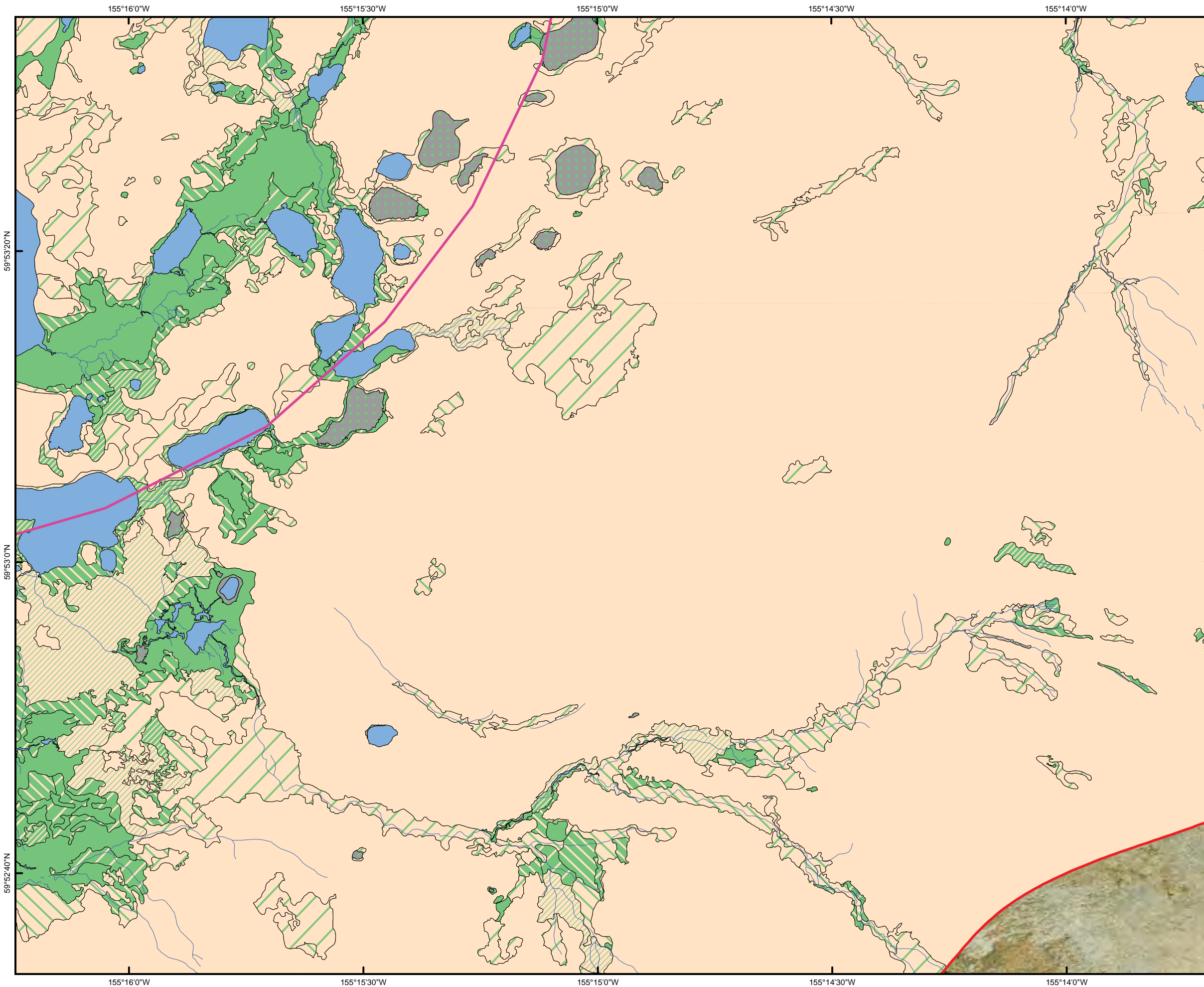


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

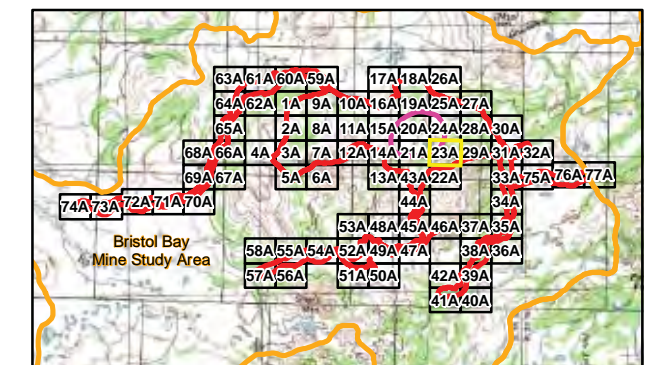




**Figure 14.1-3**  
**Tile 23A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

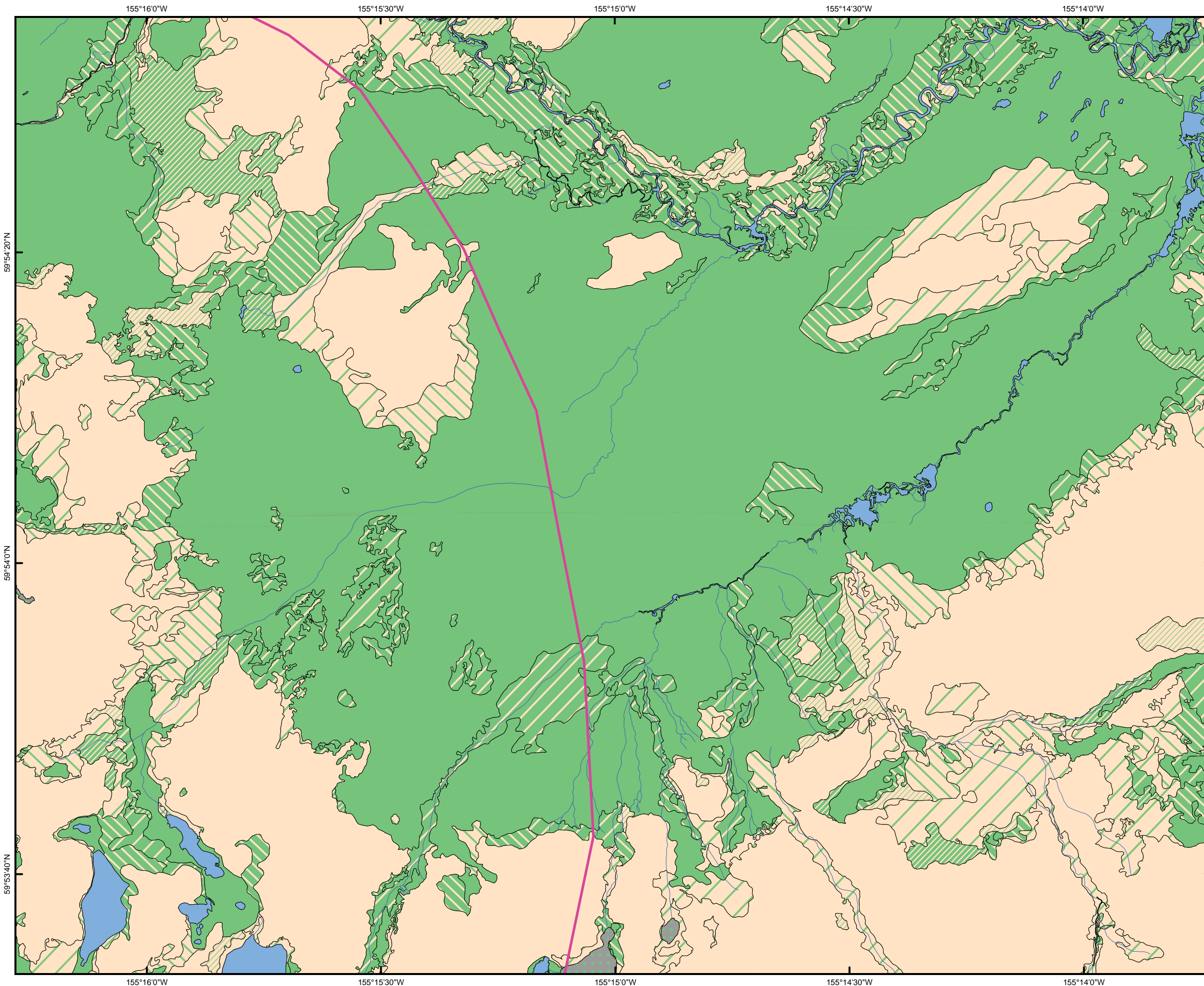
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

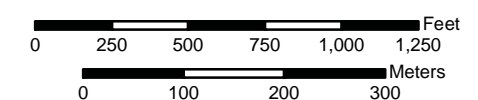
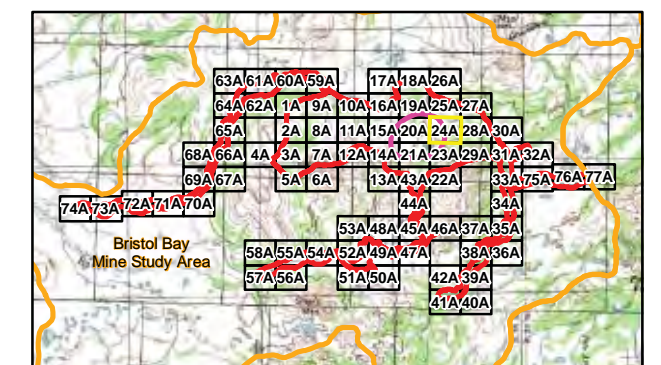




**Figure 14.1-3**  
**Tile 24A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

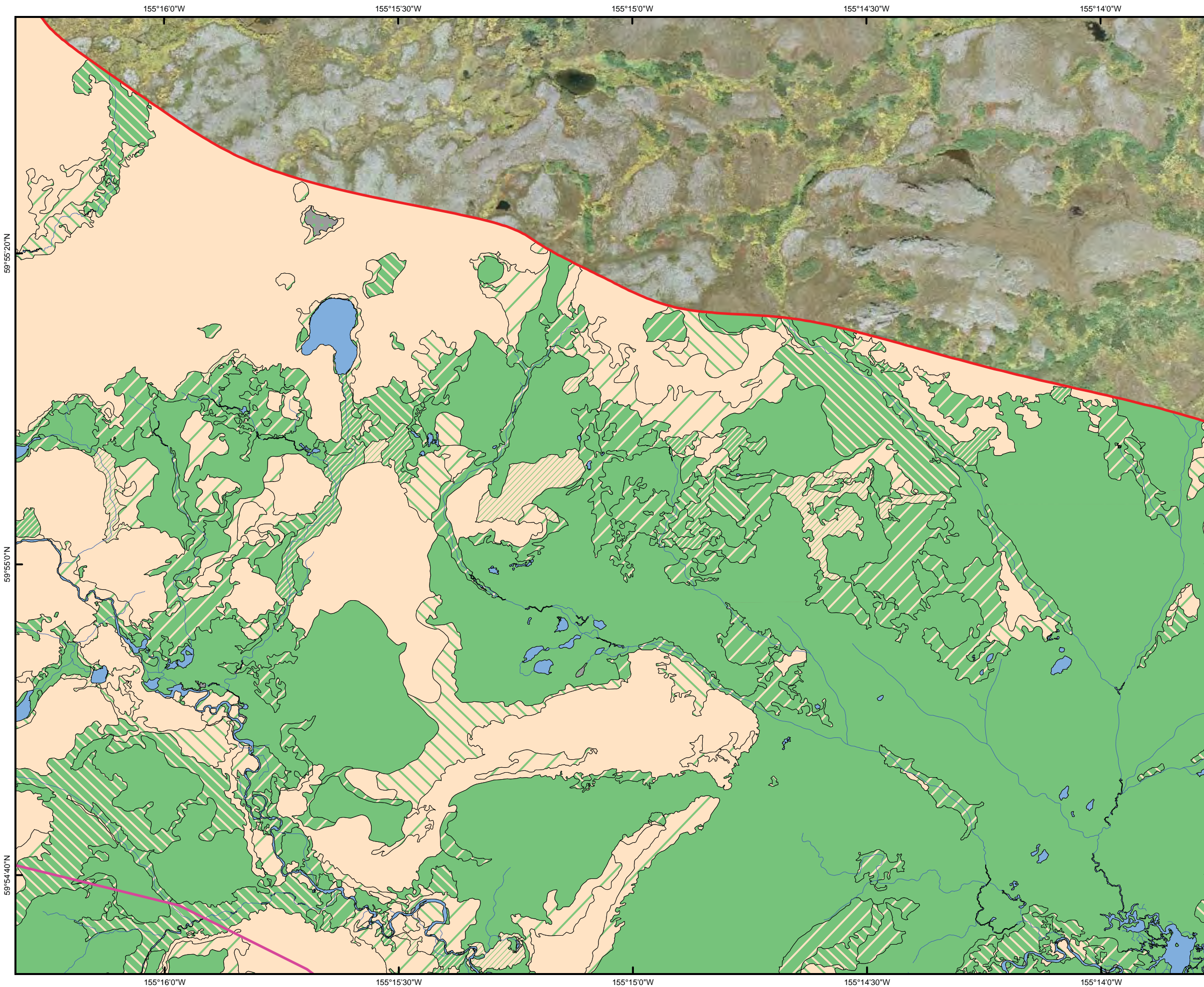
-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





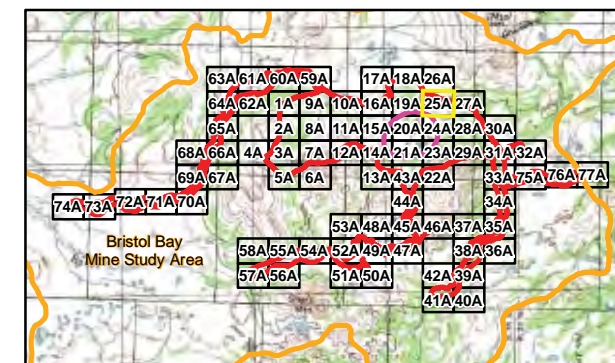
**Figure 14.1-3**  
**Tile 25A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location

**Wetlands Mapping Classification**

- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

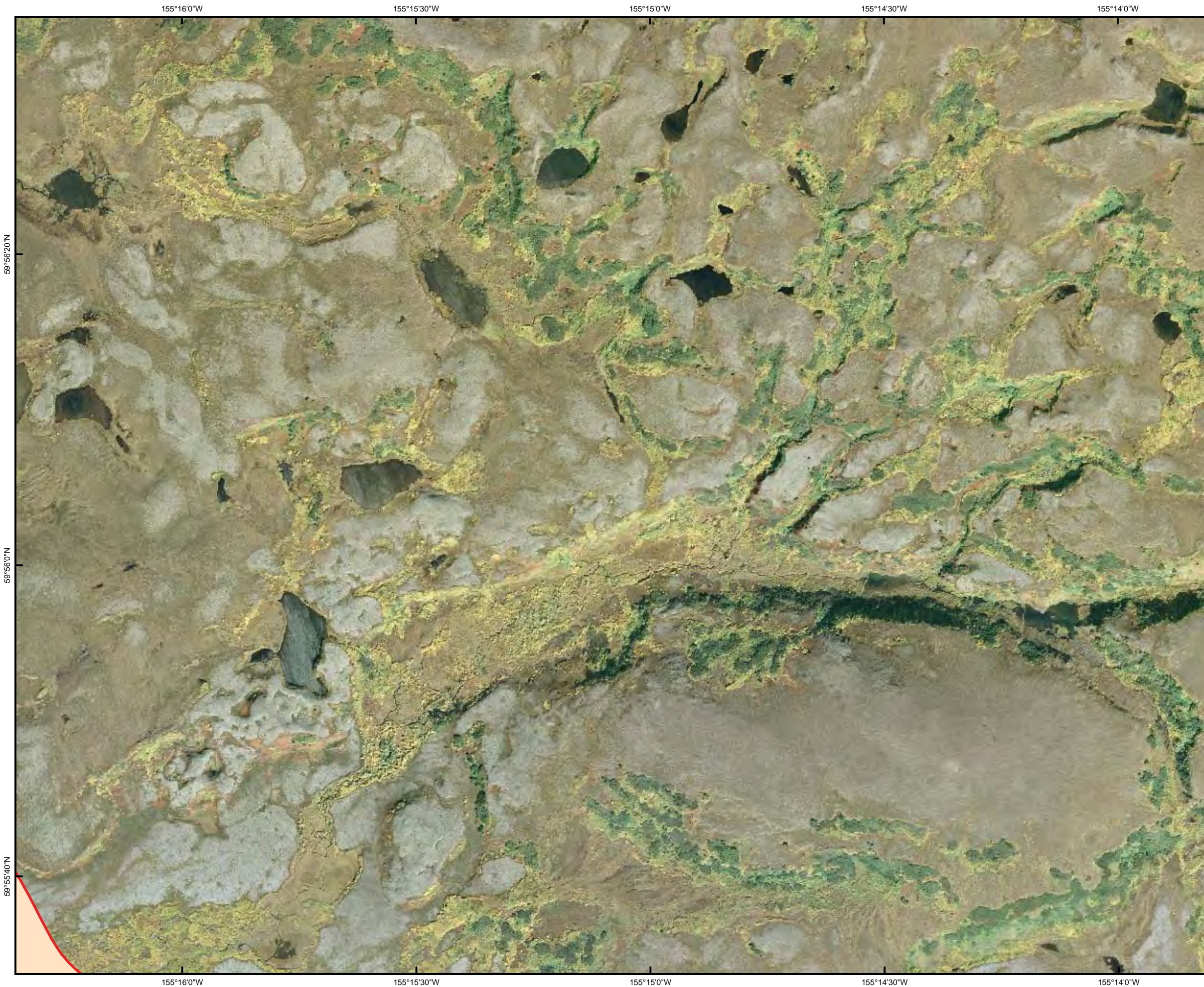
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1-3**  
**Tile 26A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**


**Legend**


 Mine Mapping Area


 Mine Study Area


 General Deposit Location


**Wetlands Mapping Classification**


 Wetland (<1% Non-wetland Inclusions)


 Wetland (Up to 10% Non-wetland Inclusions)


 Wetland (Up to 20% Non-wetland Inclusions)

 Wetland (Up to 40% Non-wetland Inclusions)

 Non-wetland (Up to 40% Wetland Inclusions)

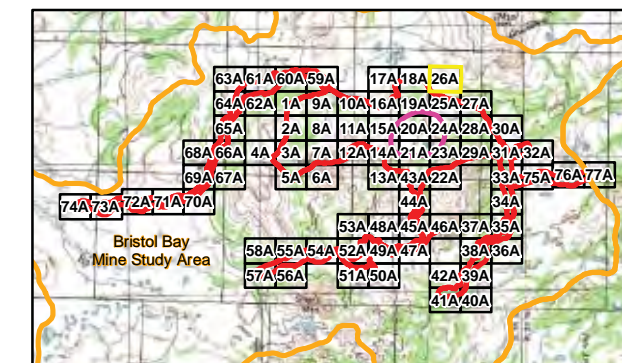
 Non-wetland (Up to 20% Wetland Inclusions)

 Non-wetland (Up to 10% Wetland Inclusions)

 Non-wetland (<1% Wetland Inclusions)

 Waterbodies

 Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

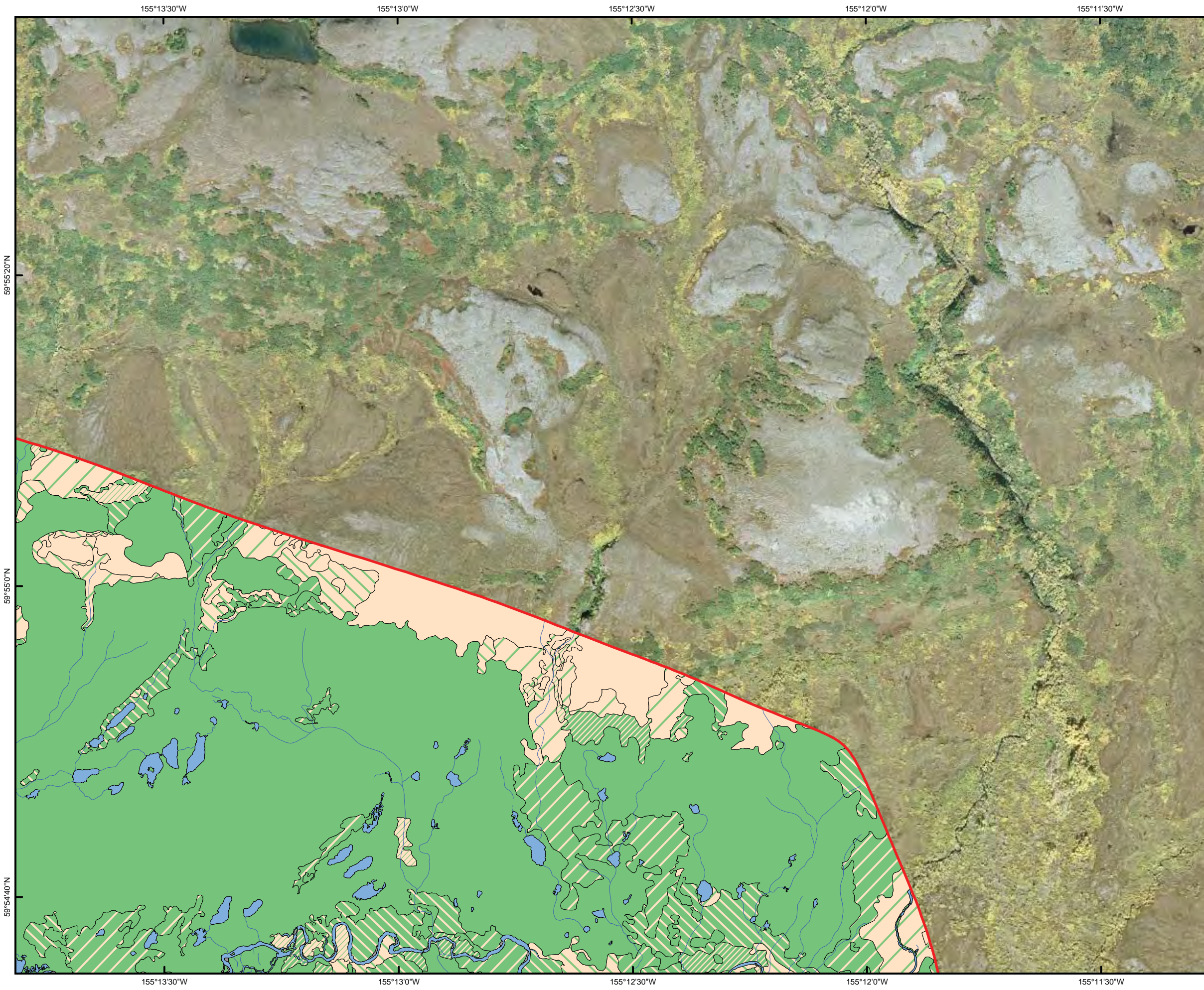
File: RDI\_3PP\_EBD\_Fig14.1-3\_JDWET\_Tiled\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3














Author: RDI-LS

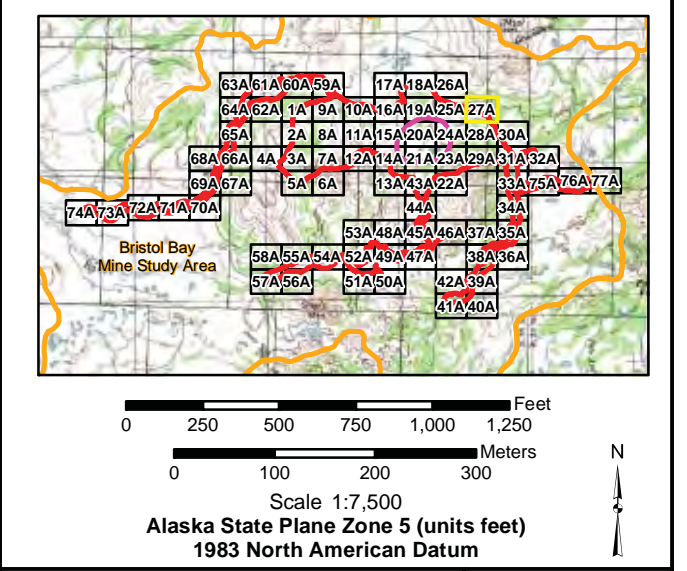




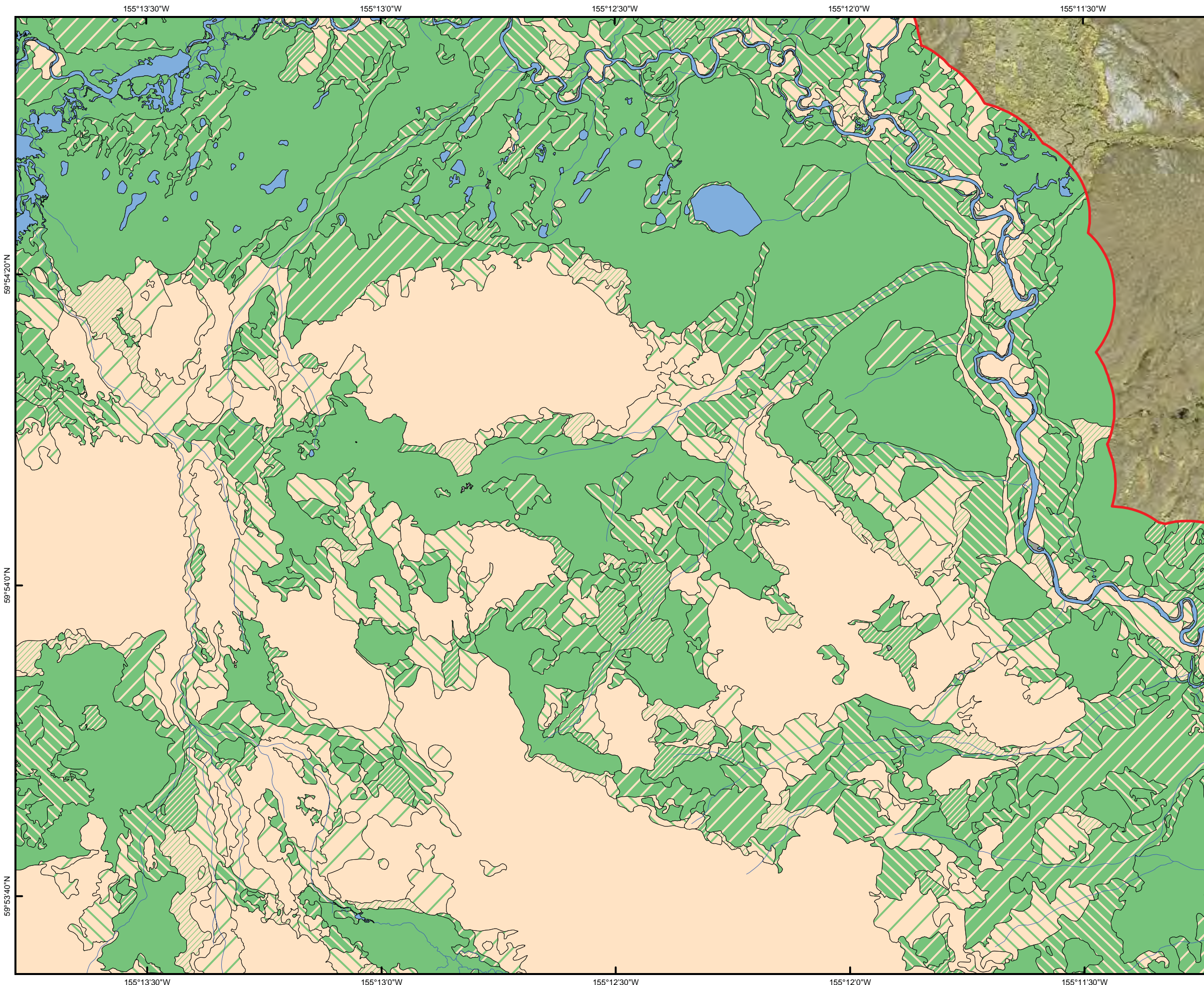
**Figure 14.1-3**  
**Tile 27A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds
















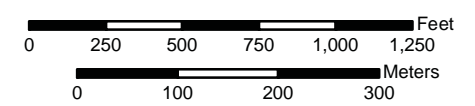
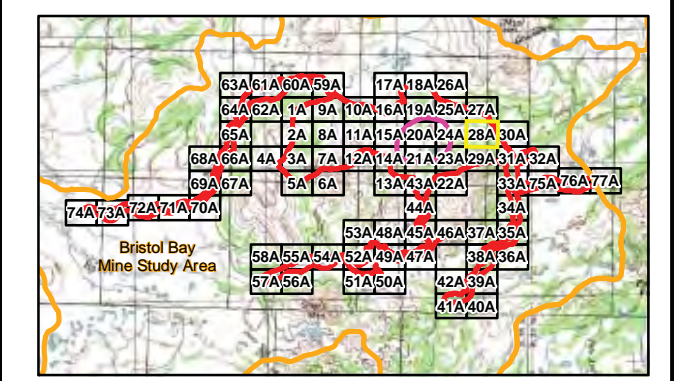




**Figure 14.1-3**  
**Tile 28A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

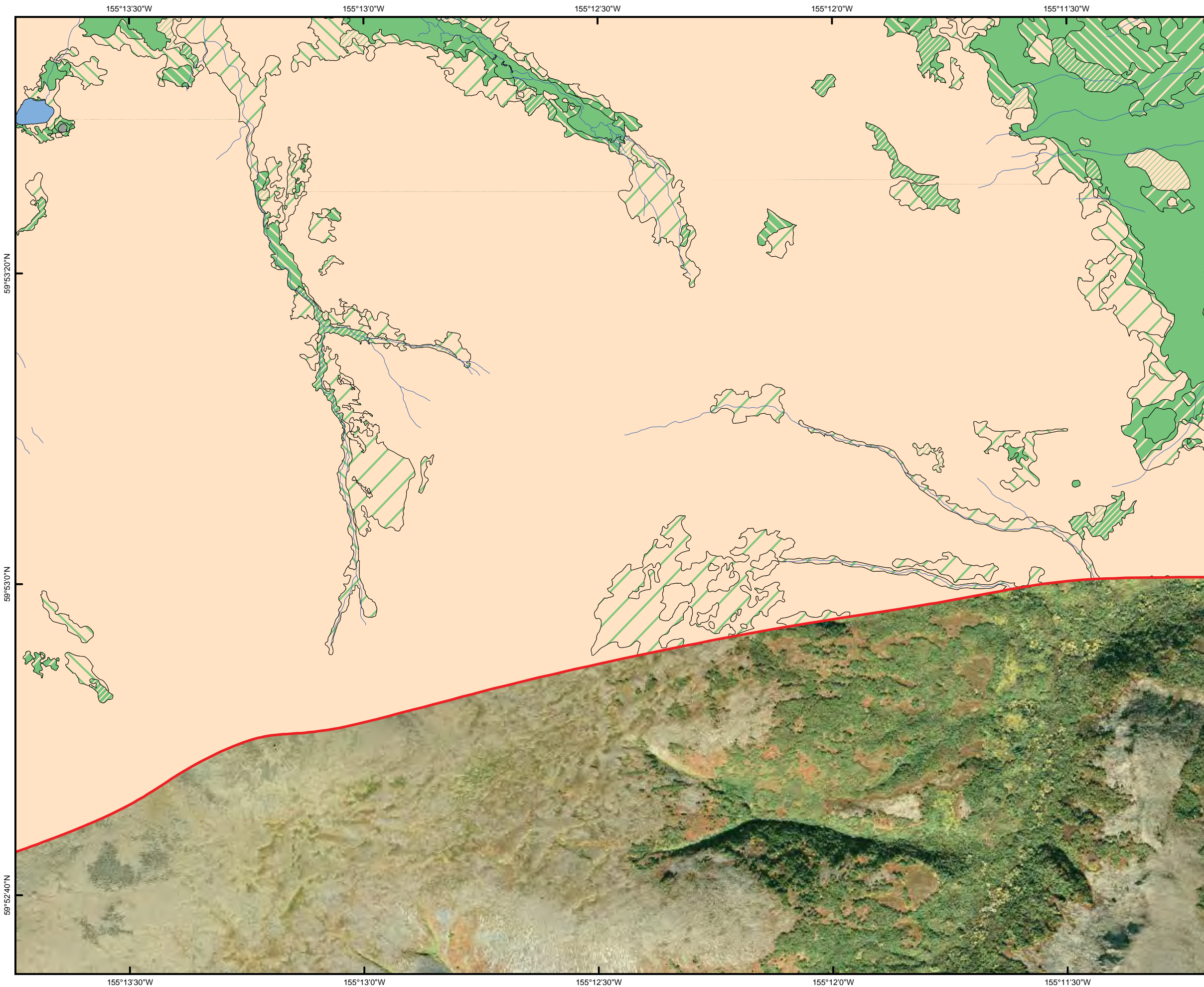


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

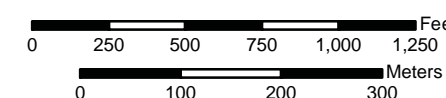
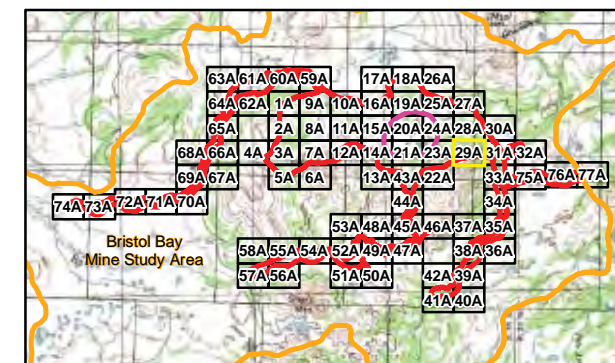




**Figure 14.1-3**  
**Tile 29A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

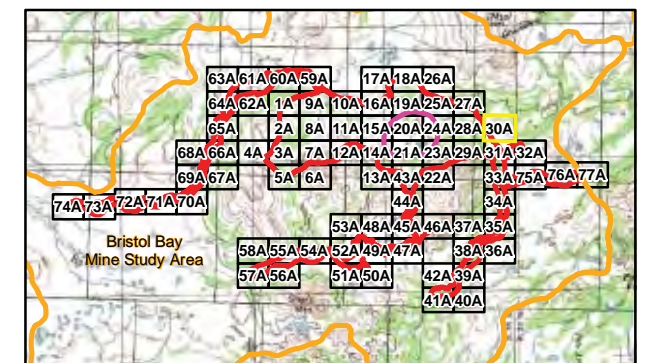




**Figure 14.1-3**  
**Tile 30A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

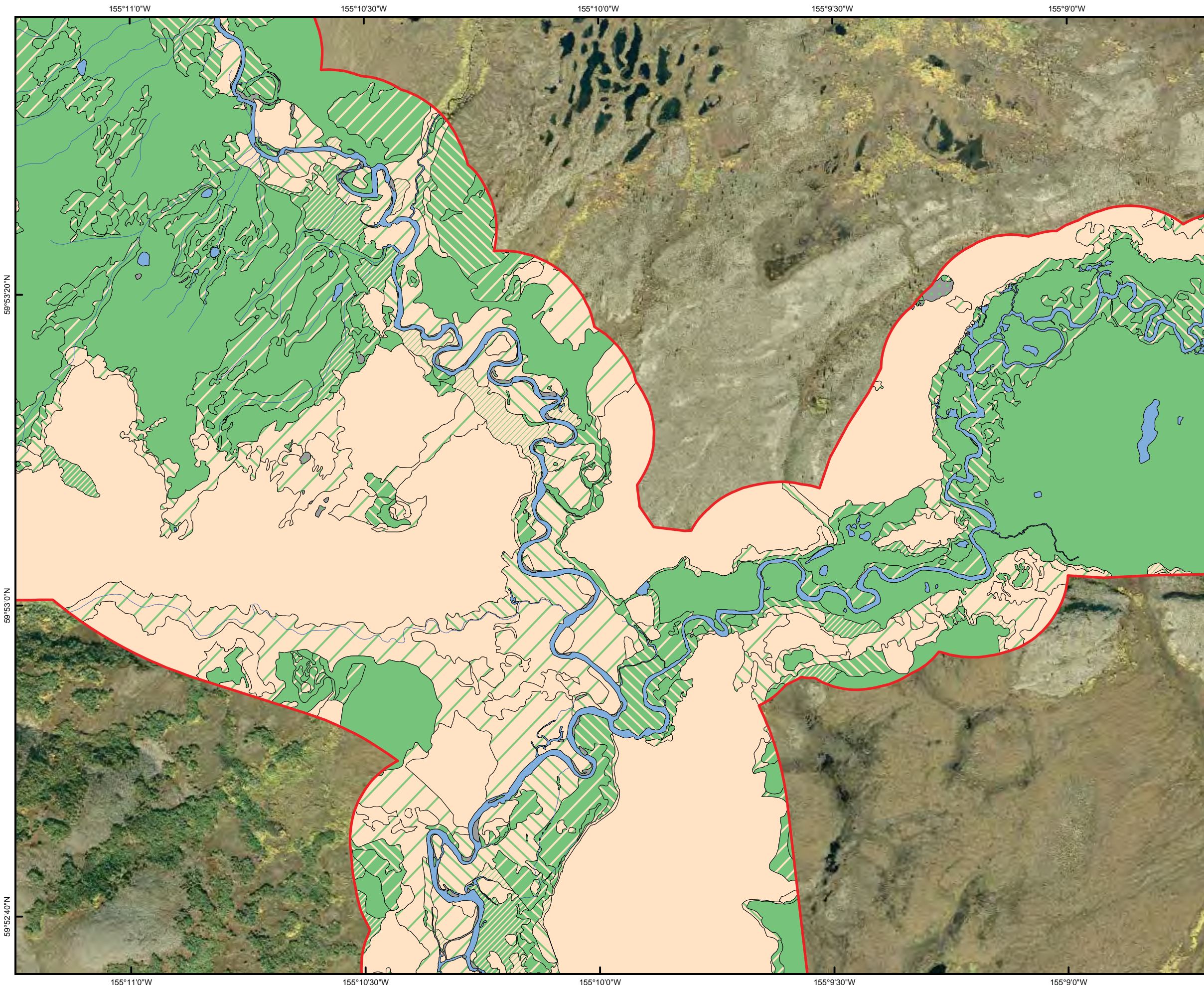
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

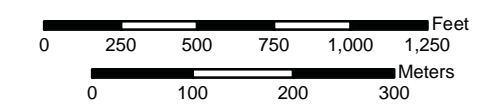
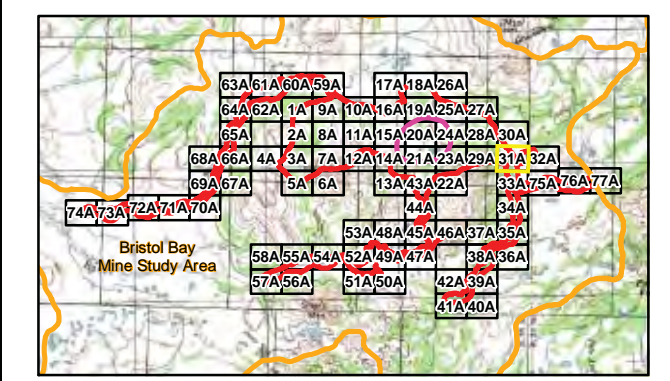




**Figure 14.1-3**  
**Tile 31A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

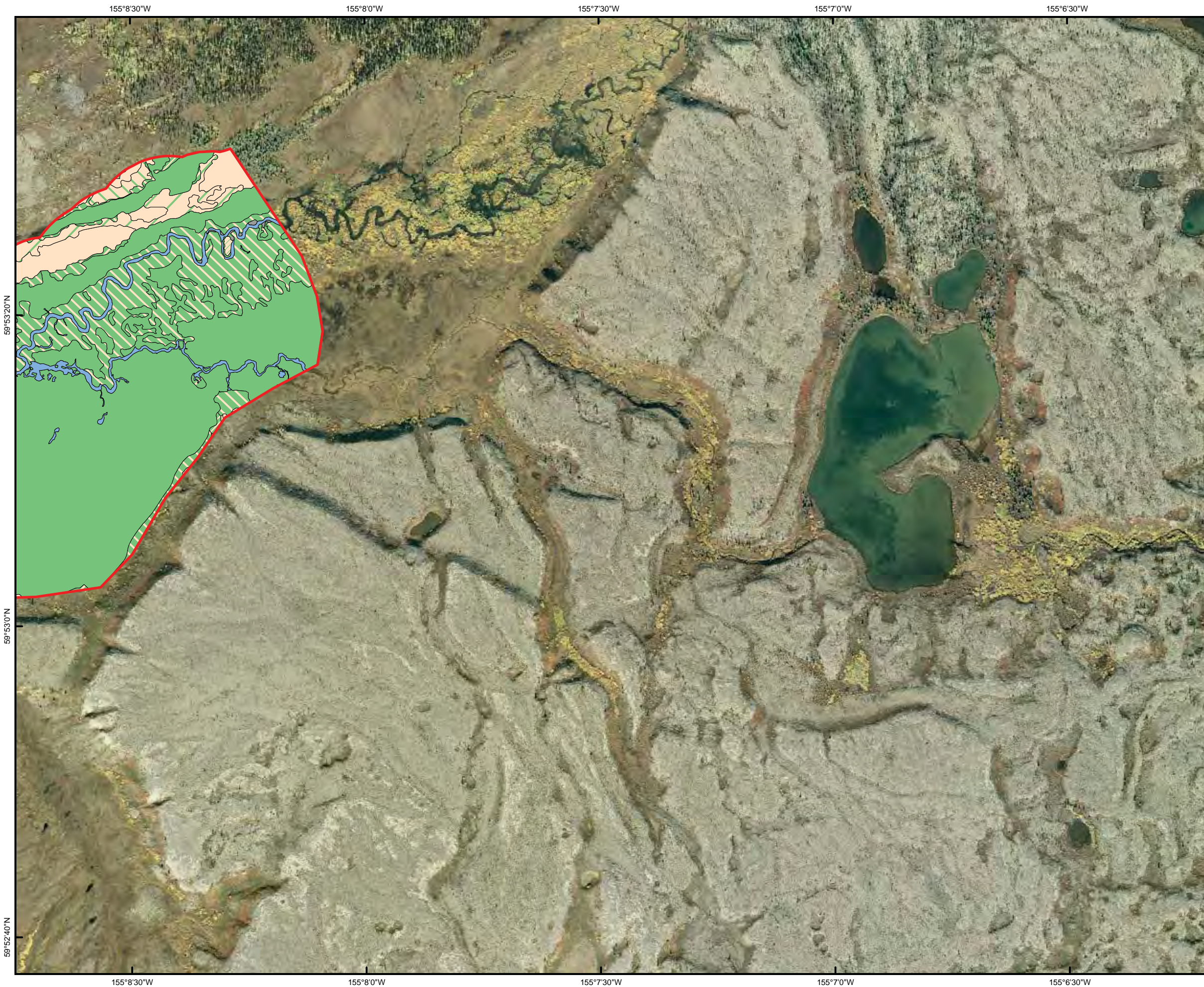


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

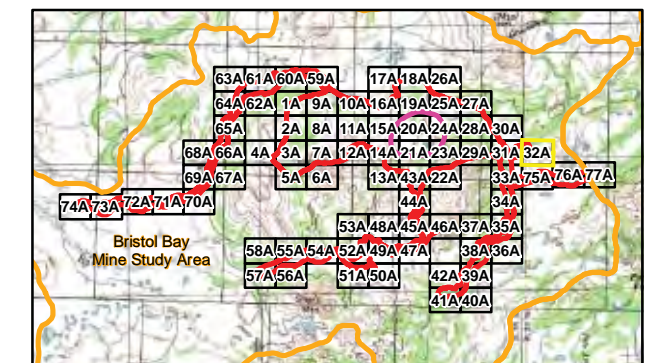




**Figure 14.1-3**  
**Tile 32A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



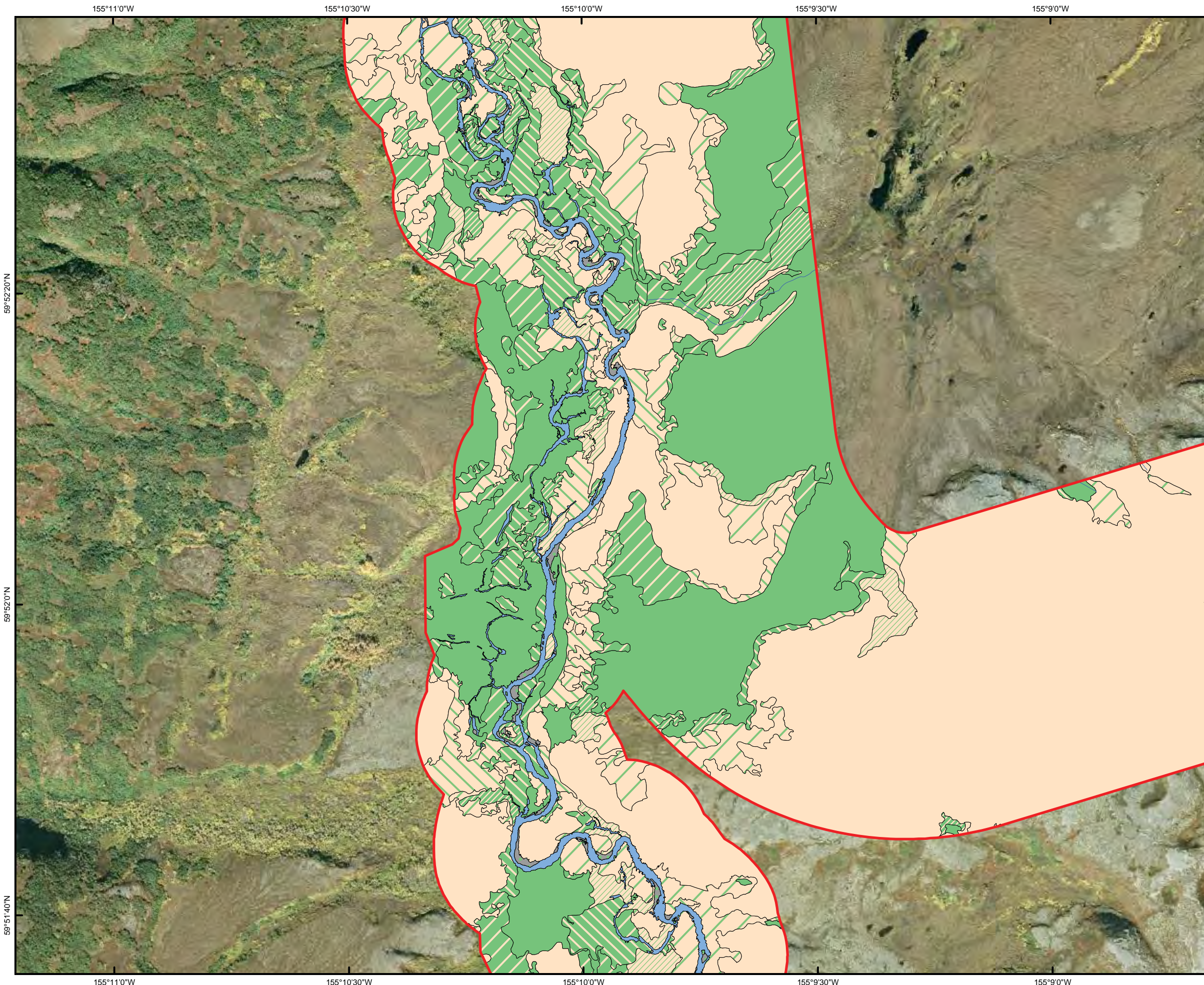
0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

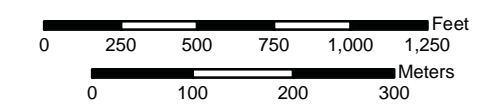
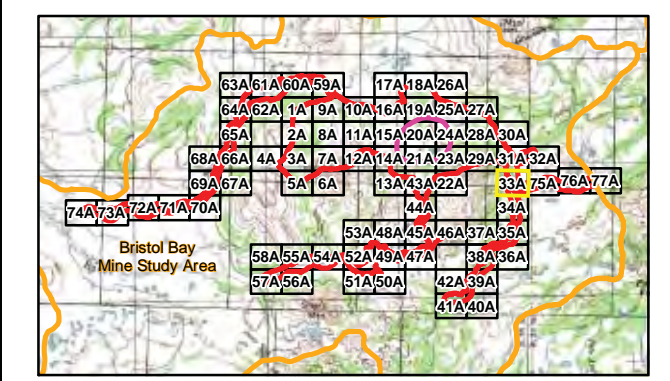




**Figure 14.1-3**  
**Tile 33A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

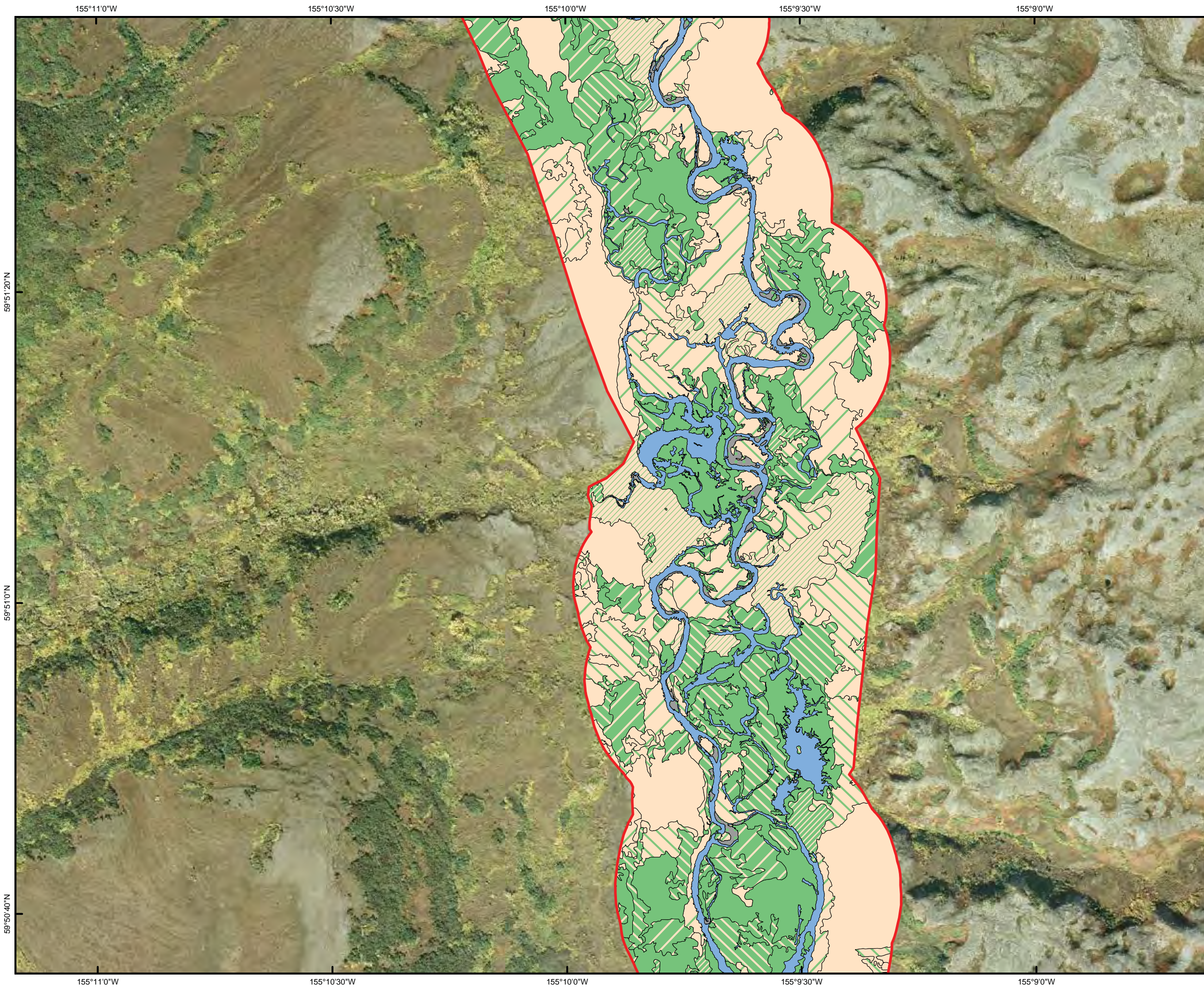


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

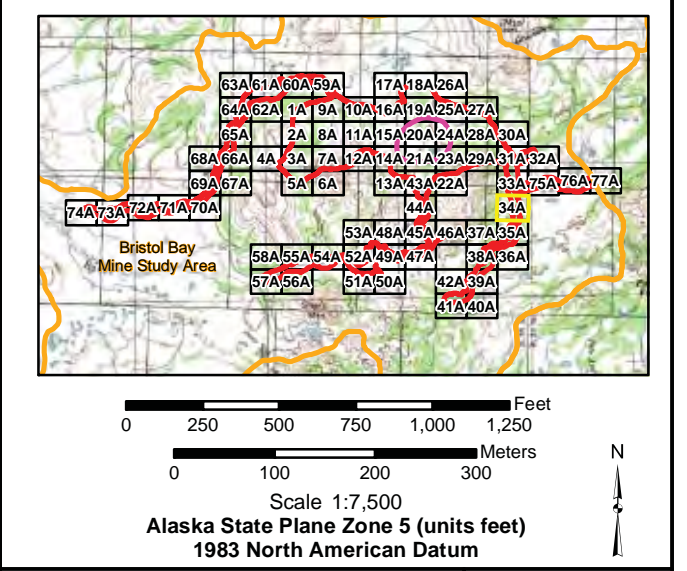




**Figure 14.1-3**  
**Tile 34A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

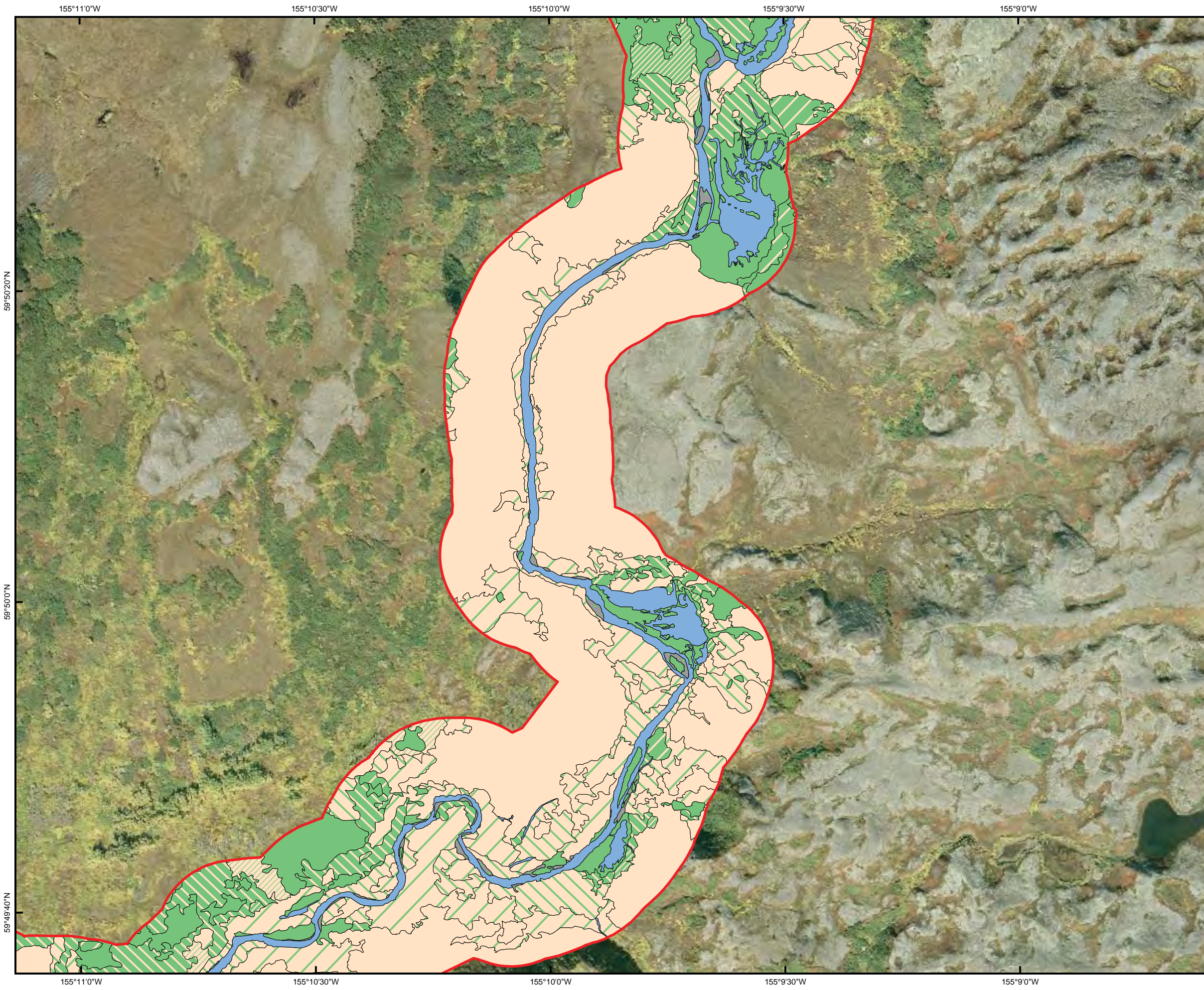
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

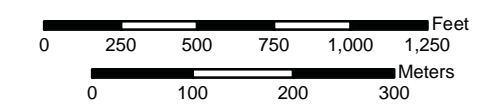
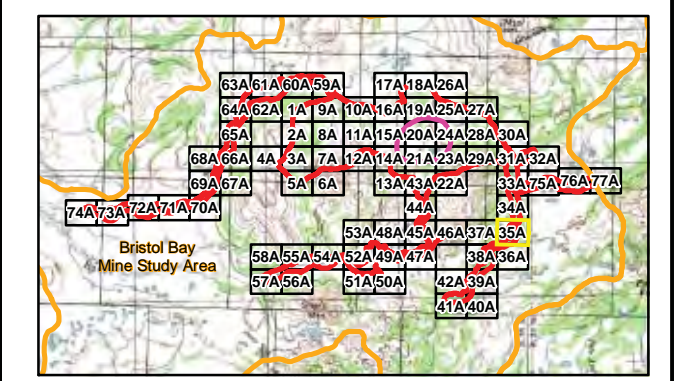




**Figure 14.1-3**  
**Tile 35A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

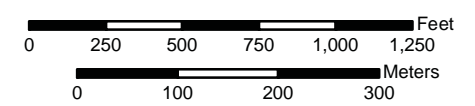
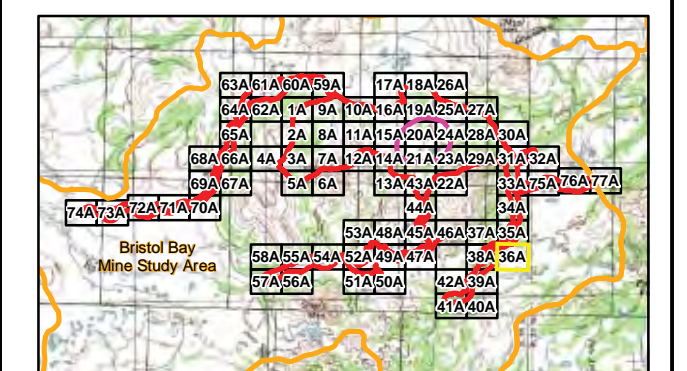




**Figure 14.1-3**  
**Tile 36A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



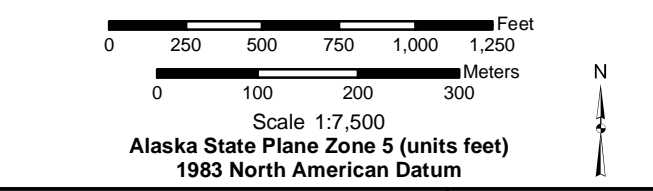
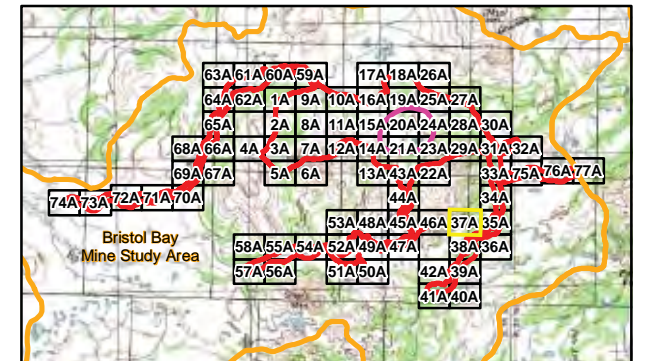
File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





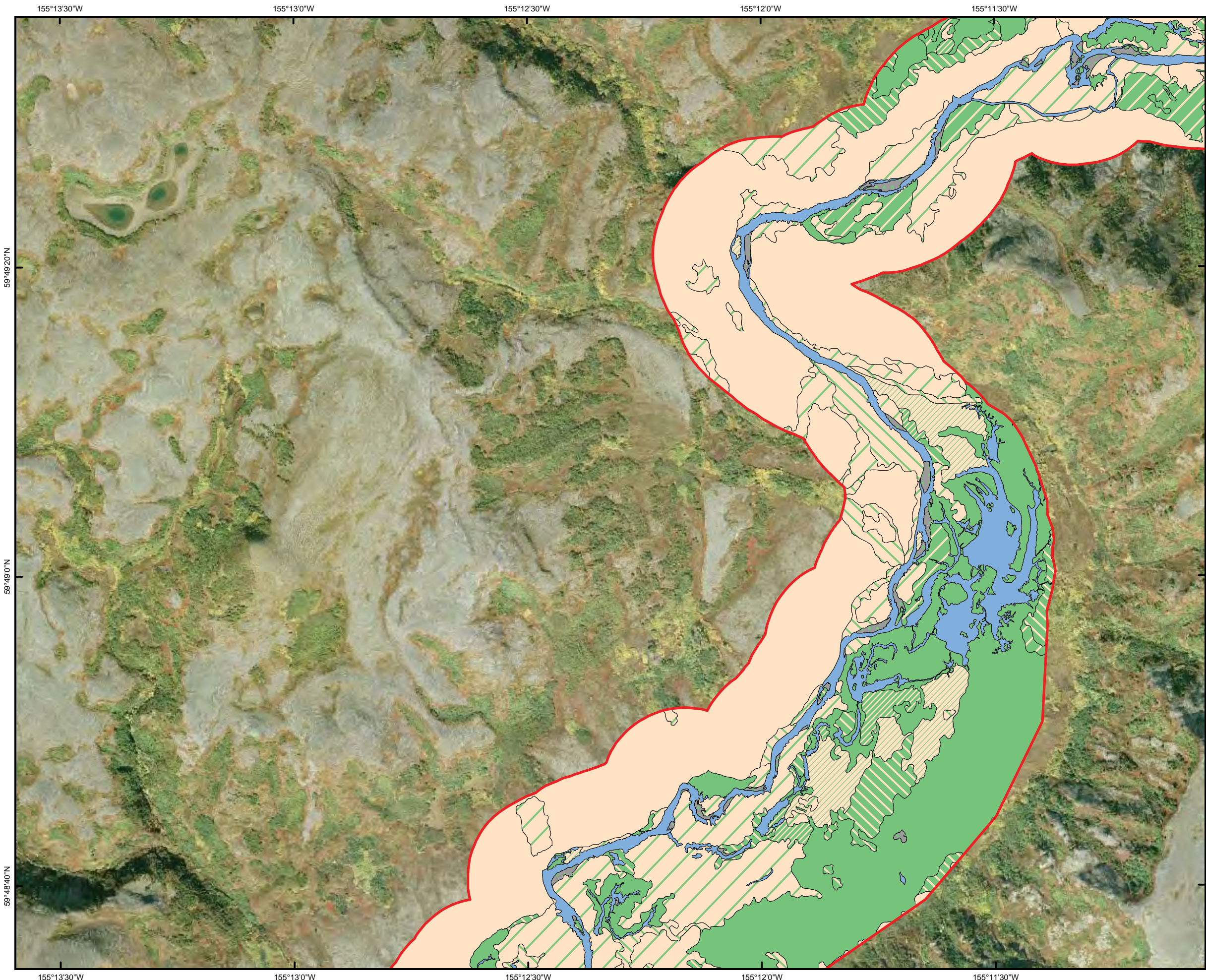
**Figure 14.1-3**  
**Tile 37A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

- Legend**
- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



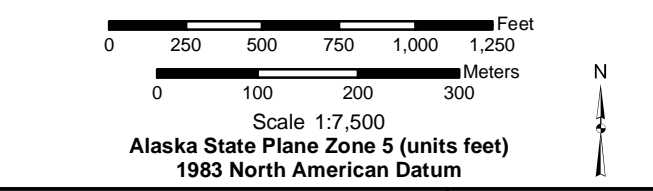
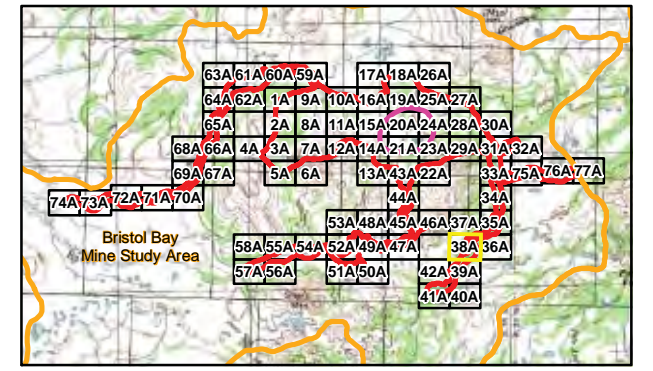
File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





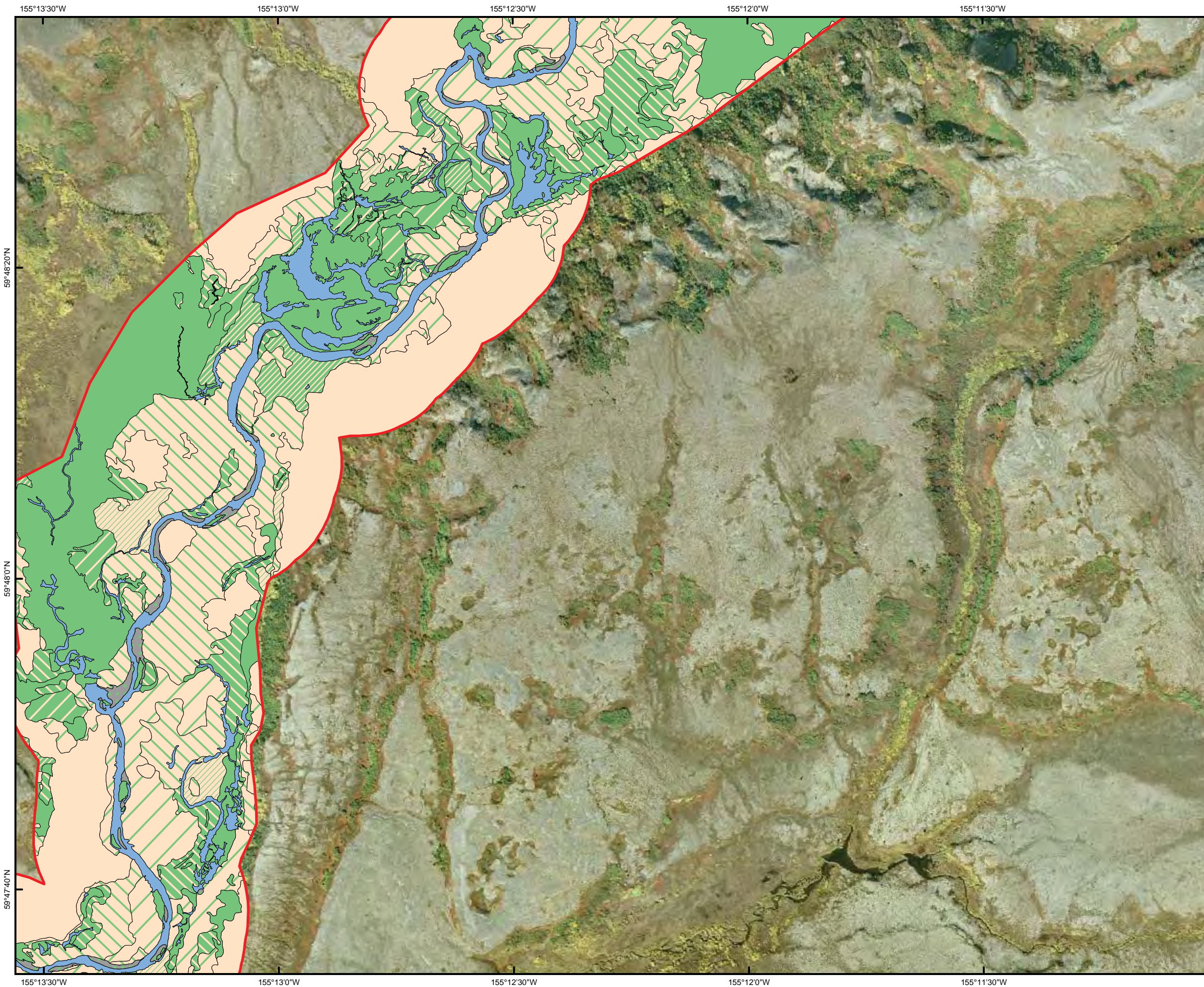
**Figure 14.1-3**  
**Tile 38A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

- Legend**
- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

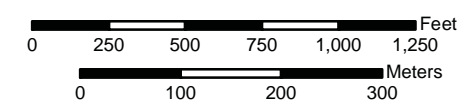
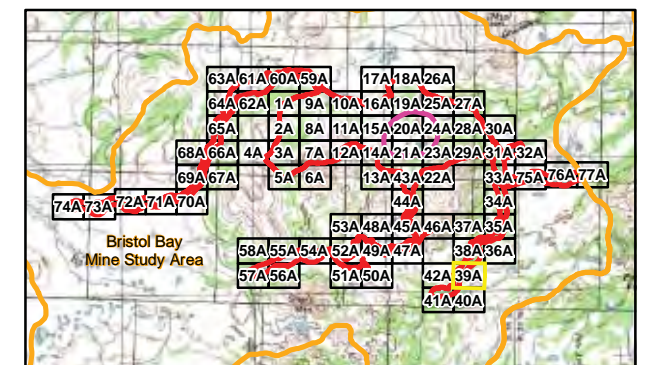




**Figure 14.1-3**  
**Tile 39A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



155°13'30"W 155°13'0"W 155°12'30"W 155°12'0"W 155°11'30"W 155°11'0"W

59°47'20"N

59°47'0"N

59°46'40"N

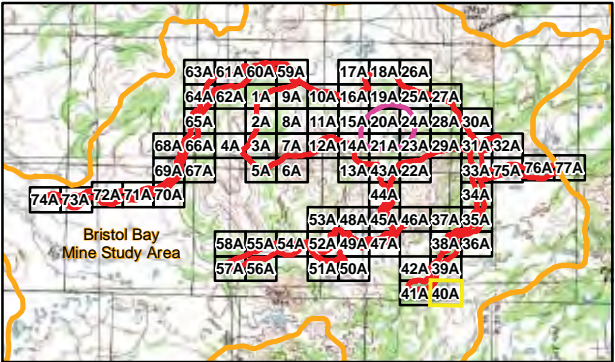
155°13'30"W 155°13'0"W 155°12'30"W 155°12'0"W 155°11'30"W 155°11'0"W



**Figure 14.1-3**  
**Tile 40A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



155°16'0"W 155°15'30"W 155°15'0"W 155°14'30"W 155°14'0"W 155°13'30"W

59°47'20"N

59°47'0"N

59°46'40"N

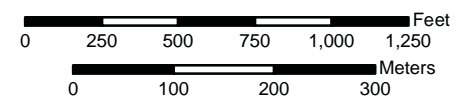
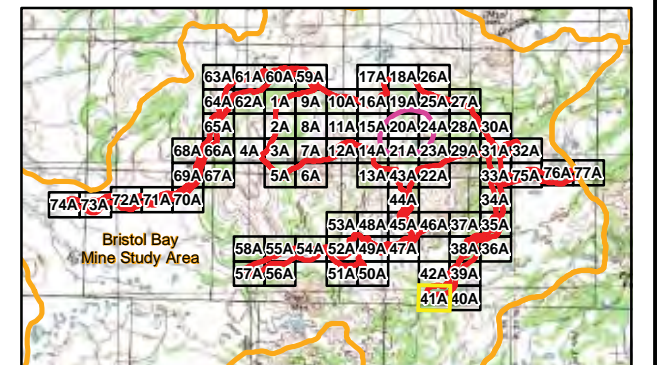
155°16'0"W 155°15'30"W 155°15'0"W 155°14'30"W 155°14'0"W 155°13'30"W



**Figure 14.1-3**  
**Tile 41A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds

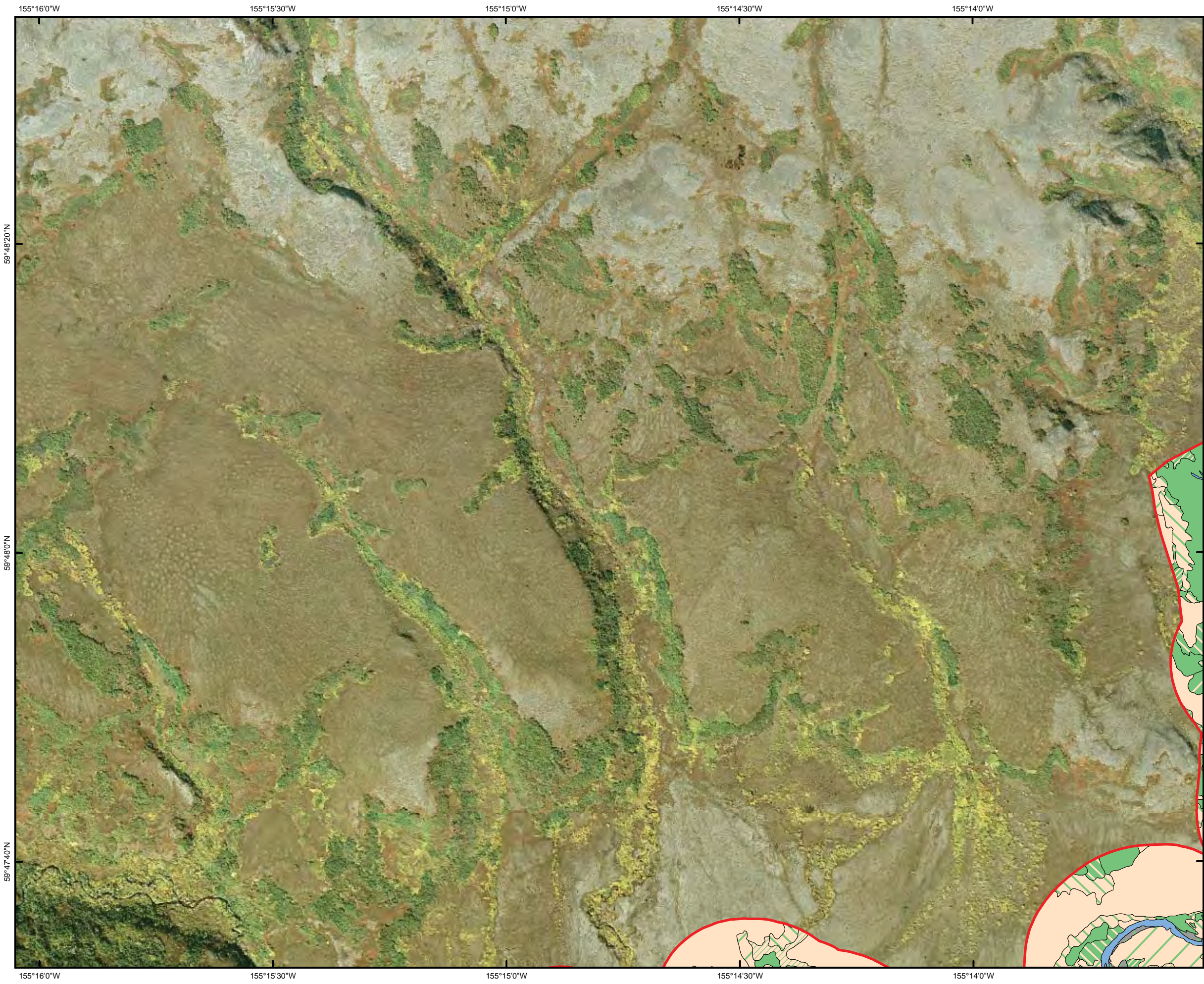


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

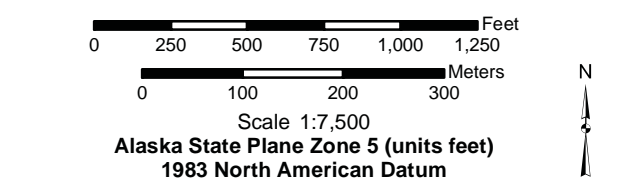
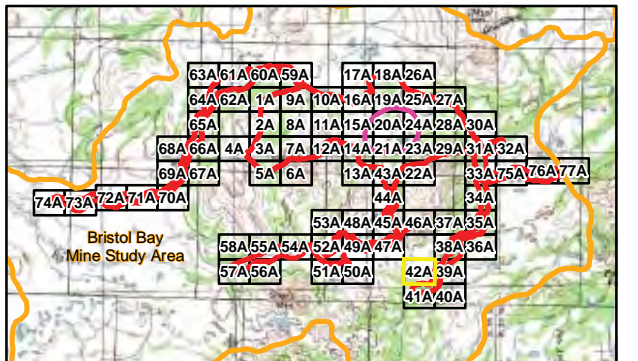




**Figure 14.1-3**  
**Tile 42A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

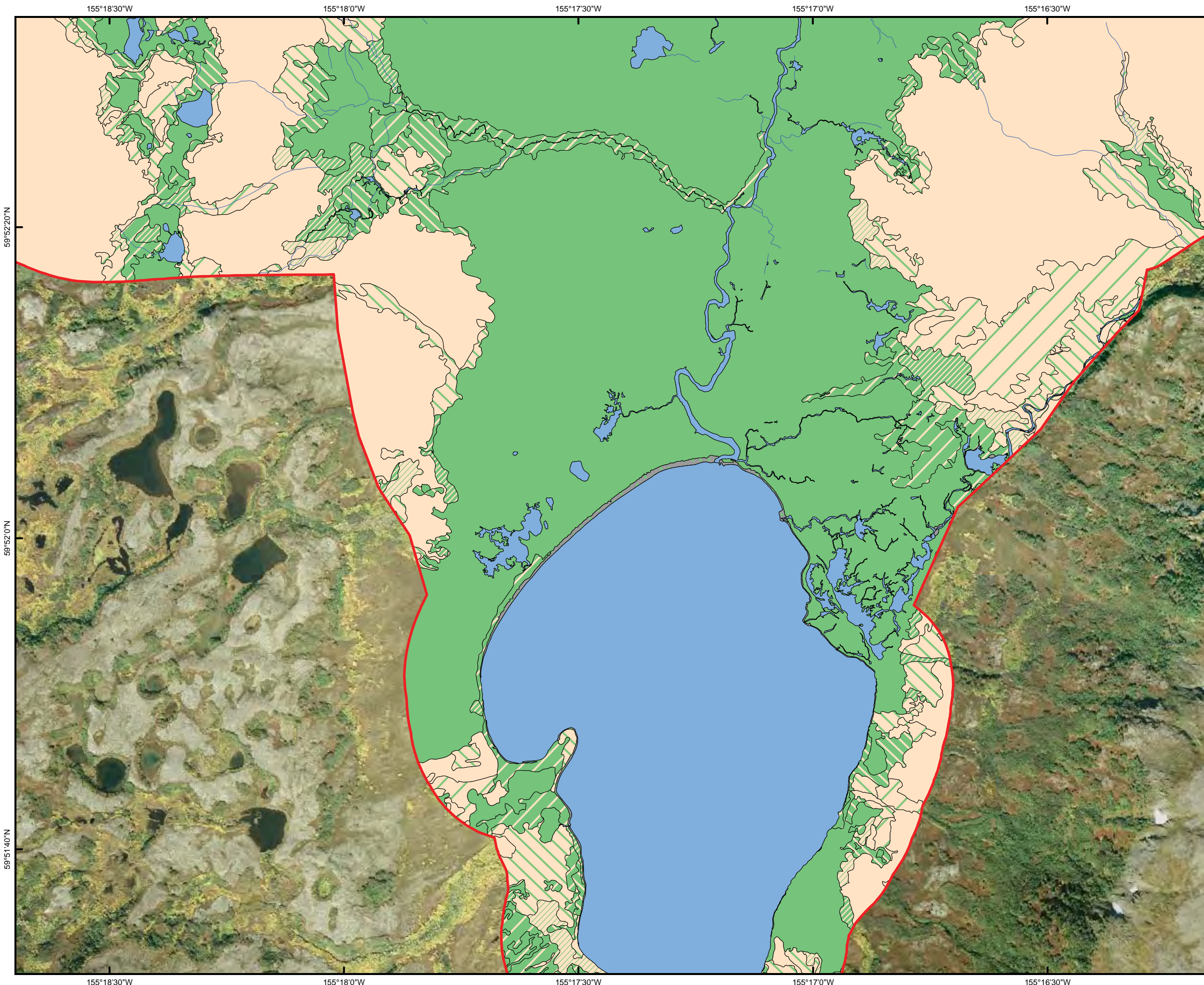
**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

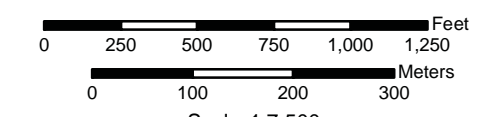
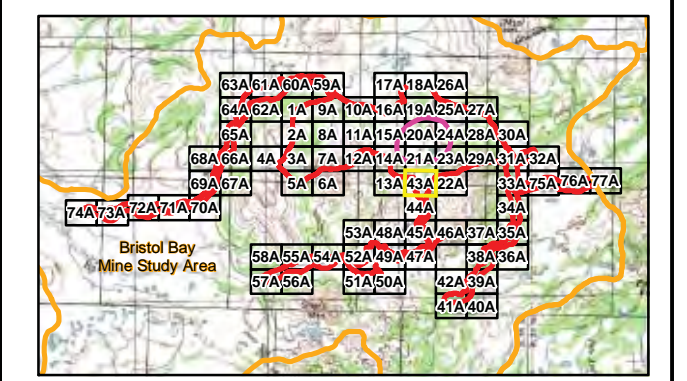




**Figure 14.1-3**  
**Tile 43A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds

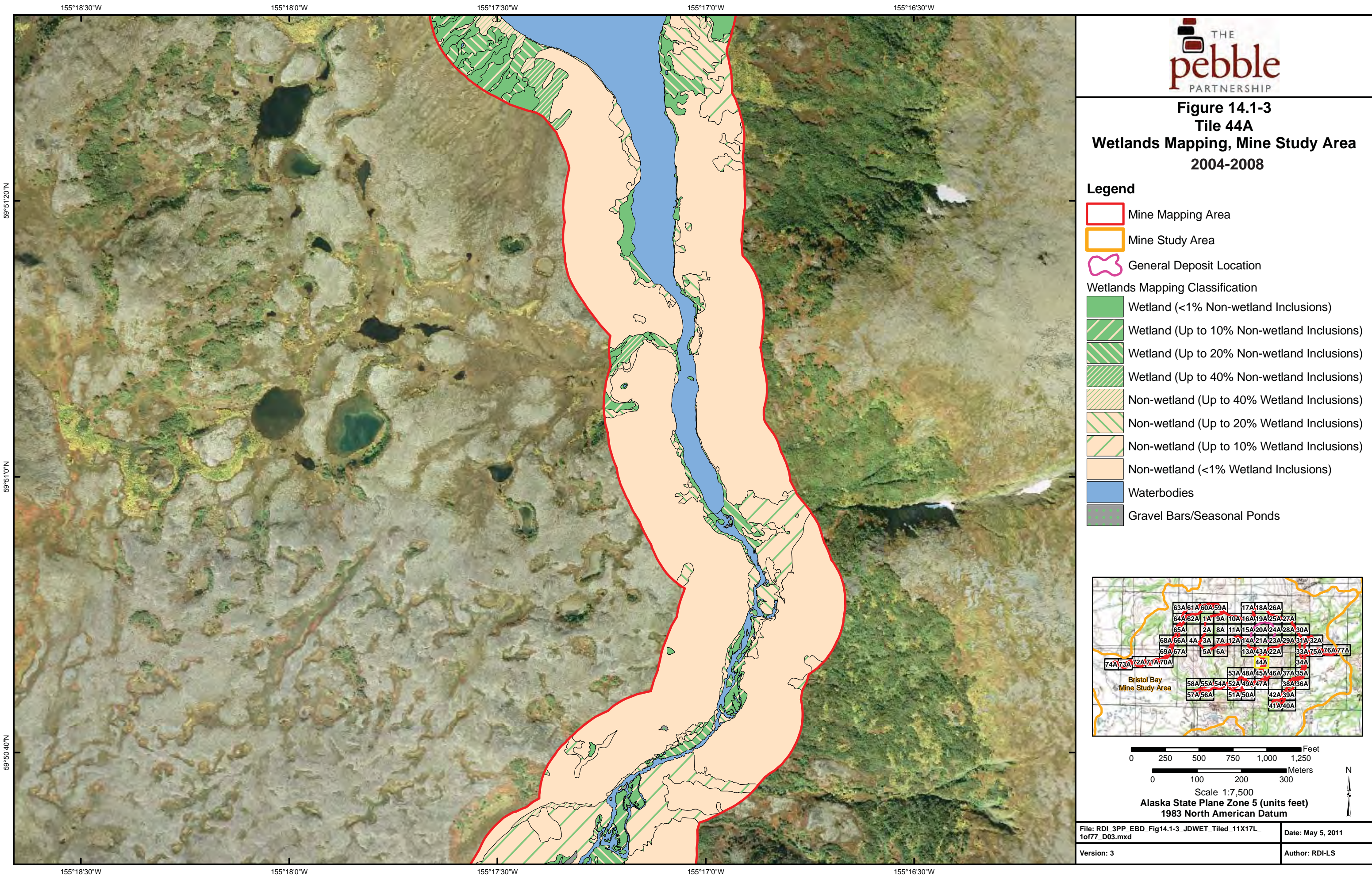


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

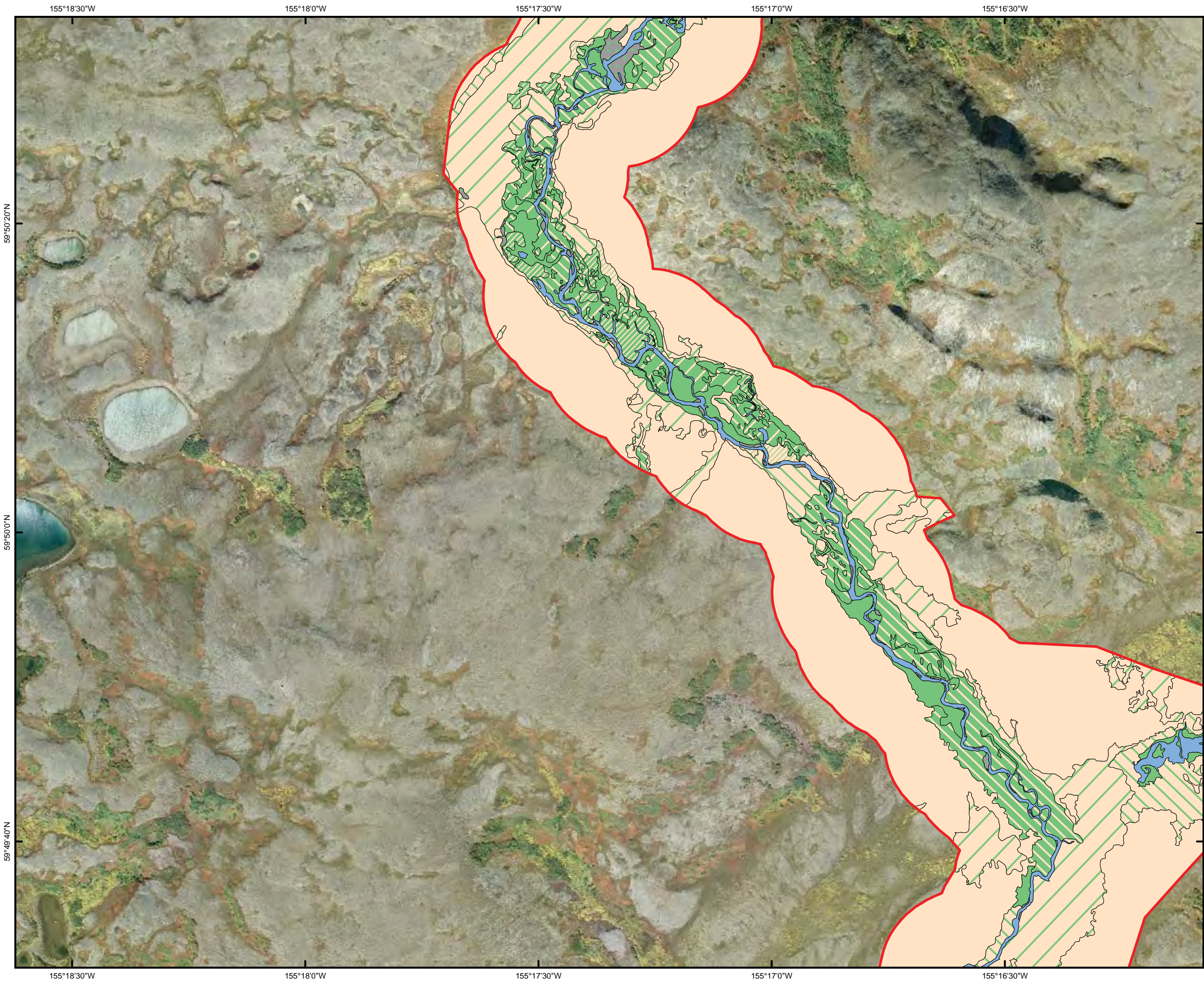


File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS


















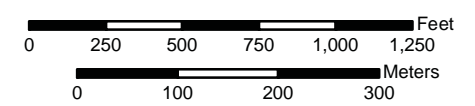
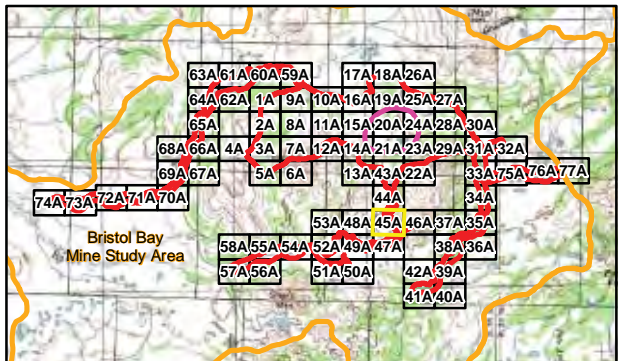




**Figure 14.1-3**  
**Tile 45A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

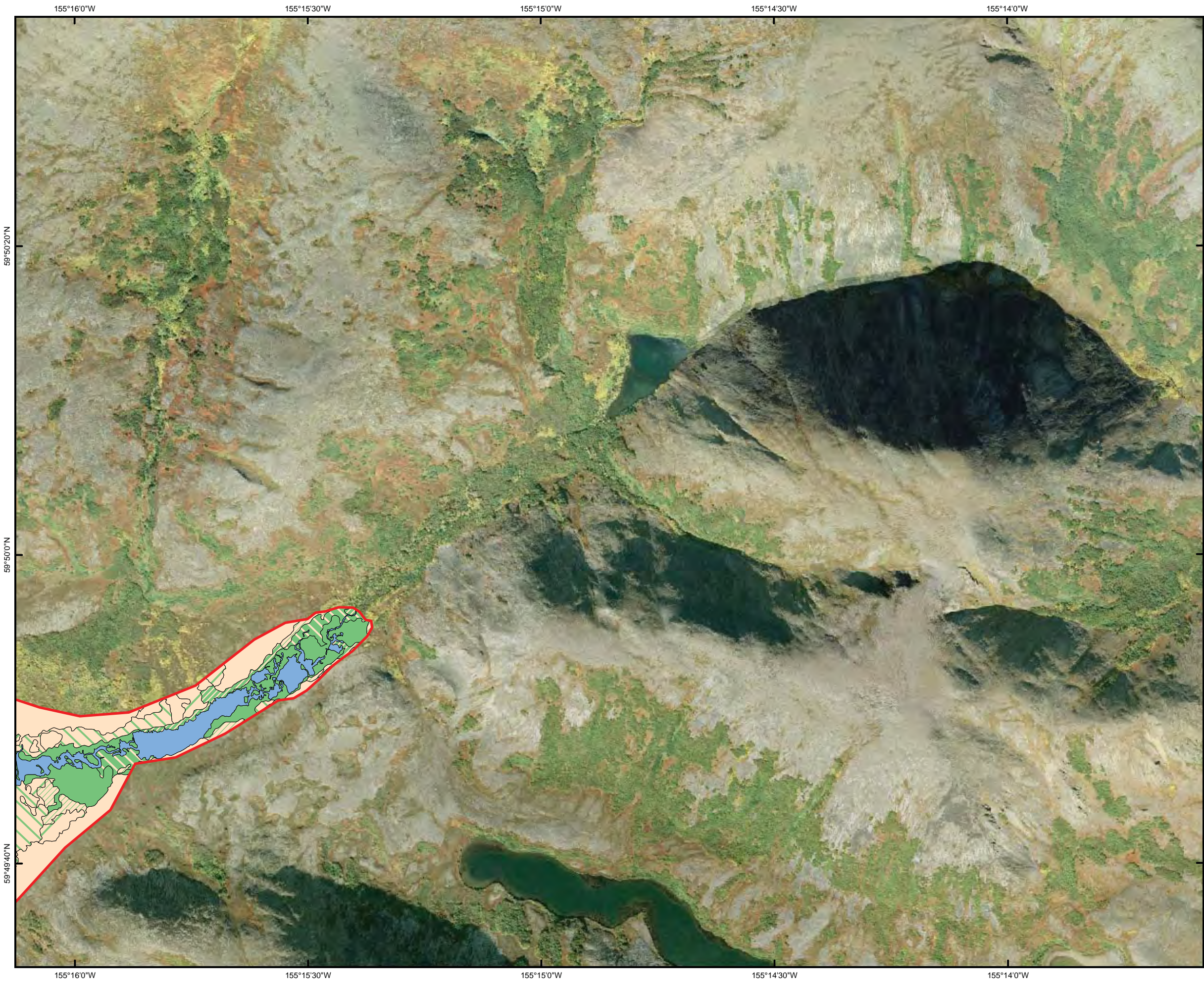


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

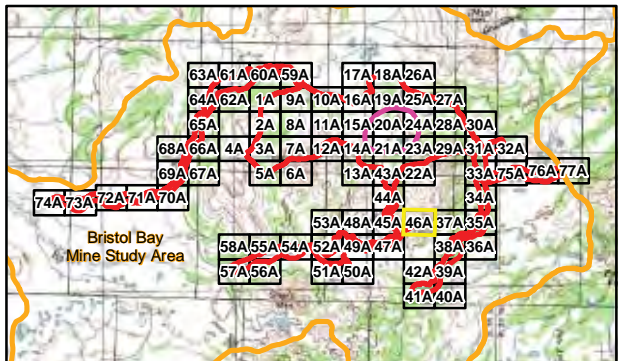




**Figure 14.1-3**  
**Tile 46A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

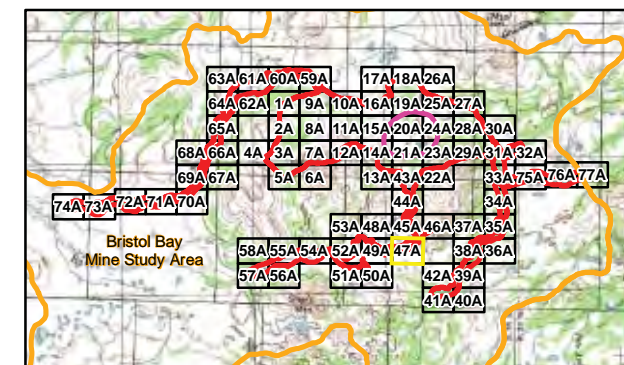




**Figure 14.1-3**  
**Tile 47A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

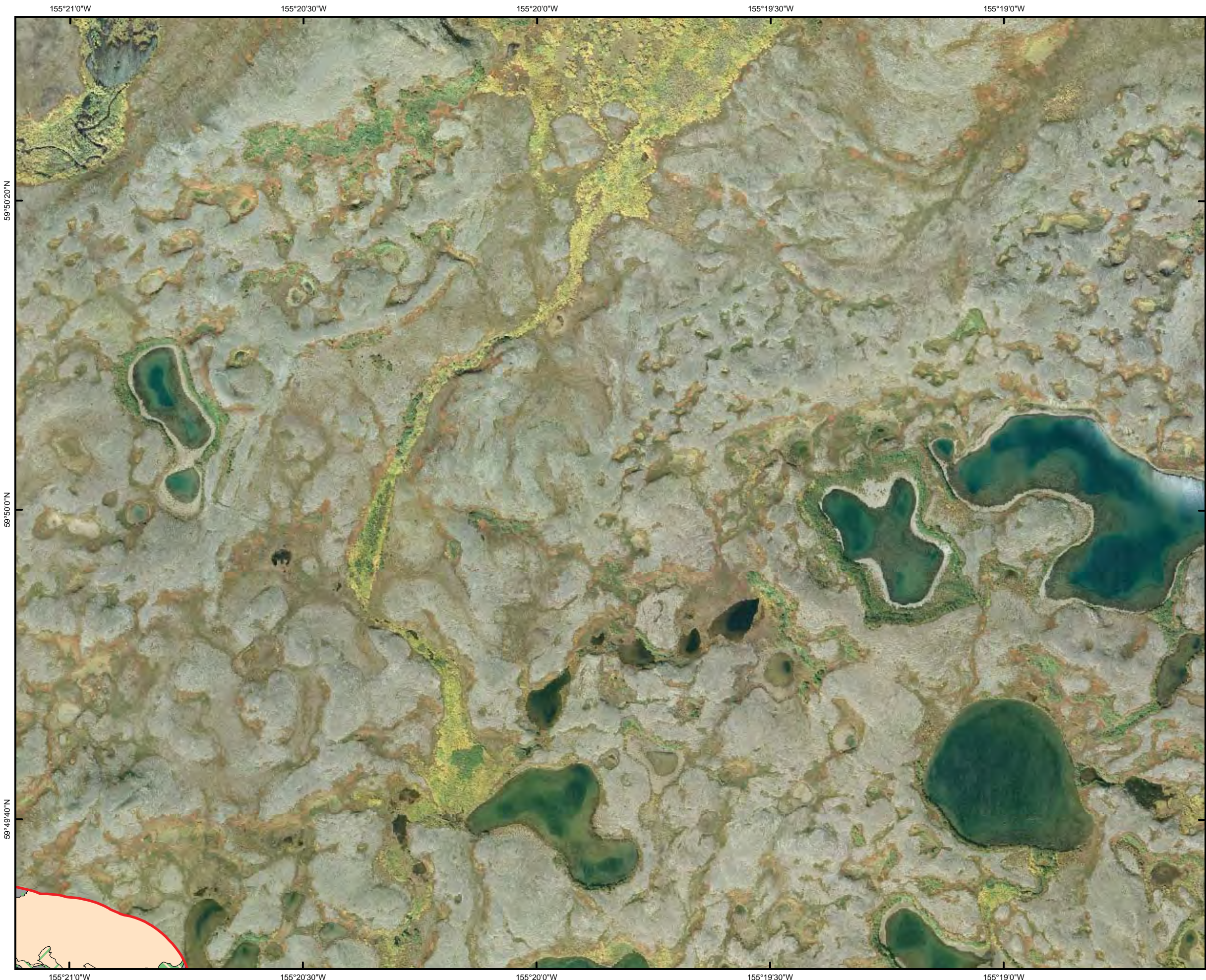
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

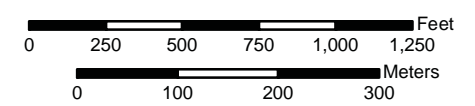
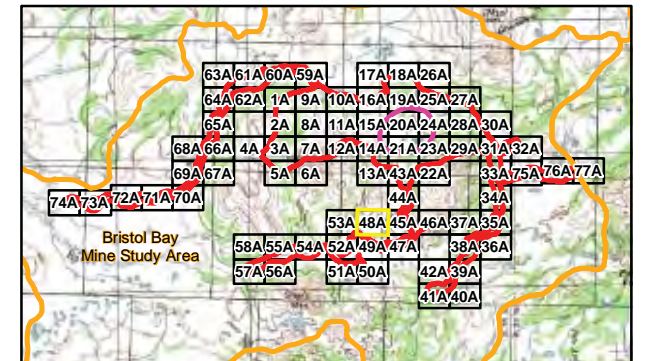




**Figure 14.1-3**  
**Tile 48A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds

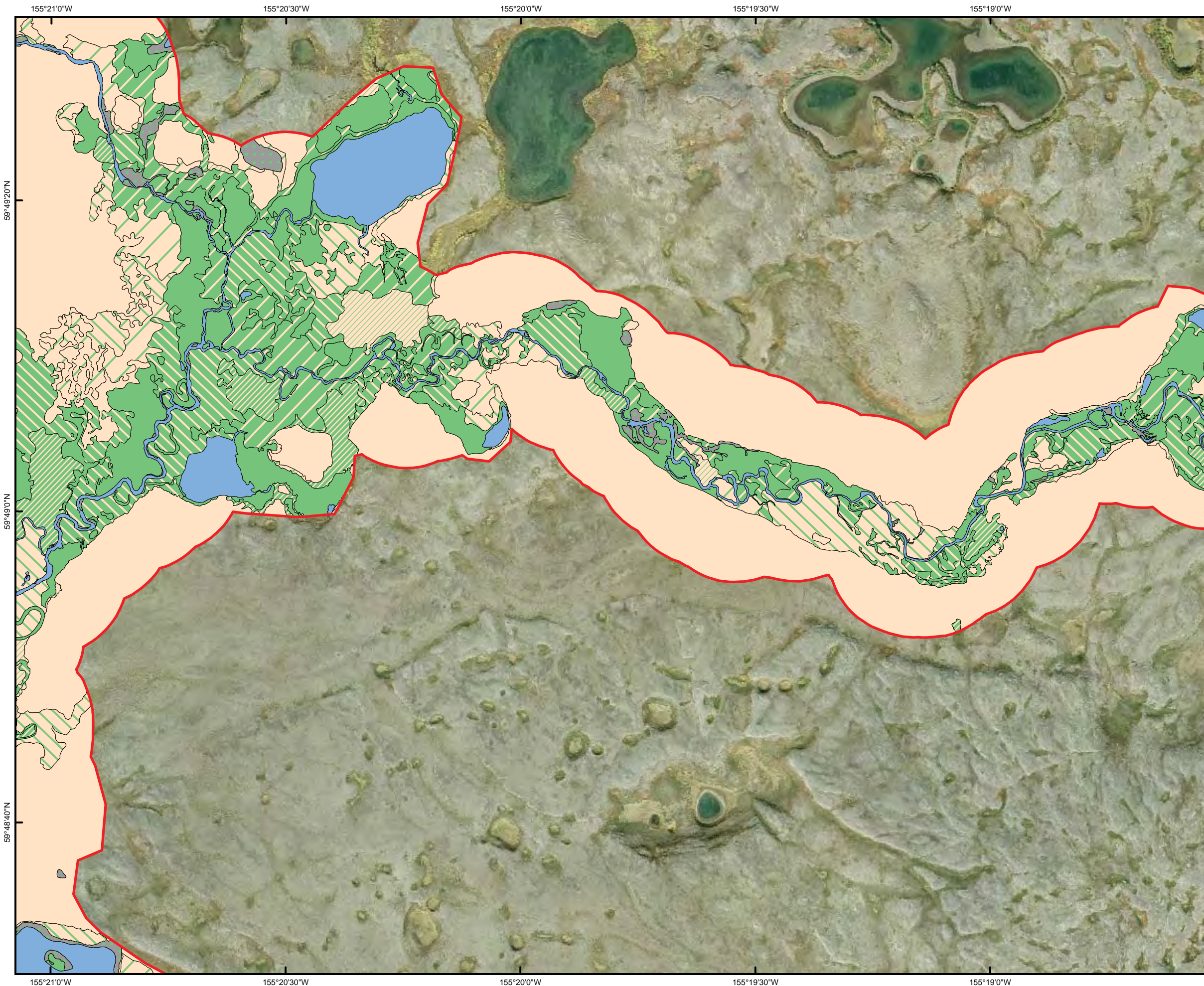


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

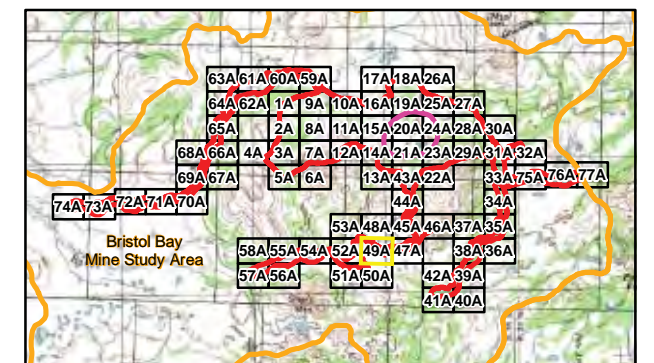




**Figure 14.1-3**  
**Tile 49A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

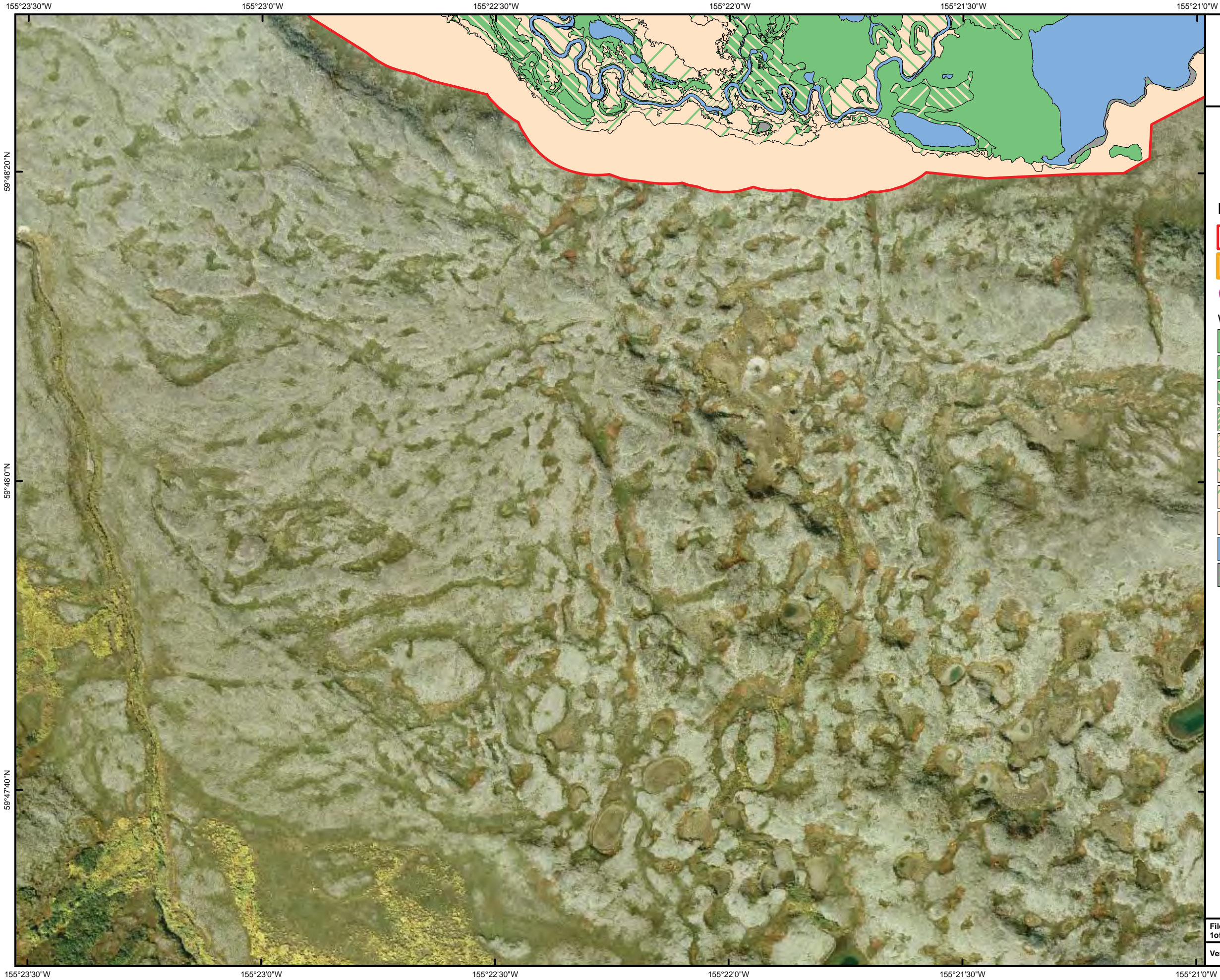


File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





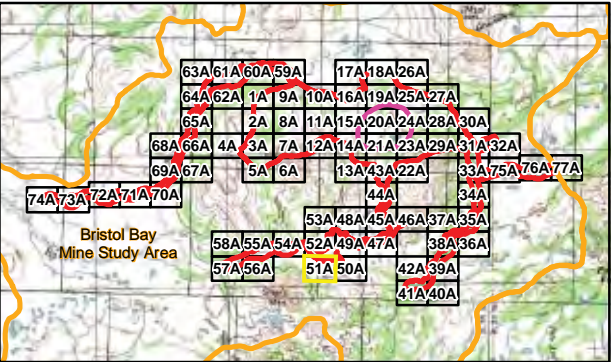




**Figure 14.1-3**  
**Tile 51A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

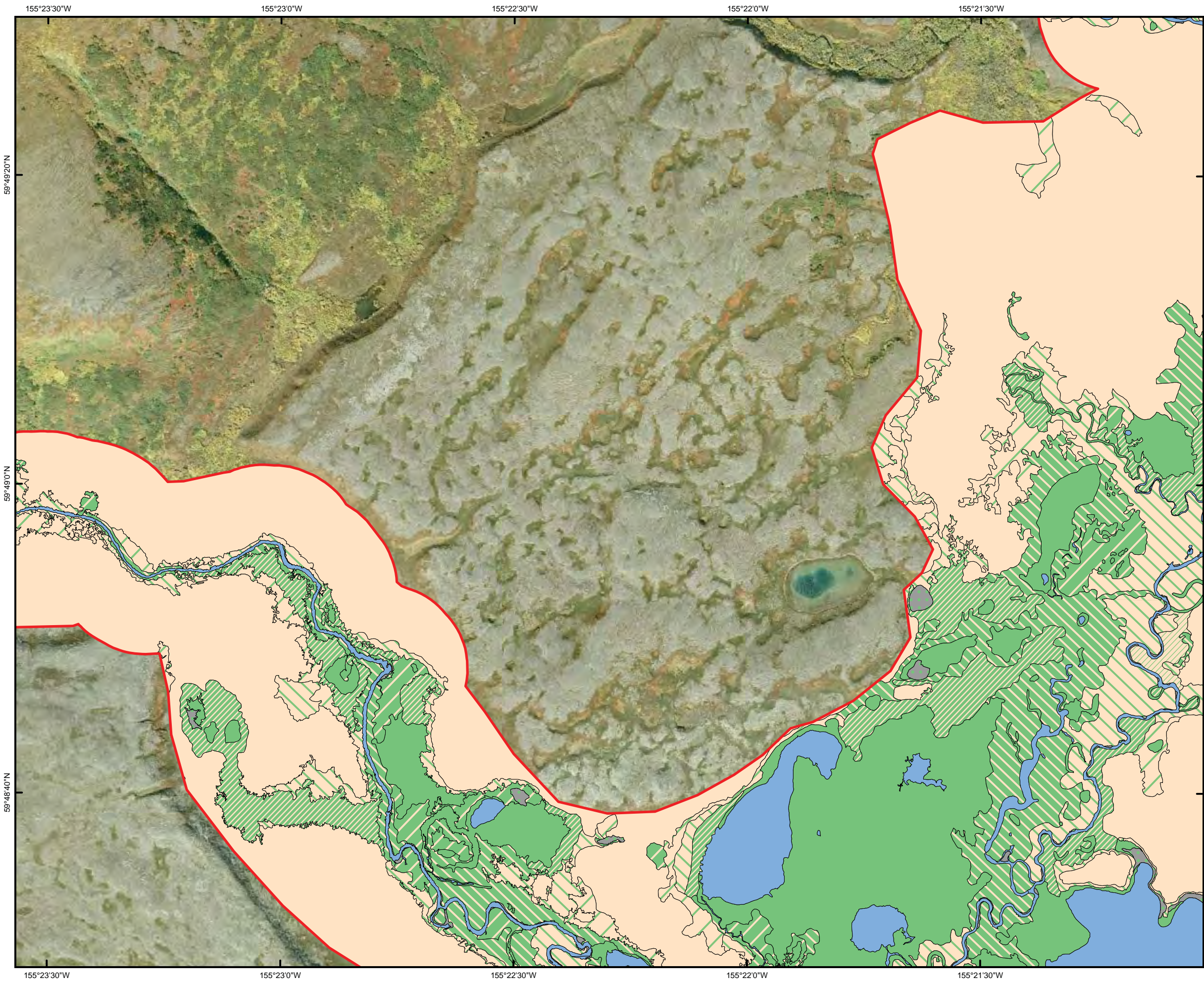
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1-3**  
**Tile 52A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

- Legend**
- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds

0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

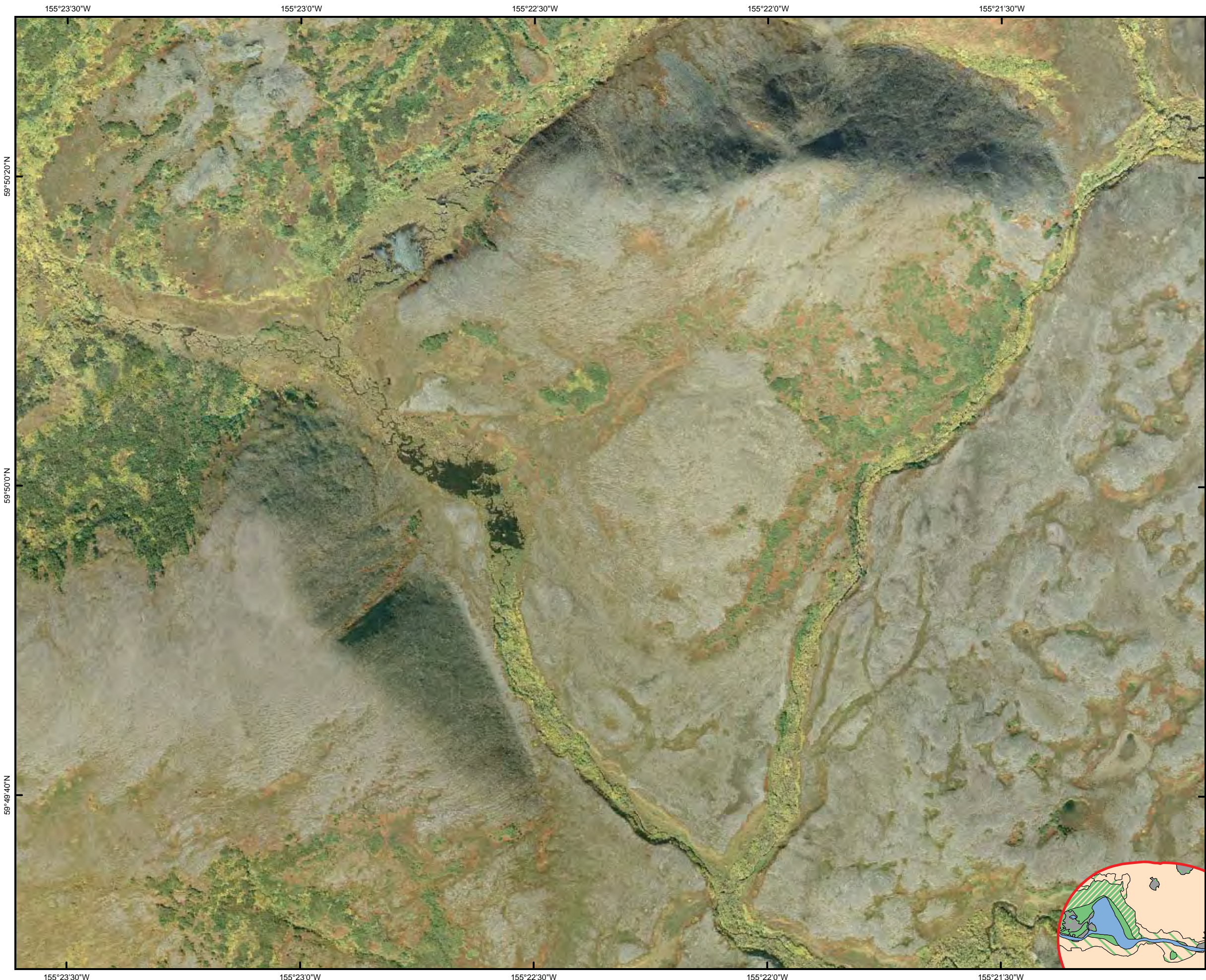
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)

1983 North American Datum

File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

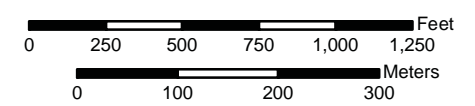
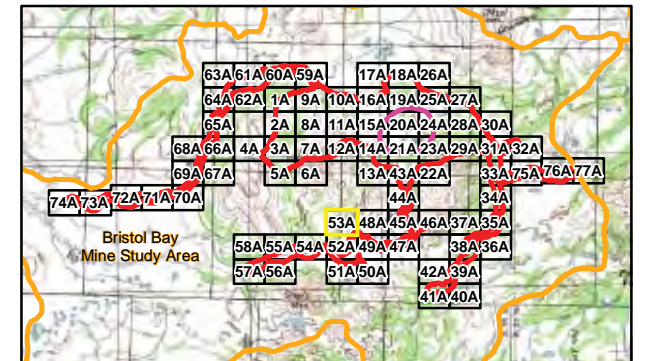




**Figure 14.1-3**  
**Tile 53A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

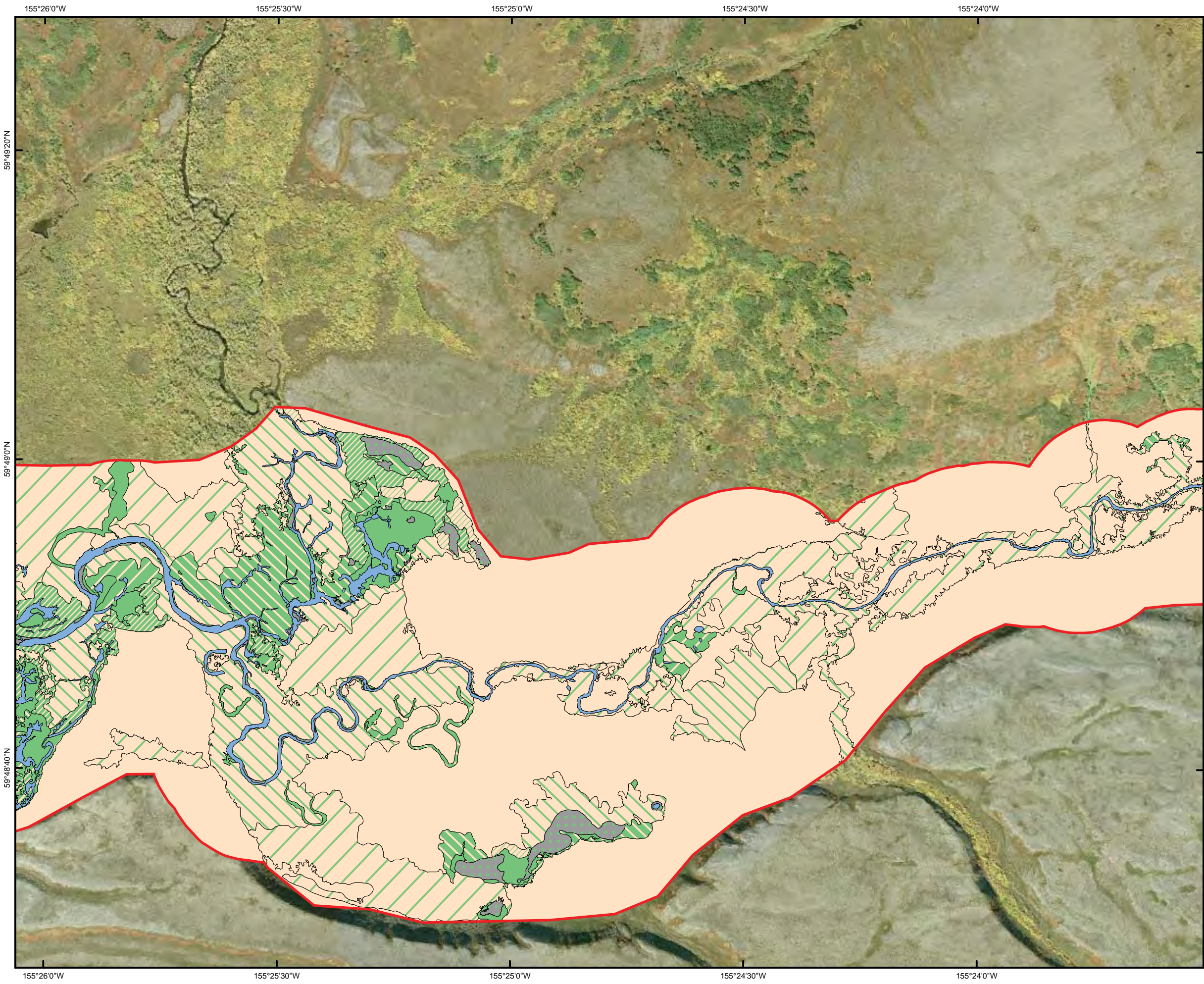
- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

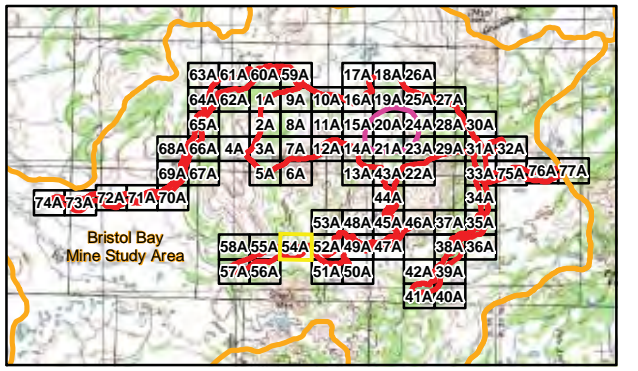




**Figure 14.1-3**  
**Tile 54A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

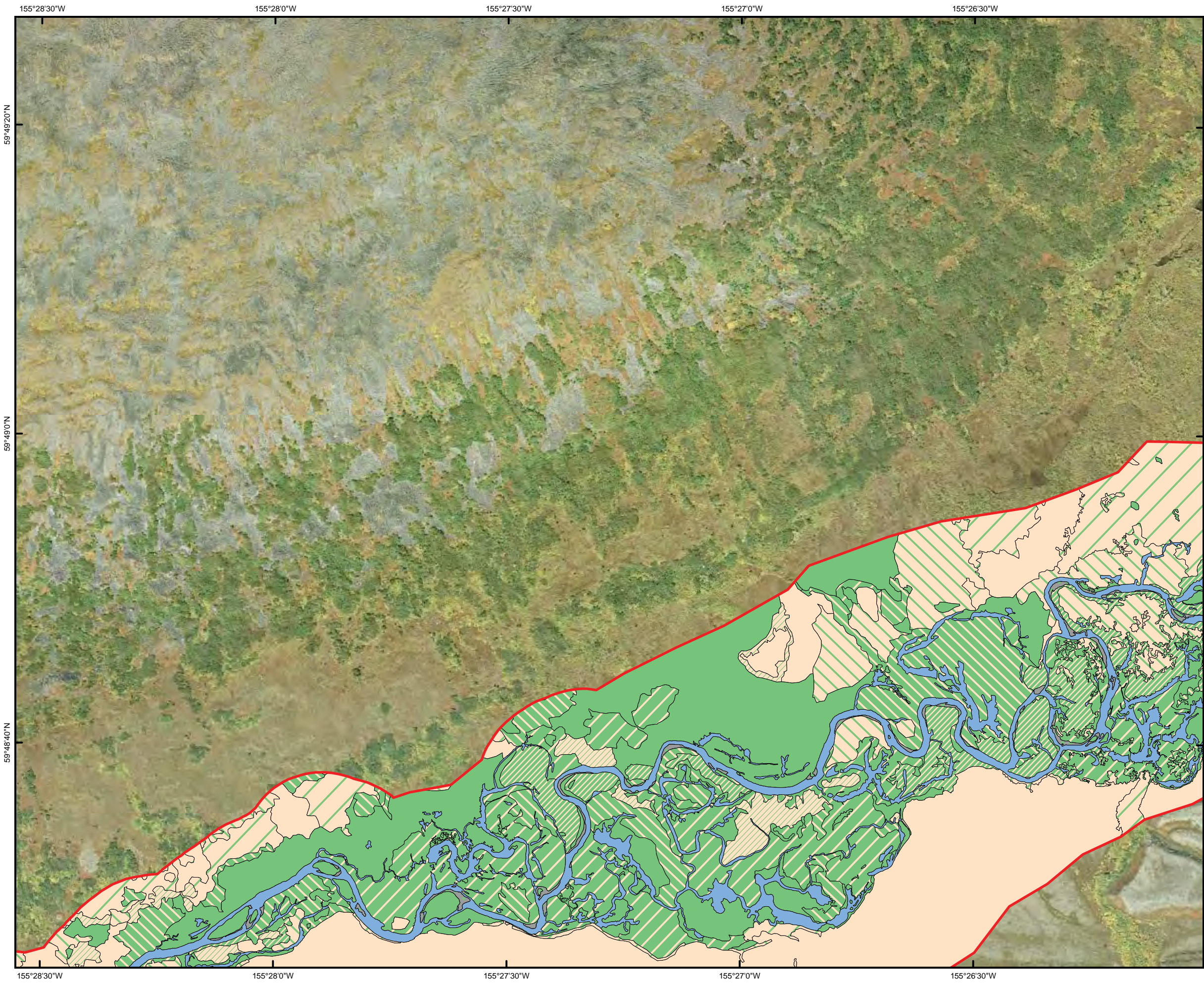


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

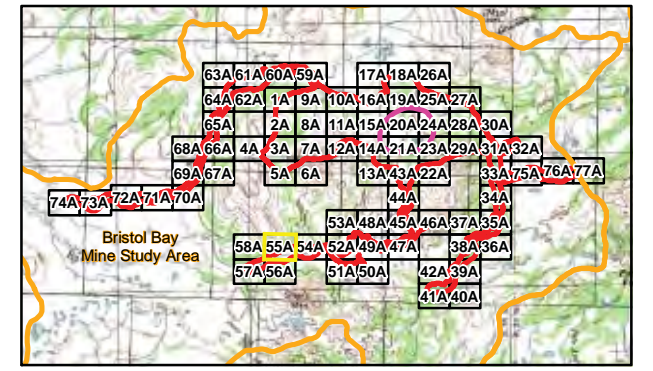




**Figure 14.1-3**  
**Tile 55A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

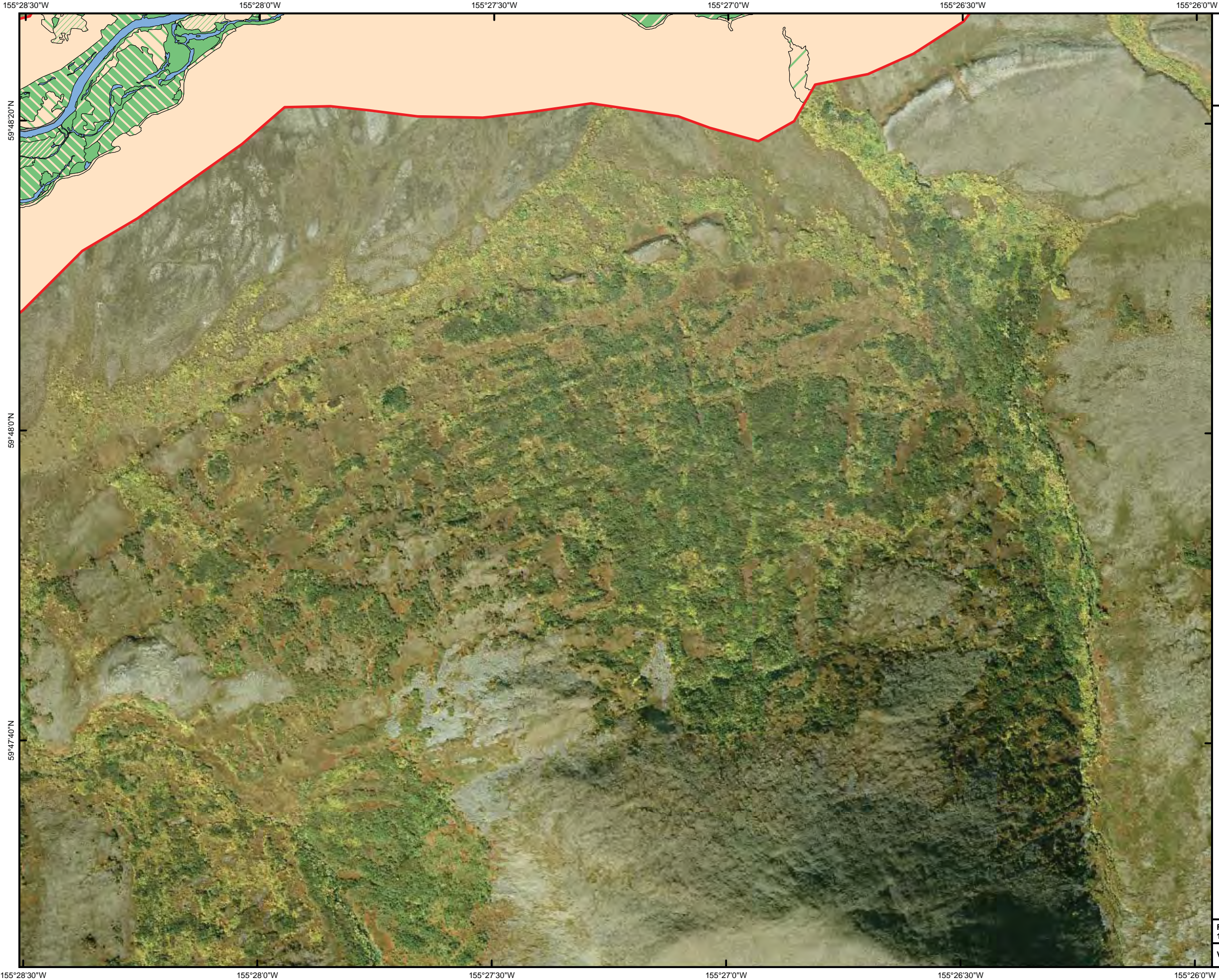


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

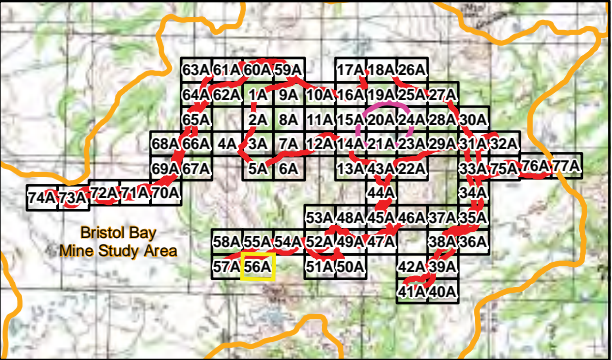




**Figure 14.1-3**  
**Tile 56A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

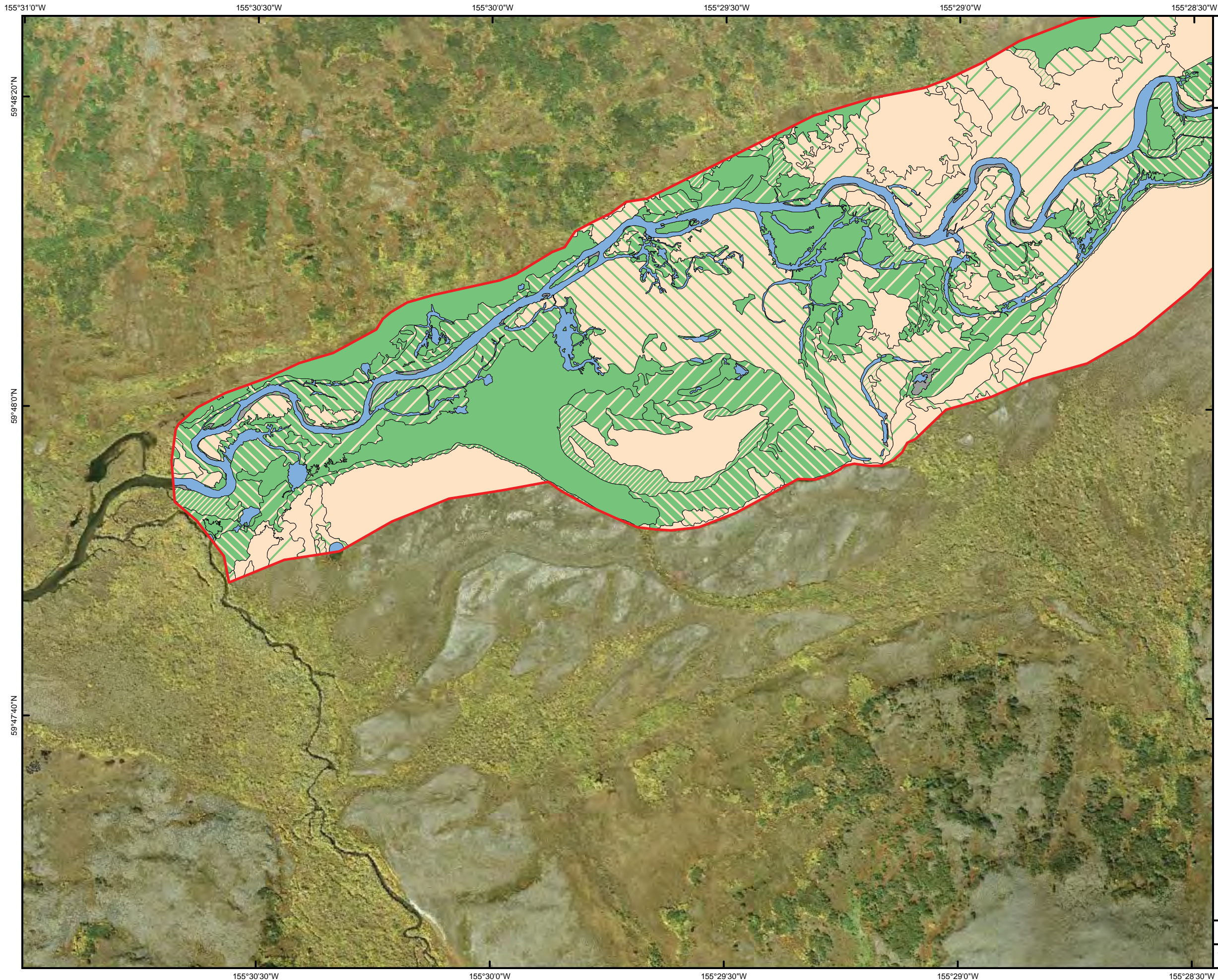
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

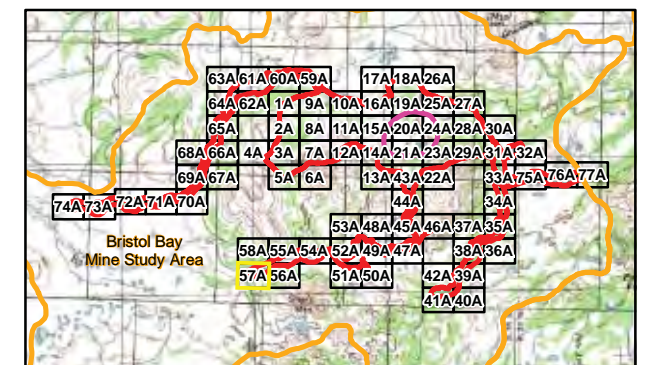




**Figure 14.1-3**  
**Tile 57A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

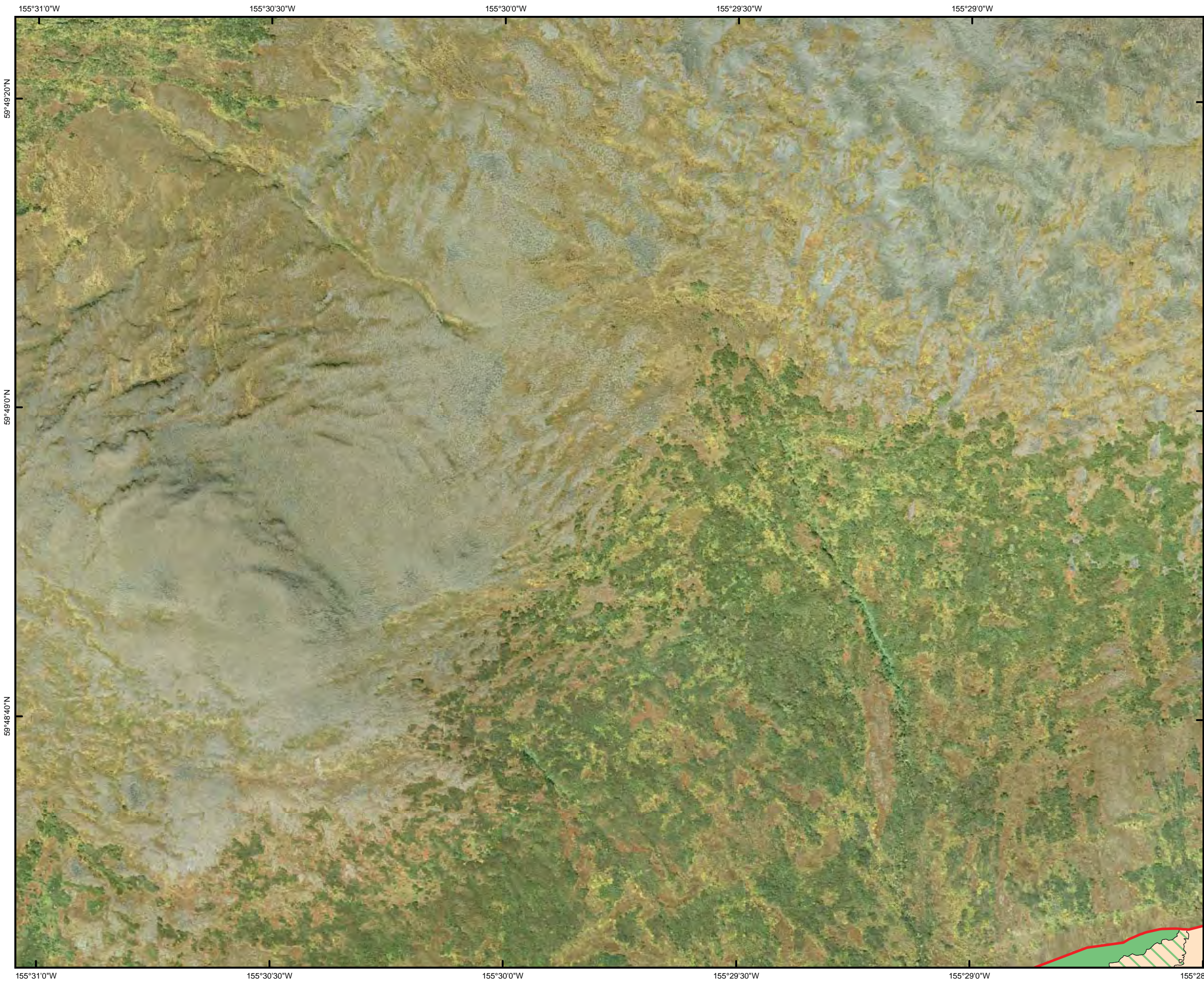
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



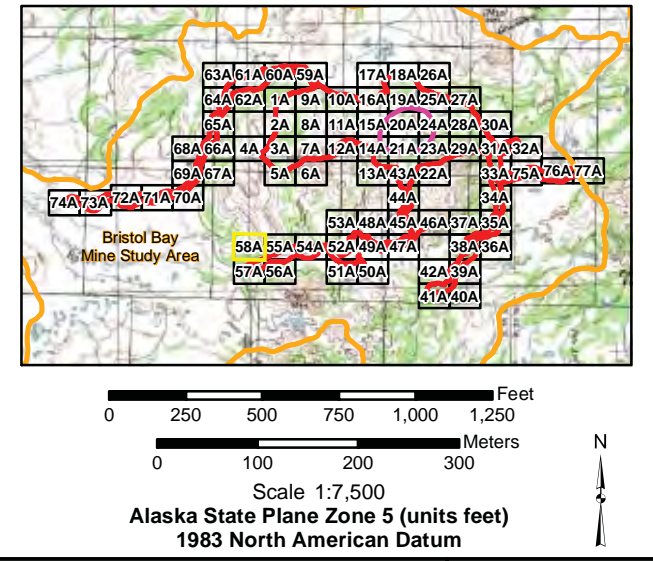
File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





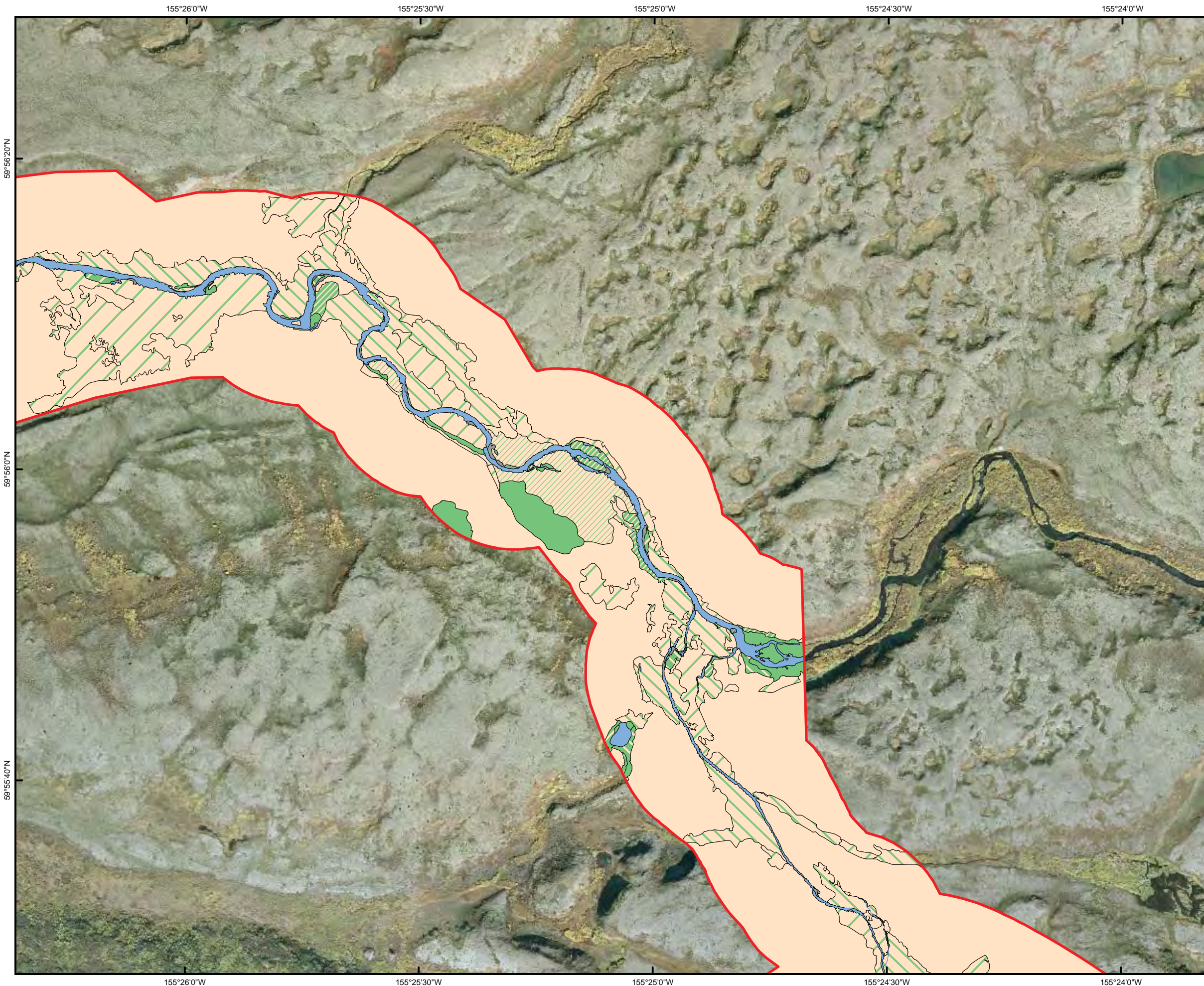
**Figure 14.1-3**  
**Tile 58A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

- Legend**
- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

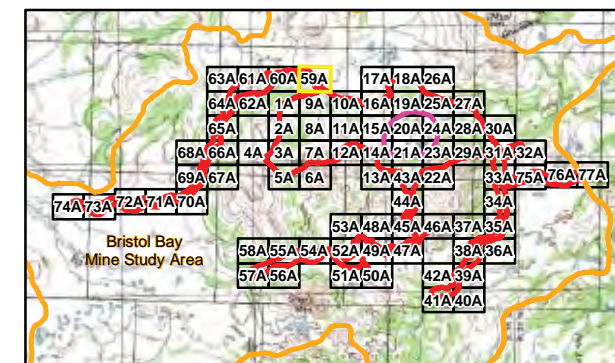




**Figure 14.1-3**  
**Tile 59A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

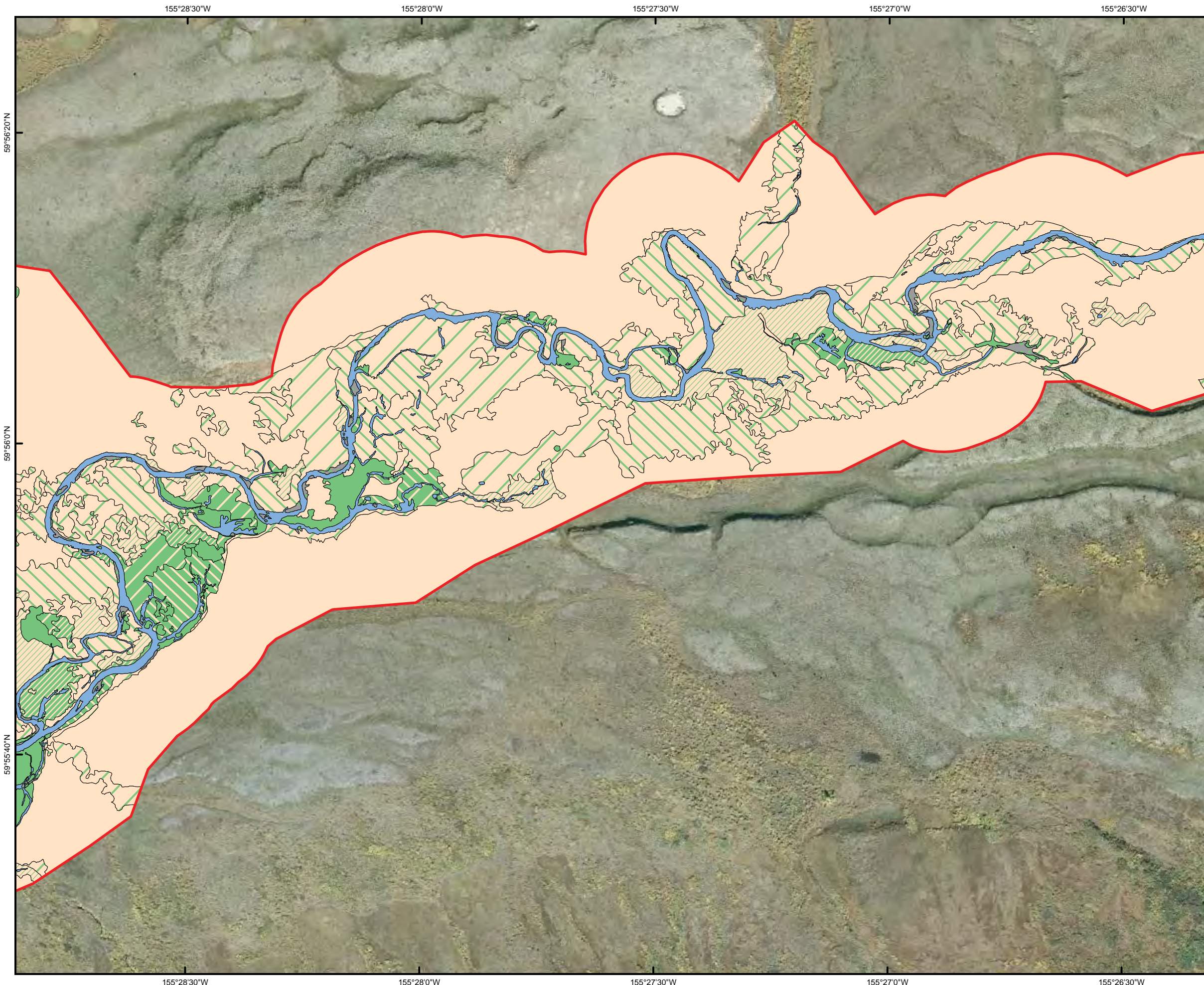


0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

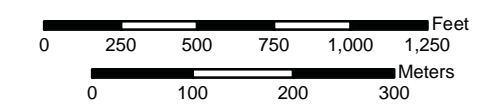
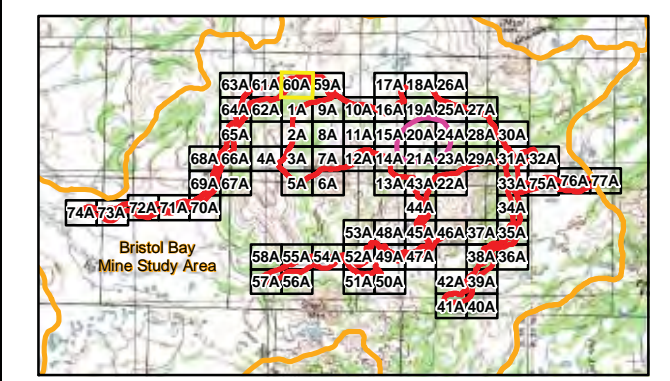




**Figure 14.1-3**  
**Tile 60A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds

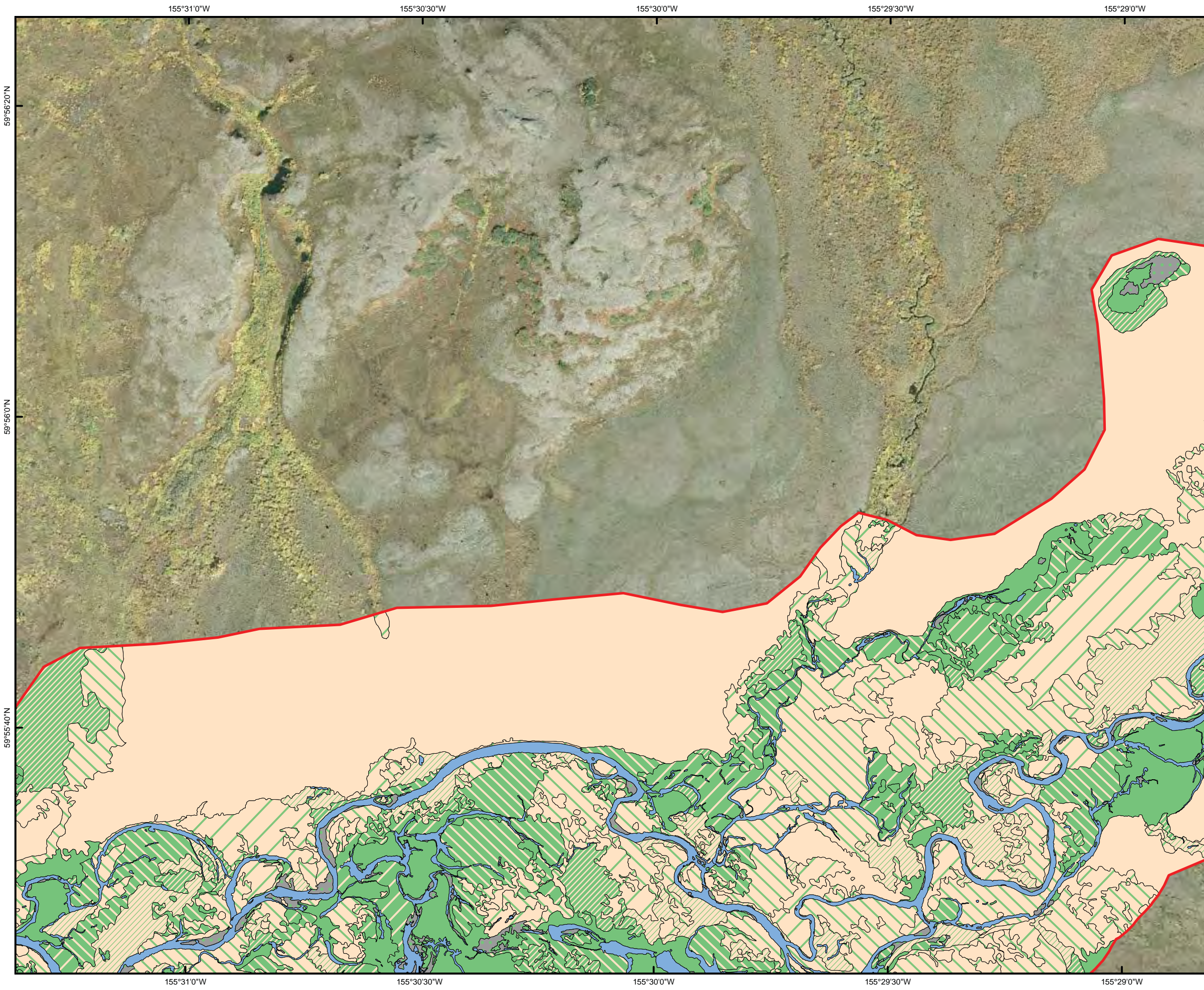


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

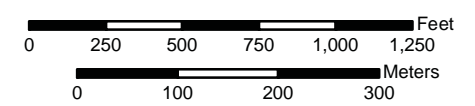
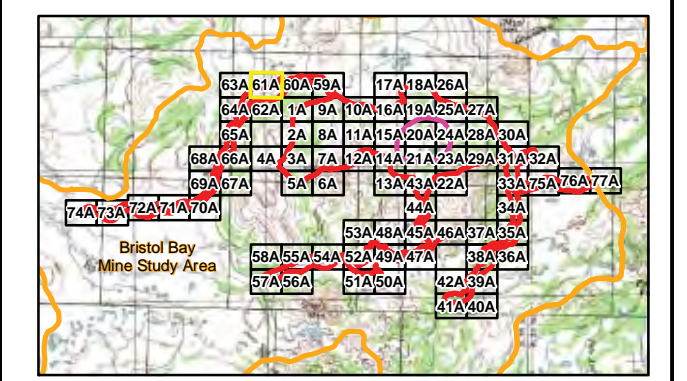




**Figure 14.1-3**  
**Tile 61A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

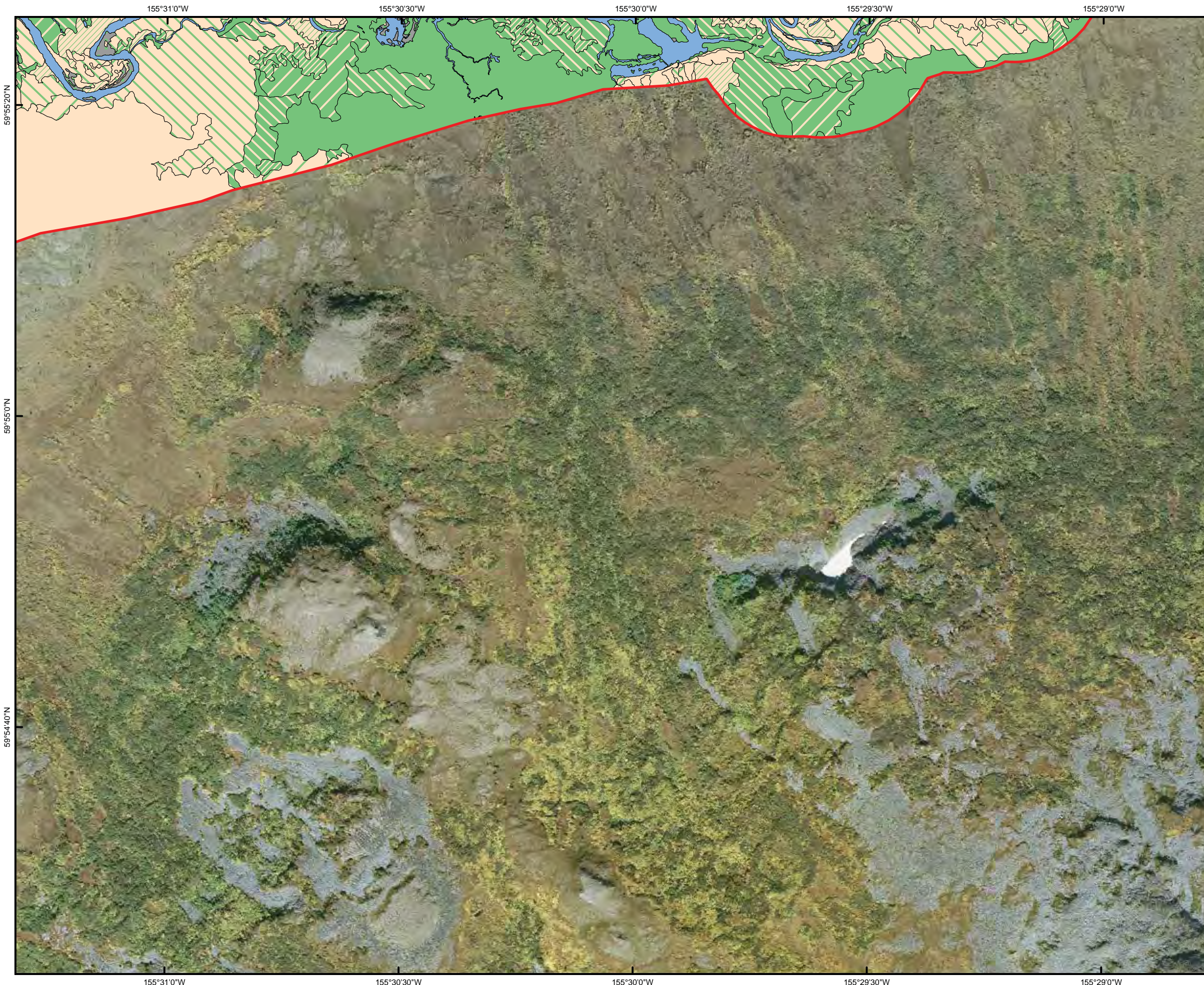
-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

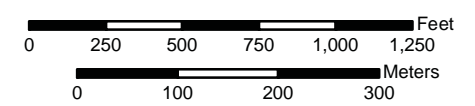
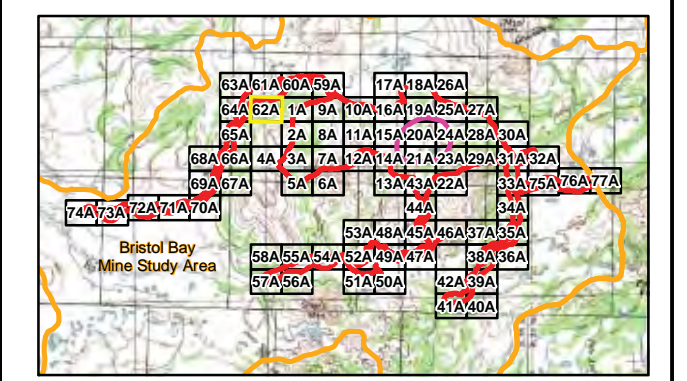




**Figure 14.1-3**  
**Tile 62A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

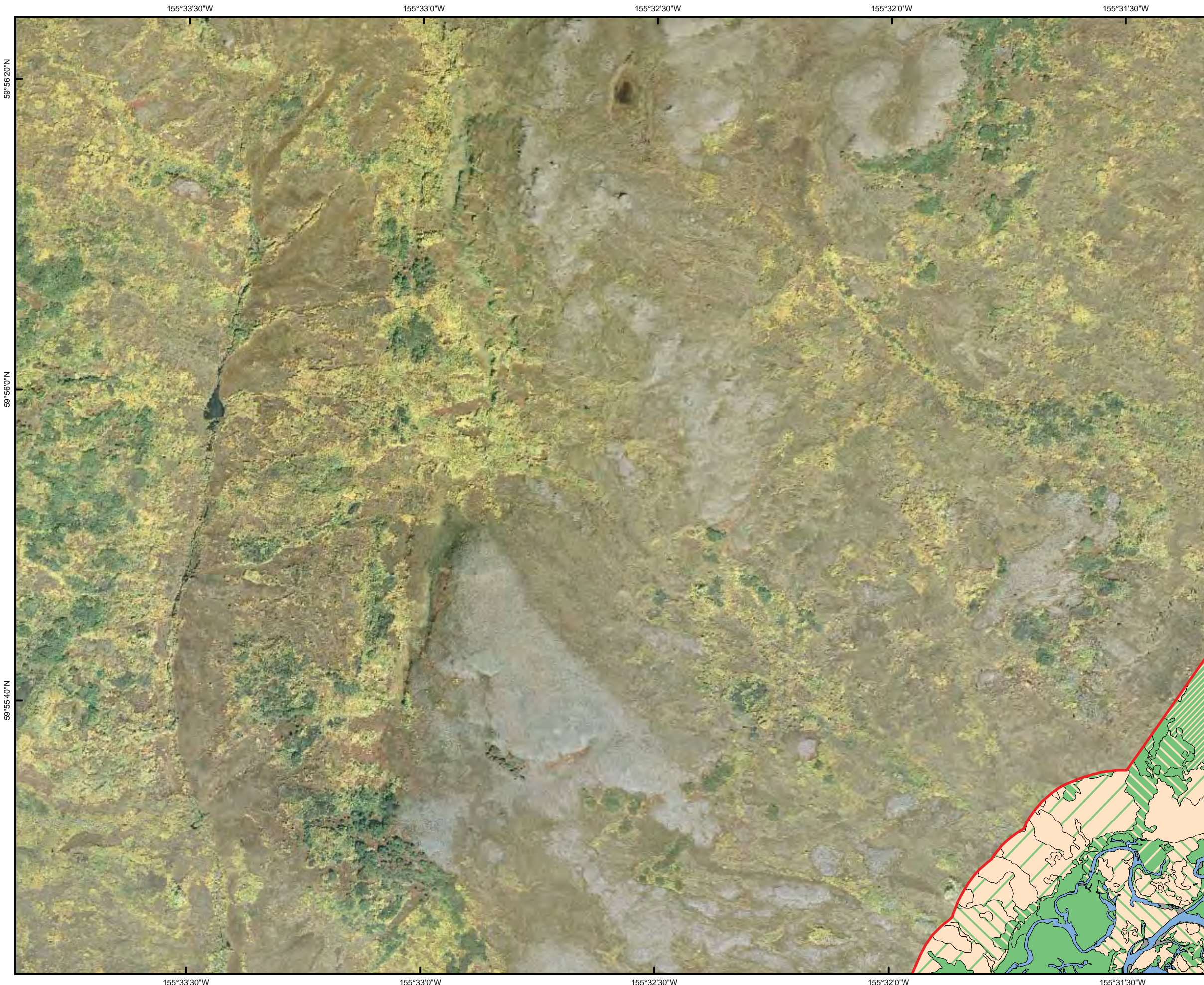


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

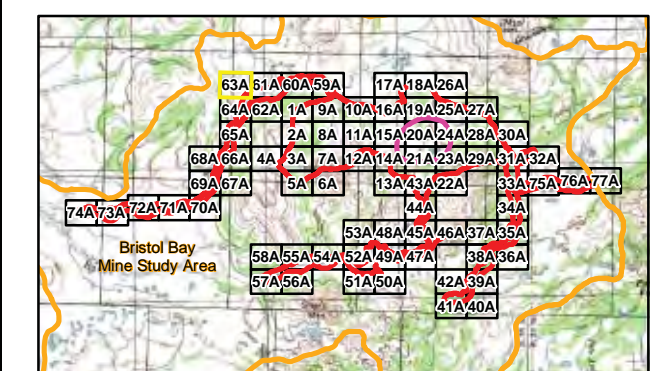




**Figure 14.1-3**  
**Tile 63A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

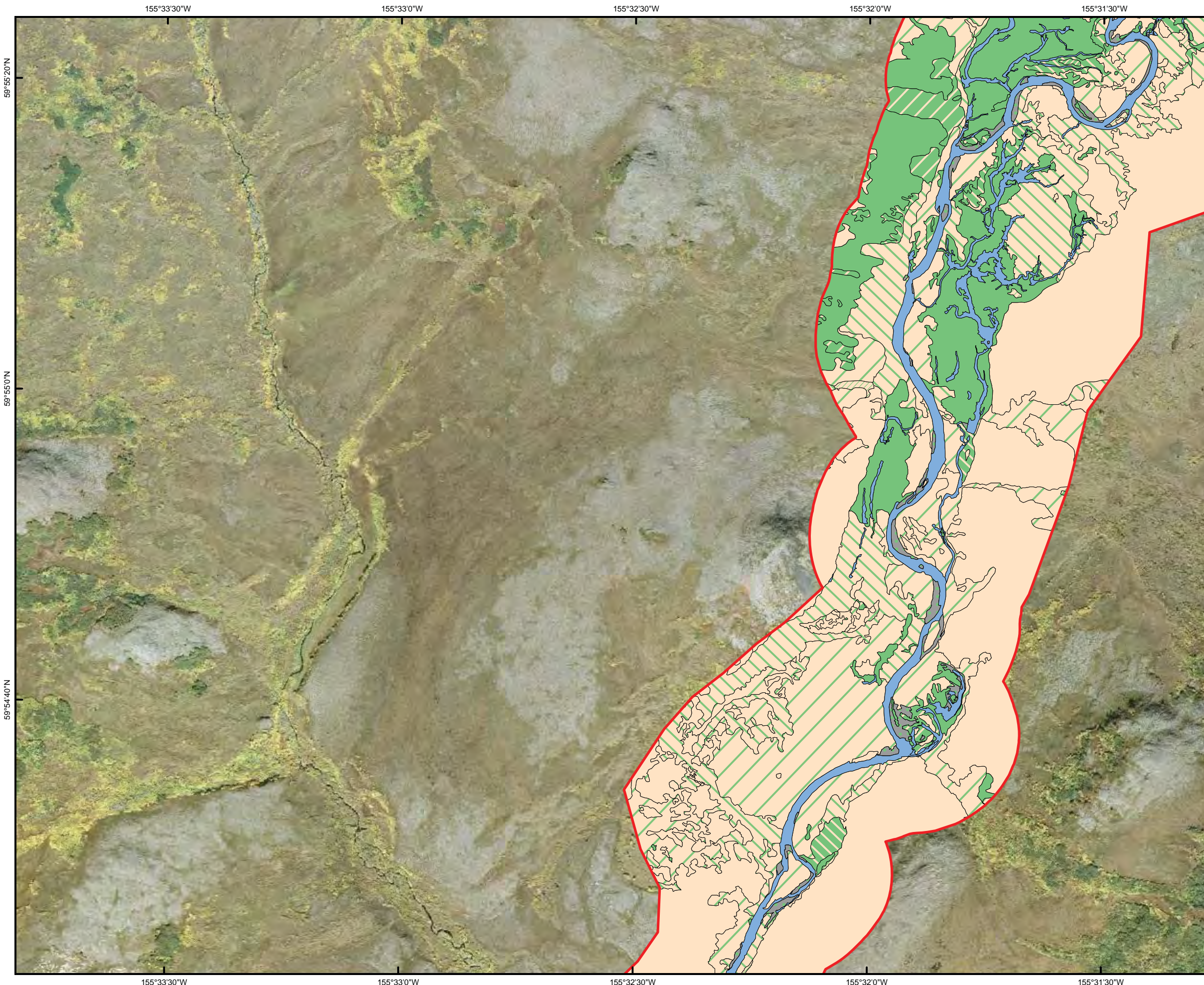


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



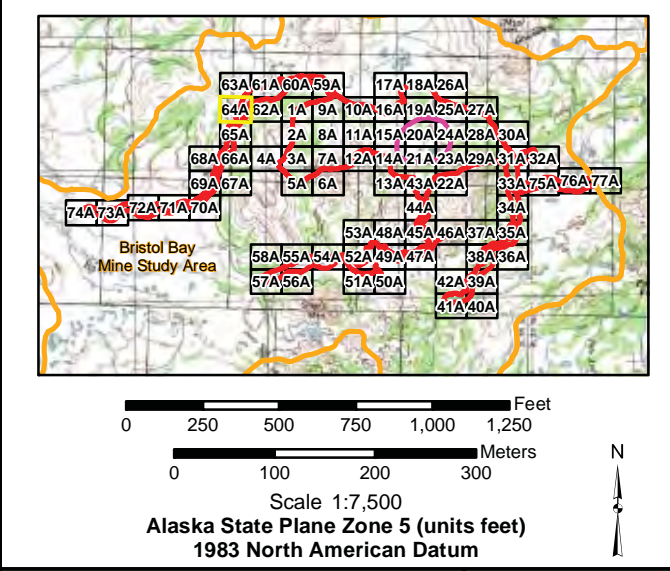
File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



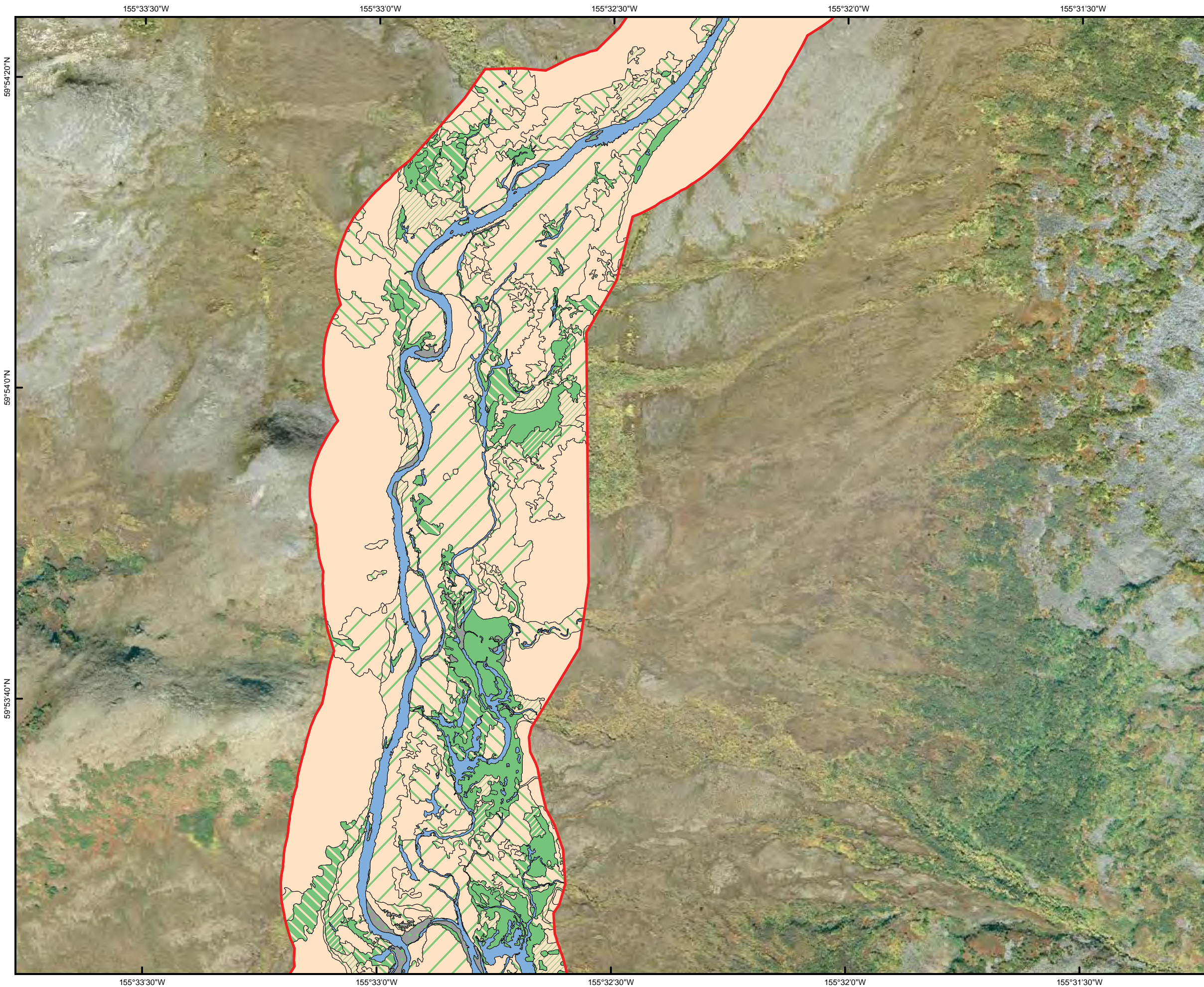


**Figure 14.1-3**  
**Tile 64A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

- Legend**
- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds
















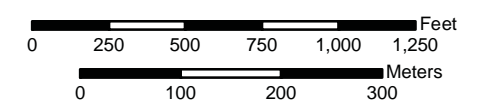
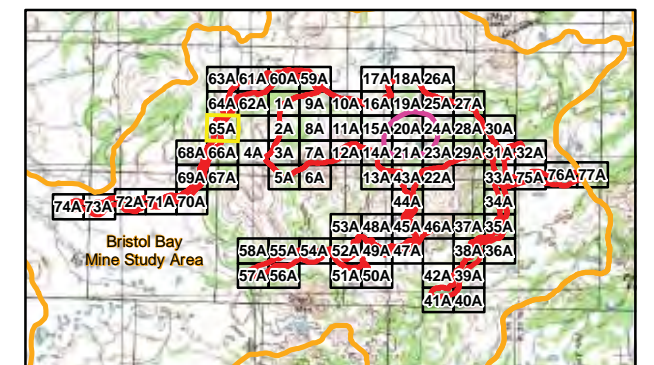




**Figure 14.1-3**  
**Tile 65A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

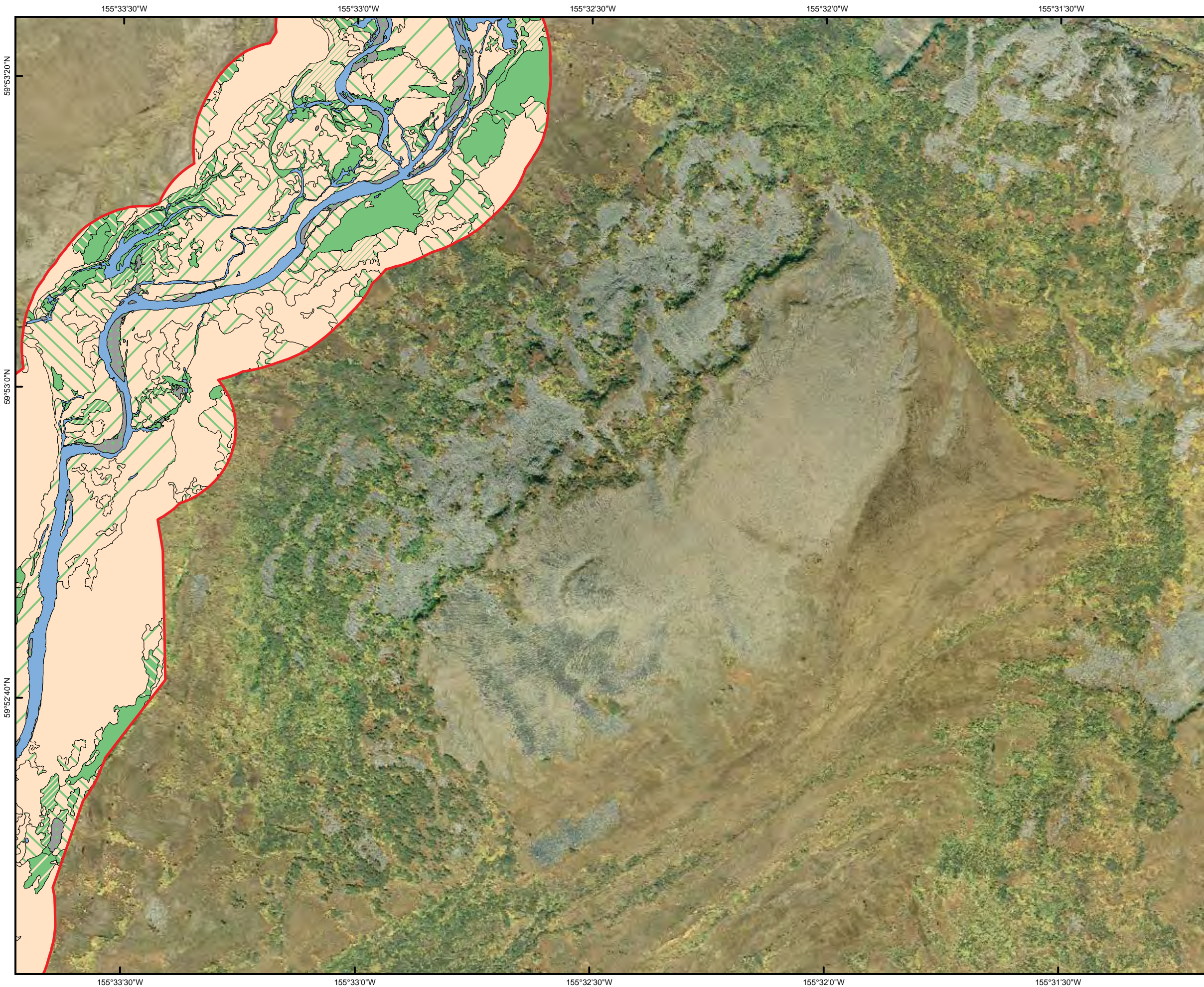


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





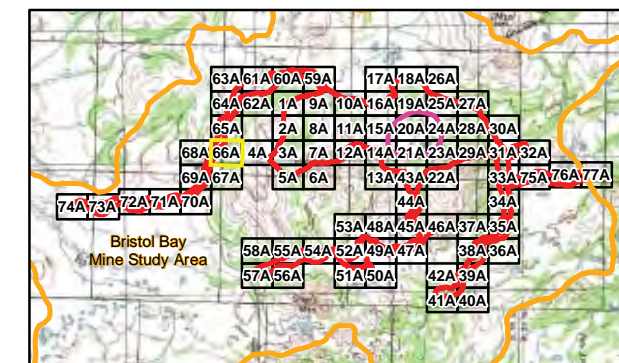
**Figure 14.1-3**  
**Tile 66A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location

**Wetlands Mapping Classification**

- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



0 250 500 750 1,000 1,250 Feet

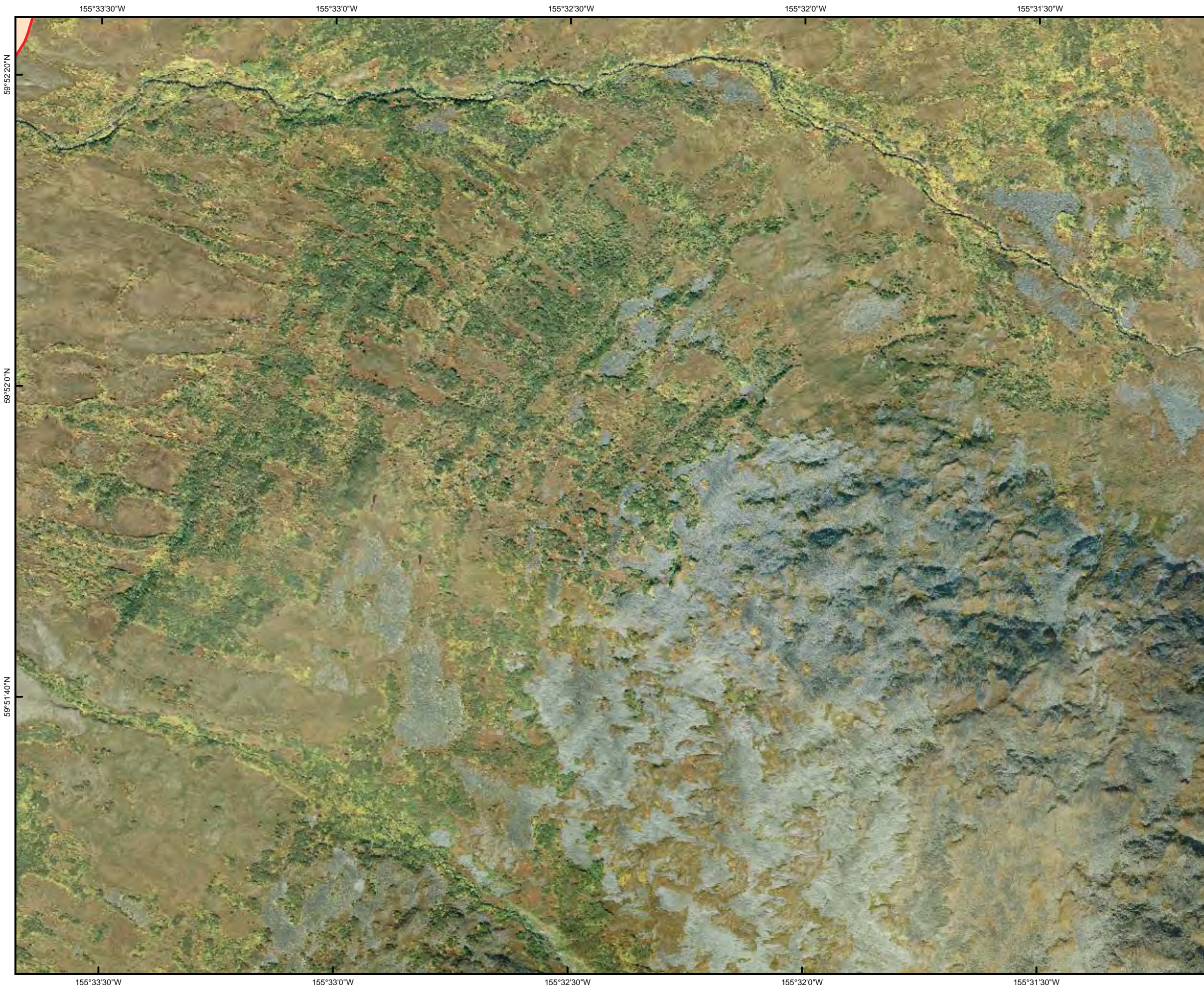
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

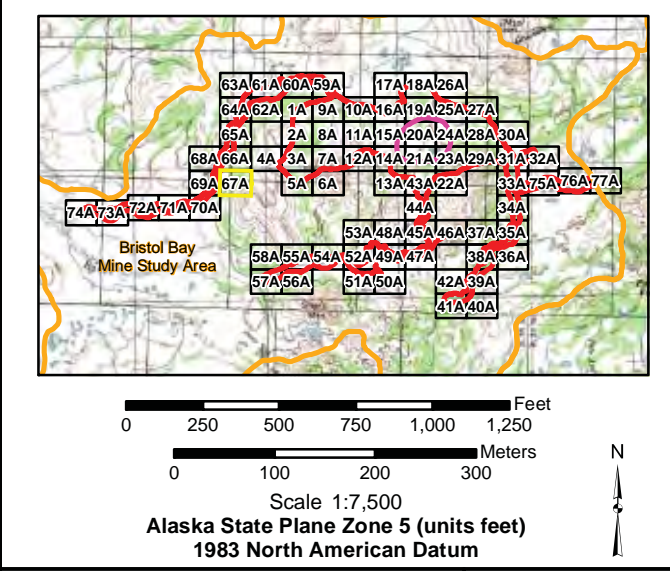




**Figure 14.1-3**  
**Tile 67A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

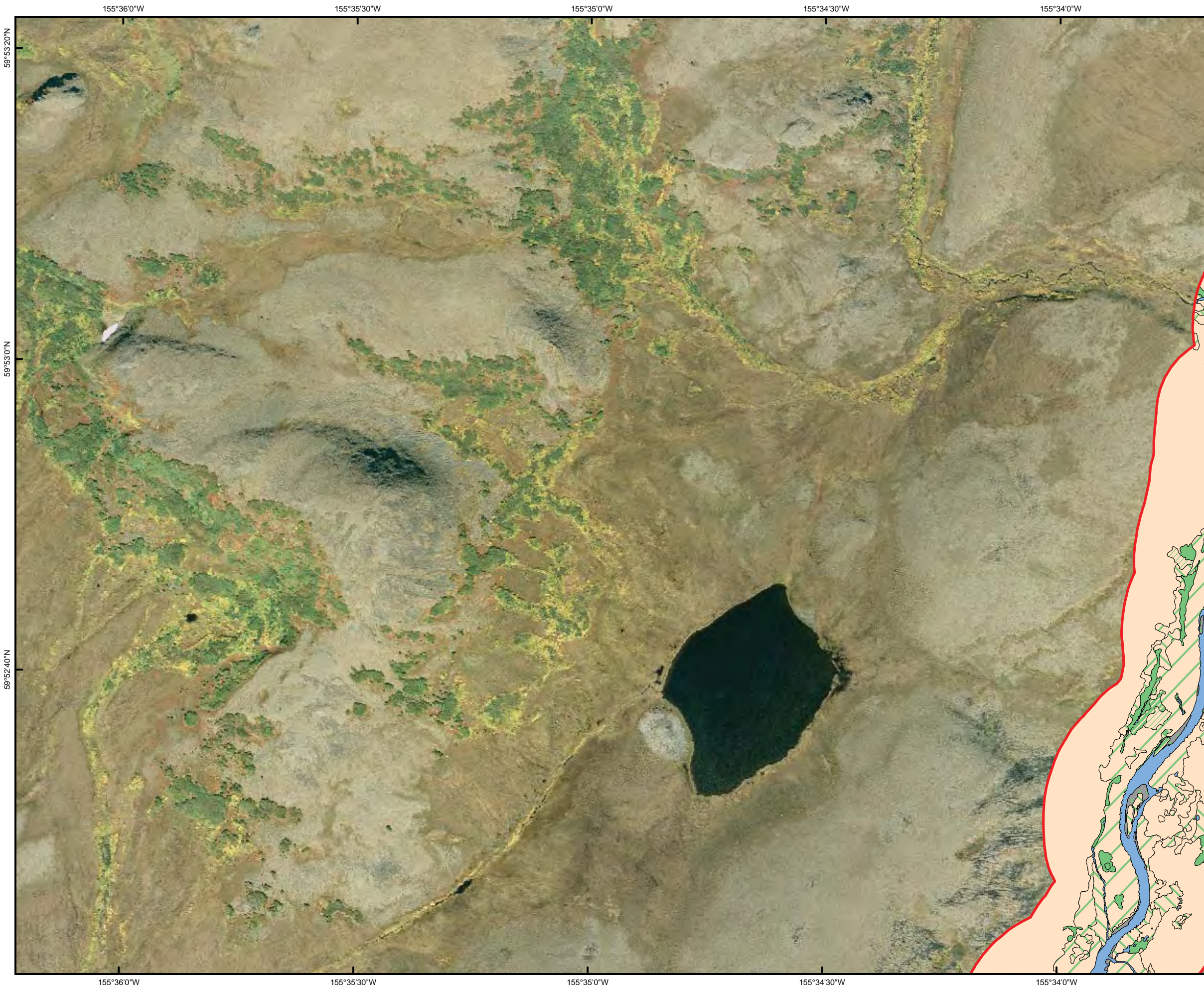
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

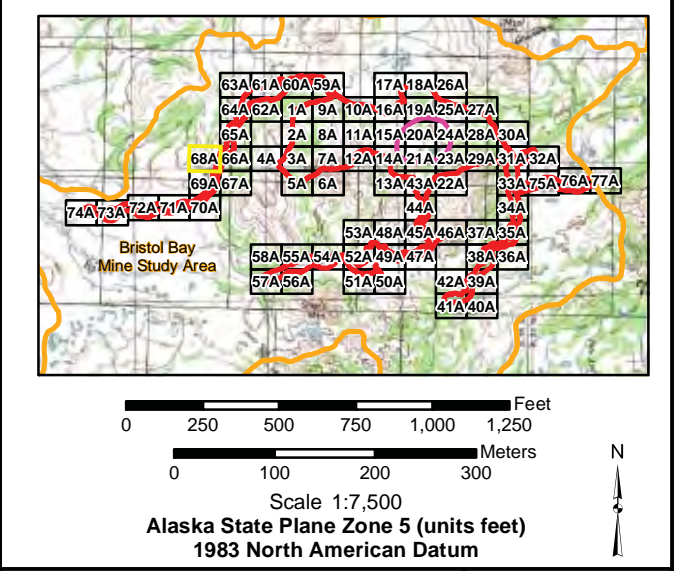




**Figure 14.1-3**  
**Tile 68A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

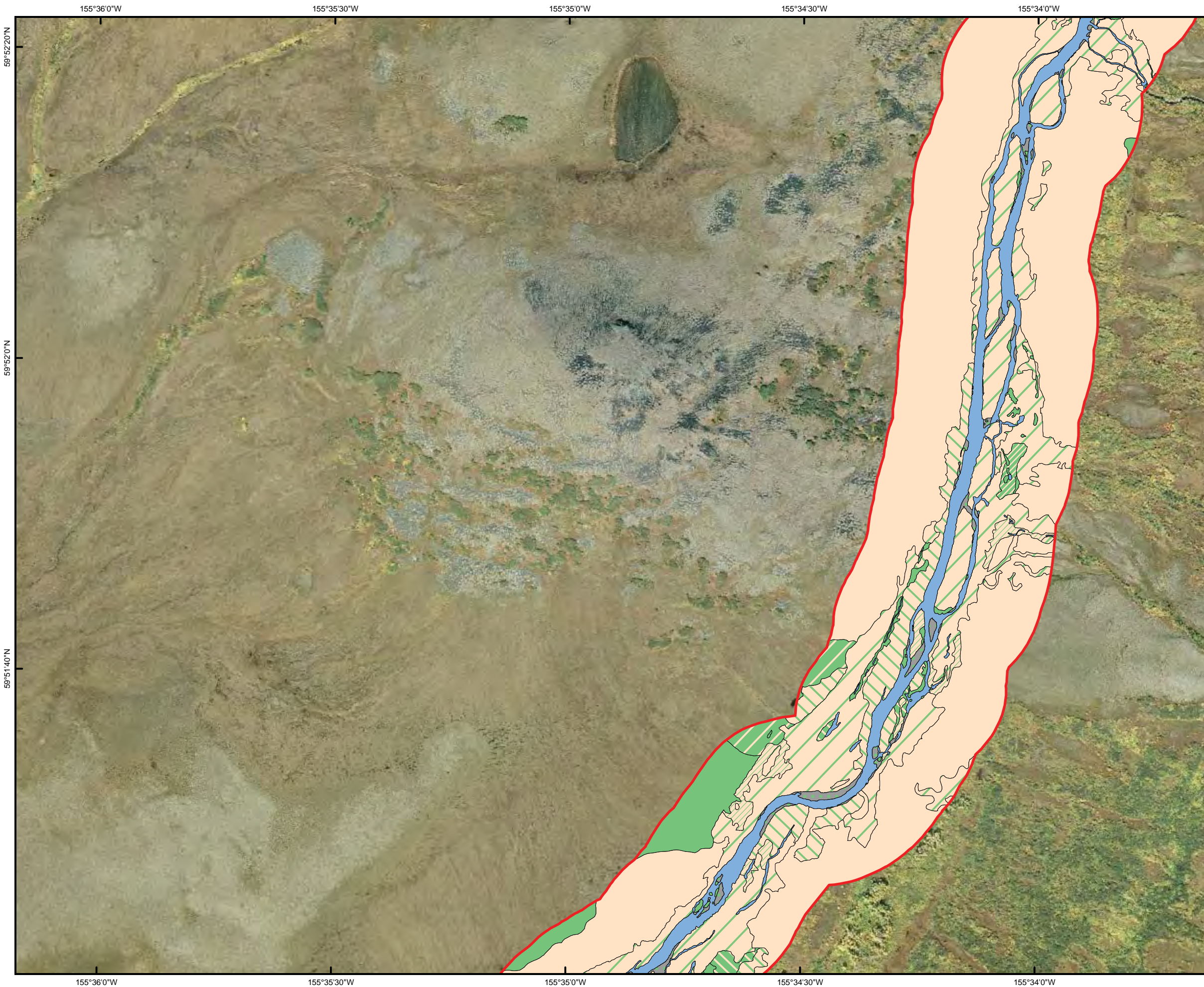
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

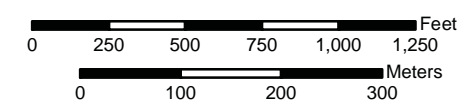
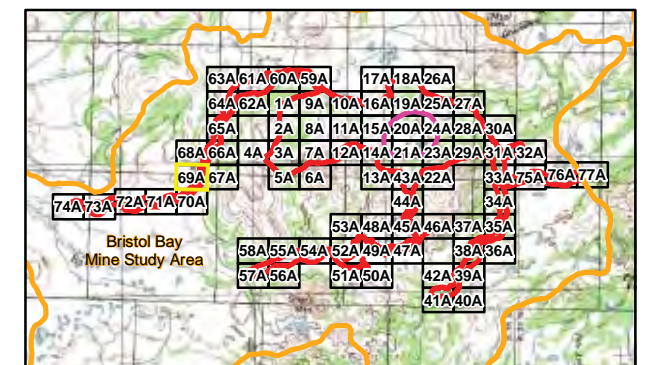




**Figure 14.1-3**  
**Tile 69A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

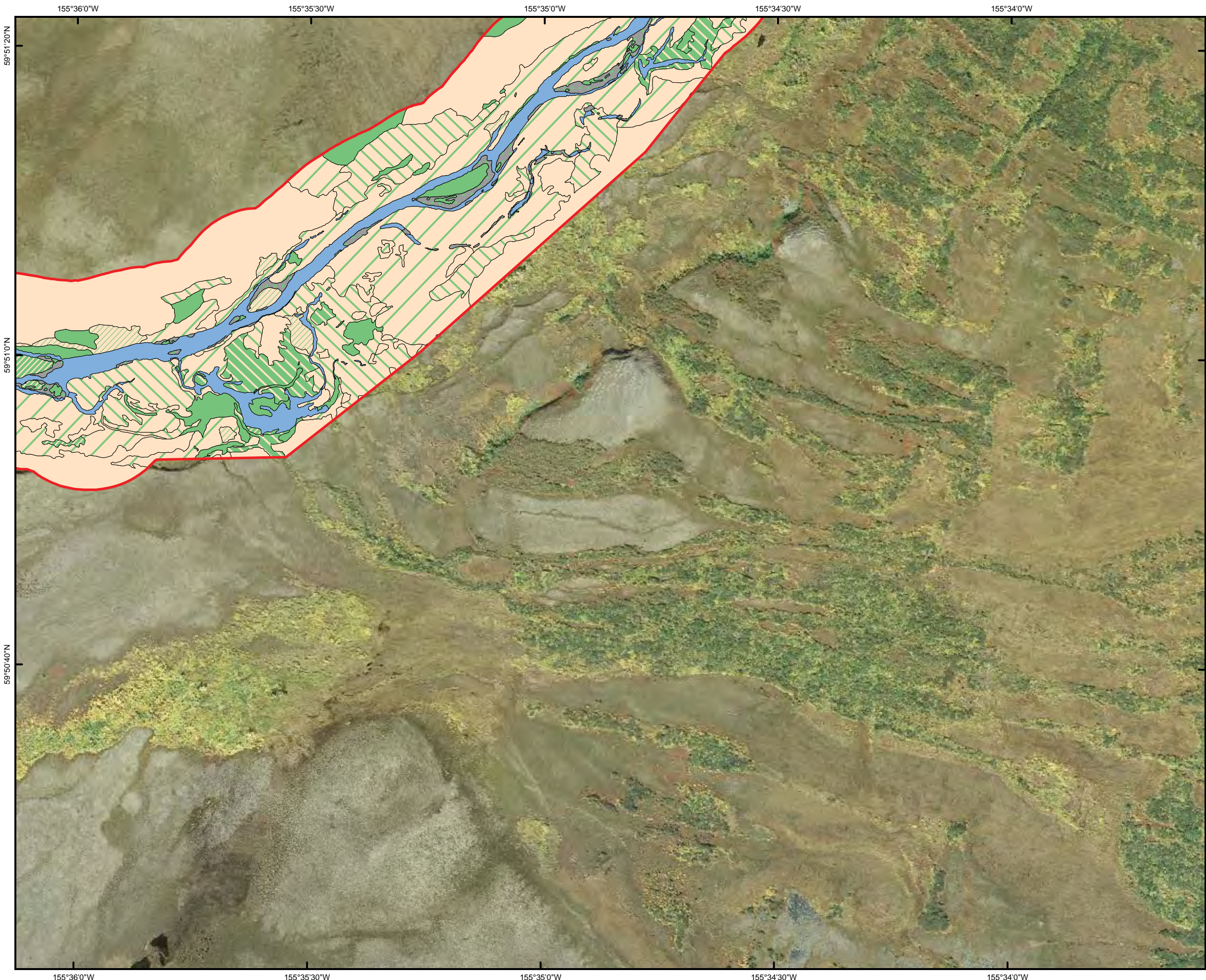
-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

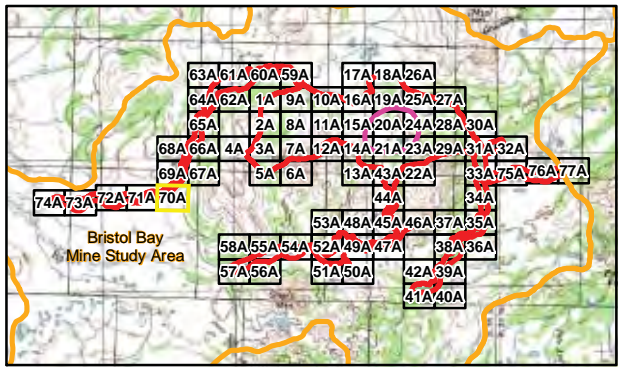




**Figure 14.1-3**  
**Tile 70A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

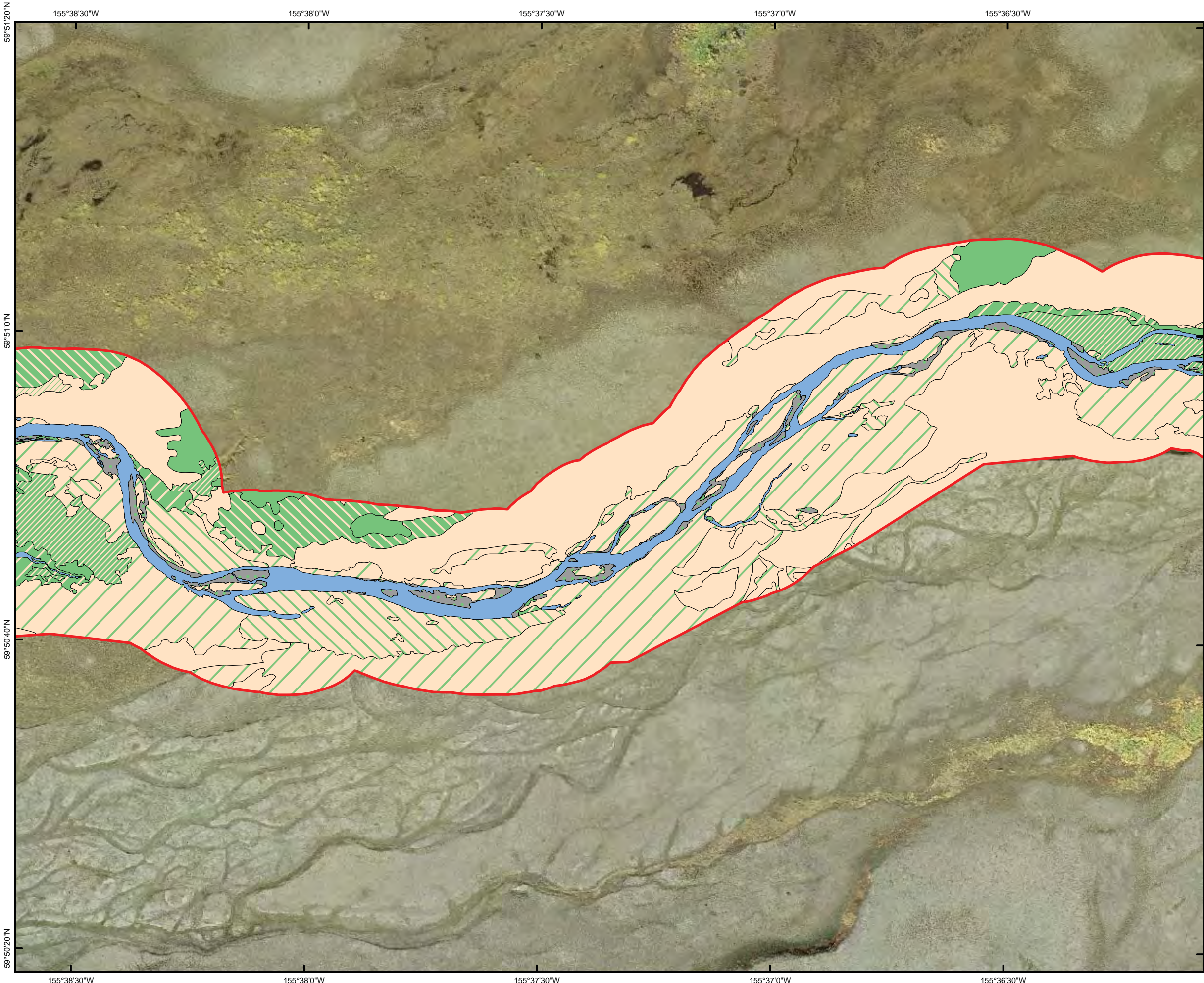


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

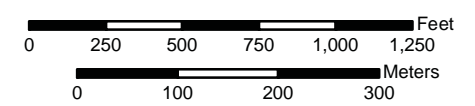
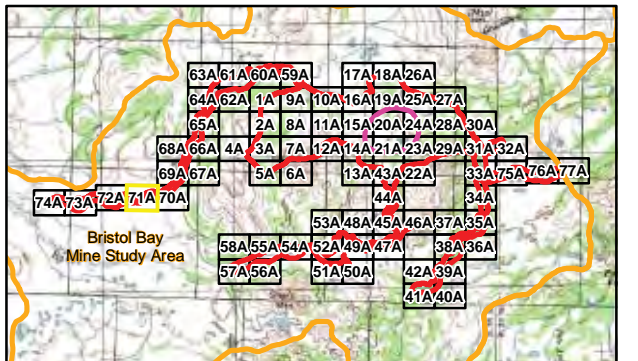




**Figure 14.1-3**  
**Tile 71A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

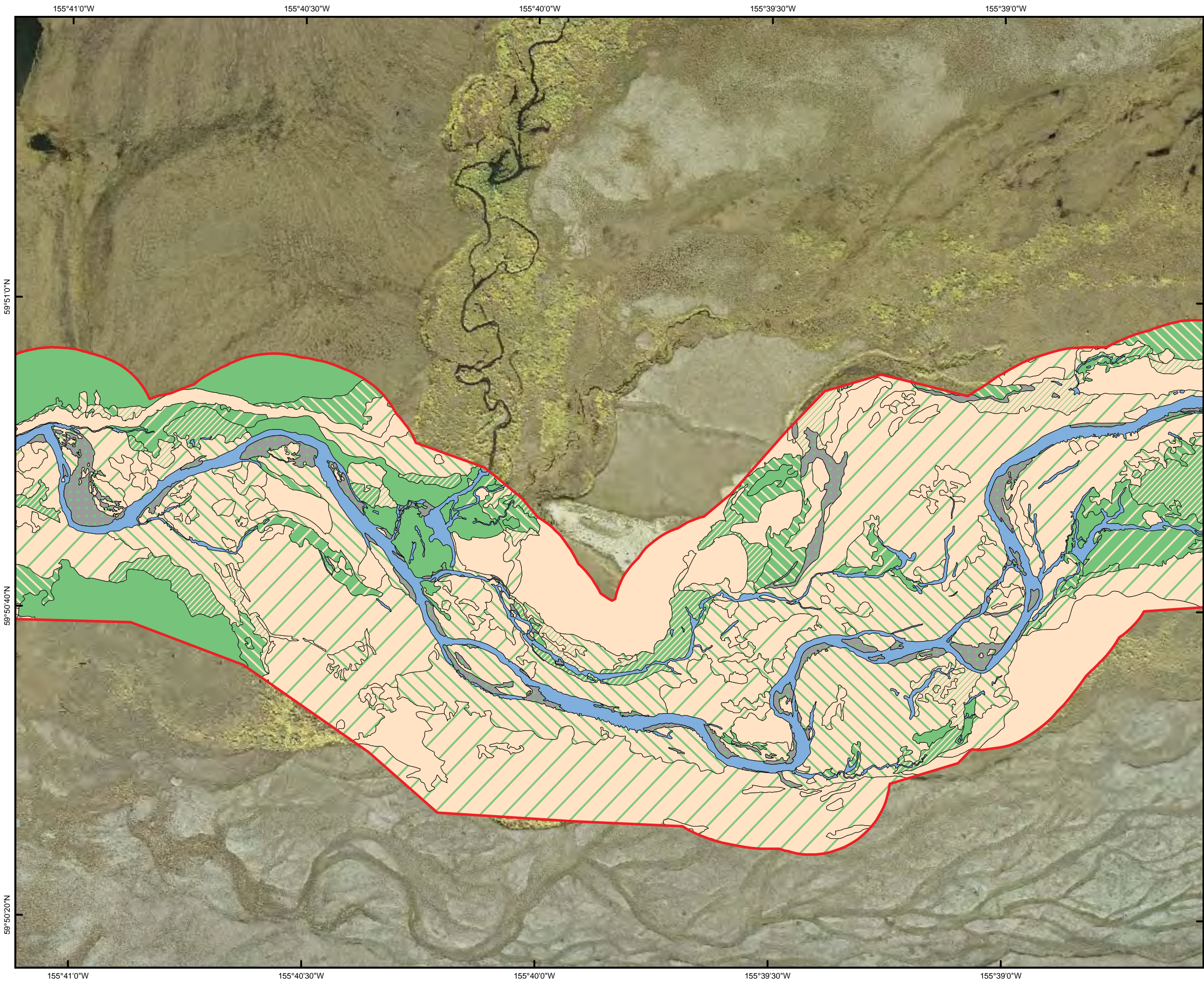


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

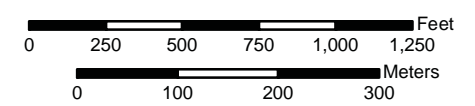
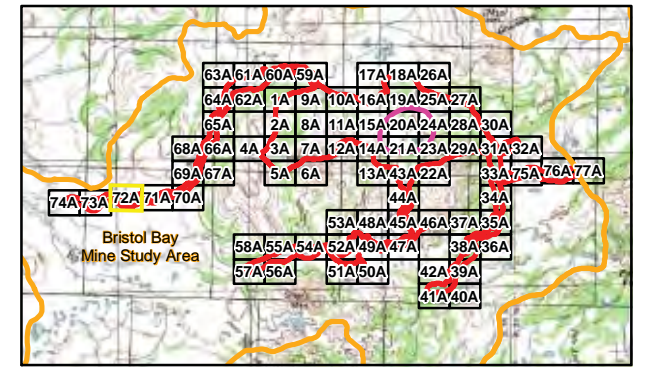




**Figure 14.1-3**  
**Tile 72A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

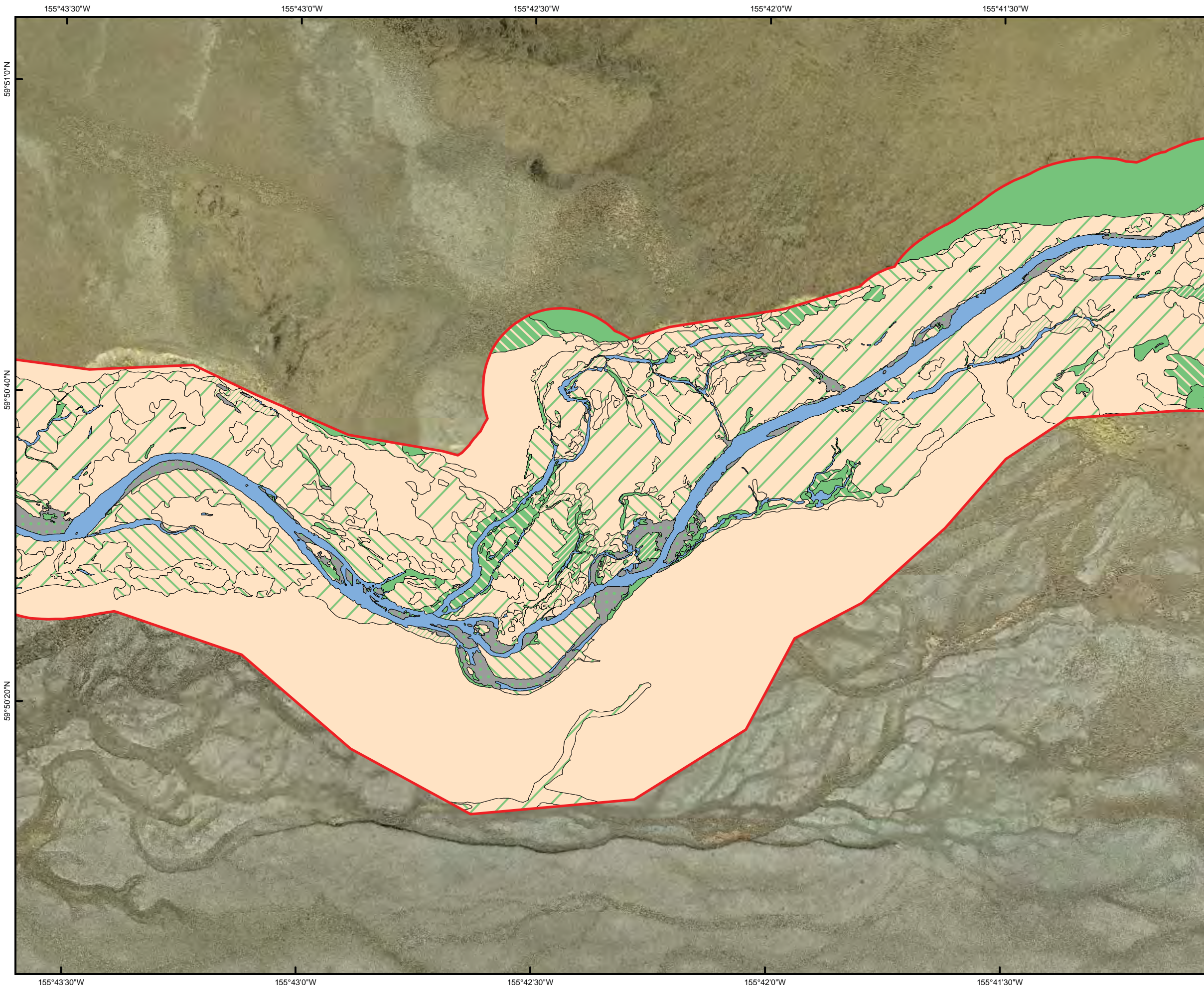
- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum














File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

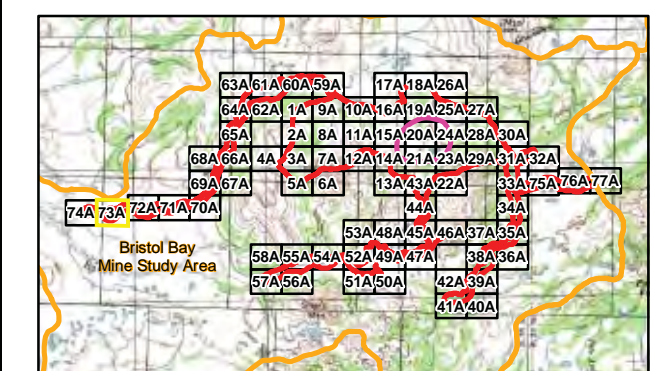




**Figure 14.1-3**  
**Tile 73A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

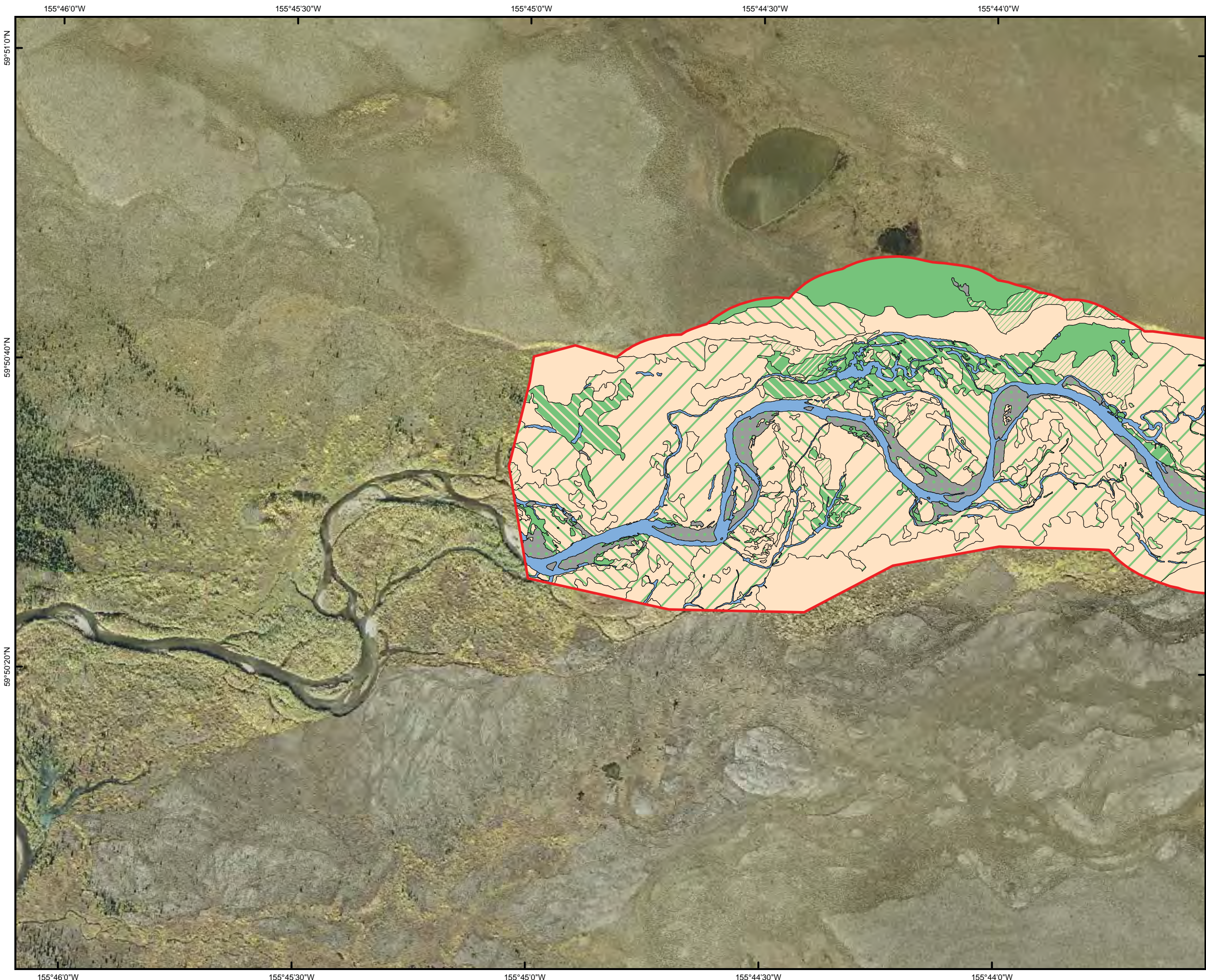


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

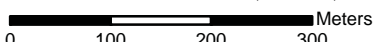
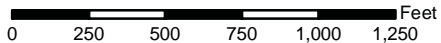
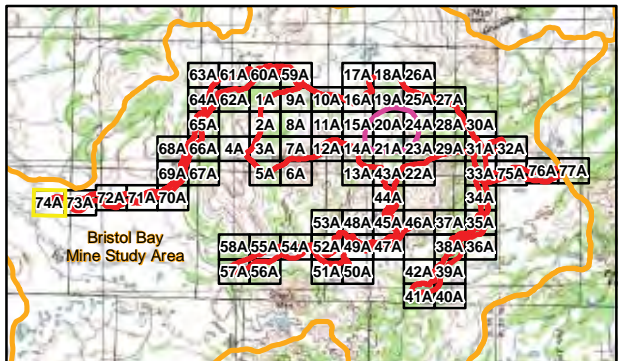




**Figure 14.1-3**  
**Tile 74A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500

Alaska State Plane Zone 5 (units feet)

1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

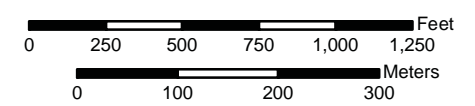
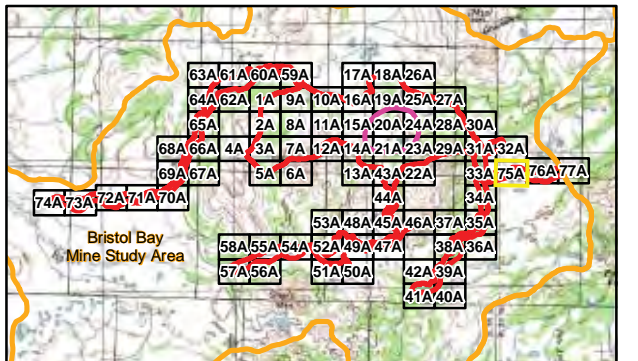




**Figure 14.1-3**  
**Tile 75A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

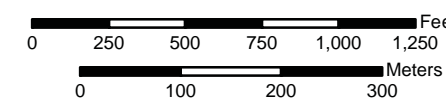
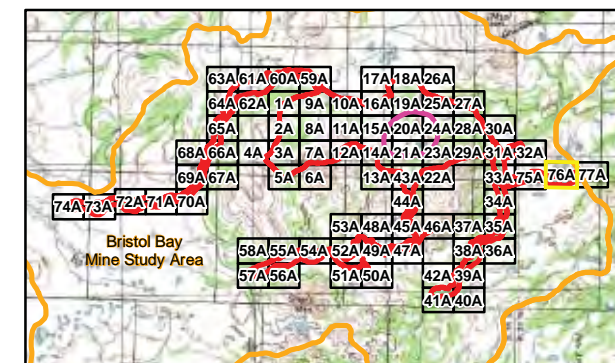




**Figure 14.1-3**  
**Tile 76A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds

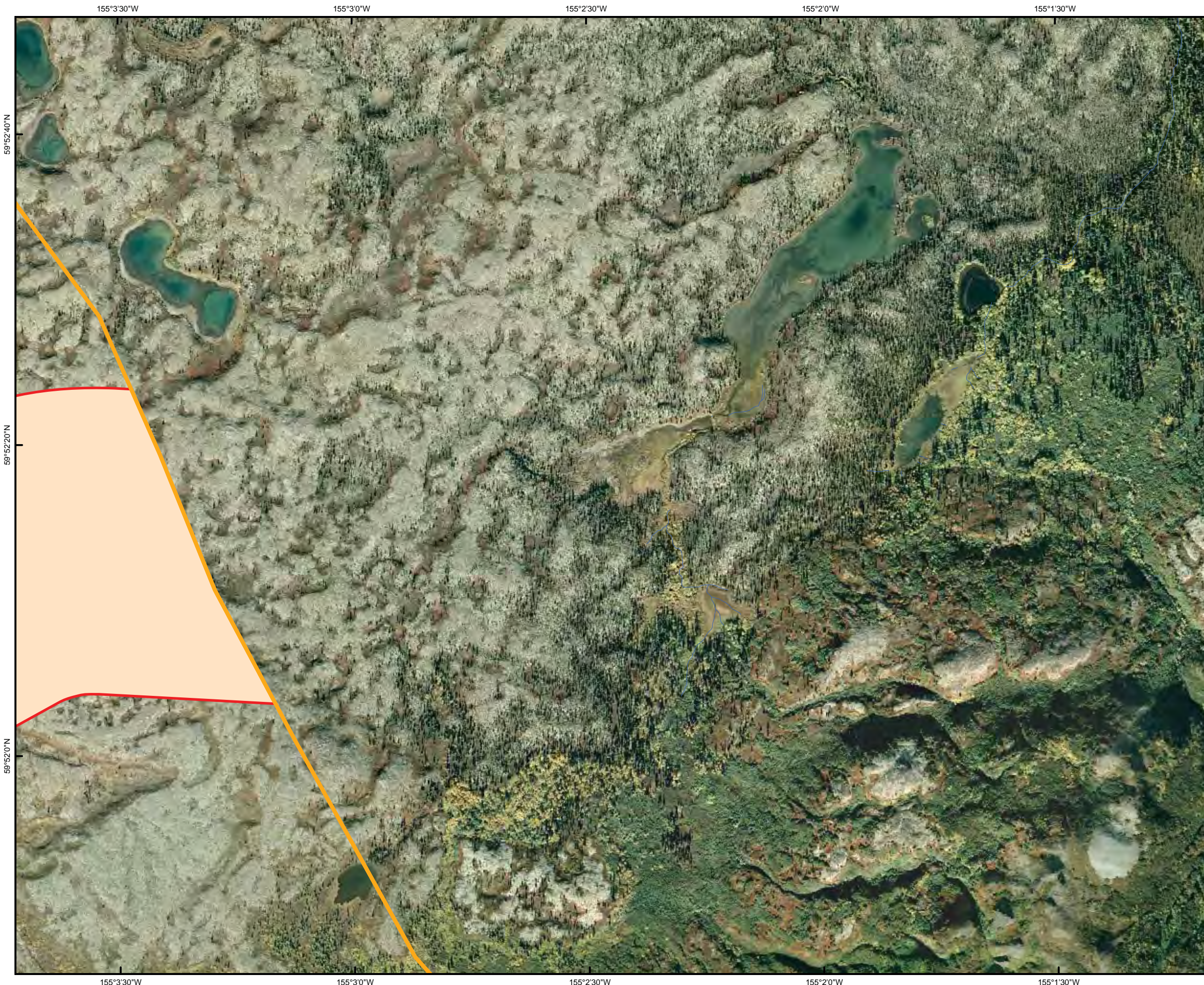


Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum
















File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

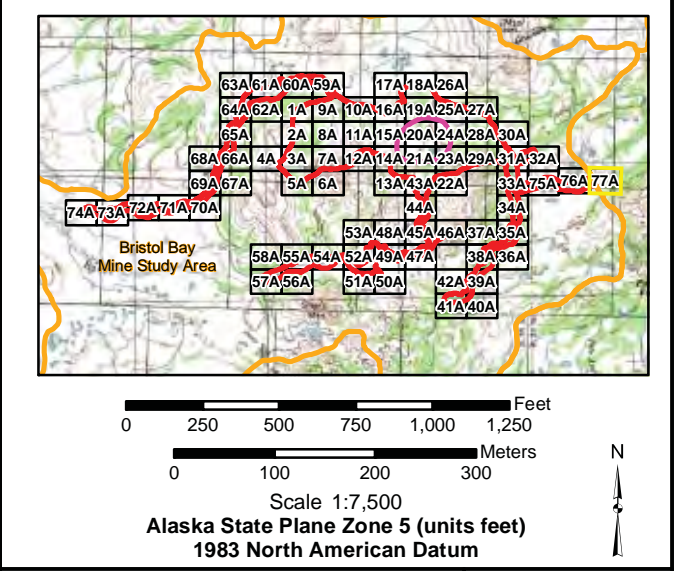




**Figure 14.1-3**  
**Tile 77A**  
**Wetlands Mapping, Mine Study Area**  
**2004-2008**

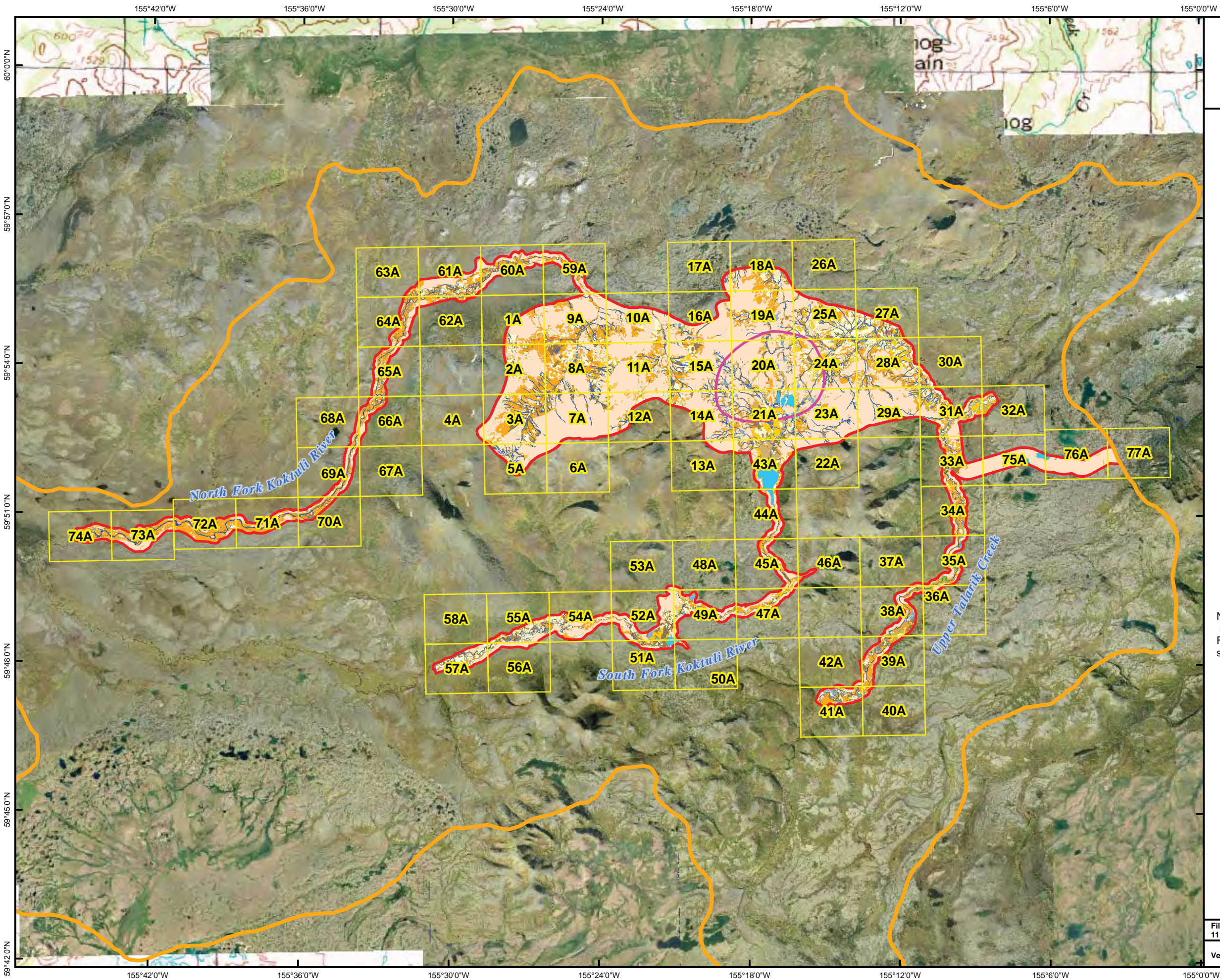
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Wetlands Mapping Classification**
-  Wetland (<1% Non-wetland Inclusions)
-  Wetland (Up to 10% Non-wetland Inclusions)
-  Wetland (Up to 20% Non-wetland Inclusions)
-  Wetland (Up to 40% Non-wetland Inclusions)
-  Non-wetland (Up to 40% Wetland Inclusions)
-  Non-wetland (Up to 20% Wetland Inclusions)
-  Non-wetland (Up to 10% Wetland Inclusions)
-  Non-wetland (<1% Wetland Inclusions)
-  Waterbodies
-  Gravel Bars/Seasonal Ponds



File: RDI_3PP_EBD_Fig14.1-3_JDWET_Tiled_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





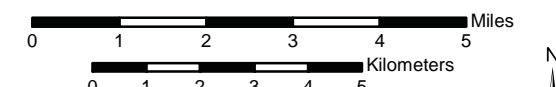
**Figure 14.1- 4**  
**Overview of Enhanced National**  
**Wetlands Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Grid for Detailed Mapping Tiles
- Enhanced National Wetlands Inventory (ENWI) Classification**
  - Deciduous Forests**
    - PFO1
    - PFO1/SS1
    - PSS1/FO1
  - Coniferous Forests**
    - PSS1/FO4
  - Shrub**
    - PSS1
    - PSS1/US
    - PSS1/ML1
  - Shrub/Herbaceous**
    - PSS1/EM1
  - Herbaceous/Shrub**
    - PEM1/SS1
  - Herbaceous**
    - PEM1
    - PEM1/ML1
    - PEM1/2
    - PEM1/US
    - PUS/EM1
    - PEM2
  - Aquatic Herbaceous**
    - PEM1
    - PAB
    - PEM1/US
    - PUS/EM1
    - R3AB
    - R3EM
  - Lakes**
    - L
  - Ponds**
    - PUB
    - PUS
  - Rivers/Streams**
    - R3UBH
    - R3US
    - R4
  - Non-wetlands**
    - U

Note: For detailed ENWI mapping, see individual tiles in this figure series.

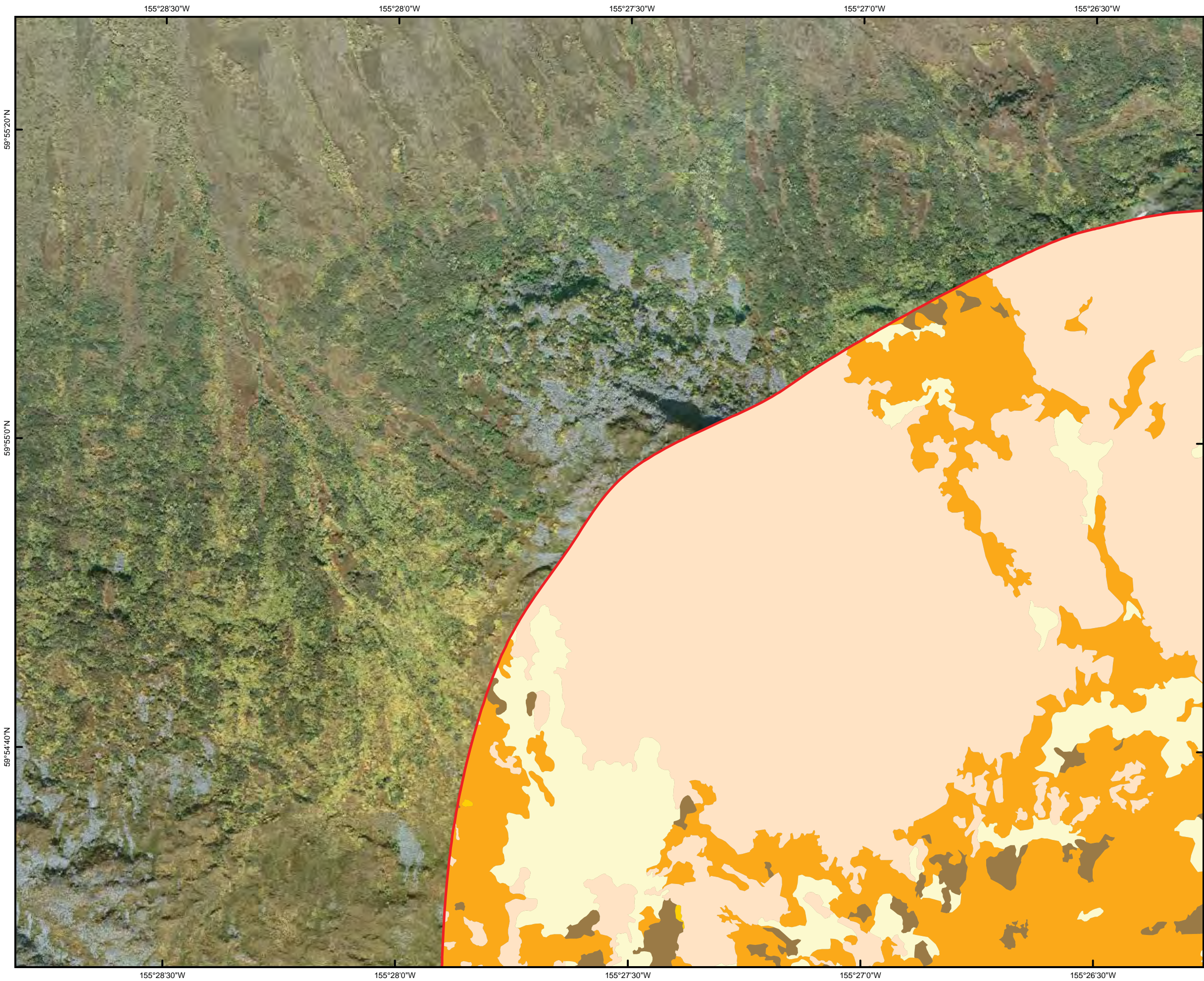
For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:140,000  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_Fig14.1-4_ENWI_11X17L_1of1_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



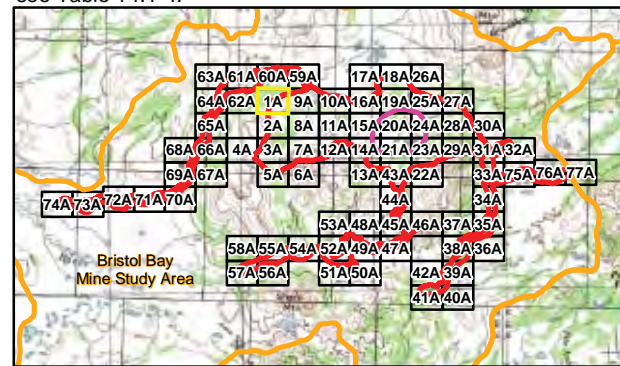


**Figure 14.1- 4, Tile 1A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
| Coniferous Forests | PUS/EM1            |
| PSS1/FO4           | R3AB               |
|                    | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
| Shrub/Herbaceous   | PUS                |
| PSS1/EM1           | Rivers/Streams     |
| Herbaceous/Shrub   | R3UBH              |
| PEM1/SS1           | R3US               |
| Herbaceous         | R4                 |
| PEM1               | Non-wetlands       |
| PEM1/ML1           | U                  |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

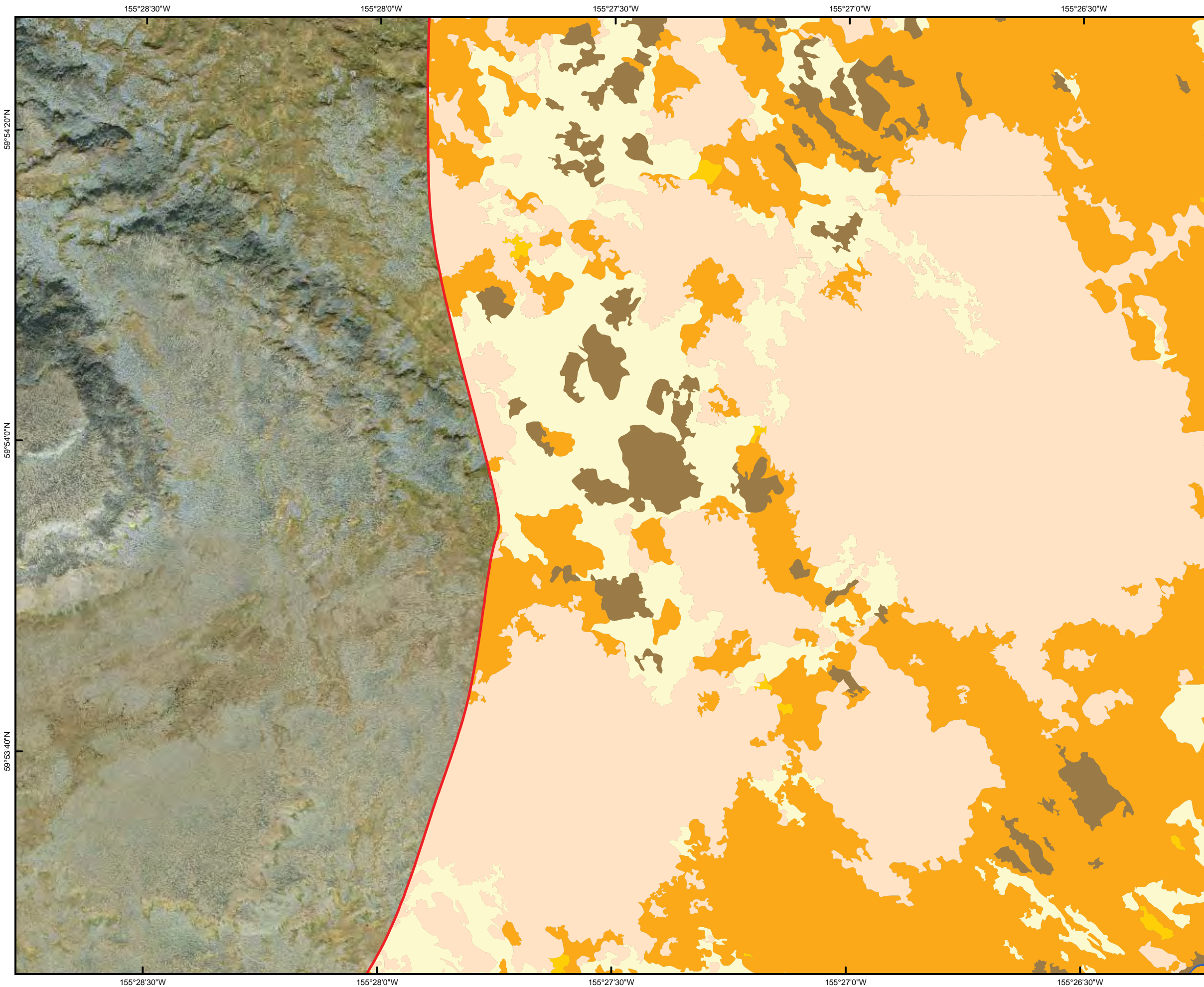
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 2A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

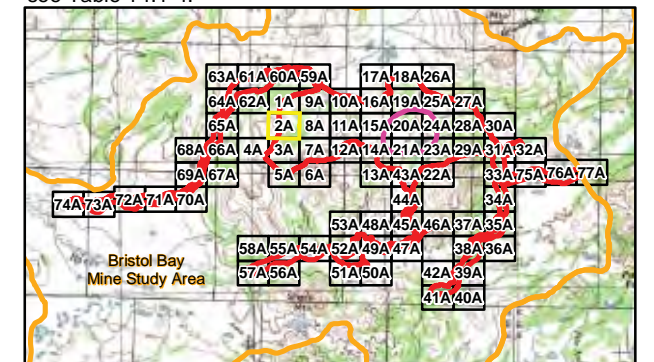
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

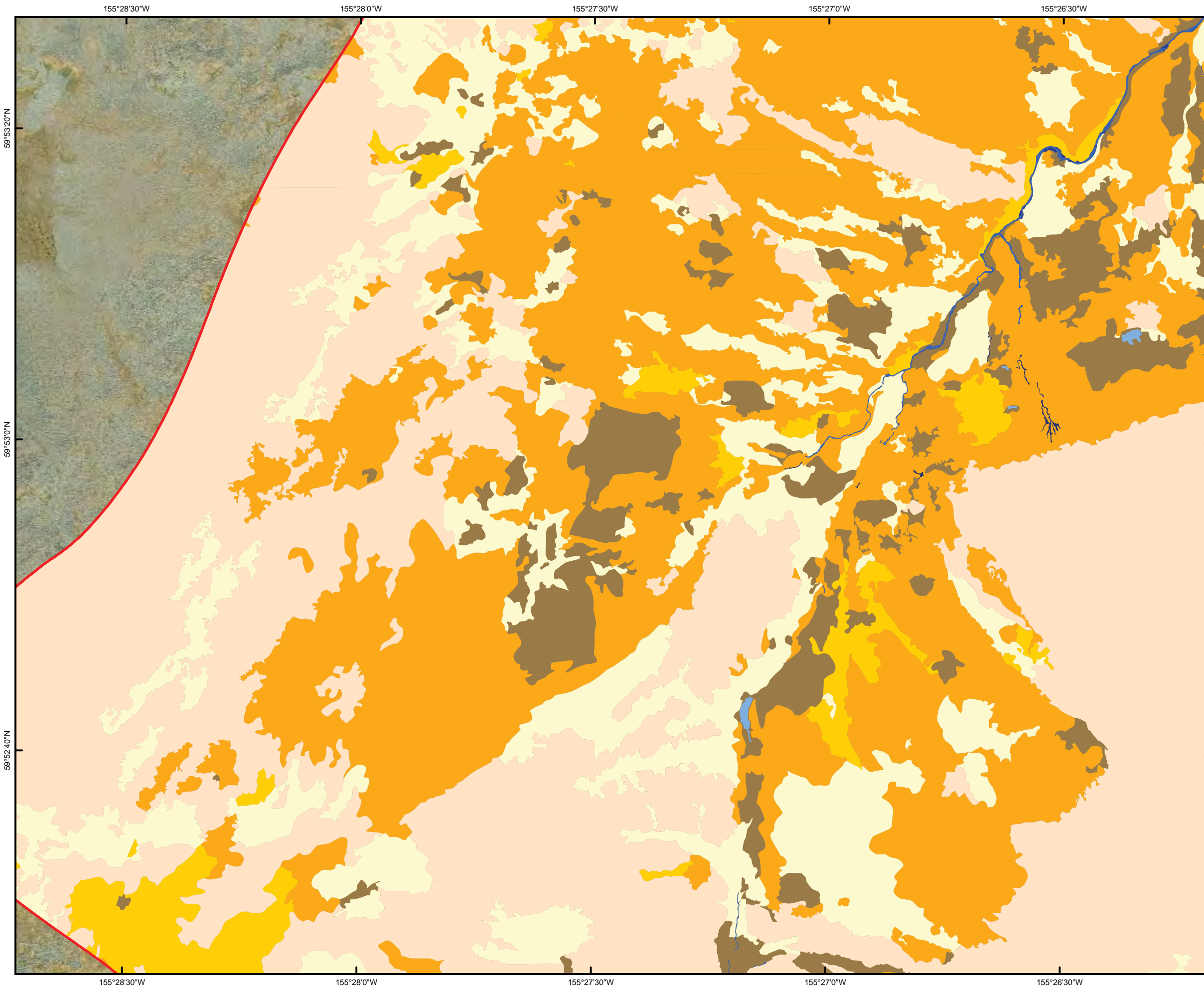
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 3A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

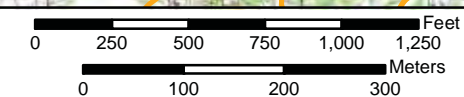
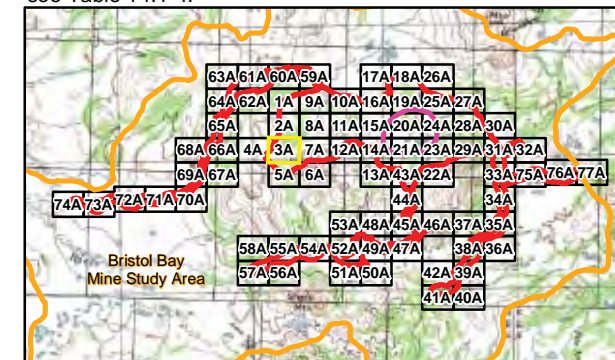
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



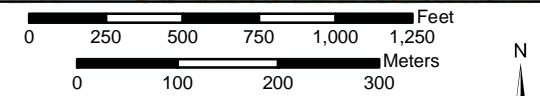
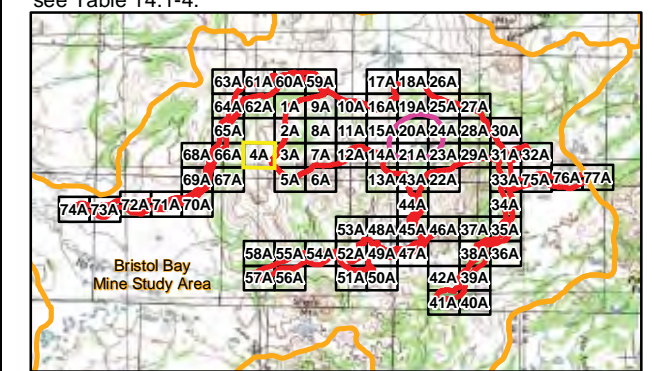


**Figure 14.1- 4, Tile 4A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           | Non-wetlands       |
| Herbaceous         | U                  |
| PEM1               |                    |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

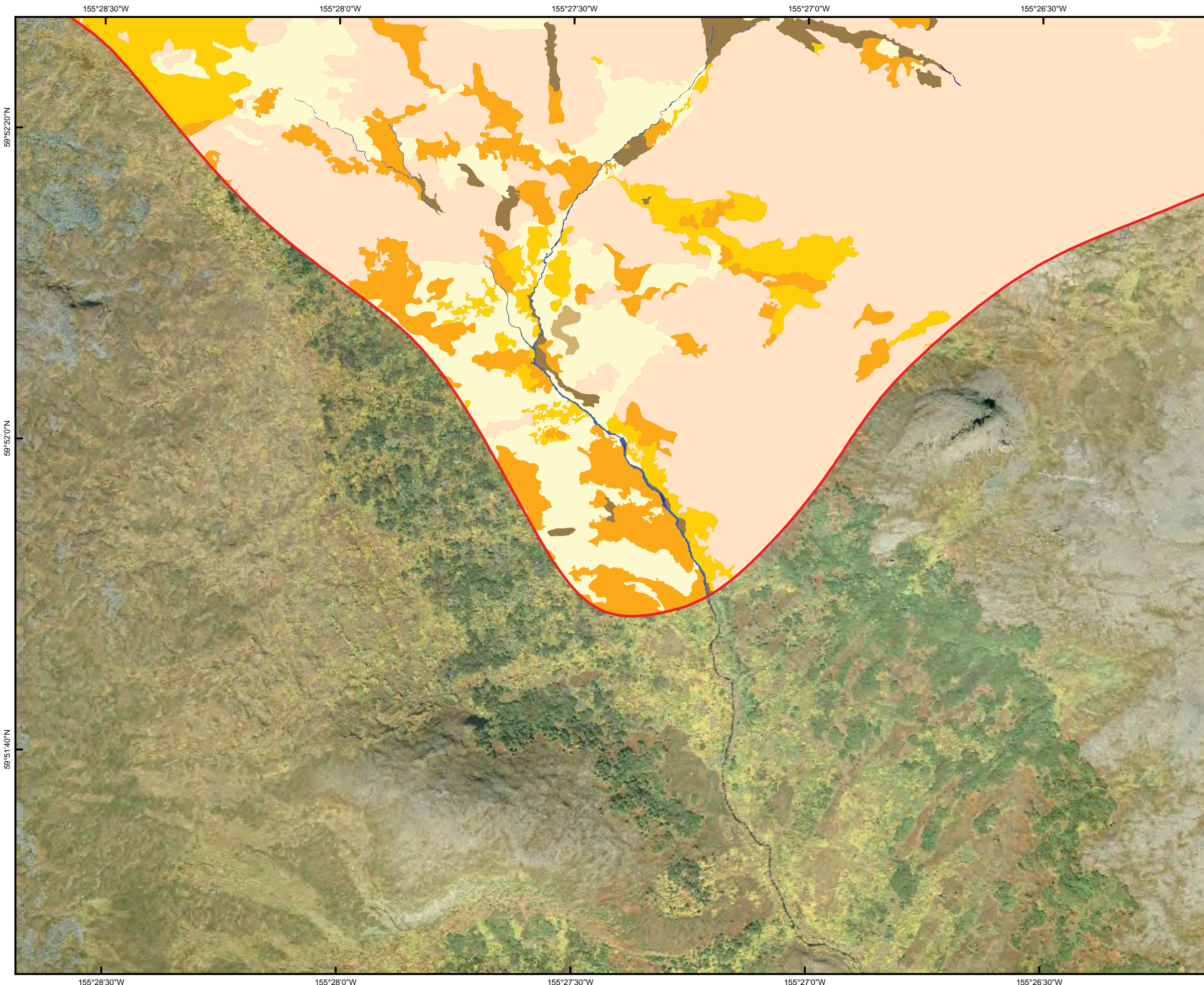
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 5A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

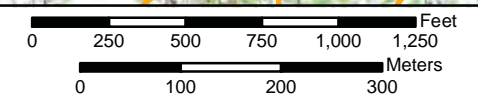
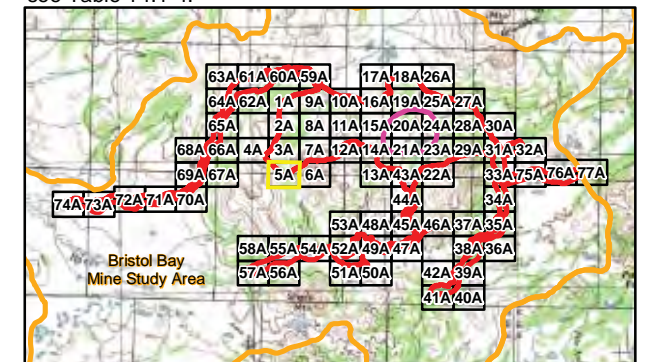
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



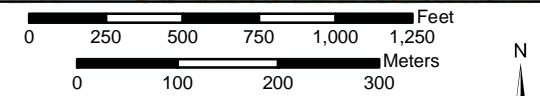
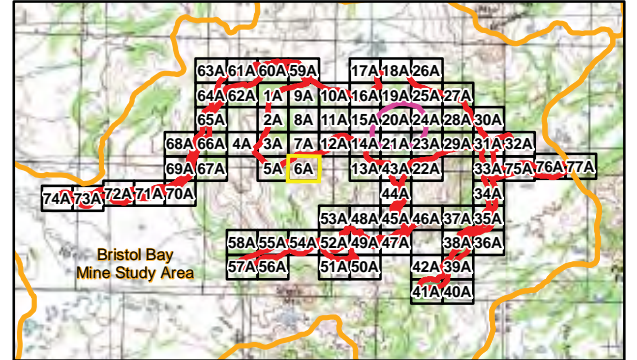


**Figure 14.1- 4, Tile 6A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
| Coniferous Forests | PUS/EM1            |
| PSS1/FO4           | R3AB               |
|                    | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
| Shrub/Herbaceous   | PUS                |
| PSS1/EM1           | Rivers/Streams     |
| Herbaceous/Shrub   | R3UBH              |
| PEM1/SS1           | R3US               |
| Herbaceous         | R4                 |
| PEM1               | Non-wetlands       |
| PEM1/ML1           | U                  |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

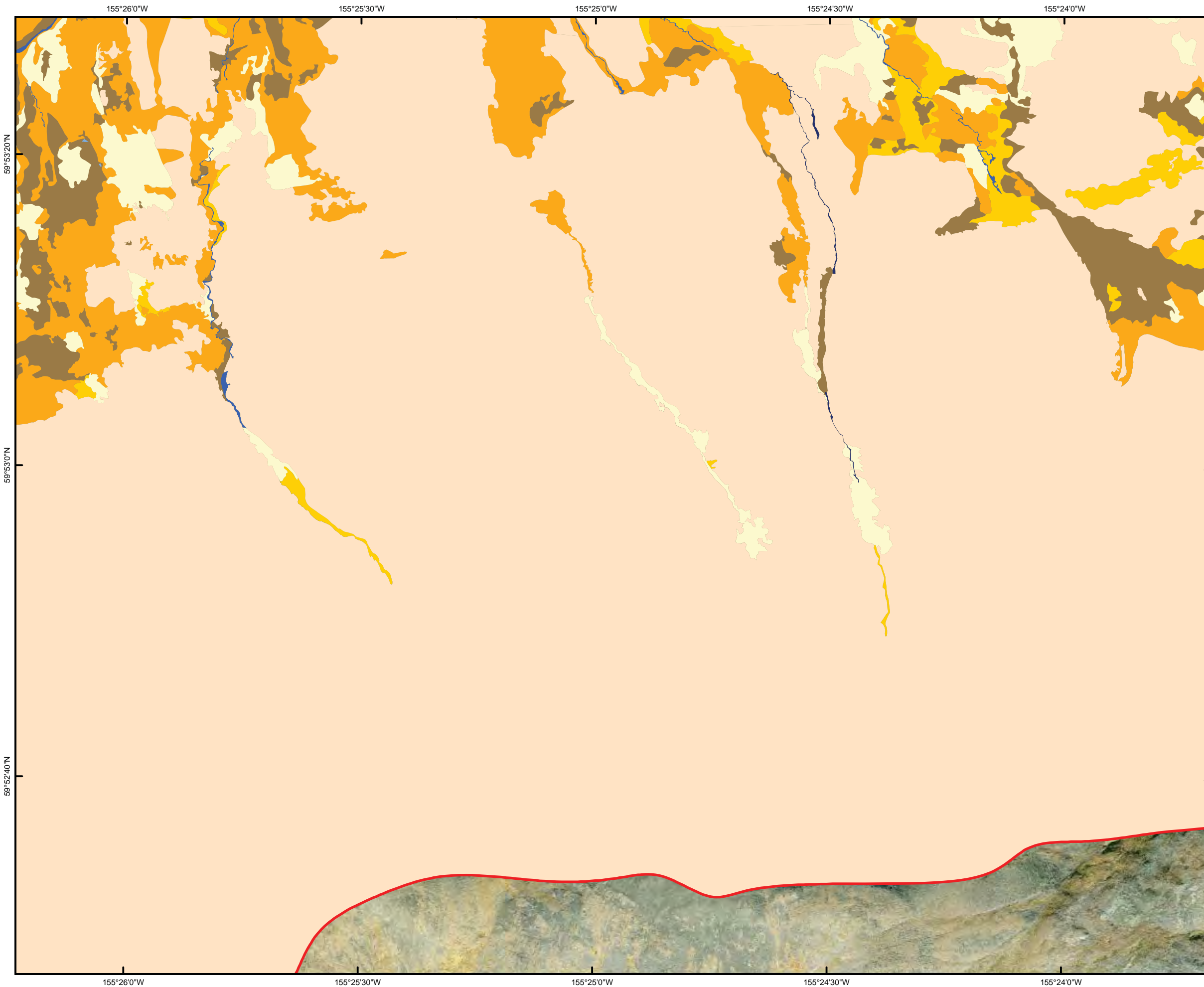
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 7A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1  
 PFO1/SS1  
 PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1  
 PSS1/US  
 PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1  
 PEM1/ML1  
 PEM1/2  
 PEM1/US  
 PUS/EM1  
 PEM2

**Aquatic Herbaceous**

PEM1  
 PAB  
 PEM1/US  
 PUS/EM1  
 R3AB  
 R3EM

**Lakes**

L

**Ponds**

PUB  
 PUS

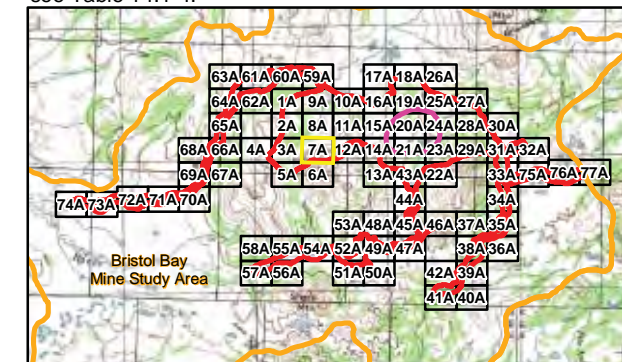
**Rivers/Streams**

R3UBH  
 R3US  
 R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

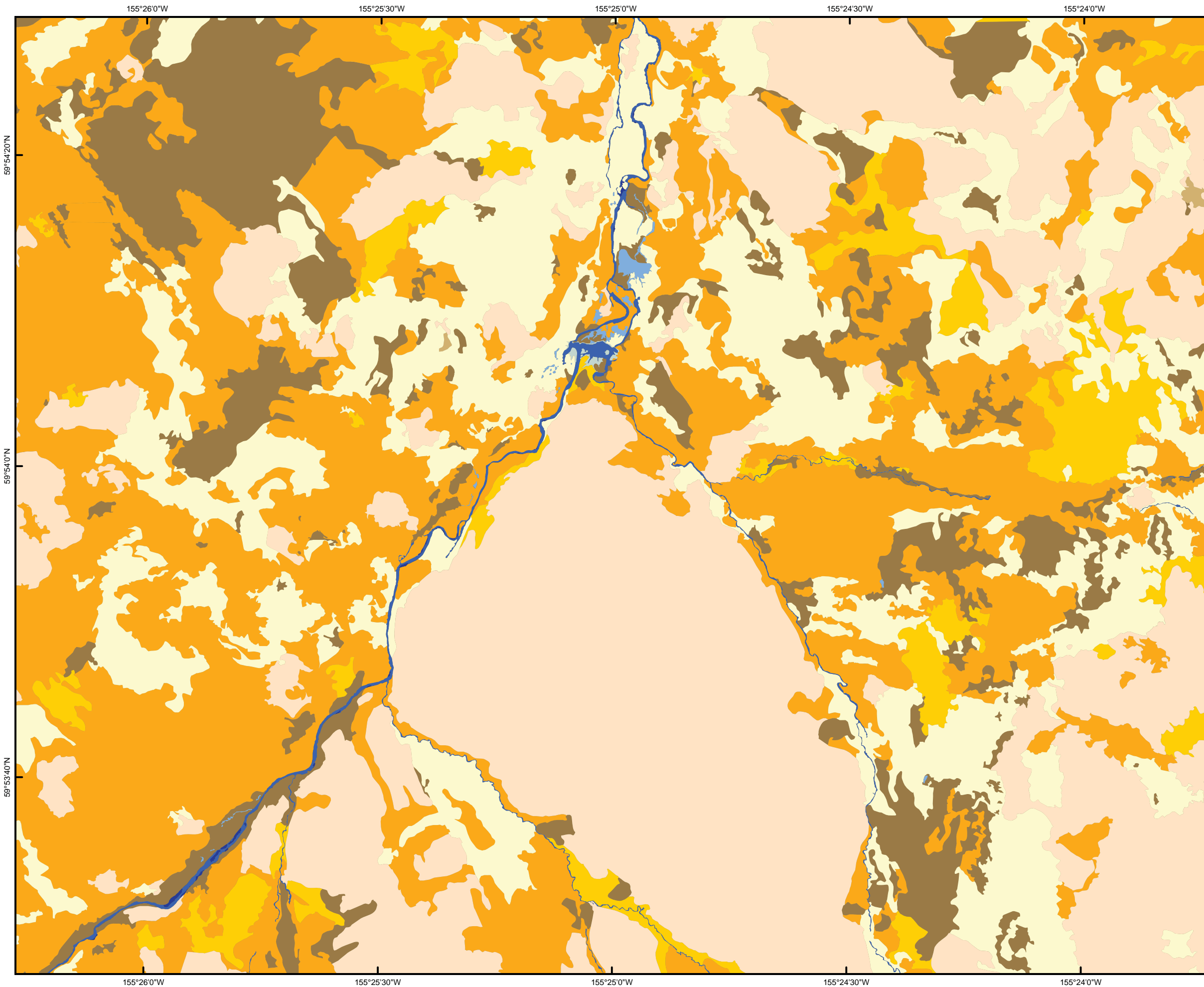
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 8A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

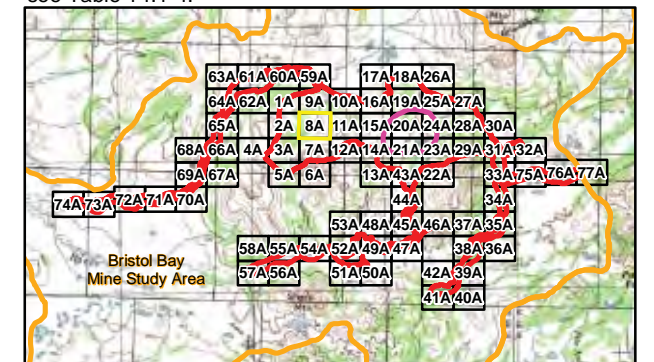
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

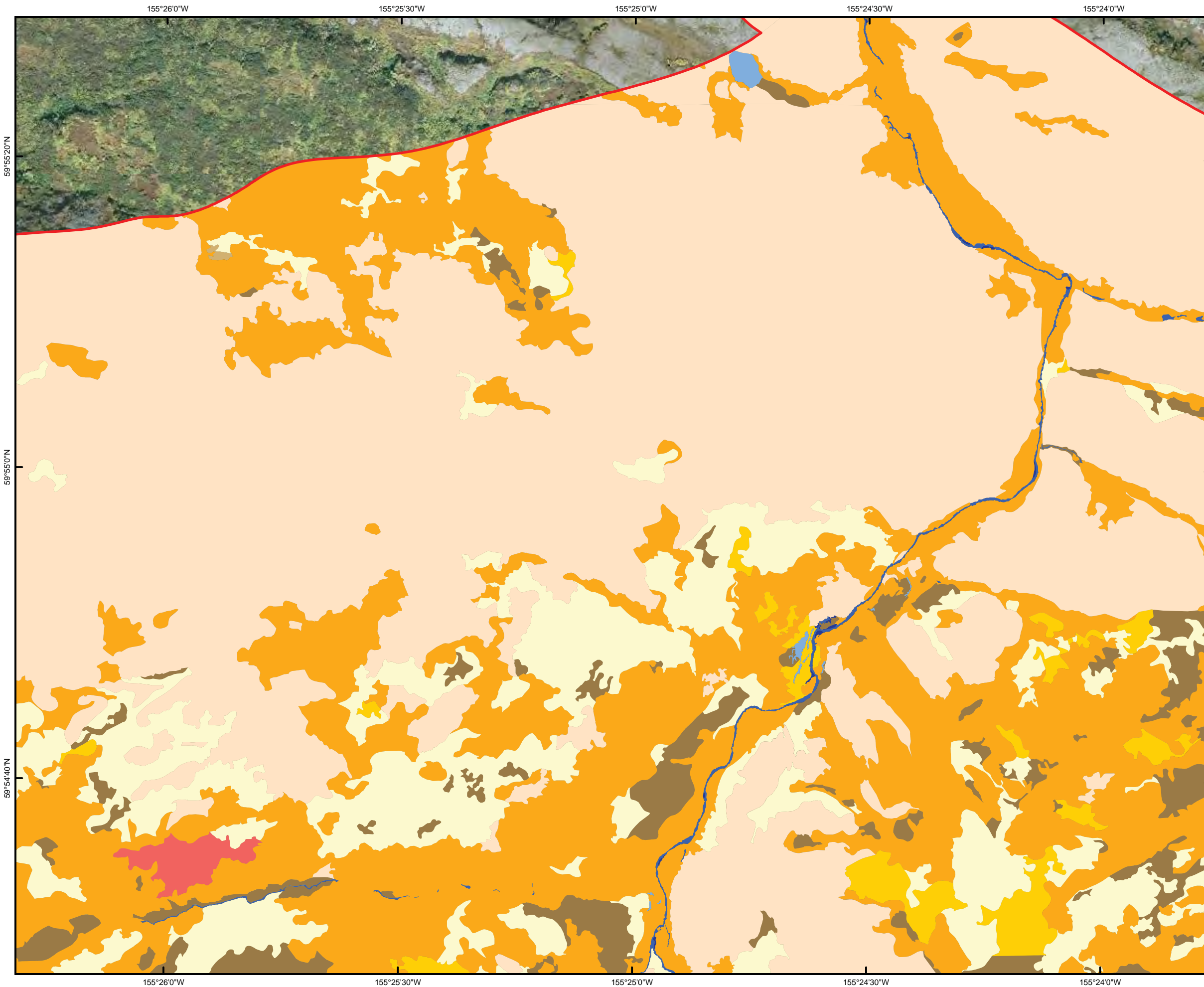
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



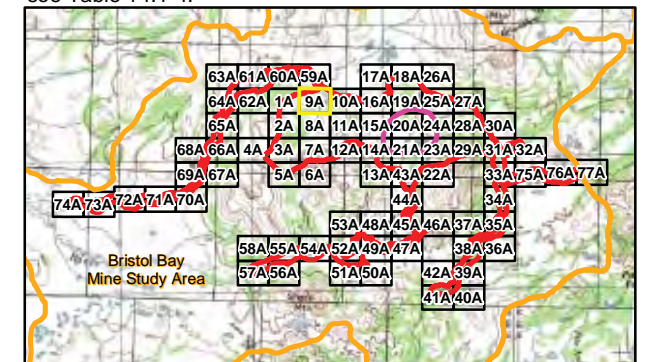


**Figure 14.1- 4, Tile 9A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area  
 Mine Study Area  
 General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
| Coniferous Forests | PUS/EM1            |
| PSS1/FO4           | R3AB               |
| Shrub              | R3EM               |
| PSS1               | Lakes              |
| PSS1/US            | L                  |
| PSS1/ML1           | Ponds              |
| Shrub/Herbaceous   | PUB                |
| PSS1/EM1           | PUS                |
| Herbaceous/Shrub   | Rivers/Streams     |
| PEM1/SS1           | R3UBH              |
| Herbaceous         | R3US               |
| PEM1               | R4                 |
| PEM1/ML1           | Non-wetlands       |
| PEM1/2             | U                  |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

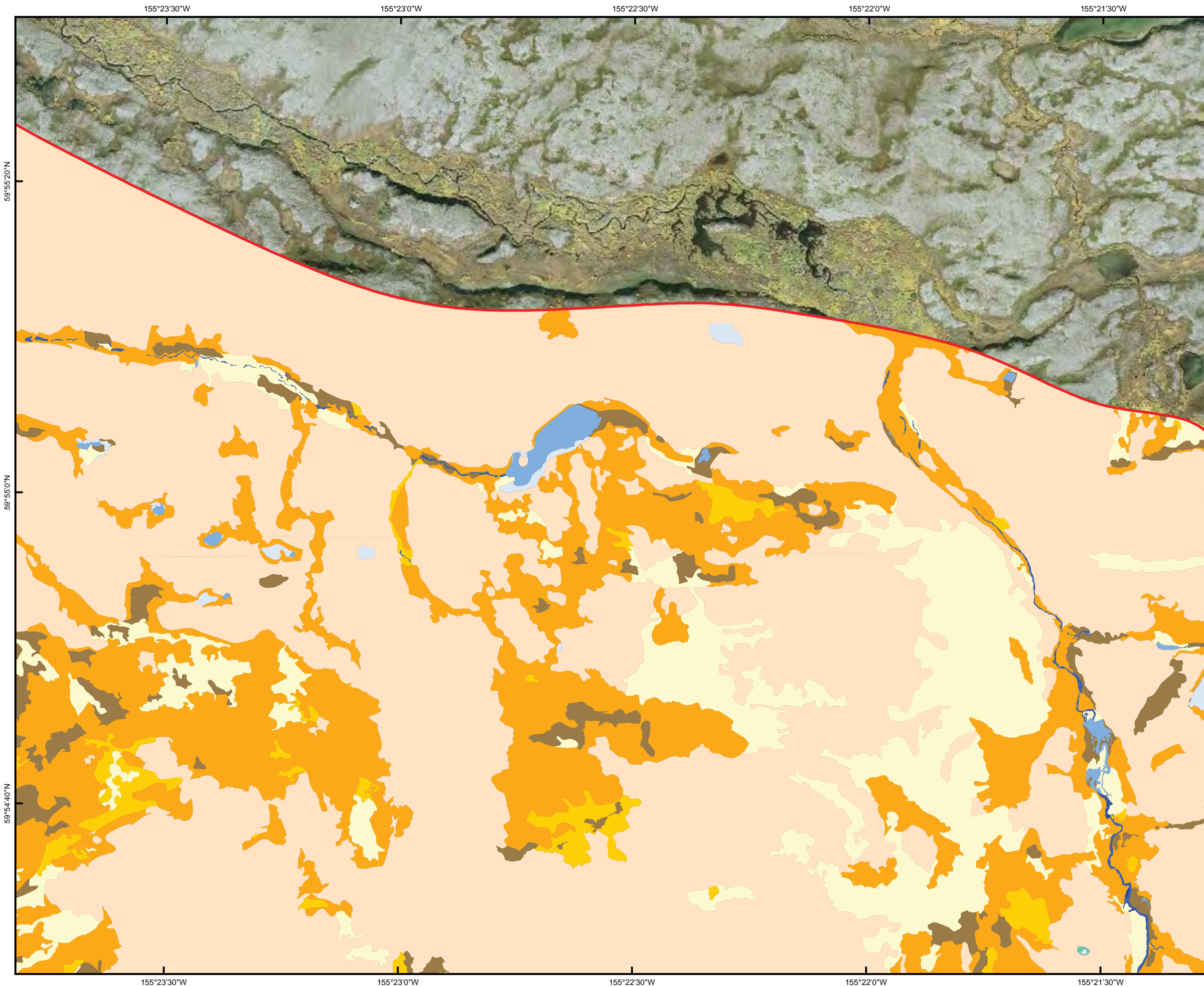
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 10A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

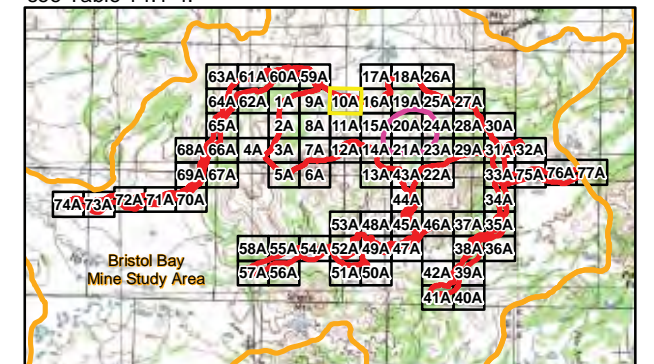
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

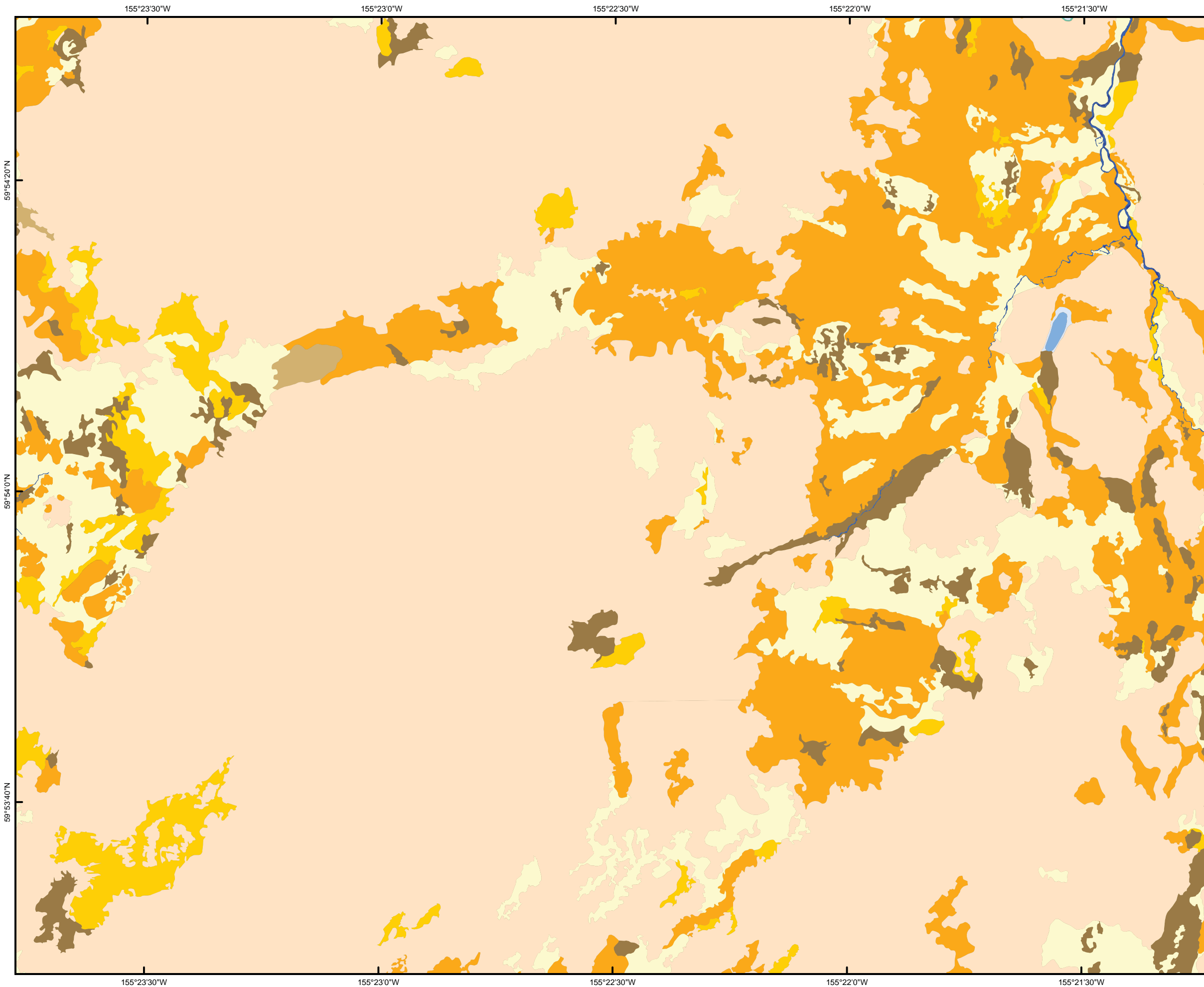
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



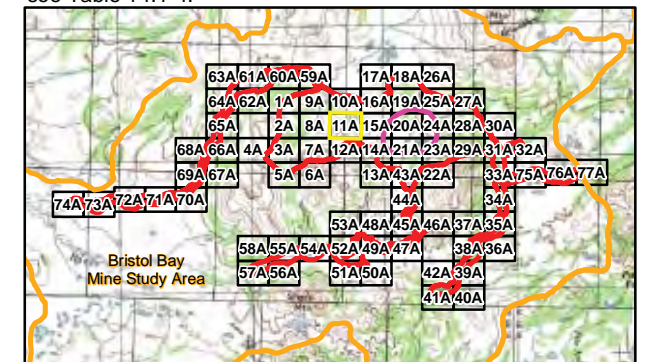


**Figure 14.1- 4, Tile 11A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           | Non-wetlands       |
| Herbaceous         | U                  |
| PEM1               |                    |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

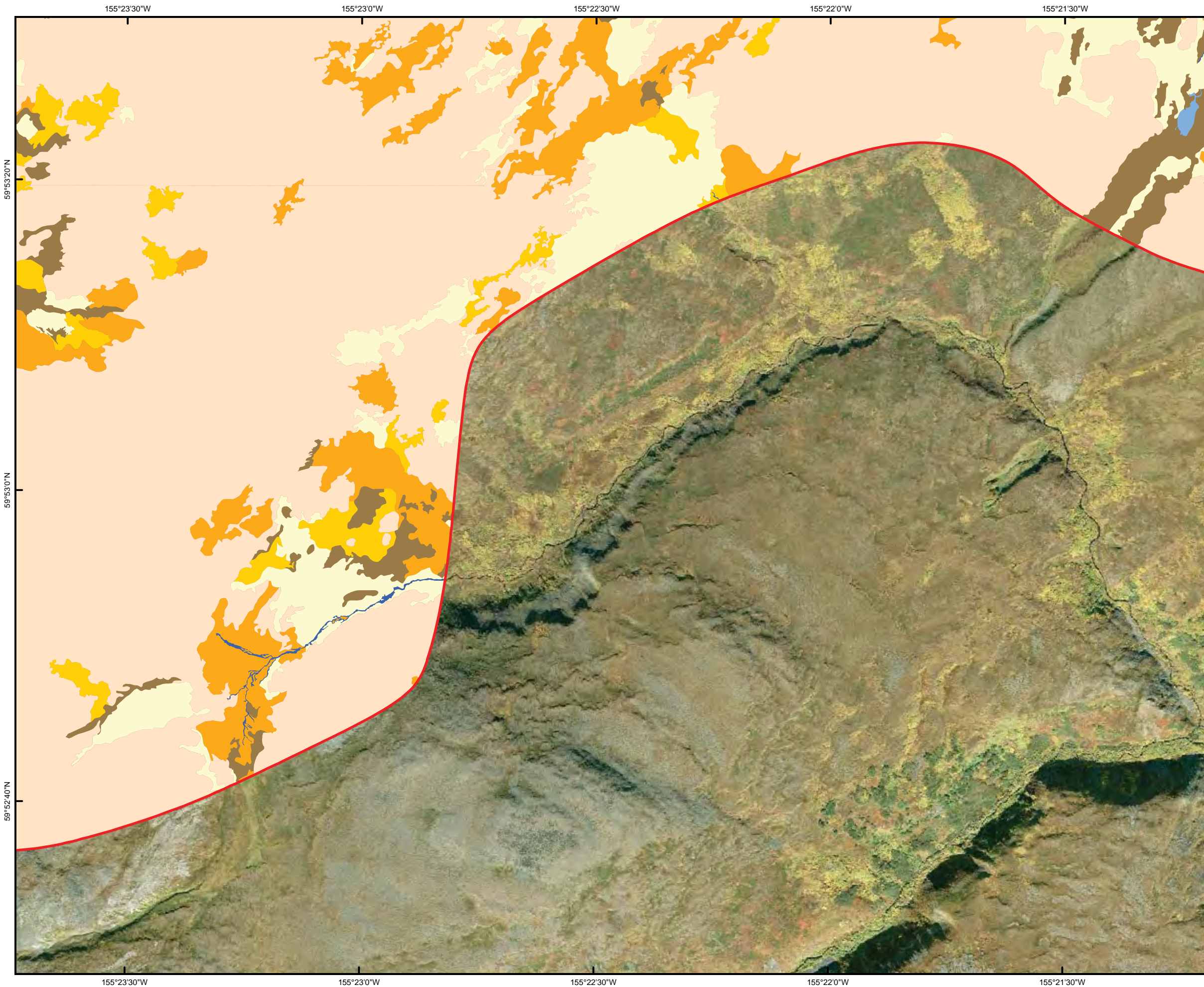
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 12A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

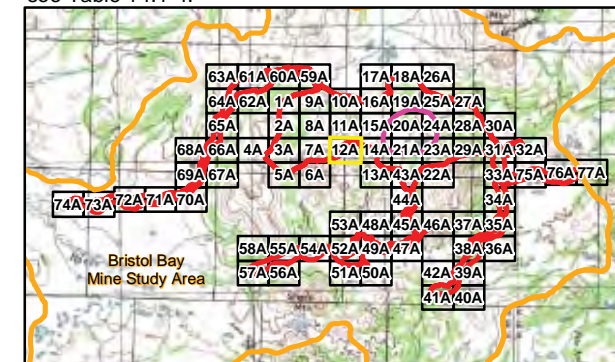
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

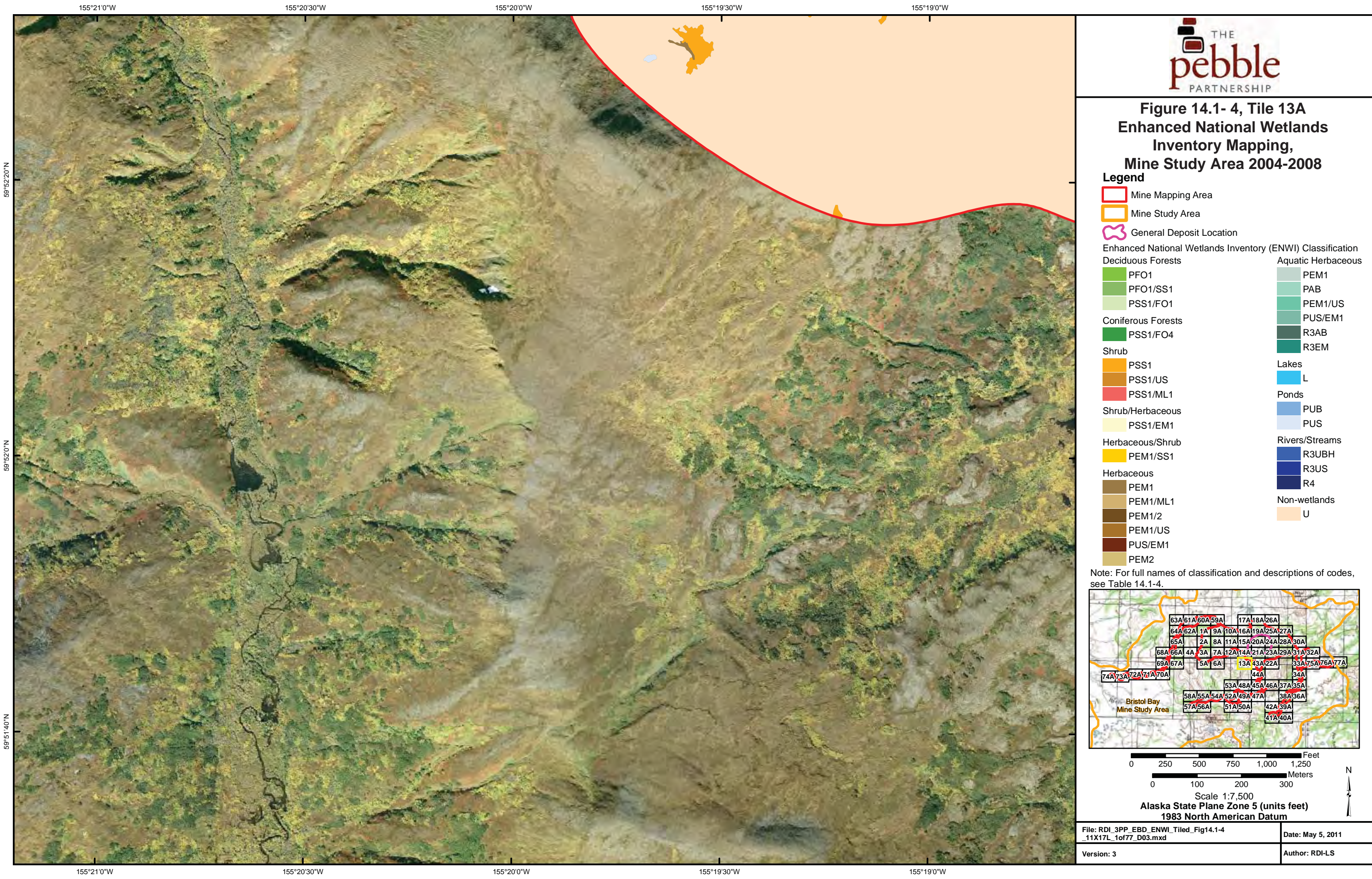
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



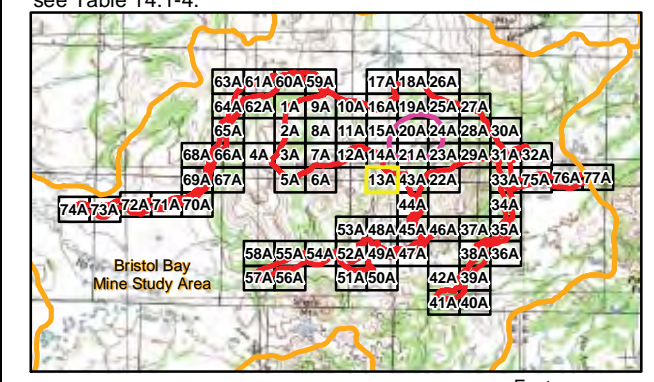


**Figure 14.1- 4, Tile 13A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           |                    |
| Herbaceous         | Non-wetlands       |
| PEM1               | U                  |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

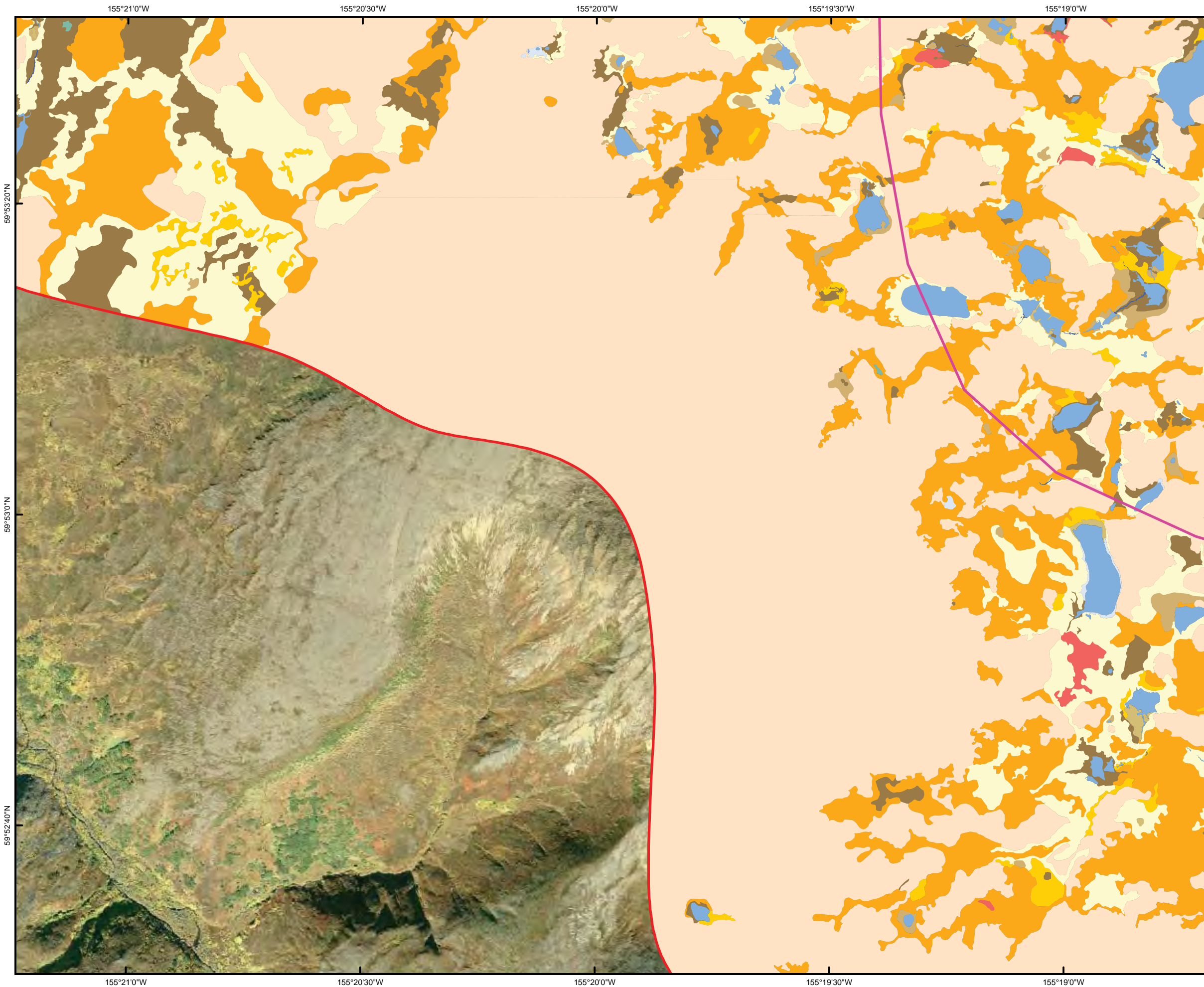
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 13A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

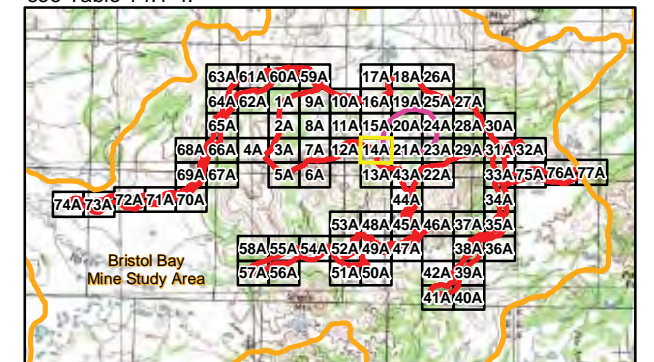
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

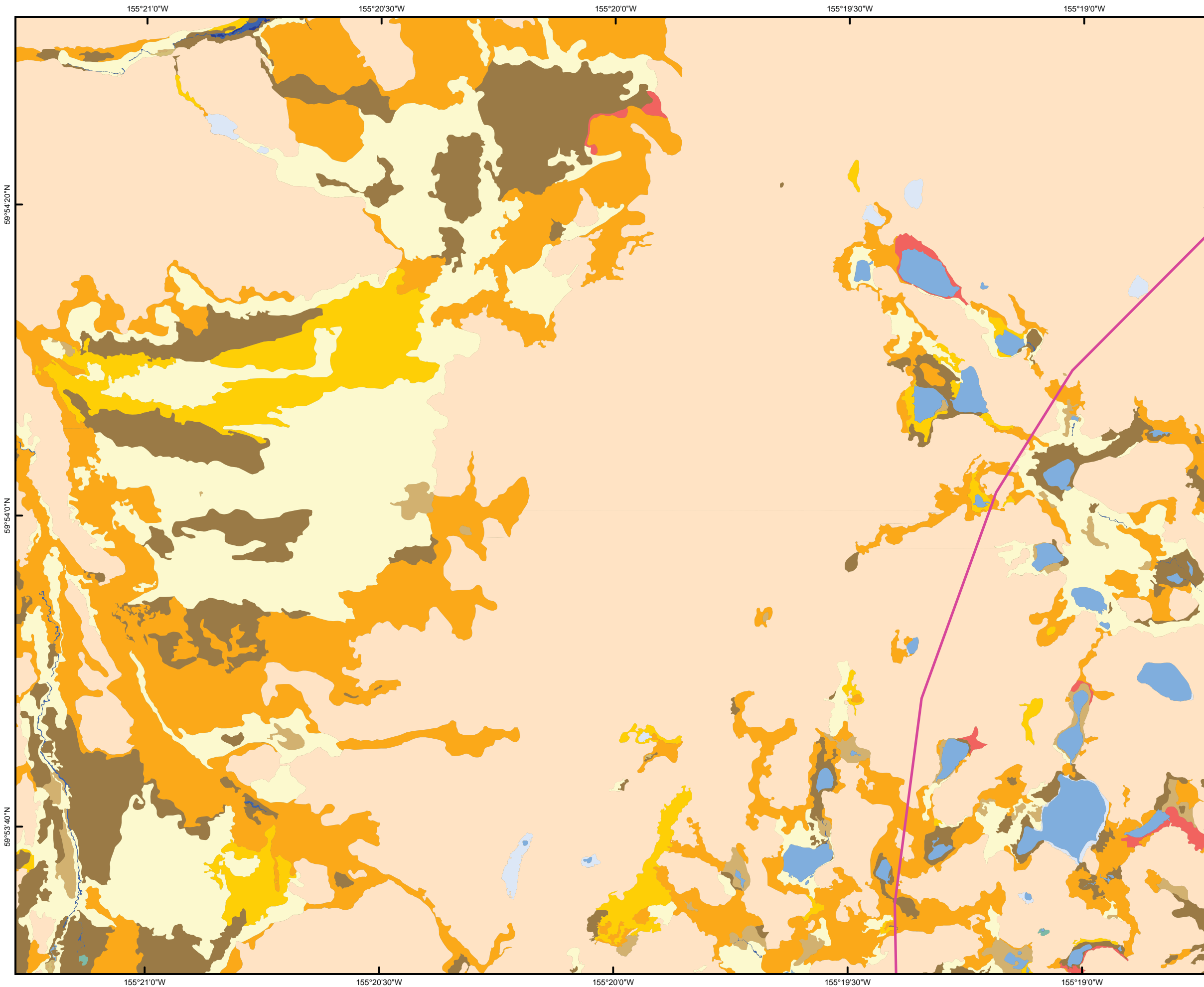
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



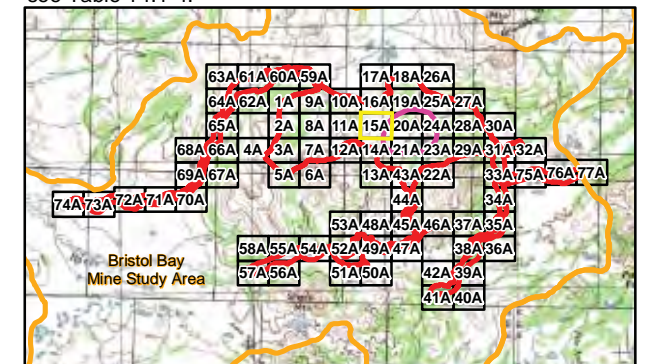


**Figure 14.1- 4, Tile 15A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| <b>Deciduous Forests</b>   | <b>Aquatic Herbaceous</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C8E6C9; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #4CAF50; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #546E7A; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #008080; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF69B4; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>  |
| <b>Shrub/Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #6495ED; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFFE0; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #B0C4DE; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>  | <b>Rivers/Streams</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4682B4; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4169E1; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A08060; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #191970; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; margin-right: 5px;"></span> PEM2     |   |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.

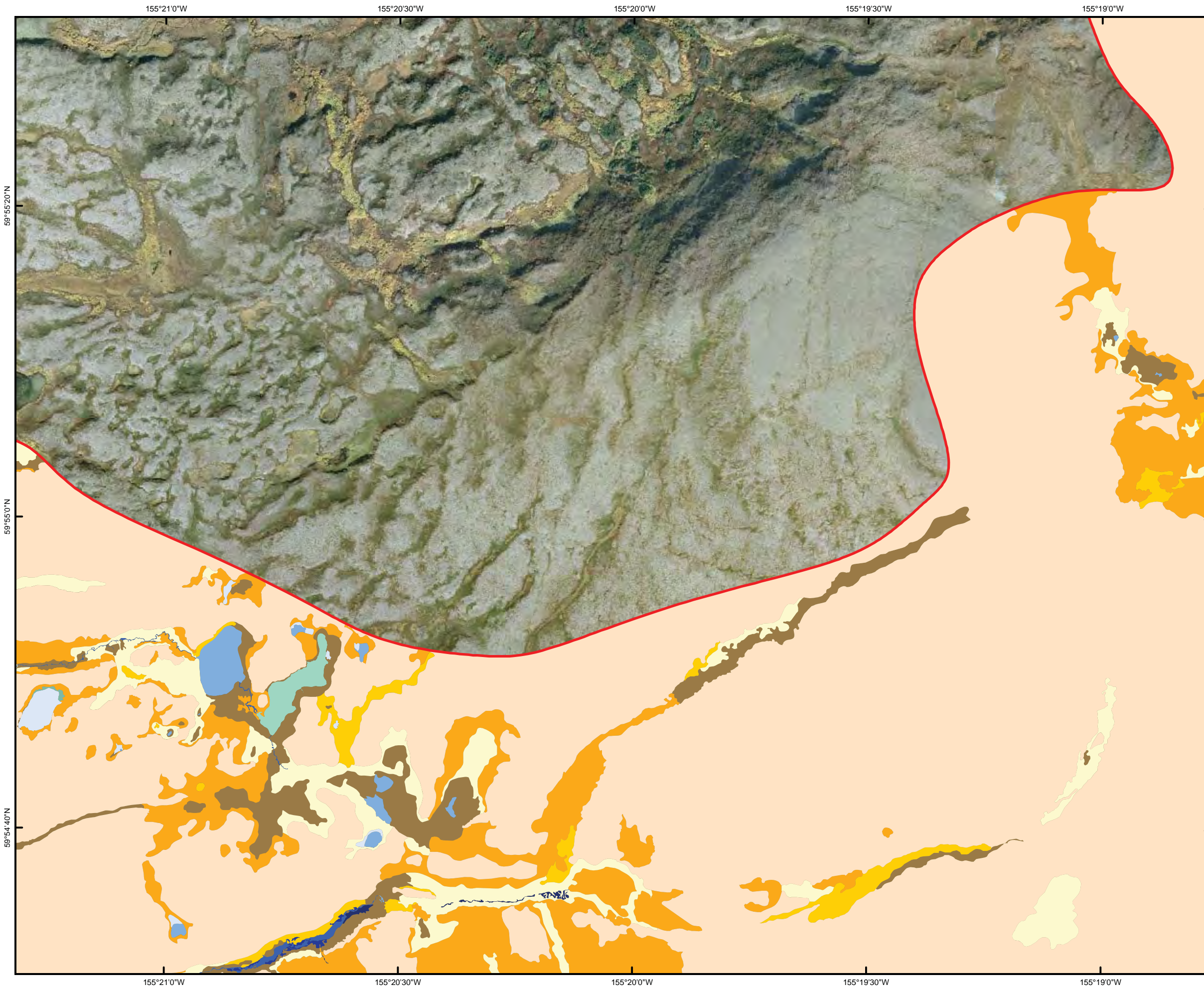


0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 16A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

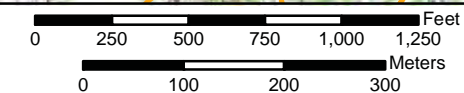
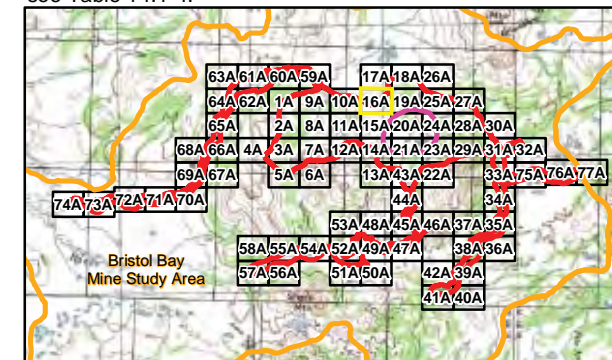
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3
































Author: RDI-LS



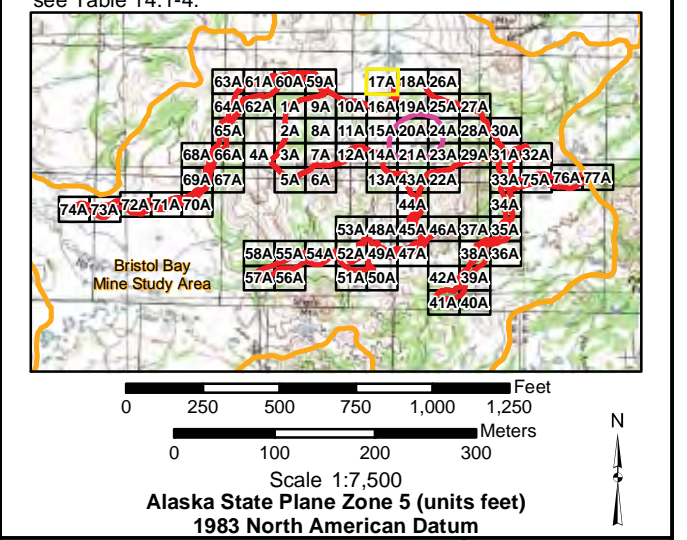


**Figure 14.1- 4, Tile 17A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

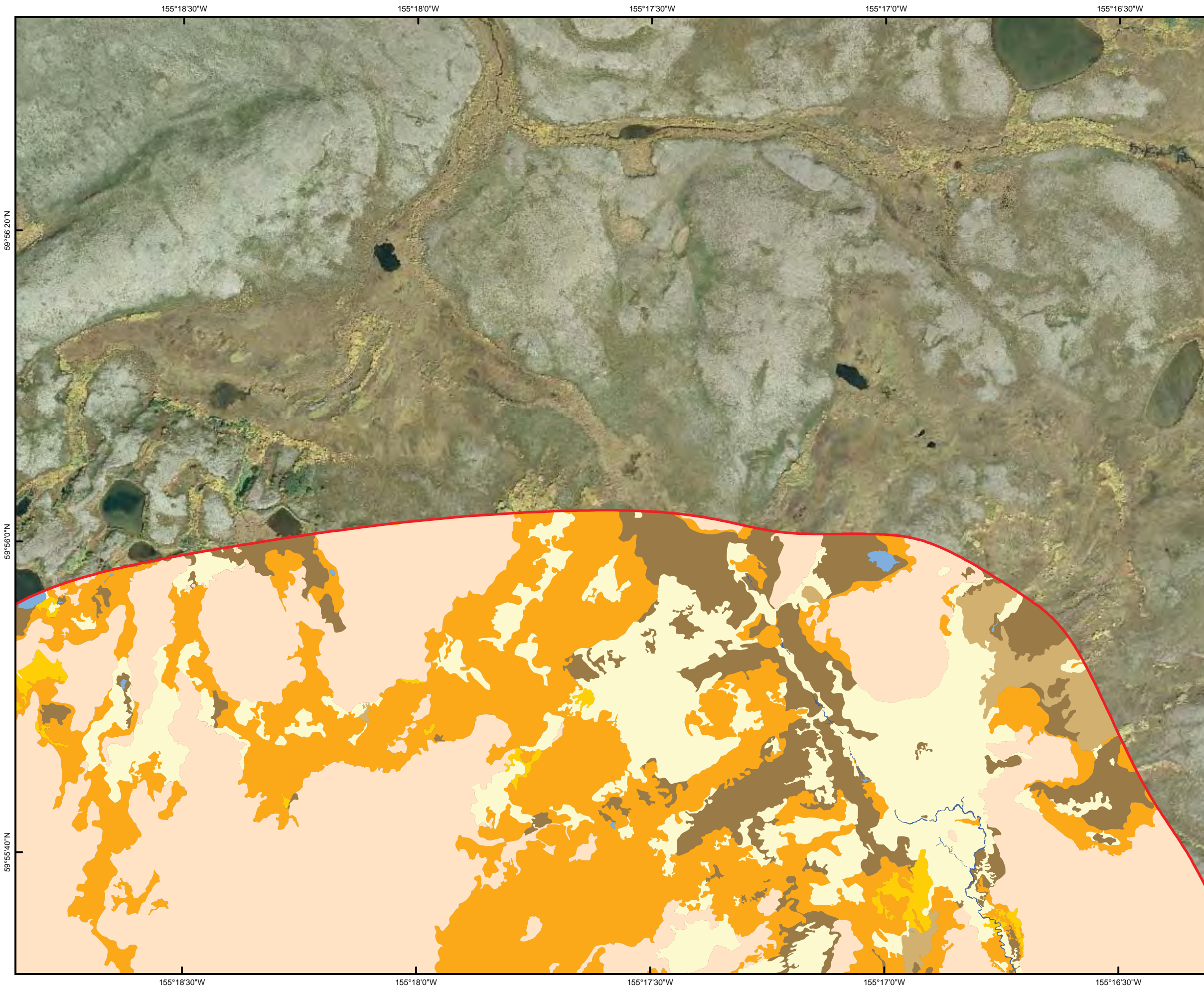
-  Mine Mapping Area
  -  Mine Study Area
  -  General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| Deciduous Forests  | Aquatic Herbaceous  |
|  PFO1       |  PEM1    |
|  PFO1/SS1   |  PAB     |
|  PSS1/FO1   |  PEM1/US |
| Coniferous Forests   |  PUS/EM1 |
|  PSS1/FO4   |  R3AB    |
| Shrub  |  R3EM    |
|  PSS1       | Lakes   |
|  PSS1/US    |  L       |
|  PSS1/ML1   | Ponds   |
| Shrub/Herbaceous   |  PUB     |
|  PSS1/EM1   |  PUS     |
| Herbaceous/Shrub   | Rivers/Streams  |
|  PEM1/SS1 |  R3UBH |
| Herbaceous   |  R3US  |
|  PEM1     |  R4    |
|  PEM1/ML1 | Non-wetlands  |
|  PEM1/2   |  U     |
|  PEM1/US  |   |
|  PUS/EM1  |   |
|  PEM2     |   |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 18A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

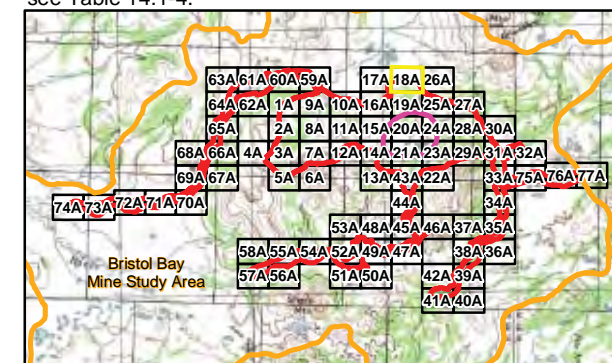
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



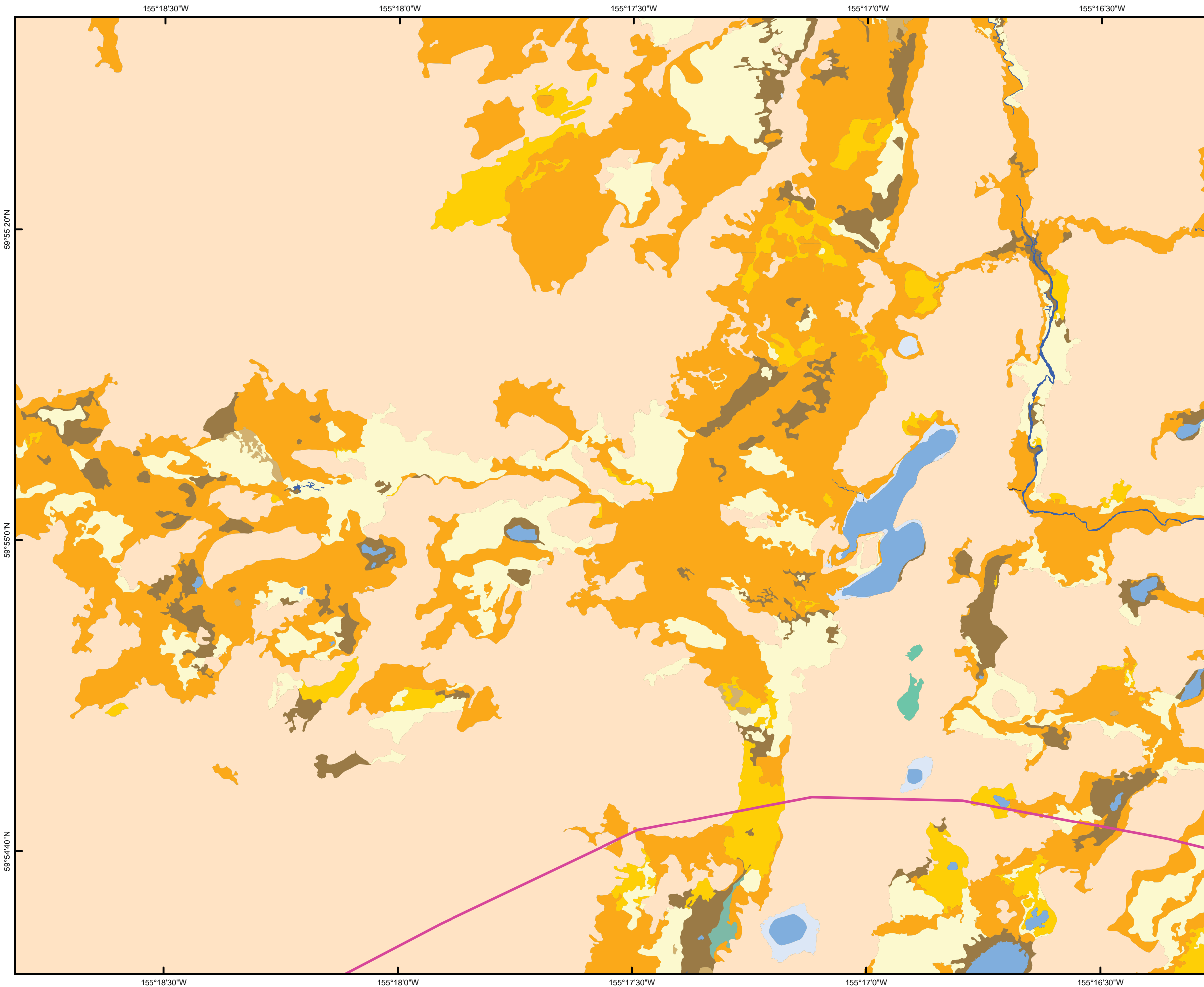
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 19A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

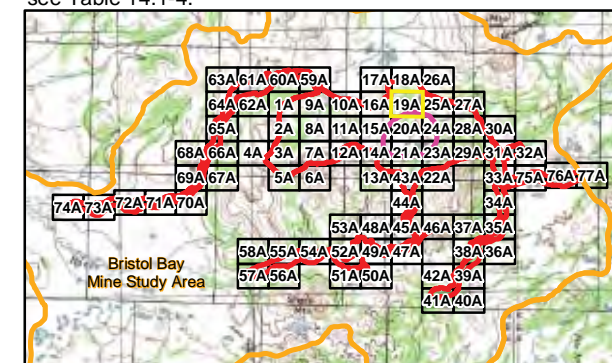
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

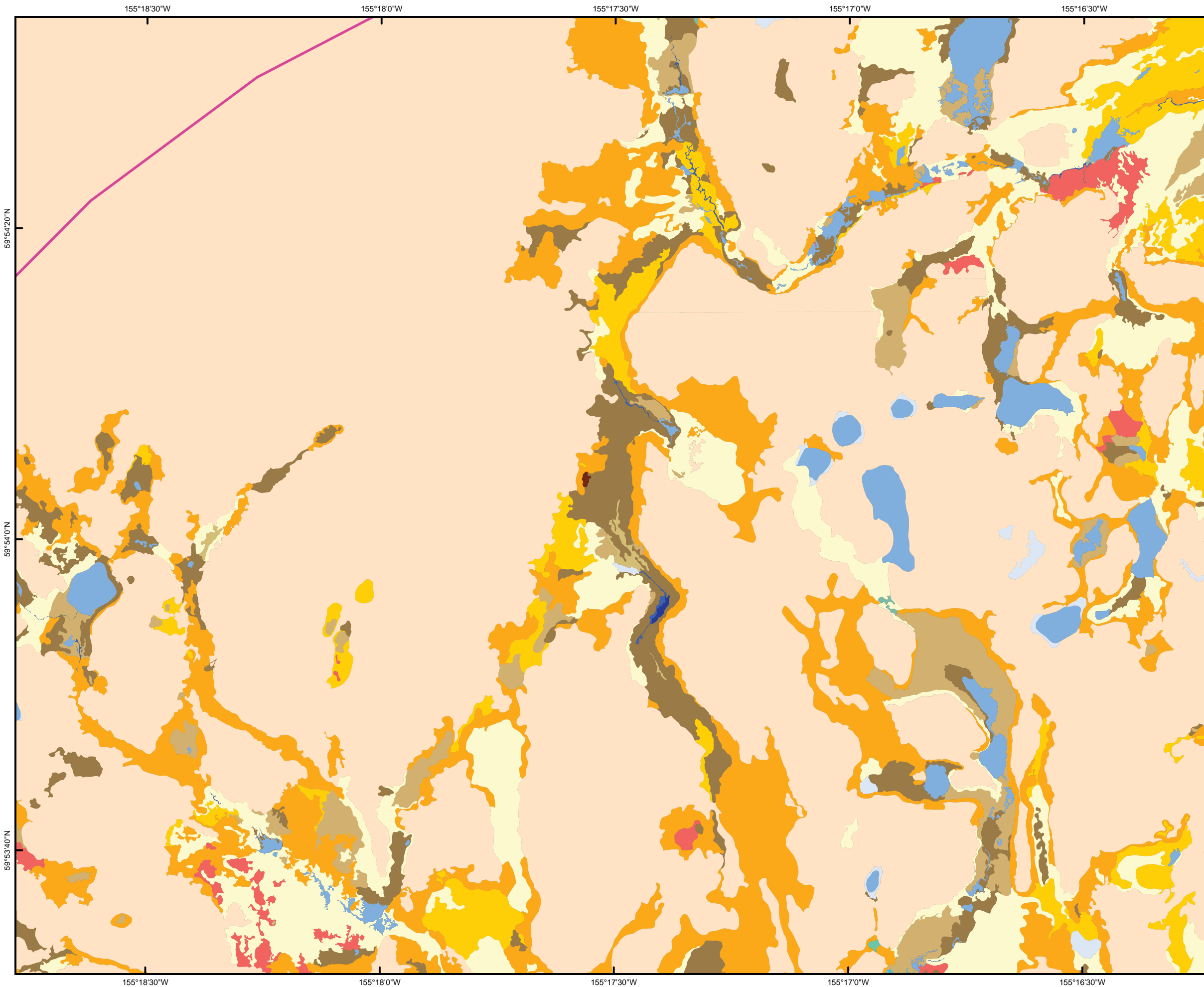
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 20A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

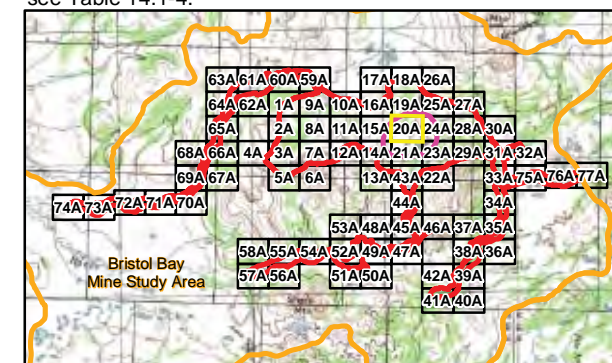
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

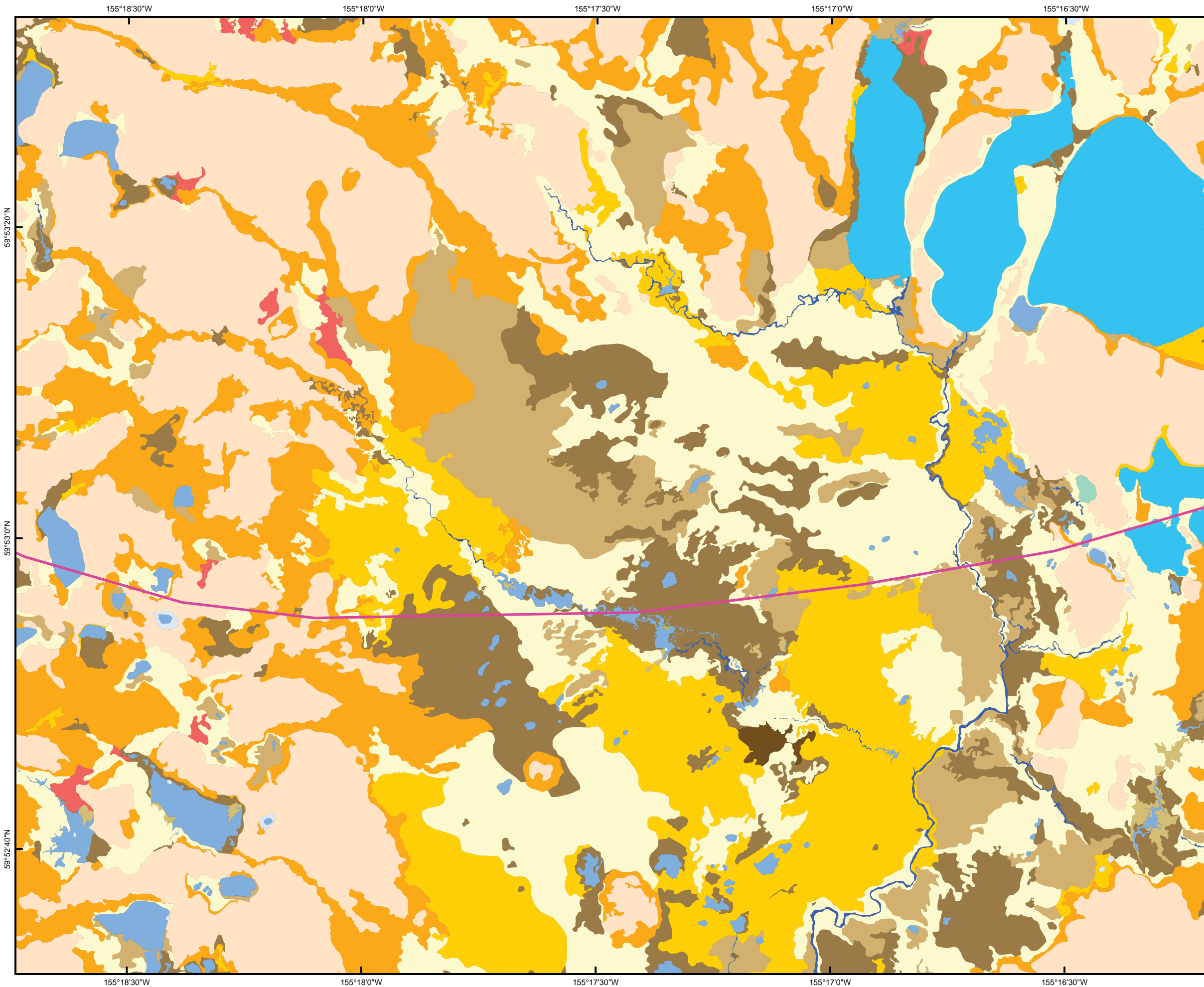
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 21A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

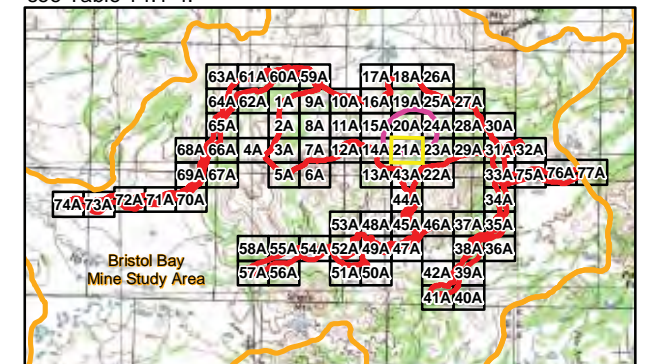
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)

1983 North American Datum

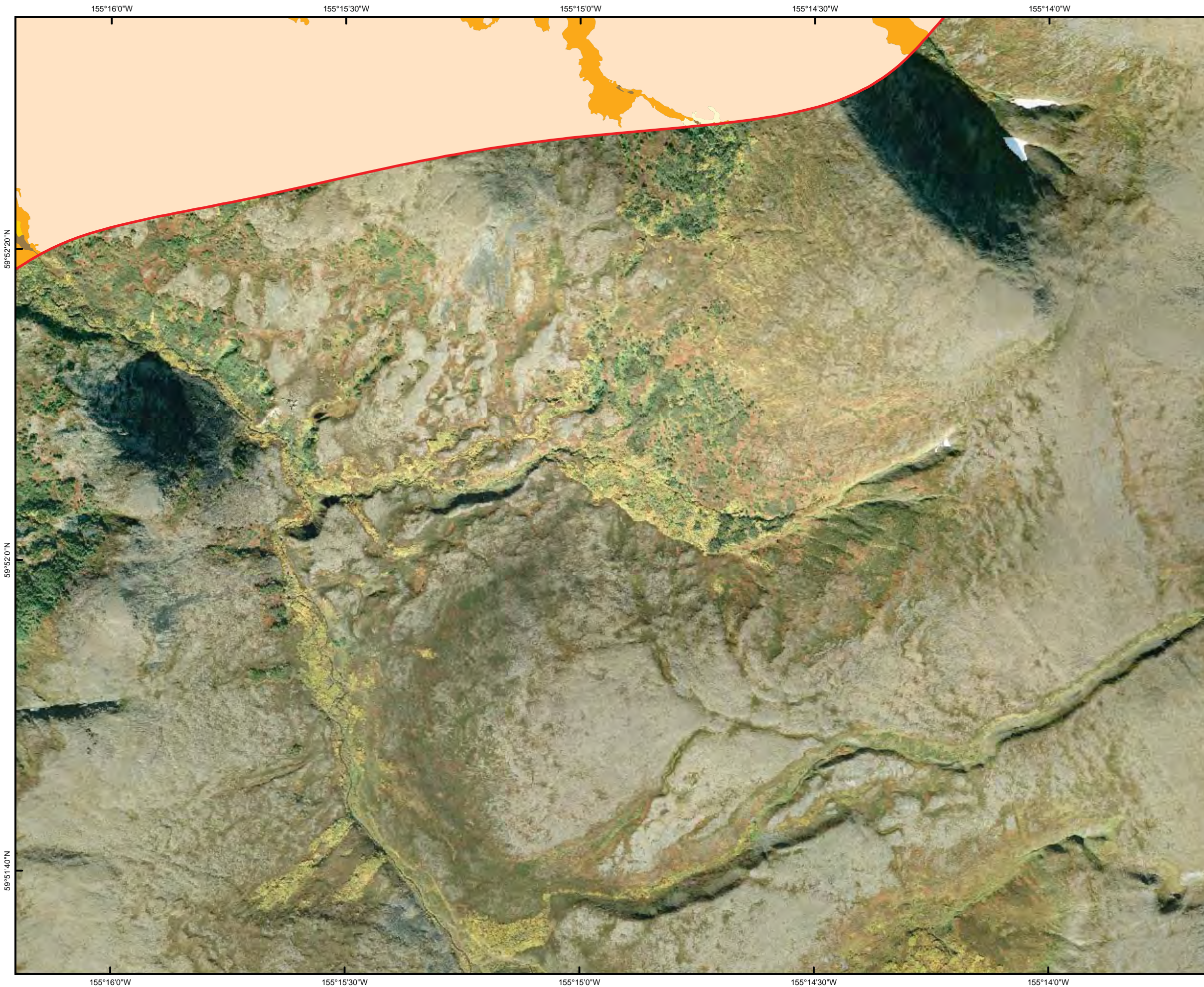
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 22A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1  
 PFO1/SS1  
 PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1  
 PSS1/US  
 PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1  
 PEM1/ML1  
 PEM1/2  
 PEM1/US  
 PUS/EM1  
 PEM2

**Aquatic Herbaceous**

PEM1  
 PAB  
 PEM1/US  
 PUS/EM1  
 R3AB  
 R3EM

**Lakes**

L

**Ponds**

PUB  
 PUS

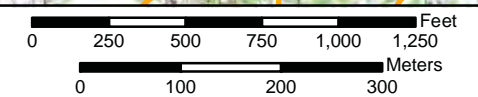
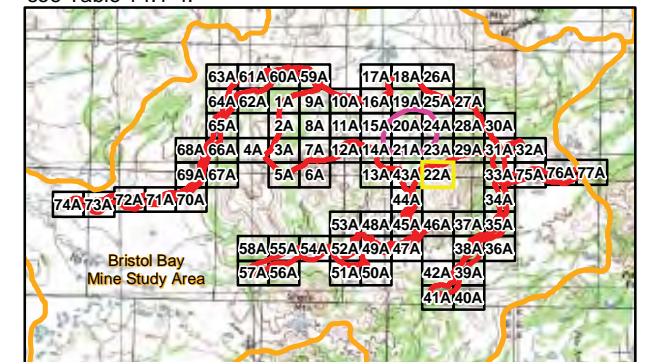
**Rivers/Streams**

R3UBH  
 R3US  
 R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

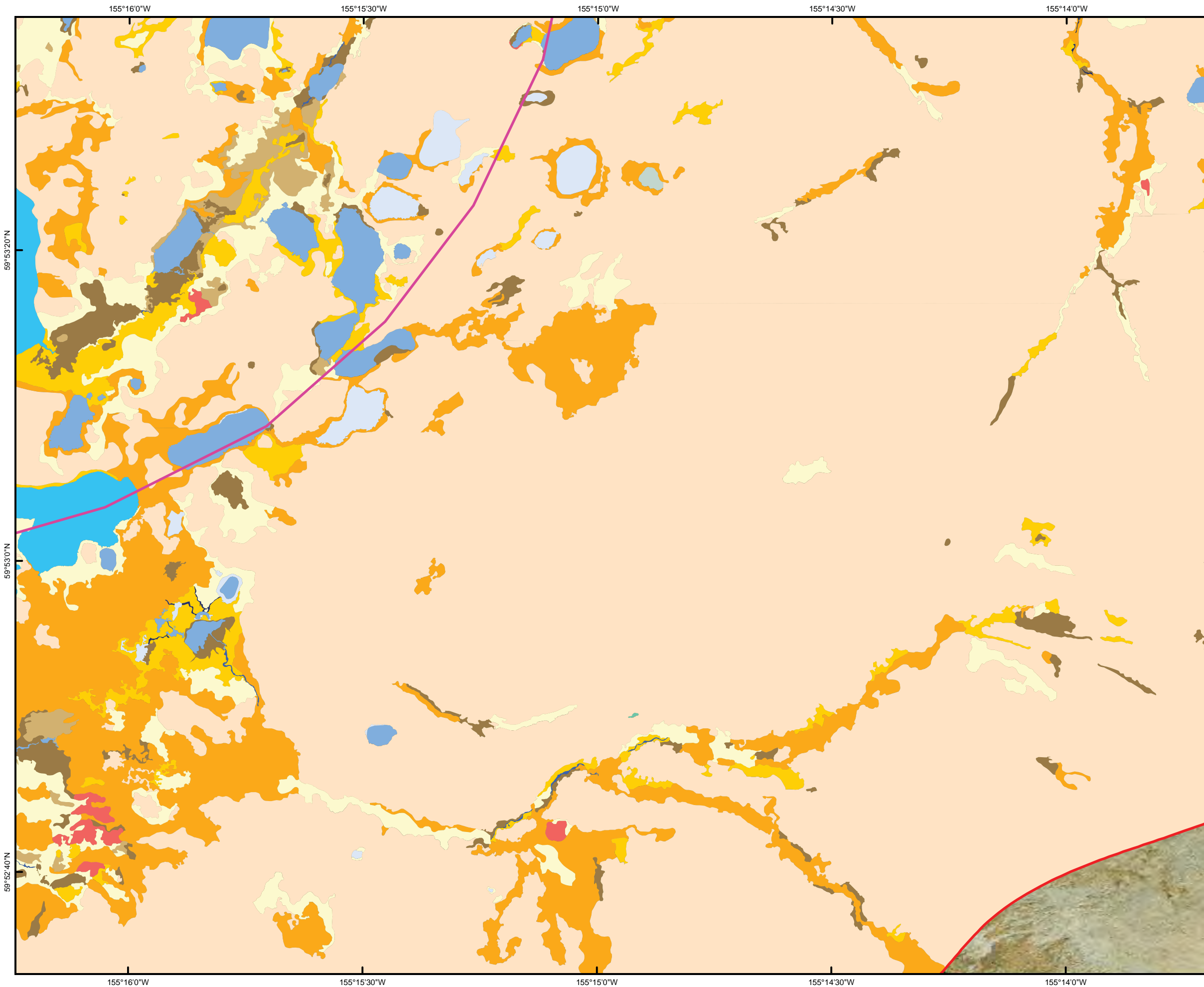
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 23A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

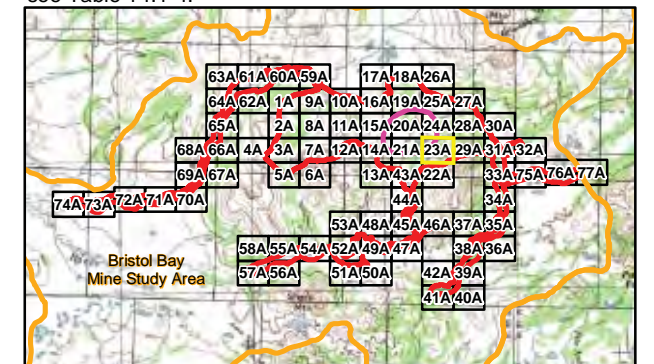
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

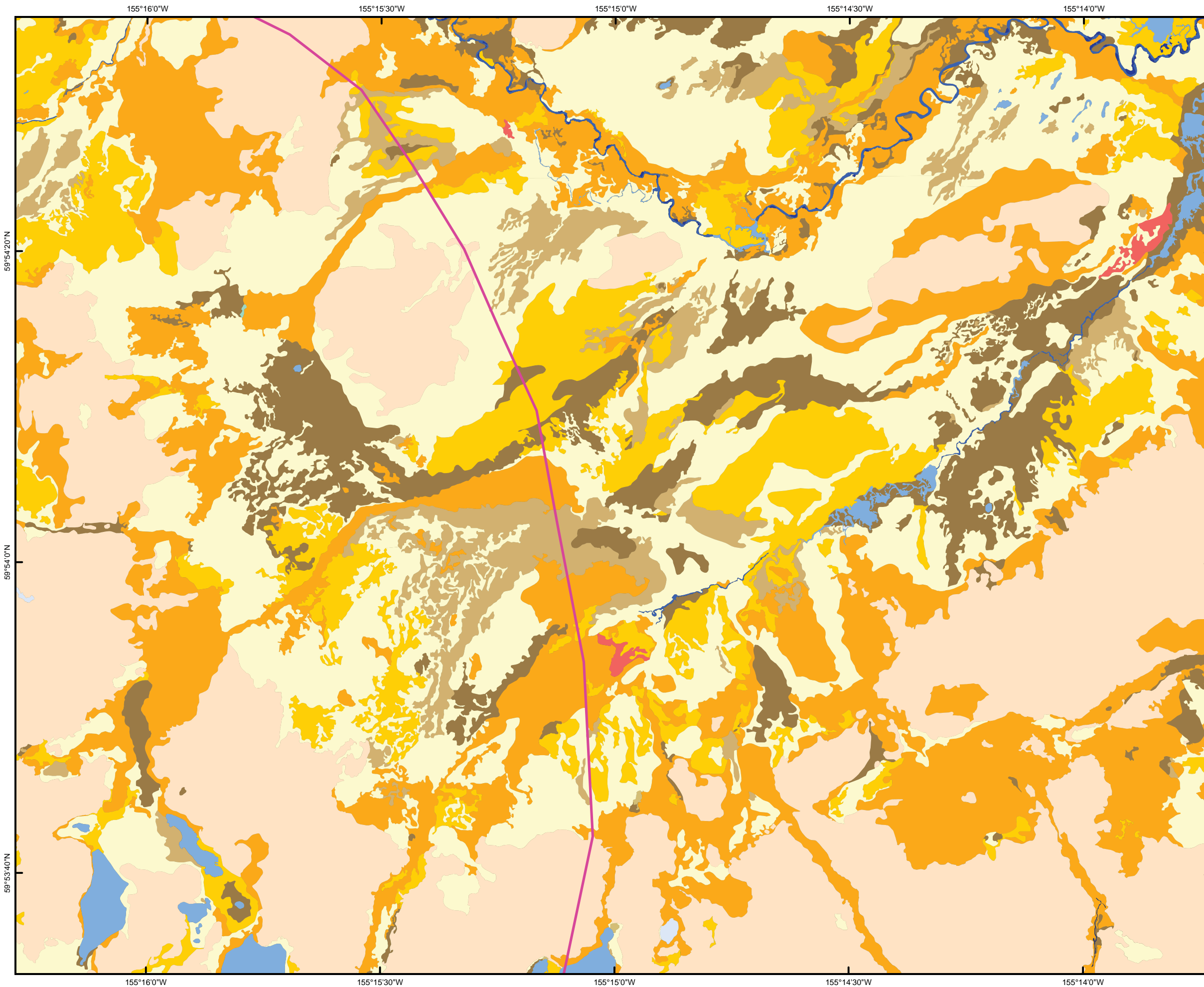
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 24A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

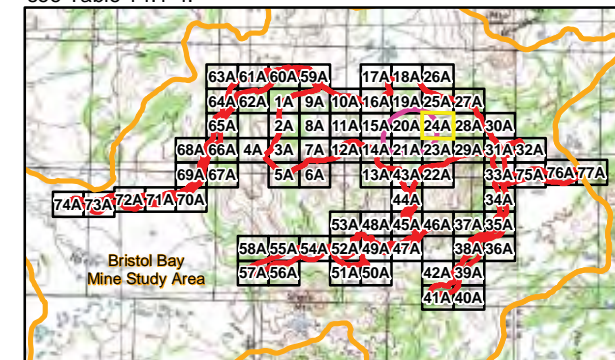
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

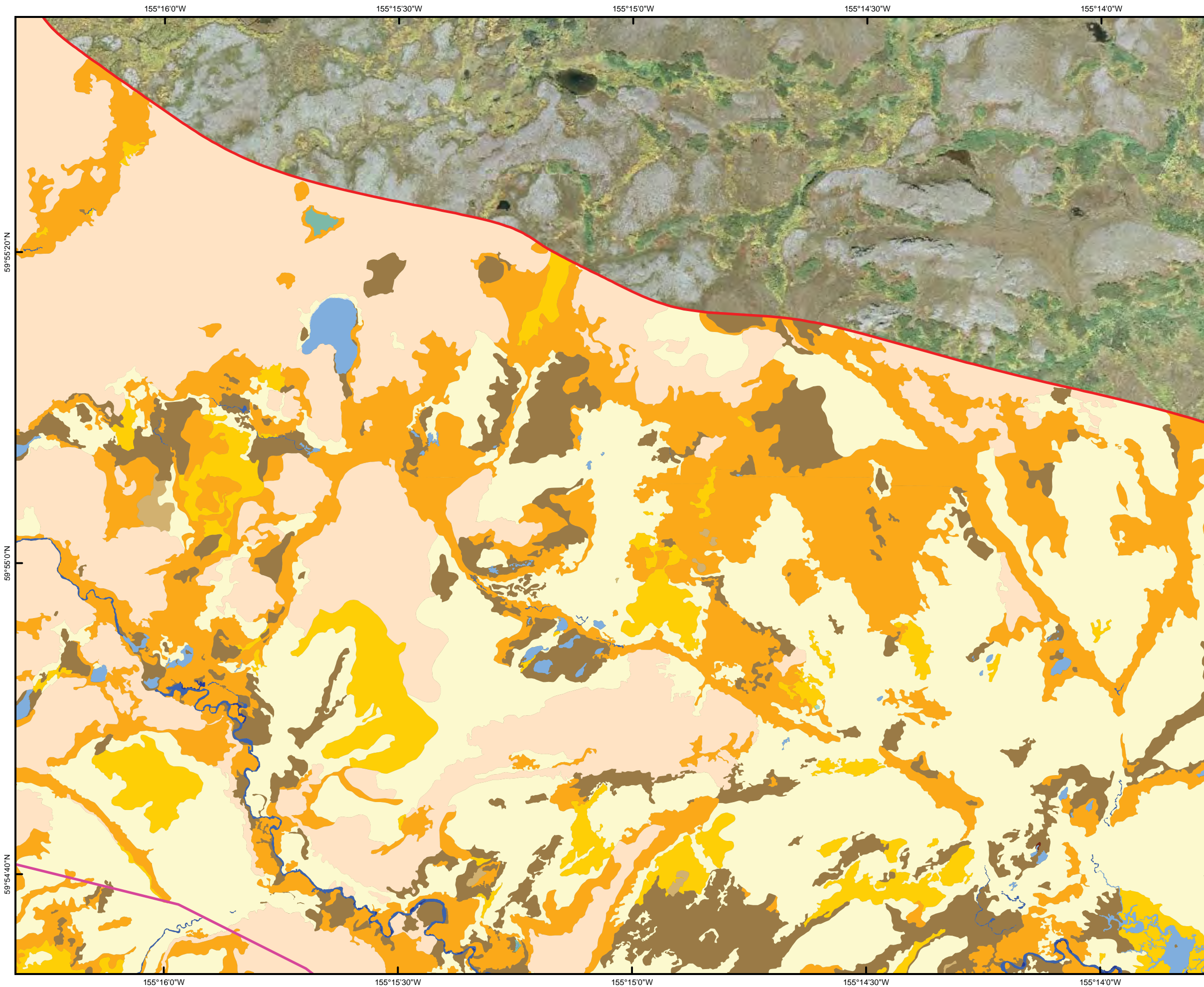
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 25A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

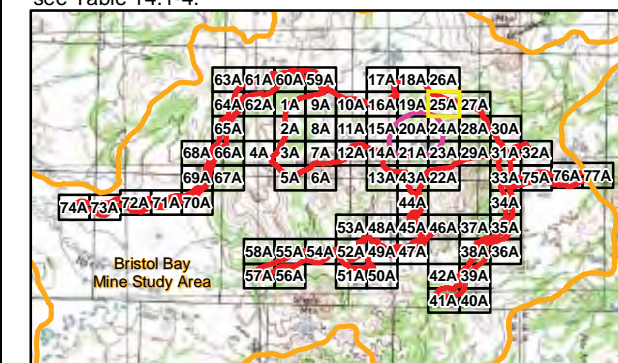
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

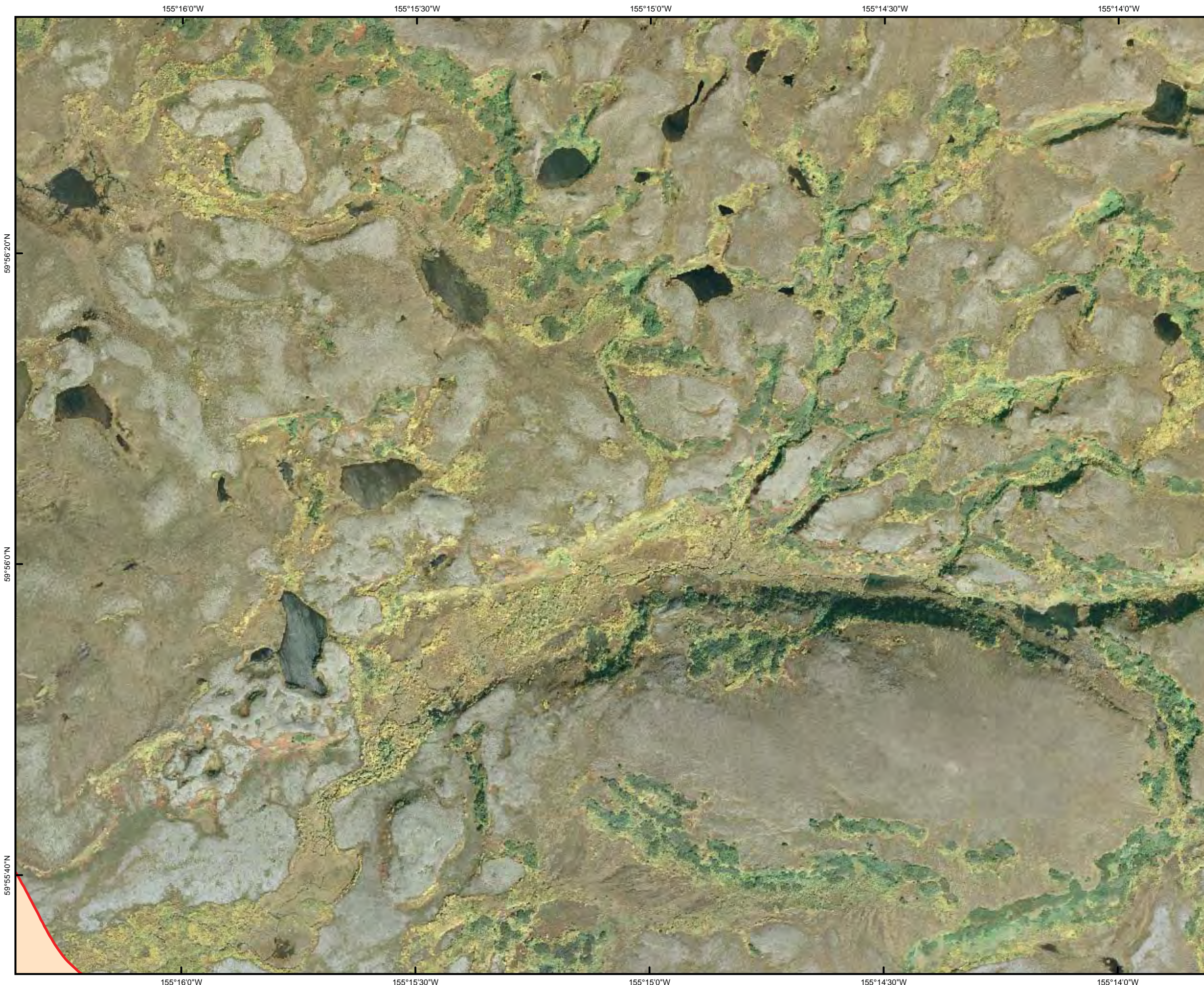
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



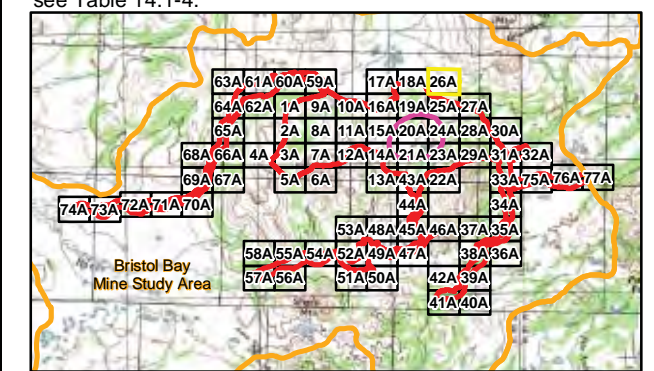


**Figure 14.1- 4, Tile 26A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
| Coniferous Forests | PUS/EM1            |
| PSS1/FO4           | R3AB               |
|                    | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
| Shrub/Herbaceous   | PUS                |
| PSS1/EM1           | Rivers/Streams     |
| Herbaceous/Shrub   | R3UBH              |
| PEM1/SS1           | R3US               |
| Herbaceous         | R4                 |
| PEM1               | Non-wetlands       |
| PEM1/ML1           | U                  |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

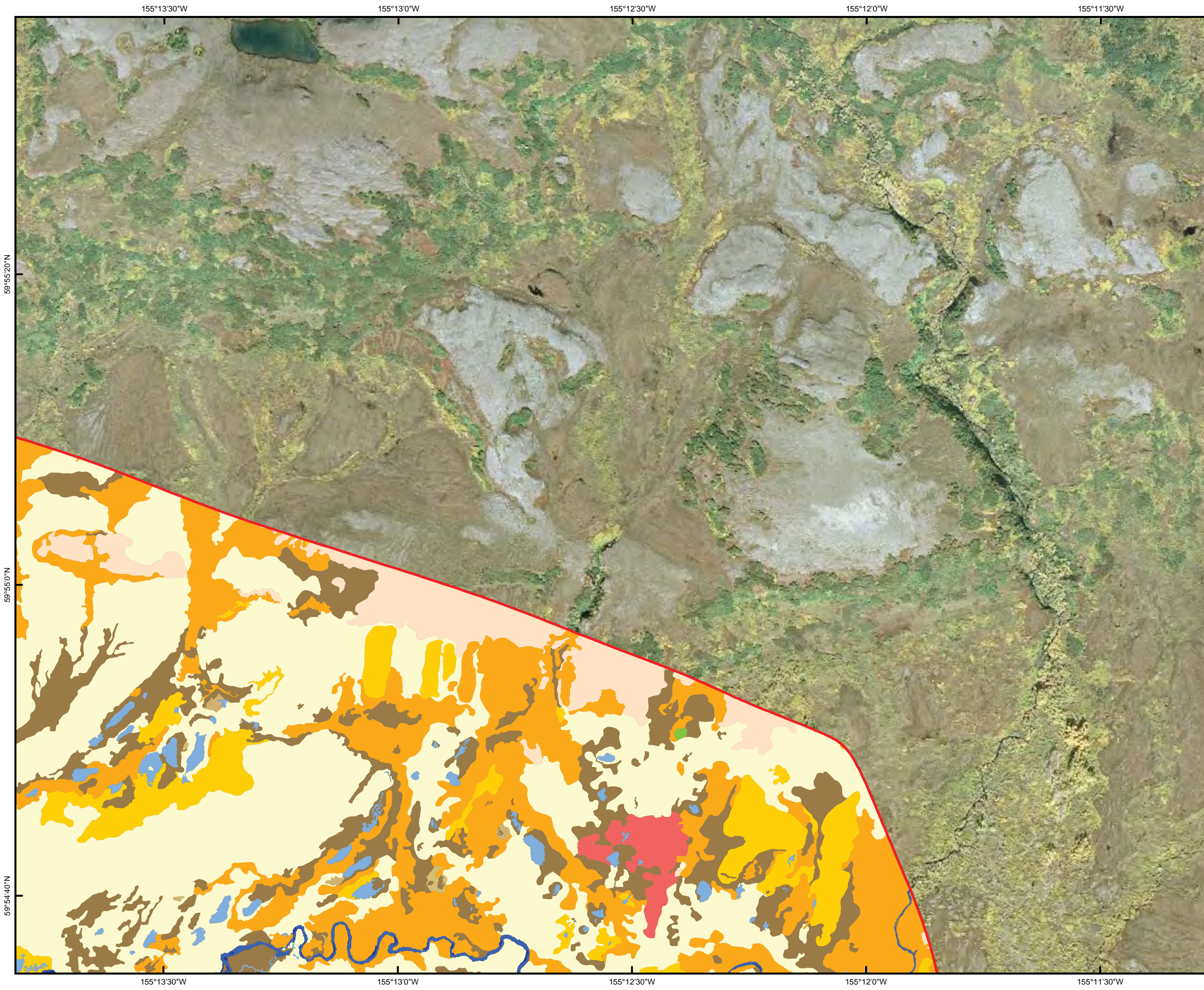
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



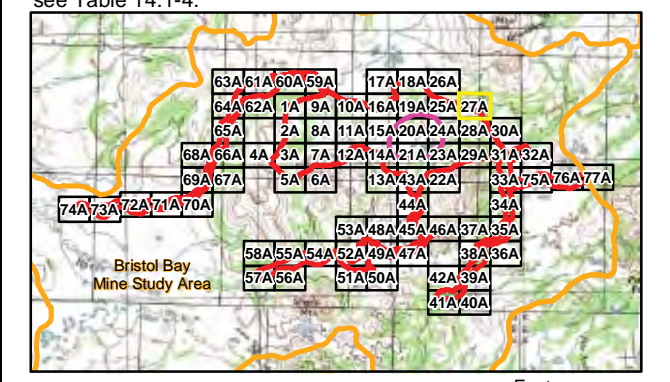


**Figure 14.1- 4, Tile 27A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| Deciduous Forests  | Aquatic Herbaceous  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #9ACD32; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #B0E0D0; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #E0E080; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PEM1/US |
| Coniferous Forests   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #808080; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #2E8B57; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #2F4F4F; margin-right: 5px;"></span> R3AB    |
| Shrub  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #008080; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF8C00; margin-right: 5px;"></span> PSS1     | Lakes   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF6347; margin-right: 5px;"></span> PSS1/ML1 | Ponds   |
| Shrub/Herbaceous   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #6495ED; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFACD; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #ADD8E6; margin-right: 5px;"></span> PUS     |
| Herbaceous/Shrub   | Rivers/Streams  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4682B4; margin-right: 5px;"></span> R3UBH   |
| Herbaceous   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00008B; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00008B; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | Non-wetlands  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #654321; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C08060; margin-right: 5px;"></span> PEM2     |   |

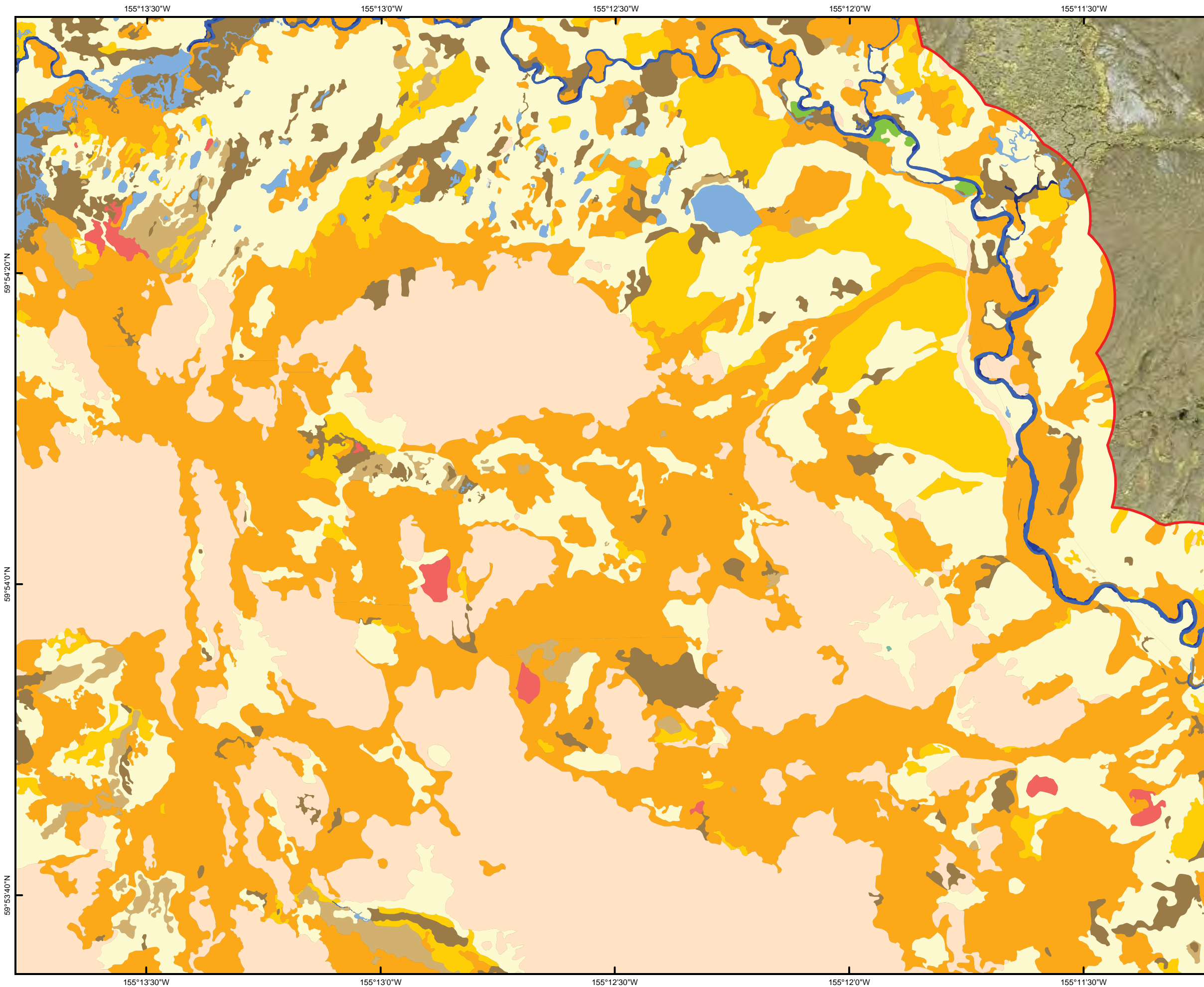
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 28A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

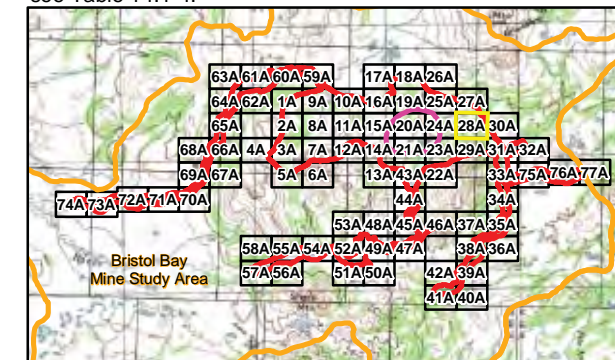
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

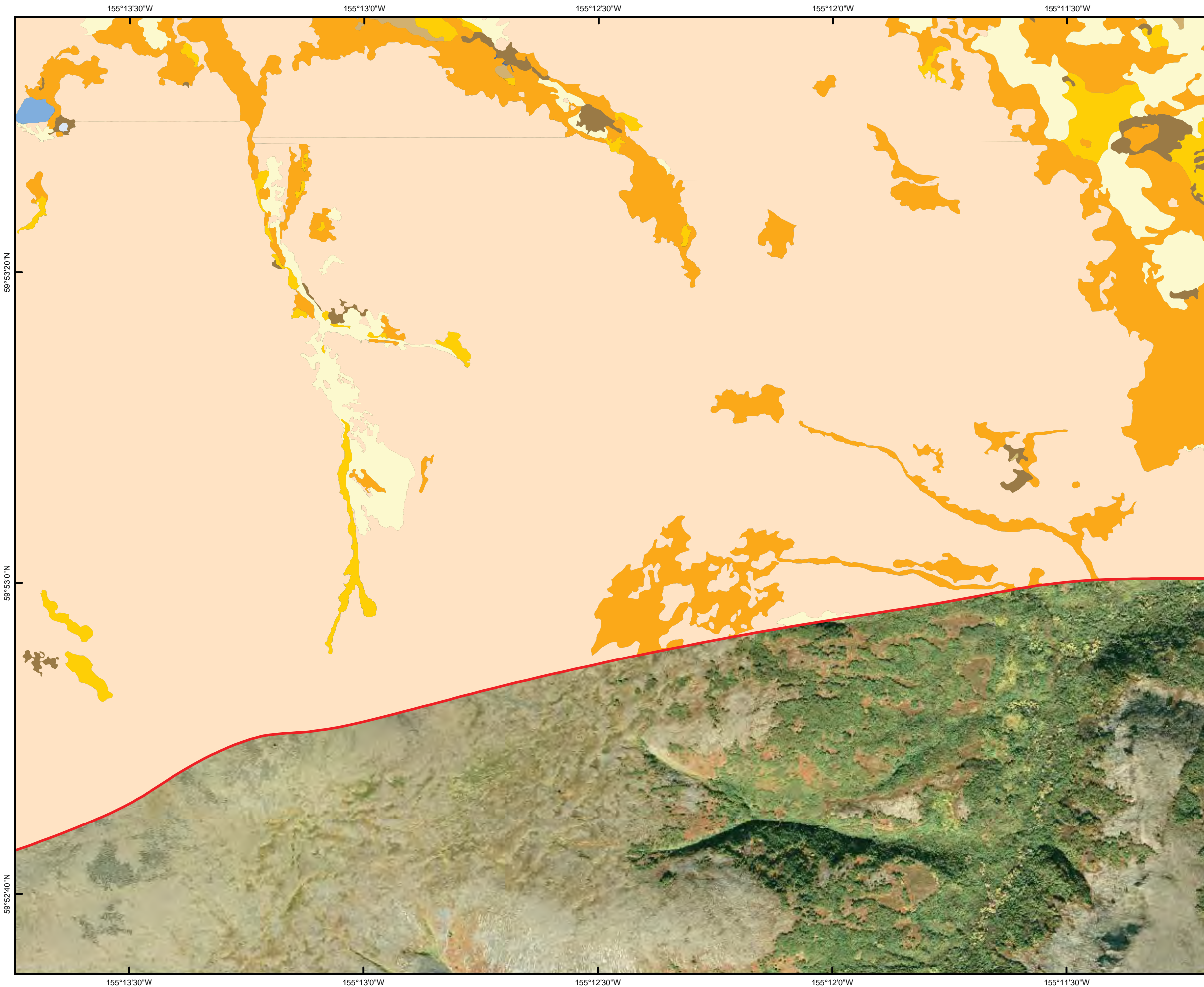
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 29A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1  
 PFO1/SS1  
 PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1  
 PSS1/US  
 PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1  
 PEM1/ML1  
 PEM1/2  
 PEM1/US  
 PUS/EM1  
 PEM2

**Aquatic Herbaceous**

PEM1  
 PAB  
 PEM1/US  
 PUS/EM1  
 R3AB  
 R3EM

**Lakes**

L

**Ponds**

PUB  
 PUS

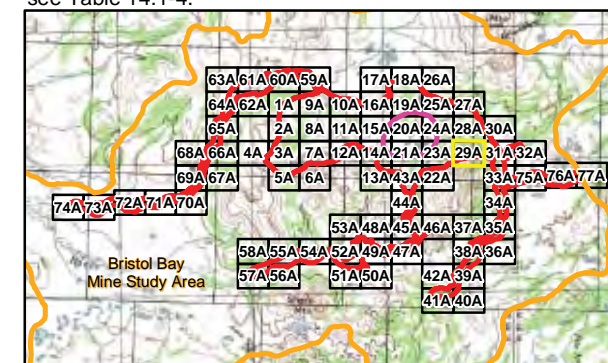
**Rivers/Streams**

R3UBH  
 R3US  
 R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 30A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1  
 PFO1/SS1  
 PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1  
 PSS1/US  
 PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1  
 PEM1/ML1  
 PEM1/2  
 PEM1/US  
 PUS/EM1  
 PEM2

**Aquatic Herbaceous**

PEM1  
 PAB  
 PEM1/US  
 PUS/EM1  
 R3AB  
 R3EM

**Lakes**

L

**Ponds**

PUB

PUS

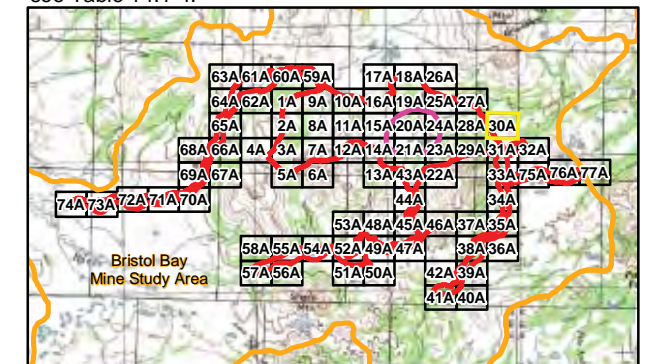
**Rivers/Streams**

R3UBH  
 R3US  
 R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

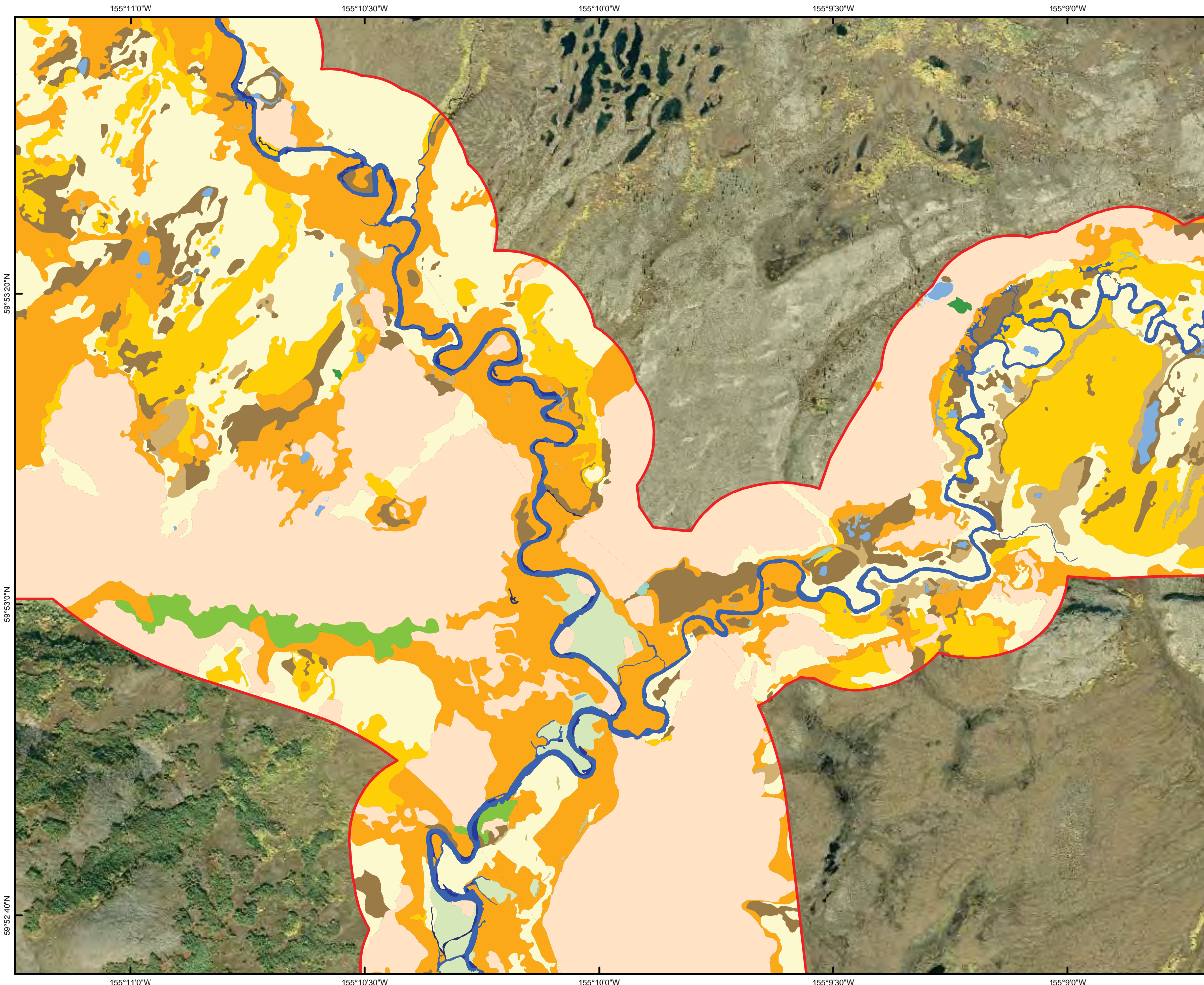
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



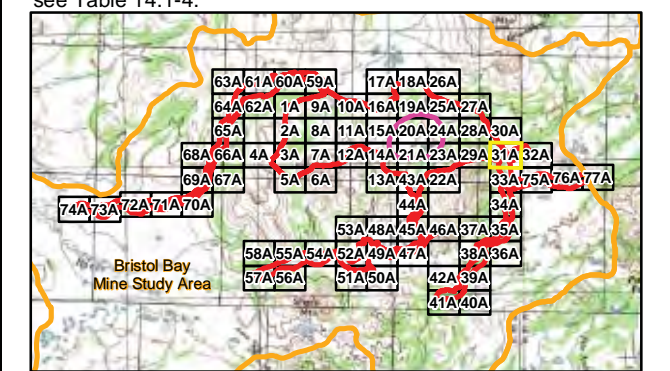


**Figure 14.1- 4, Tile 31A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| <b>Deciduous Forests</b>   | <b>Aquatic Herbaceous</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #B0E0D0; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C8E6C9; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #8FBC8F; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #66BB6A; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #4CAF50; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #546E7A; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #2E8B57; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF8C00; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF69B4; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>  |
| <b>Shrub/Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #6495ED; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFACD; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #ADD8E6; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>  | <b>Rivers/Streams</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4682B4; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4169E1; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A08060; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #191970; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #CD853F; margin-right: 5px;"></span> PEM2     |   |

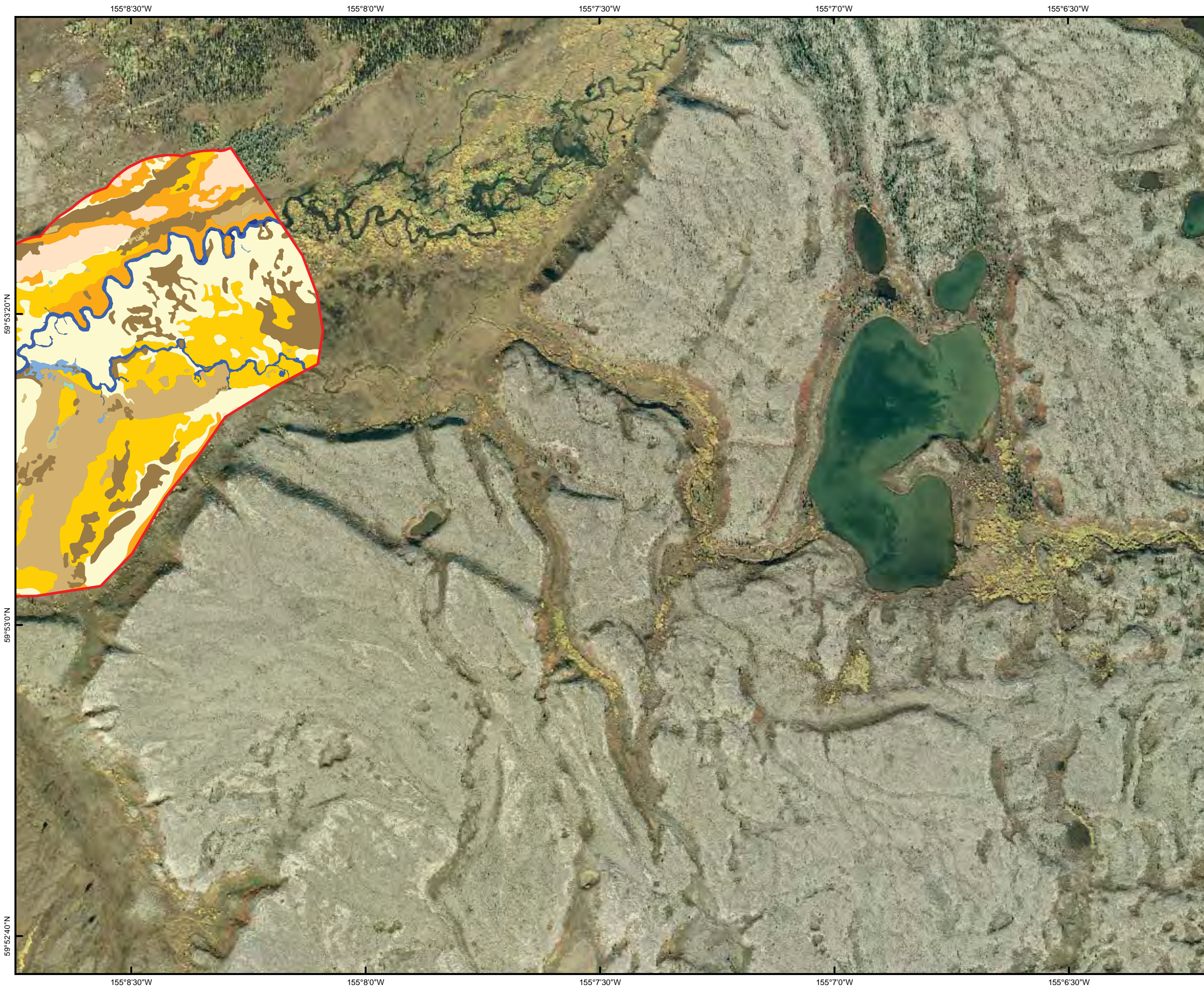
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 32A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

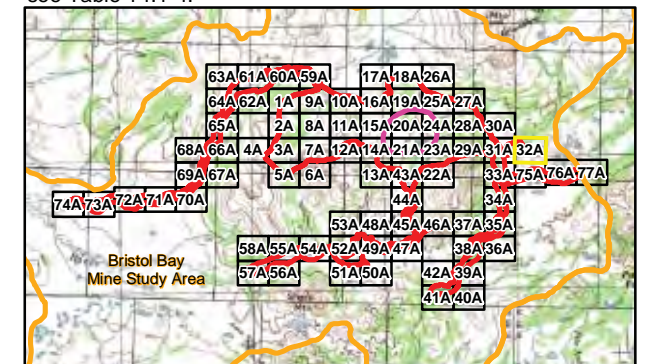
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

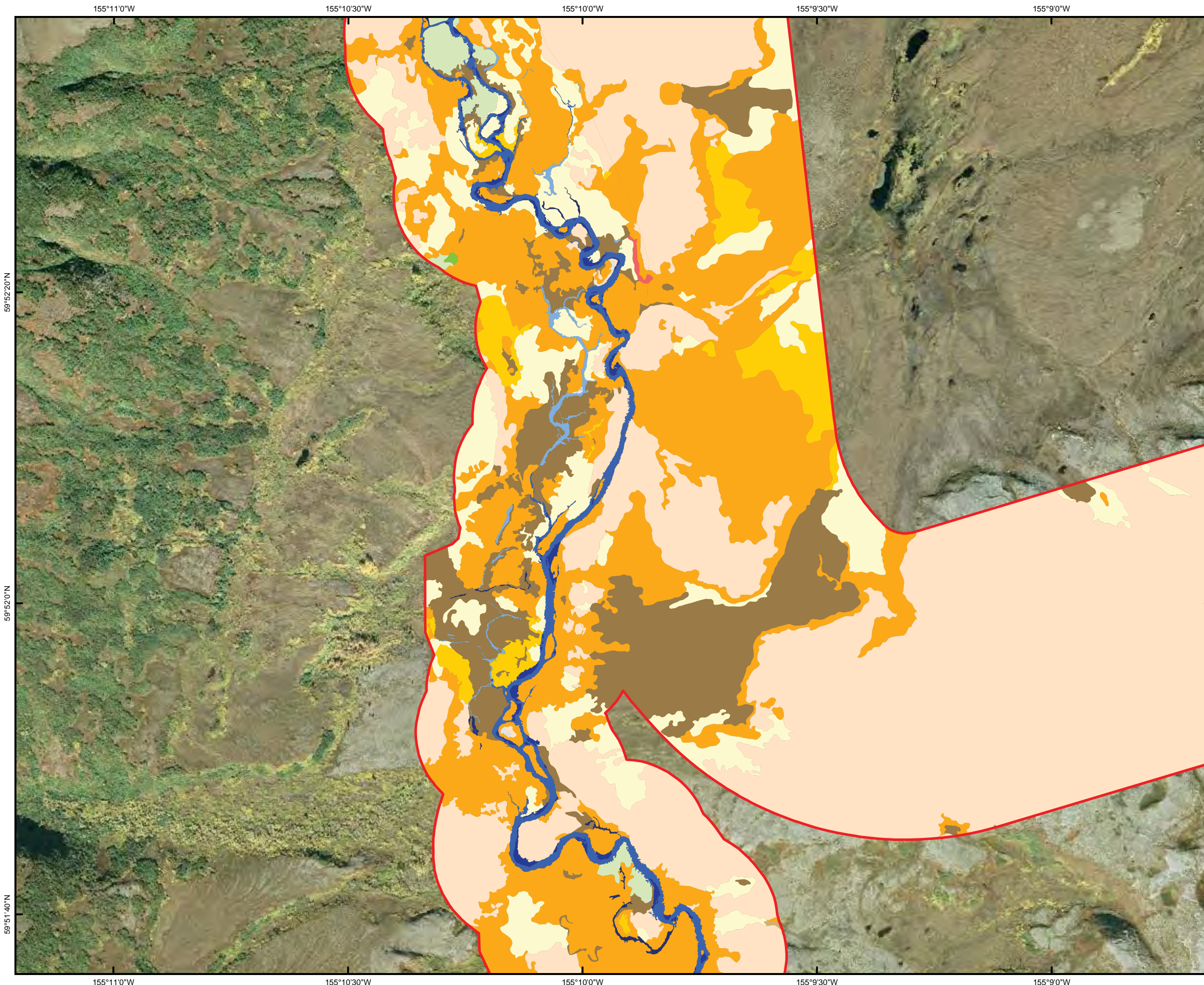
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



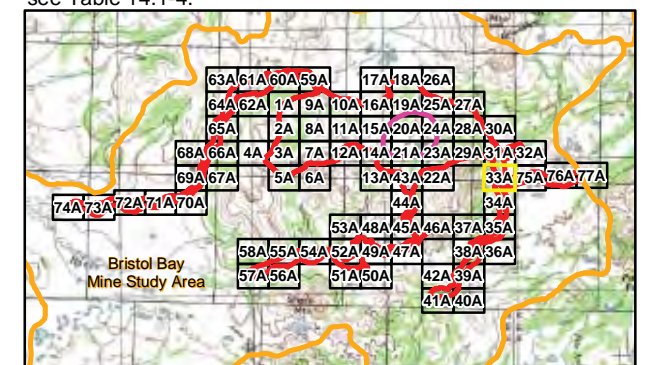


**Figure 14.1- 4, Tile 33A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| <b>Deciduous Forests</b>   | <b>Aquatic Herbaceous</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #8FBC8F; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C8E6C9; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4DB6AC; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #4CAF50; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #546E7A; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #2E8B57; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF8C00; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF69B4; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>  |
| <b>Shrub/Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #6495ED; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFFE0; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #B0C4DE; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>  | <b>Rivers/Streams</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4682B4; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4169E1; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A08060; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #191970; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; margin-right: 5px;"></span> PEM2     |   |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

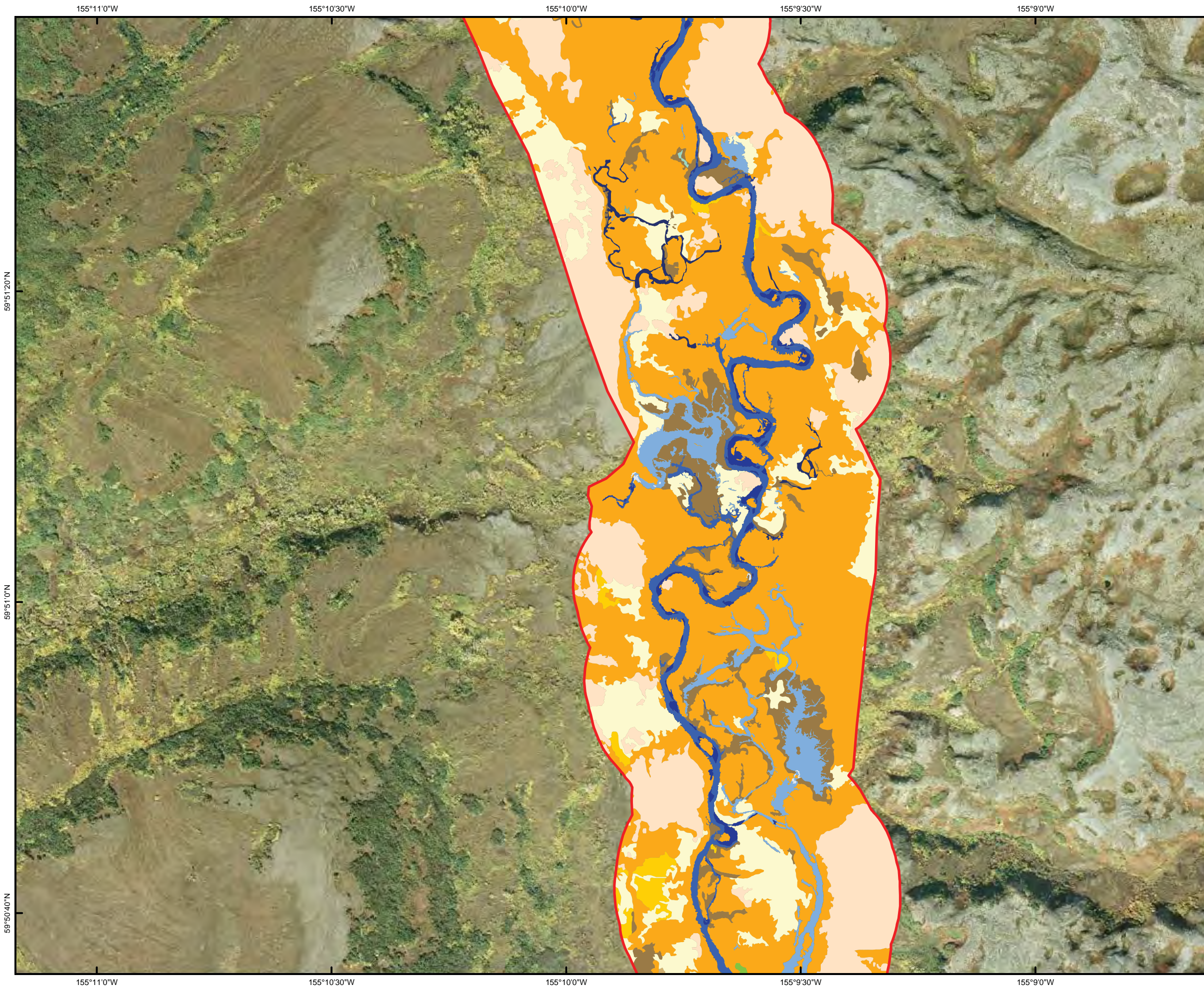
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



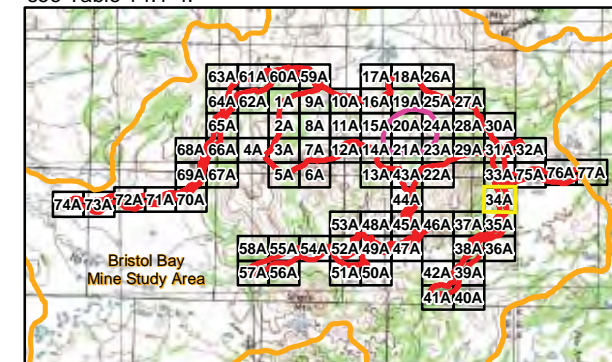


**Figure 14.1- 4, Tile 34A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| <b>Deciduous Forests</b>   | <b>Aquatic Herbaceous</b>   |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 10px; height: 10px; background-color: #D3D3D3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 10px; height: 10px; background-color: #B0E0D0; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #C8E6C9; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 10px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>  | <span style="display: inline-block; width: 10px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #4CAF50; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 10px; height: 10px; background-color: #546E7A; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>   | <span style="display: inline-block; width: 10px; height: 10px; background-color: #008080; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #FFA500; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>  |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #FF8C00; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 10px; height: 10px; background-color: #00BFFF; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #FF4500; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>  |
| <b>Shrub/Herbaceous</b>  | <span style="display: inline-block; width: 10px; height: 10px; background-color: #6495ED; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #FFFF00; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 10px; height: 10px; background-color: #ADD8E6; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>  | <b>Rivers/Streams</b>   |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #FFD700; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 10px; height: 10px; background-color: #4682B4; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>  | <span style="display: inline-block; width: 10px; height: 10px; background-color: #4169E1; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #A08060; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 10px; height: 10px; background-color: #191970; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>   |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 10px; height: 10px; background-color: #FFDAB9; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #A0522D; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 10px; height: 10px; background-color: #D2691E; margin-right: 5px;"></span> PEM2     |   |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

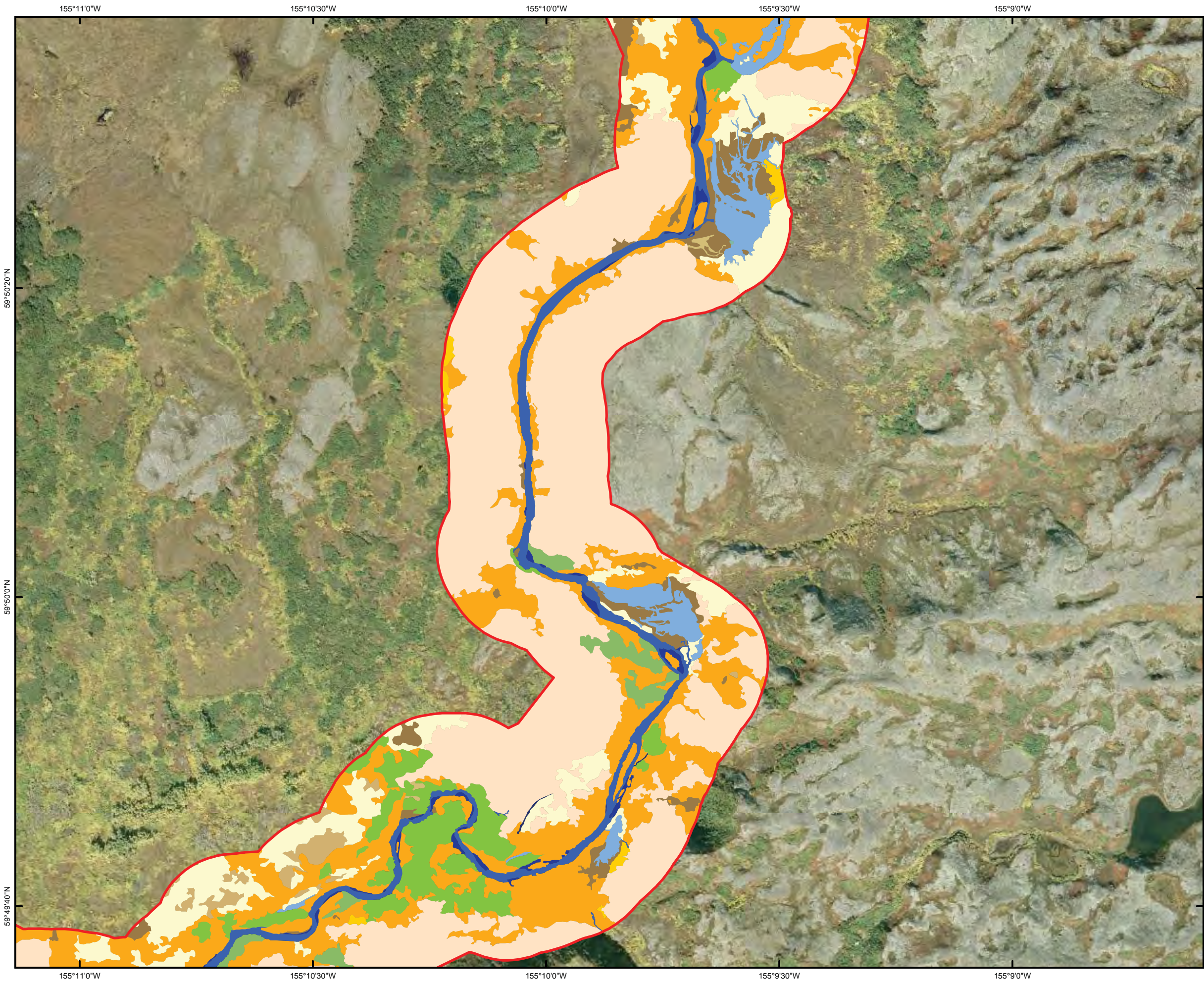
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



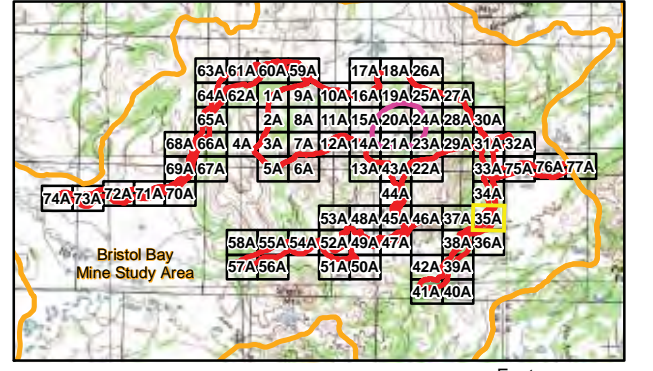


**Figure 14.1- 4, Tile 35A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification**
- Deciduous Forests**
  - PFO1
  - PFO1/SS1
  - PSS1/FO1
- Coniferous Forests**
  - PSS1/FO4
- Shrub**
  - PSS1
  - PSS1/US
  - PSS1/ML1
- Shrub/Herbaceous**
  - PSS1/EM1
- Herbaceous/Shrub**
  - PEM1/SS1
- Herbaceous**
  - PEM1
  - PEM1/ML1
  - PEM1/2
  - PEM1/US
  - PUS/EM1
  - PEM2
- Aquatic Herbaceous**
  - PEM1
  - PAB
  - PEM1/US
  - PUS/EM1
  - R3AB
  - R3EM
- Lakes**
  - L
- Ponds**
  - PUB
  - PUS
- Rivers/Streams**
  - R3UBH
  - R3US
  - R4
- Non-wetlands**
  - U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



025050075010001250

0100200300

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)

1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



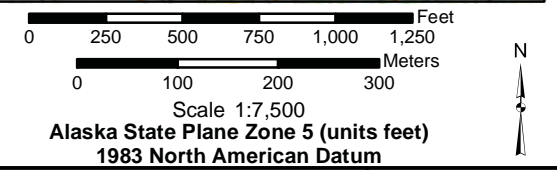
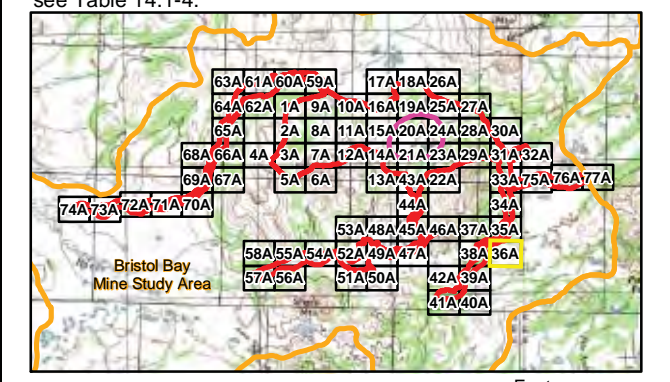


**Figure 14.1- 4, Tile 36A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
| Coniferous Forests | PUS/EM1            |
| PSS1/FO4           | R3AB               |
| Shrub              | R3EM               |
| PSS1               | Lakes              |
| PSS1/US            | L                  |
| PSS1/ML1           | Ponds              |
| Shrub/Herbaceous   | PUB                |
| PSS1/EM1           | PUS                |
| Herbaceous/Shrub   | Rivers/Streams     |
| PEM1/SS1           | R3UBH              |
| Herbaceous         | R3US               |
| PEM1               | R4                 |
| PEM1/ML1           | Non-wetlands       |
| PEM1/2             | U                  |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.


































File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



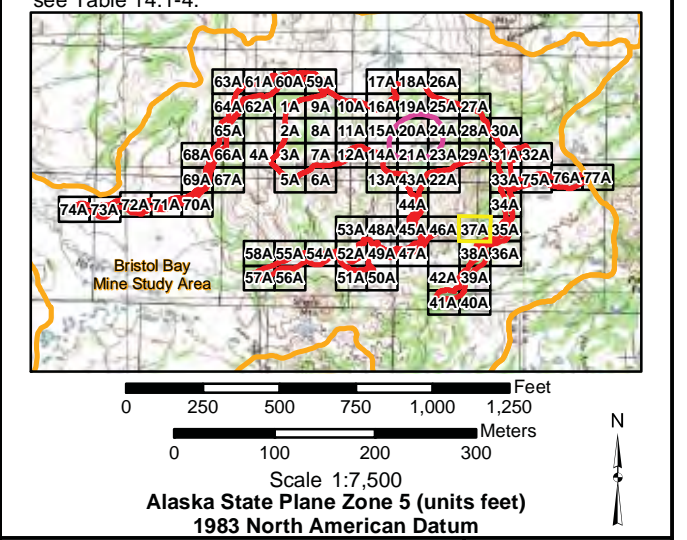


**Figure 14.1- 4, Tile 37A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

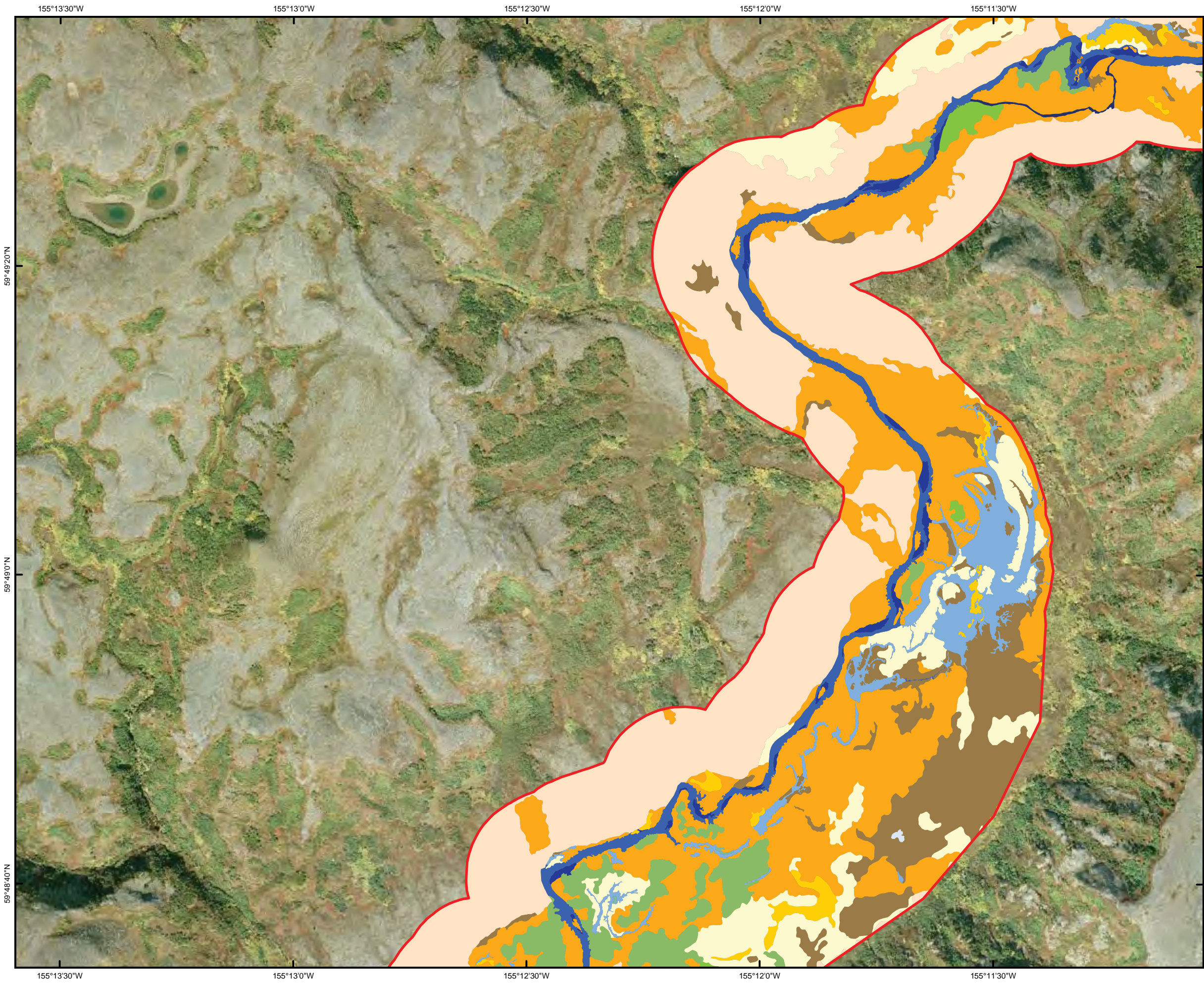
-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification**
- Deciduous Forests**
  -  PFO1
  -  PFO1/SS1
  -  PSS1/FO1
- Coniferous Forests**
  -  PSS1/FO4
- Shrub**
  -  PSS1
  -  PSS1/US
  -  PSS1/ML1
- Shrub/Herbaceous**
  -  PSS1/EM1
- Herbaceous/Shrub**
  -  PEM1/SS1
- Herbaceous**
  -  PEM1
  -  PEM1/ML1
  -  PEM1/2
  -  PEM1/US
  -  PUS/EM1
  -  PEM2
- Aquatic Herbaceous**
  -  PEM1
  -  PAB
  -  PEM1/US
  -  PUS/EM1
  -  R3AB
  -  R3EM
- Lakes**
  -  L
- Ponds**
  -  PUB
  -  PUS
- Rivers/Streams**
  -  R3UBH
  -  R3US
  -  R4
- Non-wetlands**
  -  U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



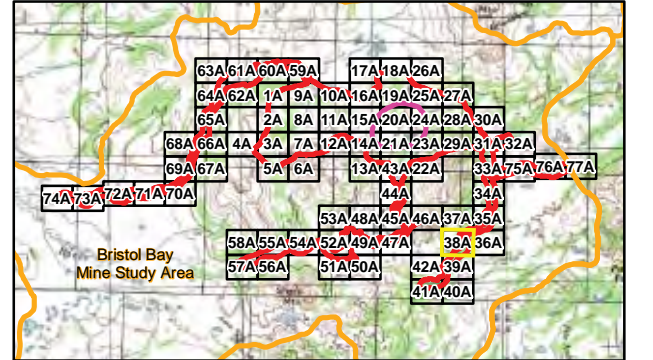


**Figure 14.1- 4, Tile 38A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |   |  |
|---|--|
| <b>Deciduous Forests</b>  | <b>Aquatic Herbaceous</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; border: 1px solid black; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #8FBC8F; border: 1px solid black; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C8E6C9; border: 1px solid black; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4DB6AC; border: 1px solid black; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4DB6AC; border: 1px solid black; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #2E8B57; border: 1px solid black; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #2F4F4F; border: 1px solid black; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #008080; border: 1px solid black; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; border: 1px solid black; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF8C00; border: 1px solid black; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; border: 1px solid black; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF6347; border: 1px solid black; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>   |
| <b>Shrub/Herbaceous</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #6495ED; border: 1px solid black; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFF00; border: 1px solid black; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #ADD8E6; border: 1px solid black; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>   | <b>Rivers/Streams</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; border: 1px solid black; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4682B4; border: 1px solid black; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00008B; border: 1px solid black; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; border: 1px solid black; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00008B; border: 1px solid black; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; border: 1px solid black; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #654321; border: 1px solid black; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; border: 1px solid black; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; border: 1px solid black; margin-right: 5px;"></span> PEM1/US  |  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; border: 1px solid black; margin-right: 5px;"></span> PUS/EM1  |  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; border: 1px solid black; margin-right: 5px;"></span> PEM2     |  |

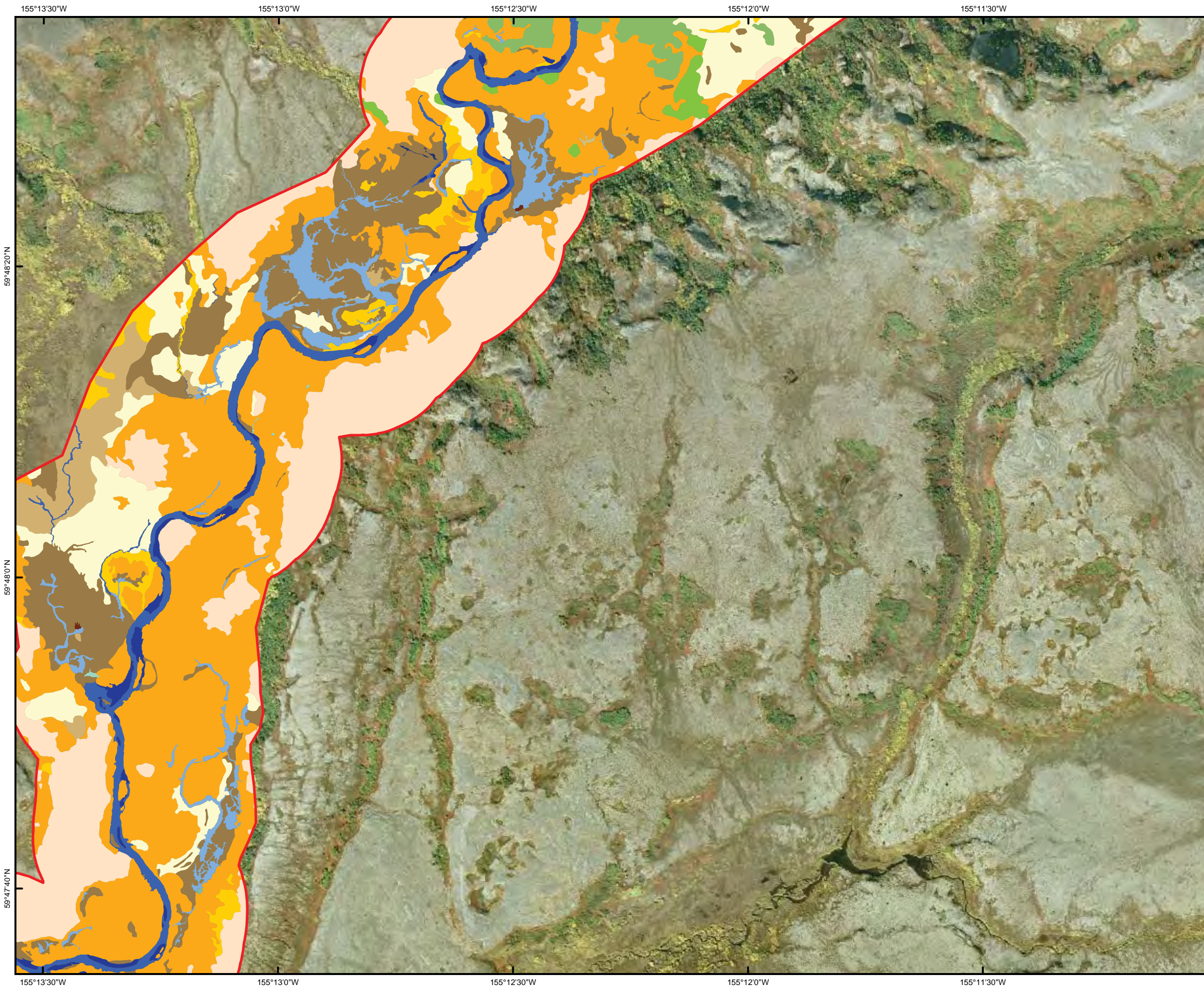
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 39A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

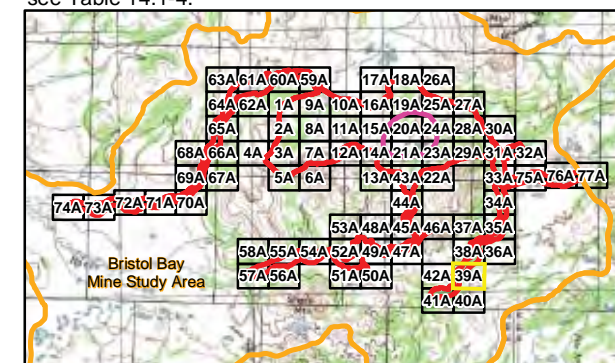
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



155°13'30"W 155°13'0"W 155°12'30"W 155°12'0"W 155°11'30"W 155°11'0"W

59°47'20"N

59°47'0"N

59°46'40"N

155°13'30"W 155°13'0"W 155°12'30"W 155°12'0"W 155°11'30"W 155°11'0"W

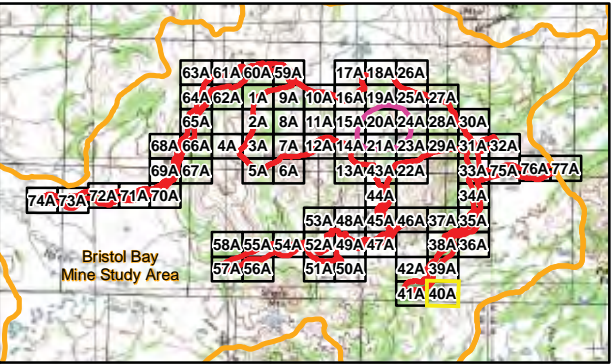


Figure 14.1- 4, Tile 40A  
Enhanced National Wetlands  
Inventory Mapping,  
Mine Study Area 2004-2008

Legend

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- Deciduous Forests
- PFO1
- PFO1/SS1
- PSS1/FO1
- Coniferous Forests
- PSS1/FO4
- Shrub
- PSS1
- PSS1/US
- PSS1/ML1
- Shrub/Herbaceous
- PSS1/EM1
- Herbaceous/Shrub
- PEM1/SS1
- Herbaceous
- PEM1
- PEM1/ML1
- PEM1/2
- PEM1/US
- PUS/EM1
- PEM2
- Aquatic Herbaceous
- PEM1
- PAB
- PEM1/US
- PUS/EM1
- R3AB
- R3EM
- Lakes
- L
- Ponds
- PUB
- PUS
- Rivers/Streams
- R3UBH
- R3US
- R4
- Non-wetlands
- U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



155°16'0"W 155°15'30"W 155°15'0"W 155°14'30"W 155°14'0"W 155°13'30"W

59°47'20"N

59°47'0"N

59°46'40"N

155°16'0"W 155°15'30"W 155°15'0"W 155°14'30"W 155°14'0"W 155°13'30"W



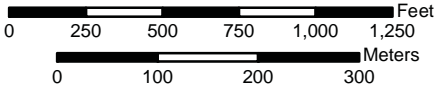
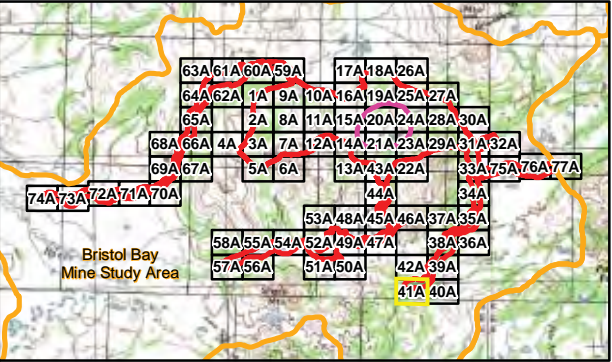
Figure 14.1- 4, Tile 41A  
Enhanced National Wetlands  
Inventory Mapping,  
Mine Study Area 2004-2008

Legend

- Mine Mapping Area
- Mine Study Area
- General Deposit Location

Enhanced National Wetlands Inventory (ENWI) Classification	
Deciduous Forests	Aquatic Herbaceous
PFO1	PEM1
PFO1/SS1	PAB
PSS1/FO1	PEM1/US
	PUS/EM1
Coniferous Forests	R3AB
PSS1/FO4	R3EM
Shrub	Lakes
PSS1	L
PSS1/US	Ponds
PSS1/ML1	PUB
	PUS
Shrub/Herbaceous	Rivers/Streams
PSS1/EM1	R3UBH
	R3US
Herbaceous/Shrub	R4
PEM1/SS1	
Herbaceous	Non-wetlands
PEM1	U
PEM1/ML1	
PEM1/2	
PEM1/US	
PUS/EM1	
PEM2	

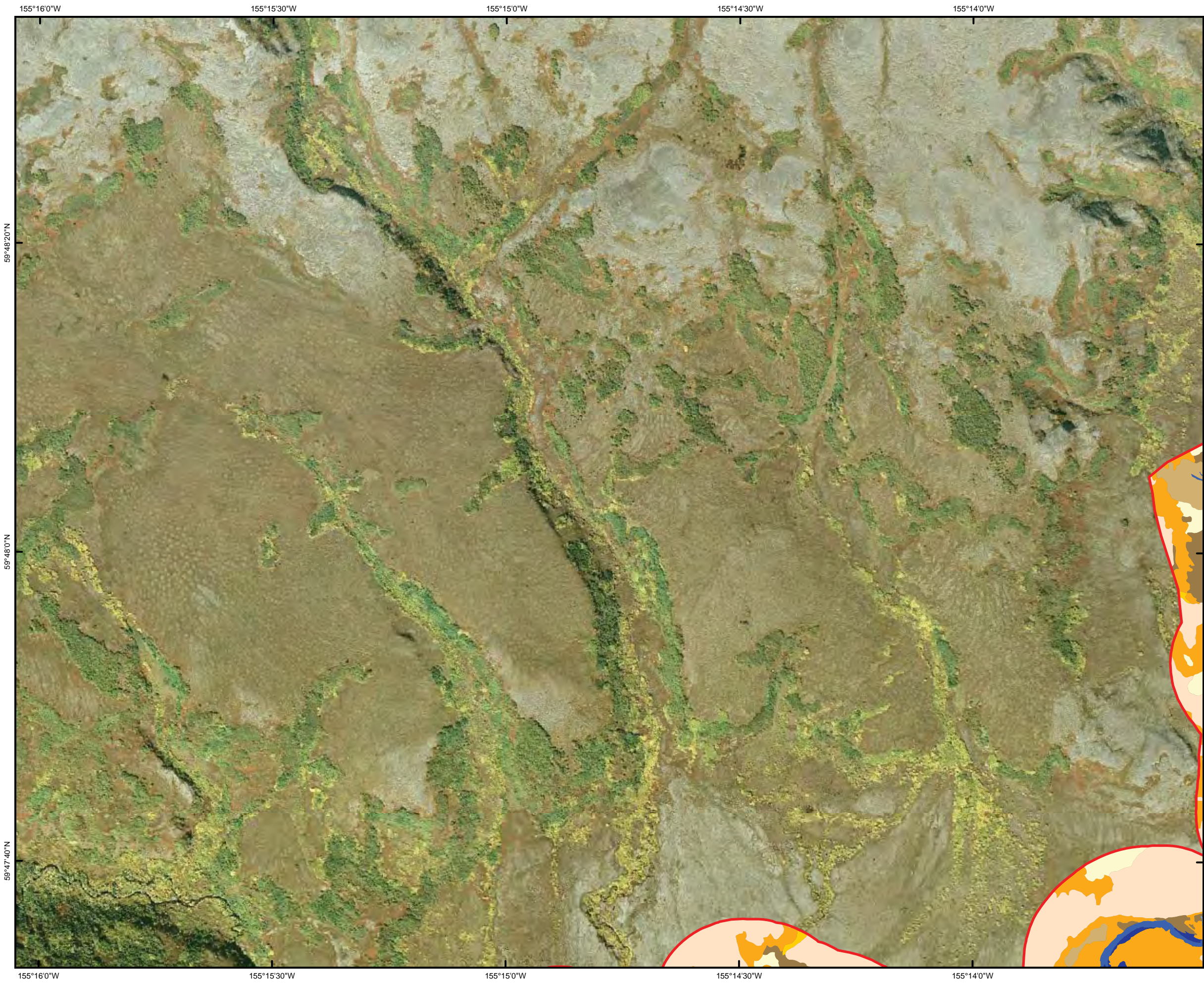
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



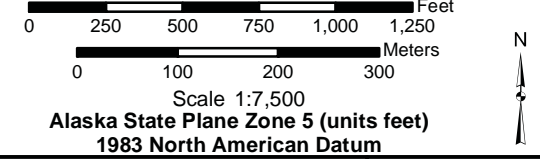
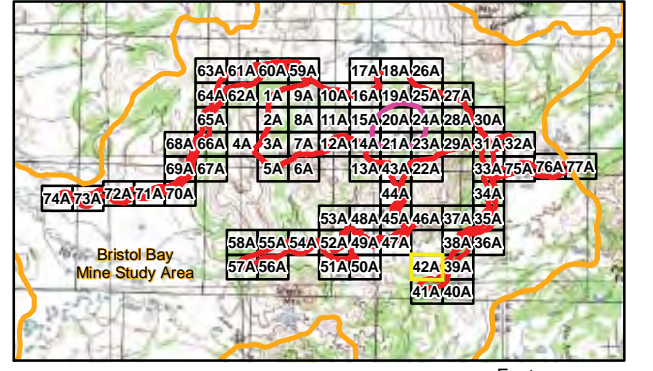


**Figure 14.1- 4, Tile 42A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

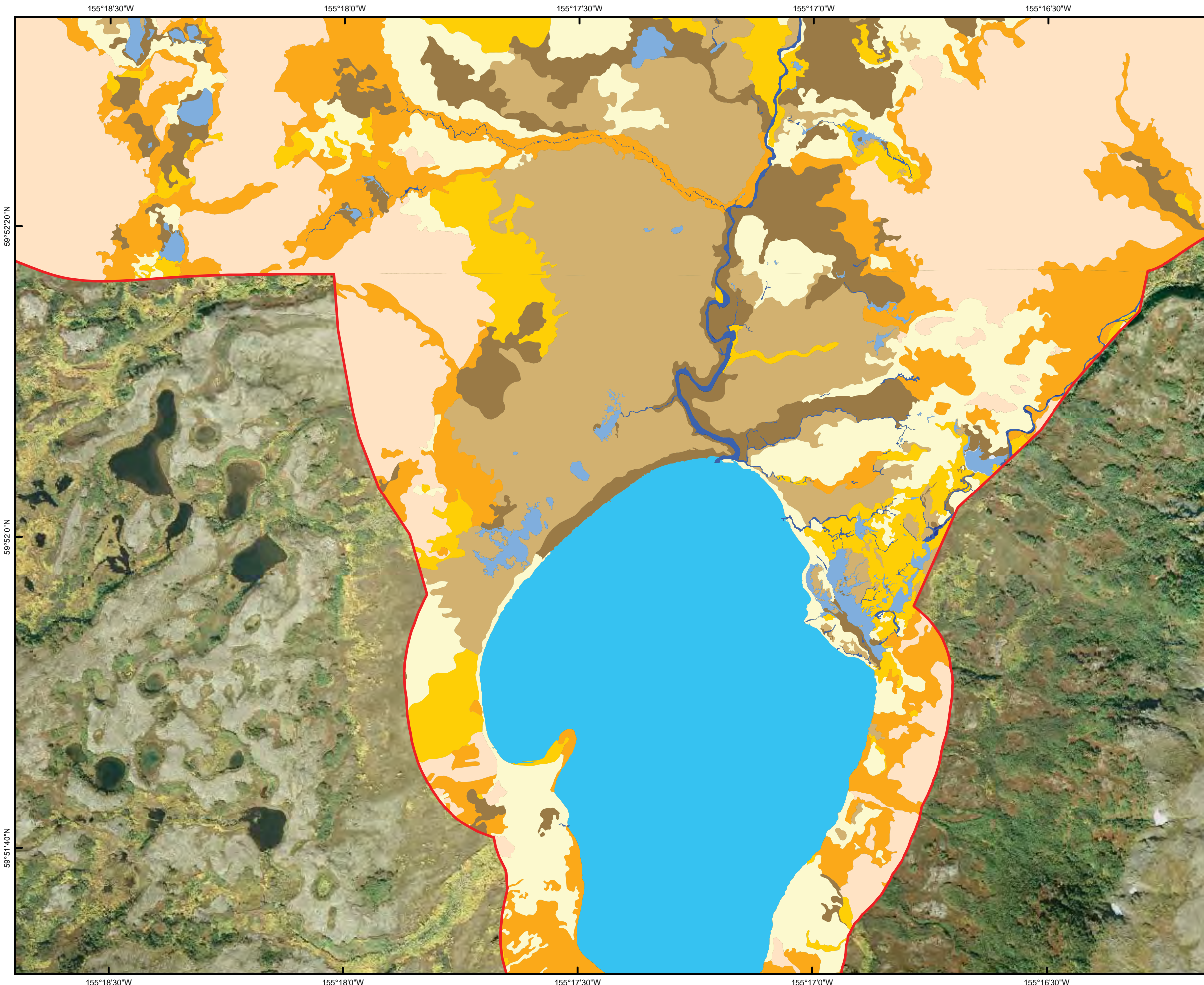
- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification**
- Deciduous Forests**
  - PFO1
  - PFO1/SS1
  - PSS1/FO1
- Coniferous Forests**
  - PSS1/FO4
- Shrub**
  - PSS1
  - PSS1/US
  - PSS1/ML1
- Shrub/Herbaceous**
  - PSS1/EM1
- Herbaceous/Shrub**
  - PEM1/SS1
- Herbaceous**
  - PEM1
  - PEM1/ML1
  - PEM1/2
  - PEM1/US
  - PUS/EM1
  - PEM2
- Aquatic Herbaceous**
  - PEM1
  - PAB
  - PEM1/US
  - PUS/EM1
  - R3AB
  - R3EM
- Lakes**
  - L
- Ponds**
  - PUB
  - PUS
- Rivers/Streams**
  - R3UBH
  - R3US
  - R4
- Non-wetlands**
  - U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



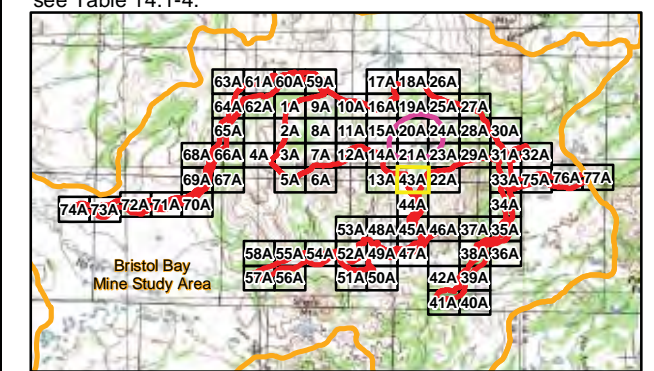


**Figure 14.1- 4, Tile 43A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                           |                           |
|---------------------------|---------------------------|
| <b>Deciduous Forests</b>  | <b>Aquatic Herbaceous</b> |
| PFO1                      | PEM1                      |
| PFO1/SS1                  | PAB                       |
| PSS1/FO1                  | PEM1/US                   |
| <b>Coniferous Forests</b> | PUS/EM1                   |
| PSS1/FO4                  | R3AB                      |
| <b>Shrub</b>              | R3EM                      |
| PSS1                      | <b>Lakes</b>              |
| PSS1/US                   | L                         |
| PSS1/ML1                  | <b>Ponds</b>              |
| <b>Shrub/Herbaceous</b>   | PUB                       |
| PSS1/EM1                  | PUS                       |
| <b>Herbaceous/Shrub</b>   | <b>Rivers/Streams</b>     |
| PEM1/SS1                  | R3UBH                     |
| <b>Herbaceous</b>         | R3US                      |
| PEM1                      | R4                        |
| PEM1/ML1                  | <b>Non-wetlands</b>       |
| PEM1/2                    | U                         |
| PEM1/US                   |                           |
| PUS/EM1                   |                           |
| PEM2                      |                           |

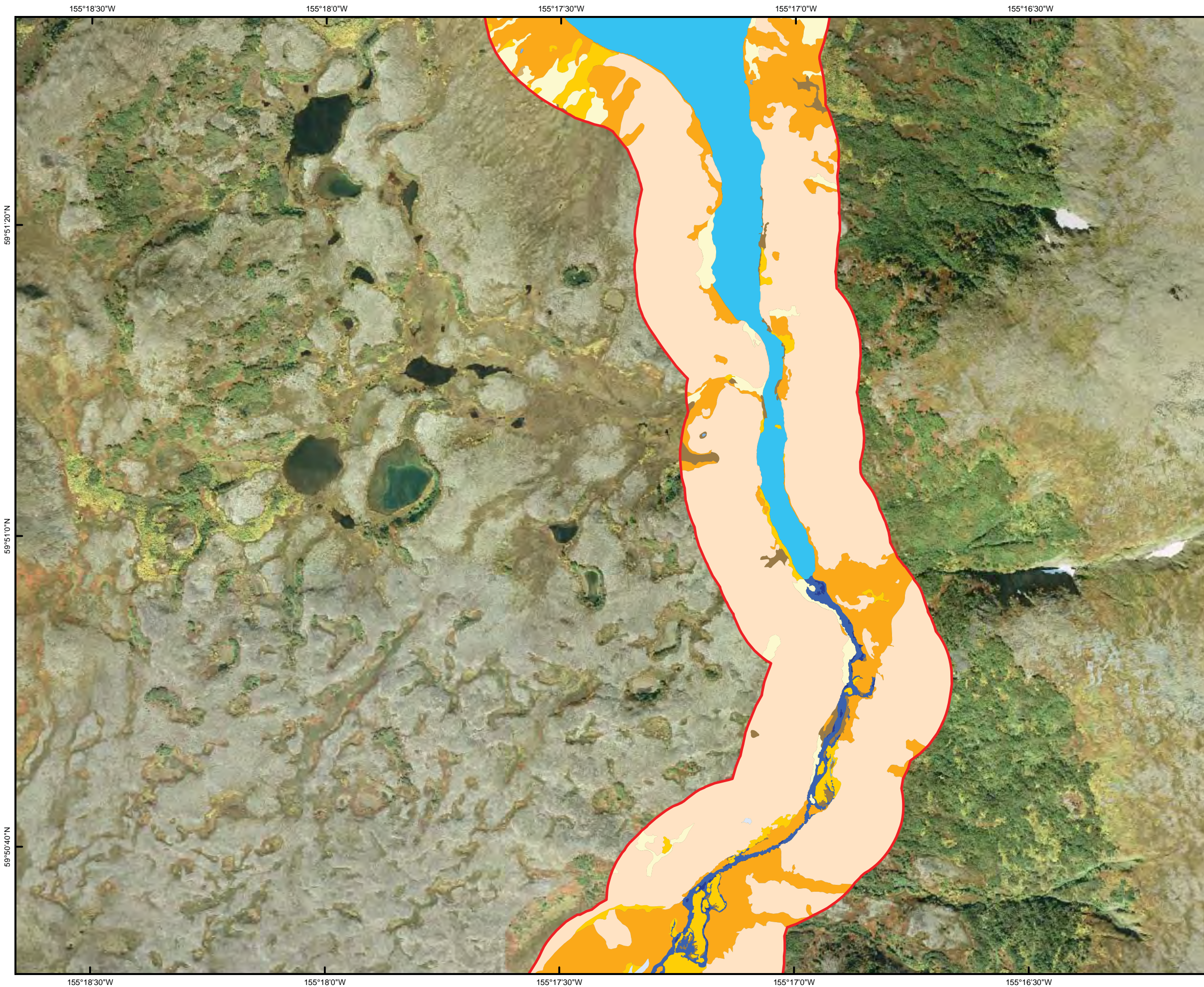
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 44A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

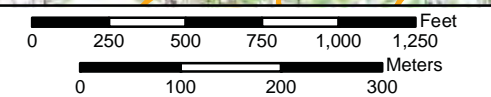
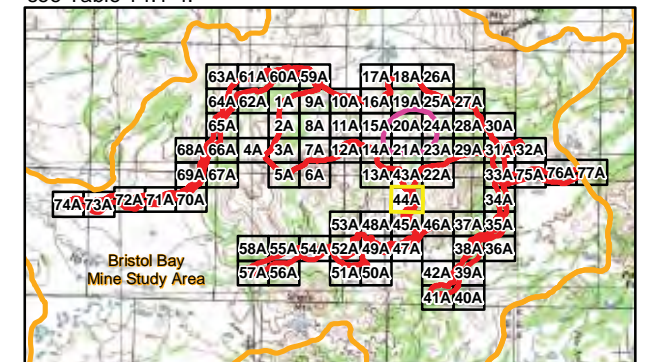
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

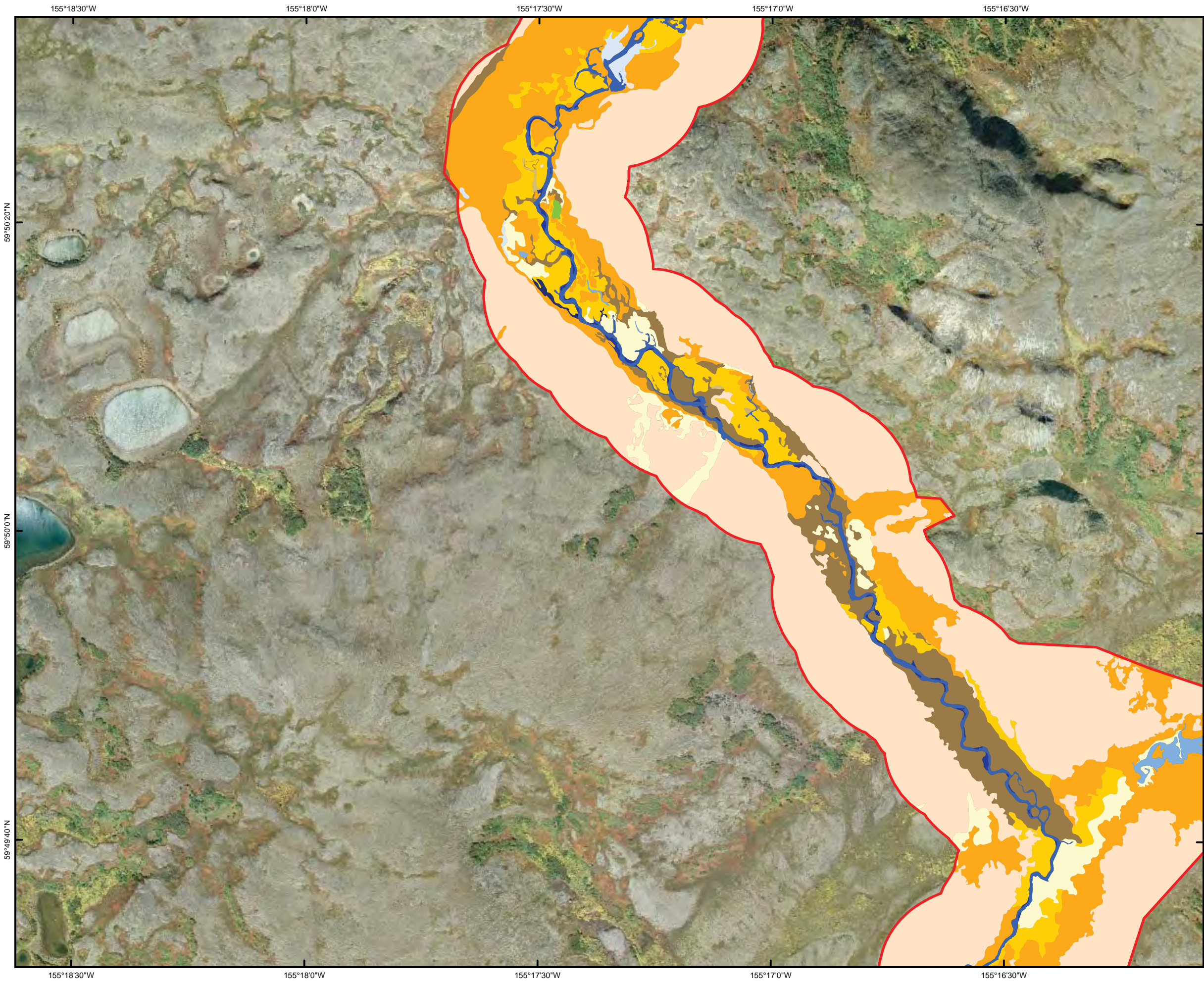
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



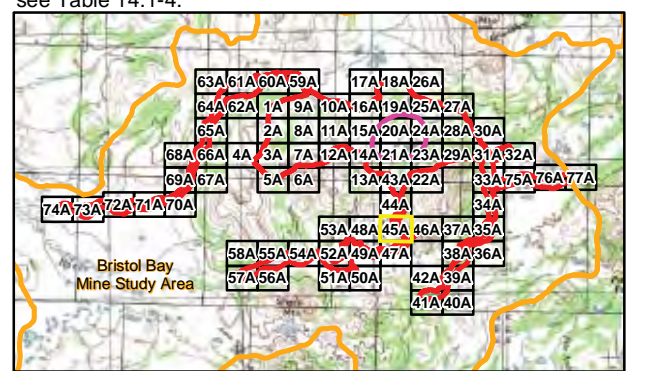


**Figure 14.1- 4, Tile 45A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

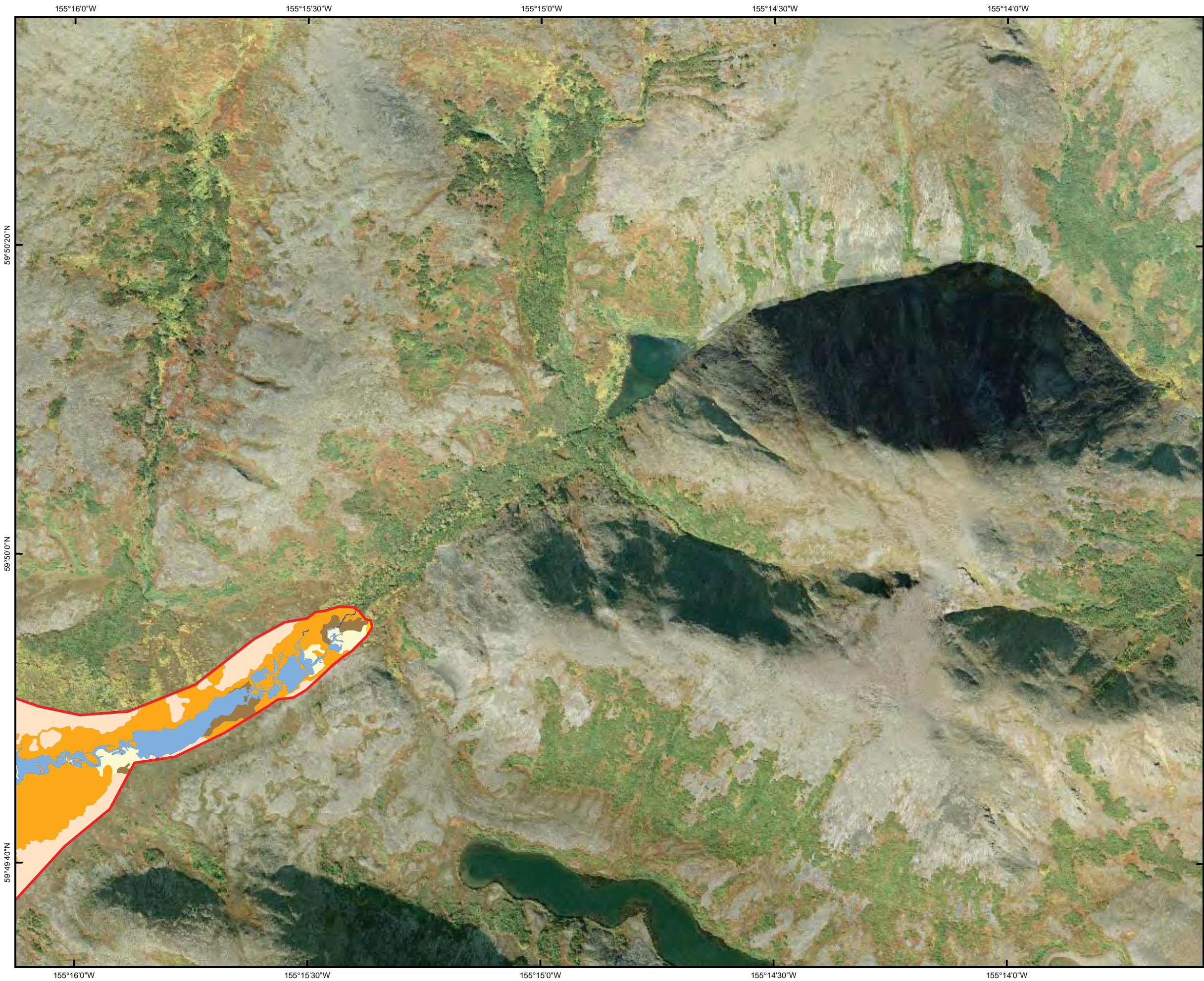
**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| <b>Deciduous Forests</b>   | <b>Aquatic Herbaceous</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #008000; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #666666; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #008000; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF8C00; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF0000; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>  |
| <b>Shrub/Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #ADD8E6; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFF00; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #ADD8E6; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>  | <b>Rivers/Streams</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00008B; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00008B; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00008B; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #654321; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; margin-right: 5px;"></span> PEM2     |   |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.





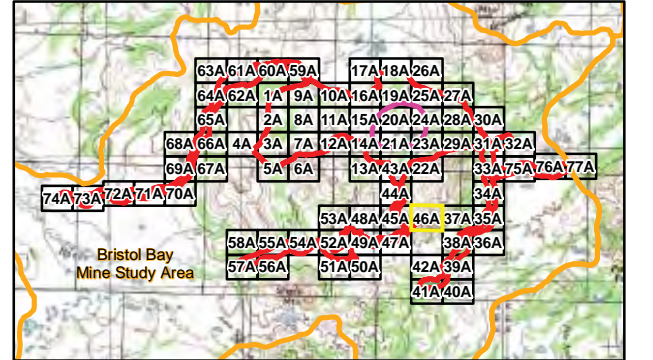


**Figure 14.1- 4, Tile 46A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

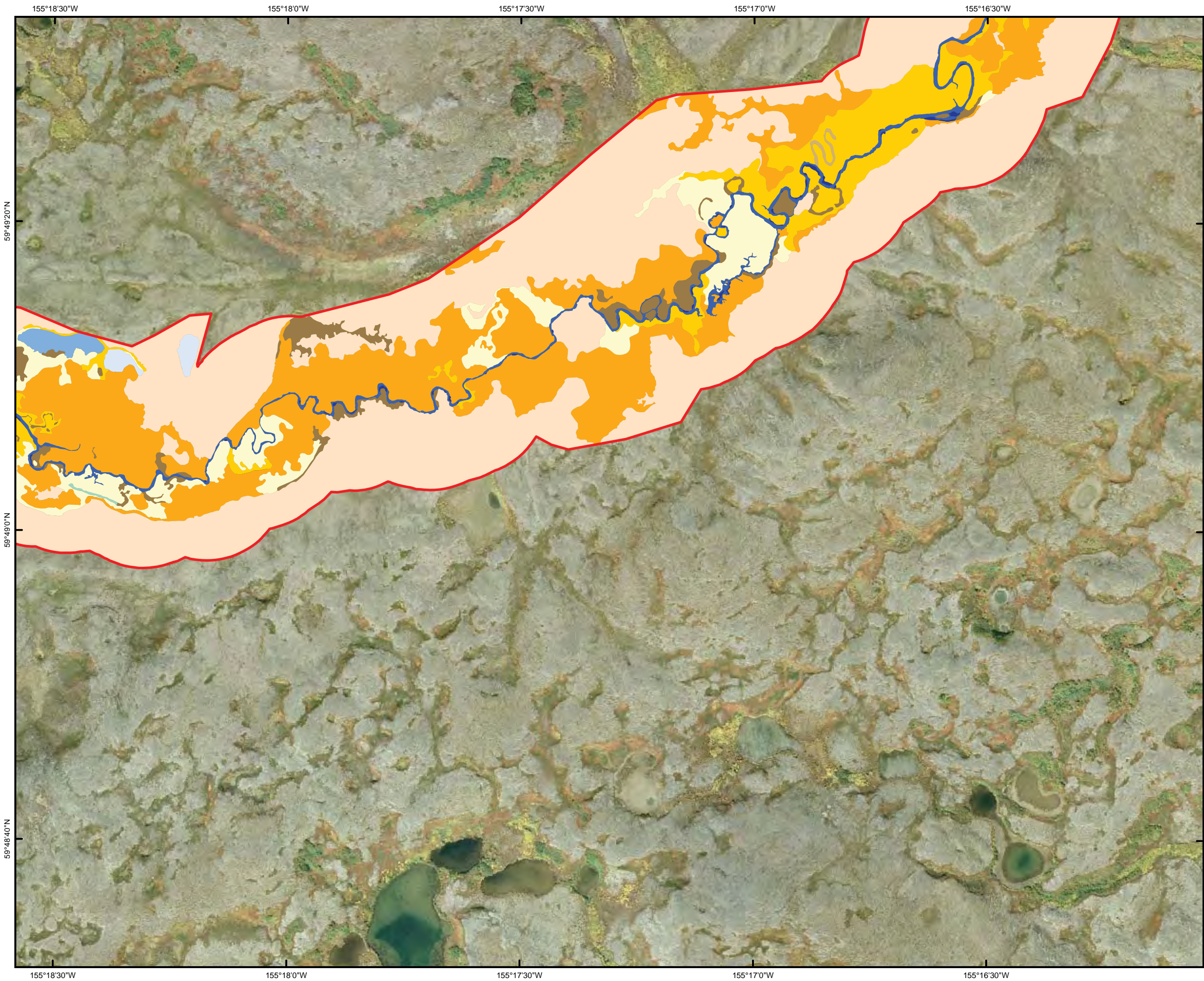
**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           | Non-wetlands       |
| Herbaceous         | U                  |
| PEM1               |                    |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.





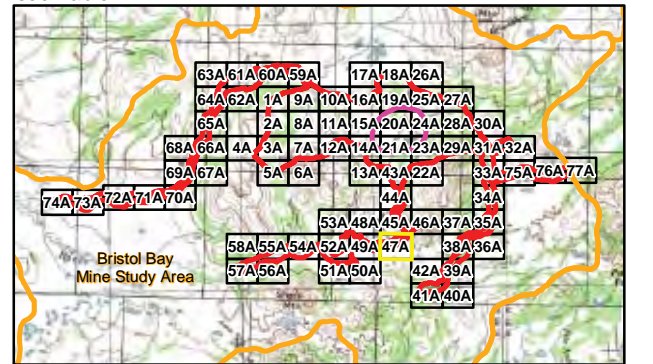


**Figure 14.1- 4, Tile 47A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           |                    |
| Herbaceous         | Non-wetlands       |
| PEM1               | U                  |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

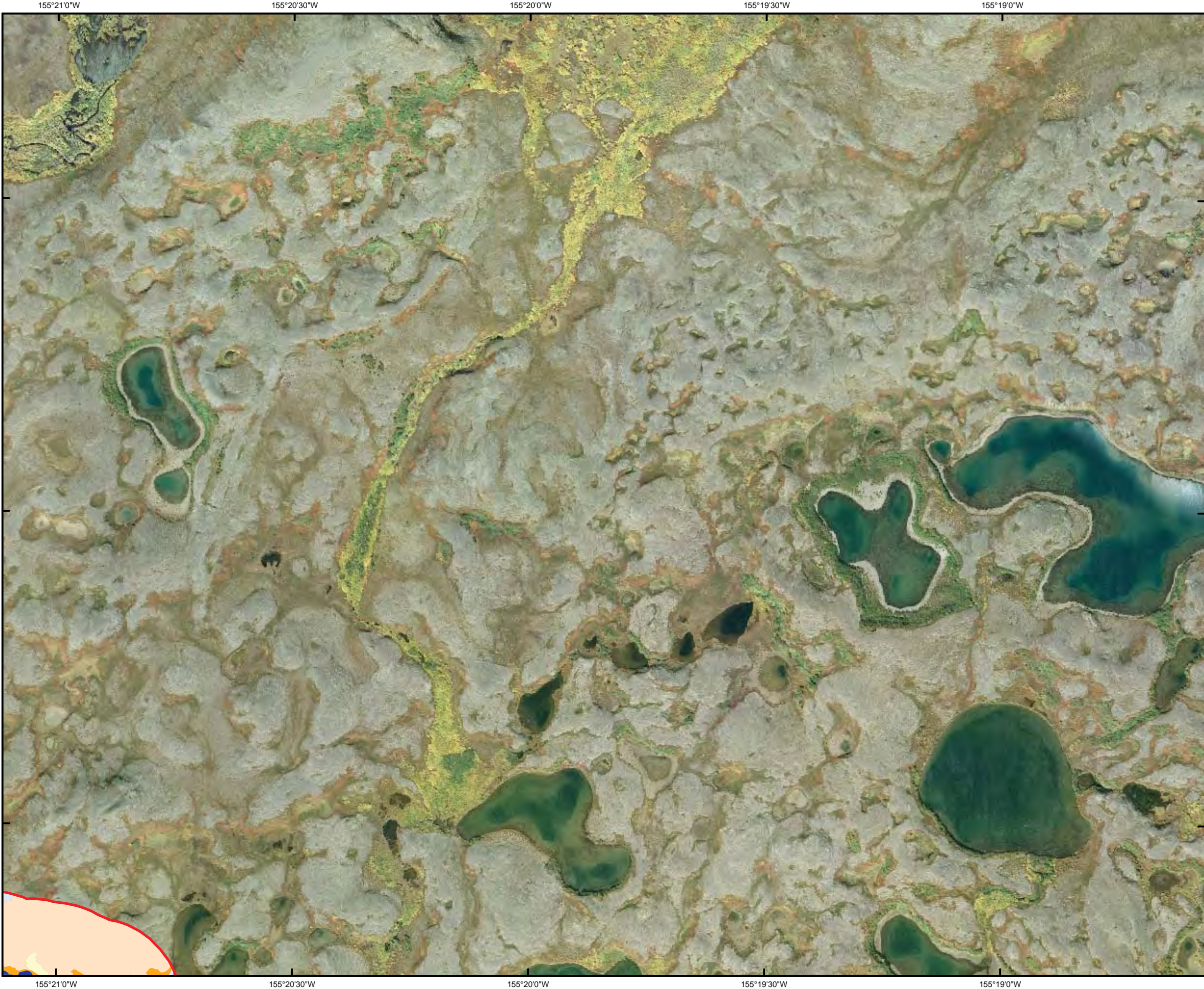
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



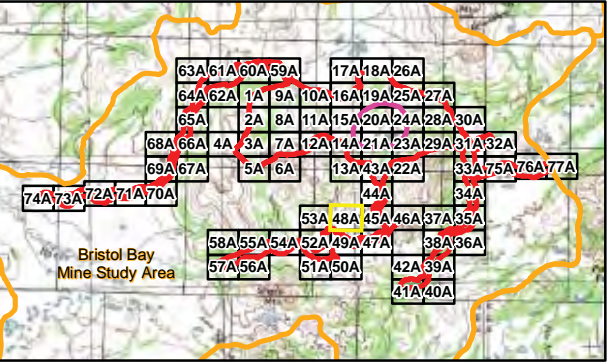


**Figure 14.1- 4, Tile 48A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           | Non-wetlands       |
| Herbaceous         | U                  |
| PEM1               |                    |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

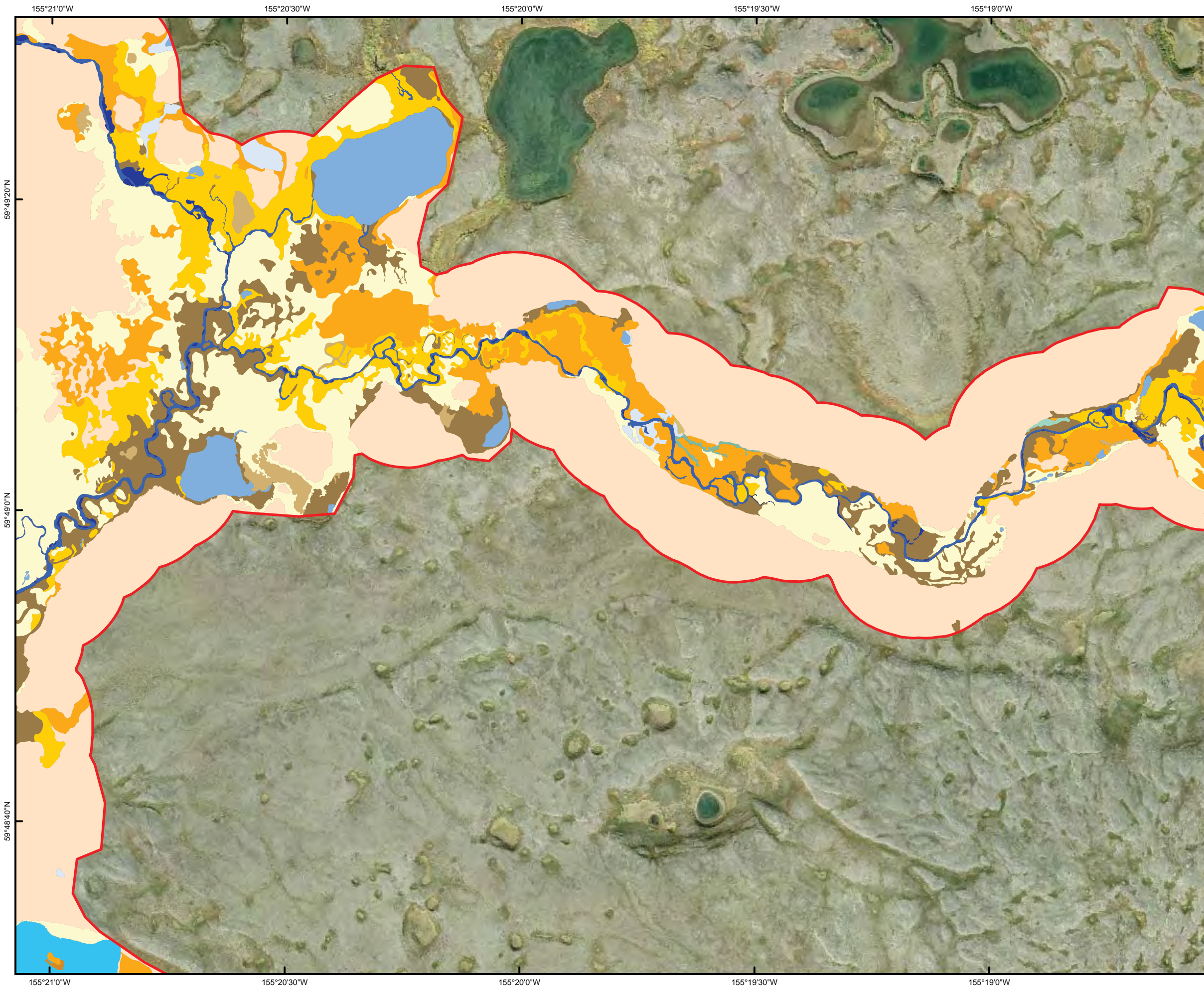
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 49A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

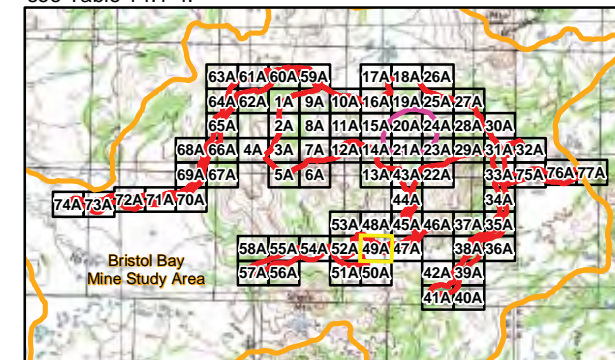
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 50A  
Enhanced National Wetlands  
Inventory Mapping,  
Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

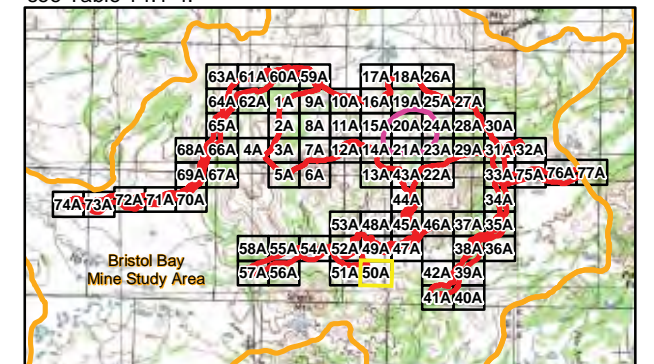
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

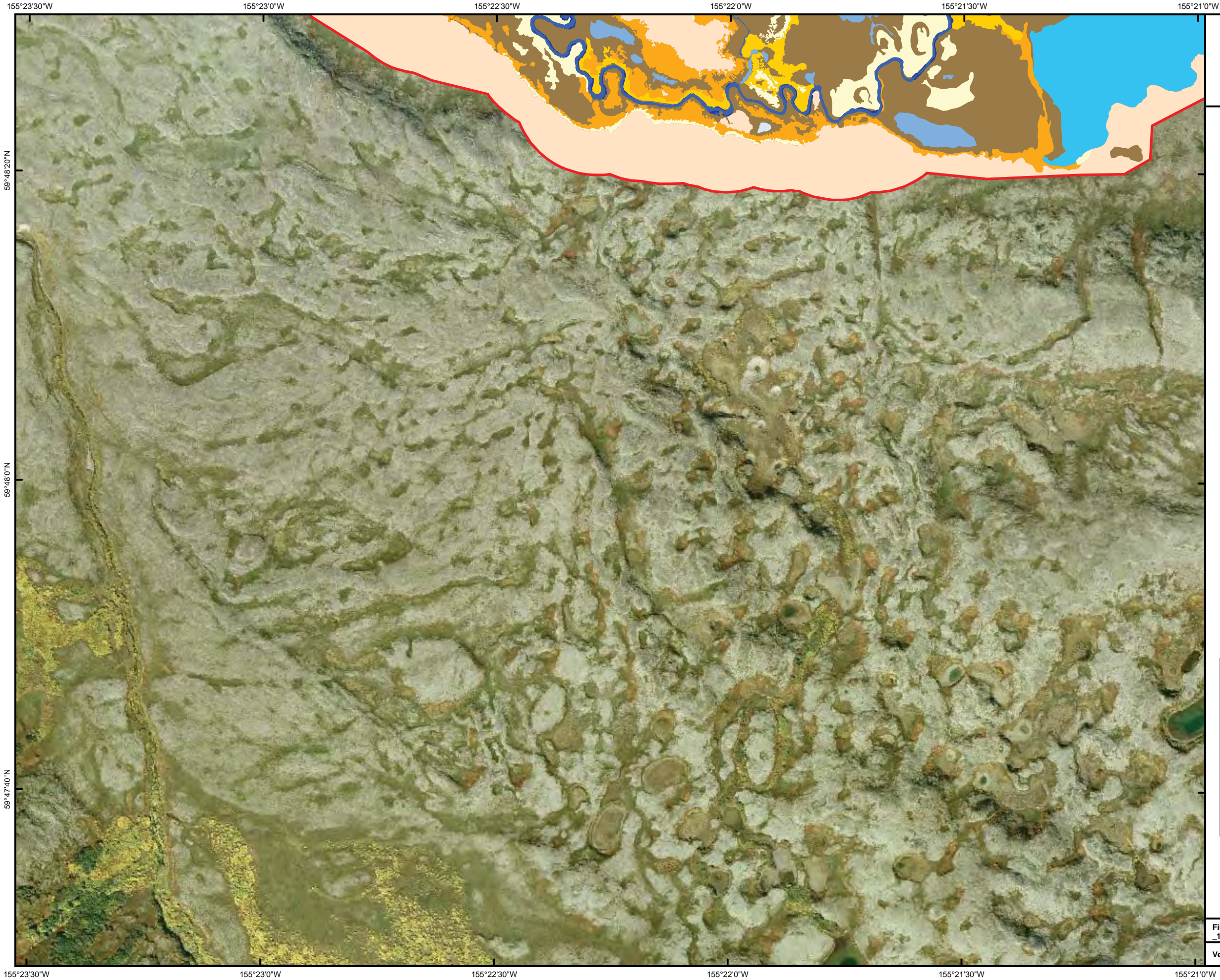
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



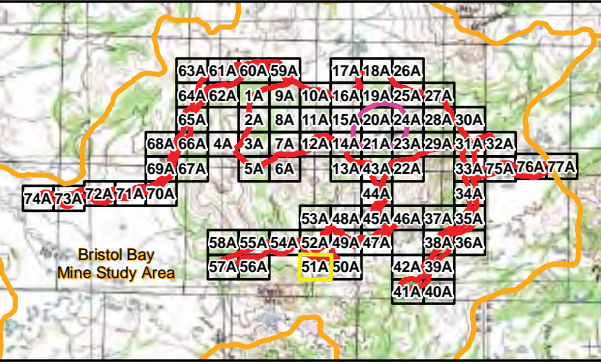


**Figure 14.1- 4, Tile 51A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           | Non-wetlands       |
| Herbaceous         | U                  |
| PEM1               |                    |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

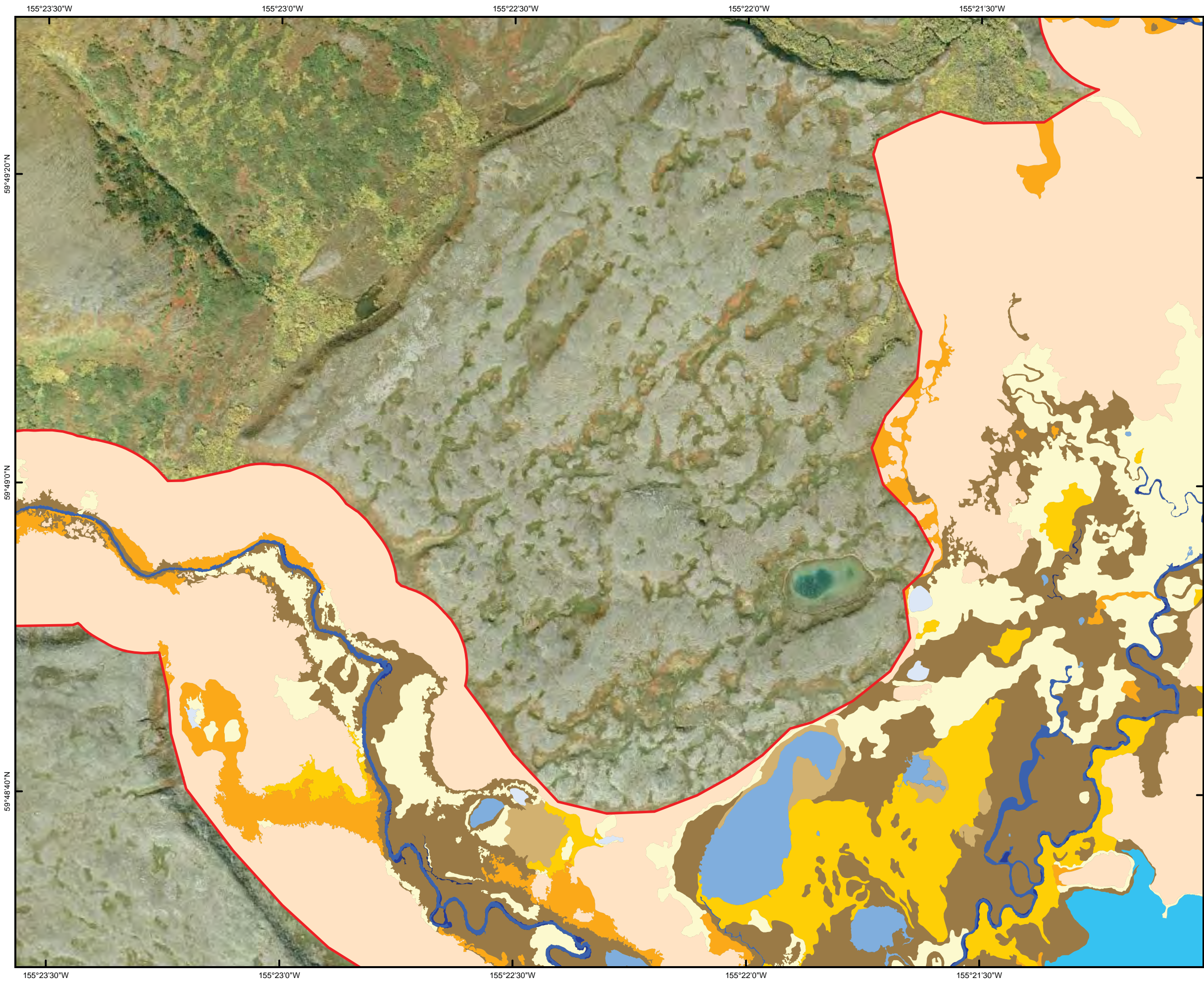
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



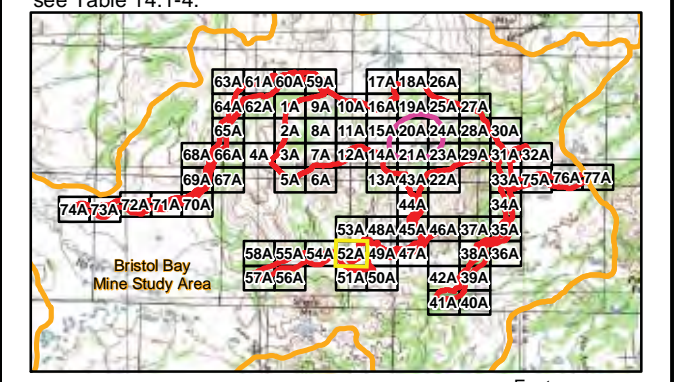


**Figure 14.1- 4, Tile 52A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification**
- Deciduous Forests**
  - PFO1
  - PFO1/SS1
  - PSS1/FO1
- Coniferous Forests**
  - PSS1/FO4
- Shrub**
  - PSS1
  - PSS1/US
  - PSS1/ML1
- Shrub/Herbaceous**
  - PSS1/EM1
- Herbaceous/Shrub**
  - PEM1/SS1
- Herbaceous**
  - PEM1
  - PEM1/ML1
  - PEM1/2
  - PEM1/US
  - PUS/EM1
  - PEM2
- Aquatic Herbaceous**
  - PEM1
  - PAB
  - PEM1/US
  - PUS/EM1
  - R3AB
  - R3EM
- Lakes**
  - L
- Ponds**
  - PUB
  - PUS
- Rivers/Streams**
  - R3UBH
  - R3US
  - R4
- Non-wetlands**
  - U

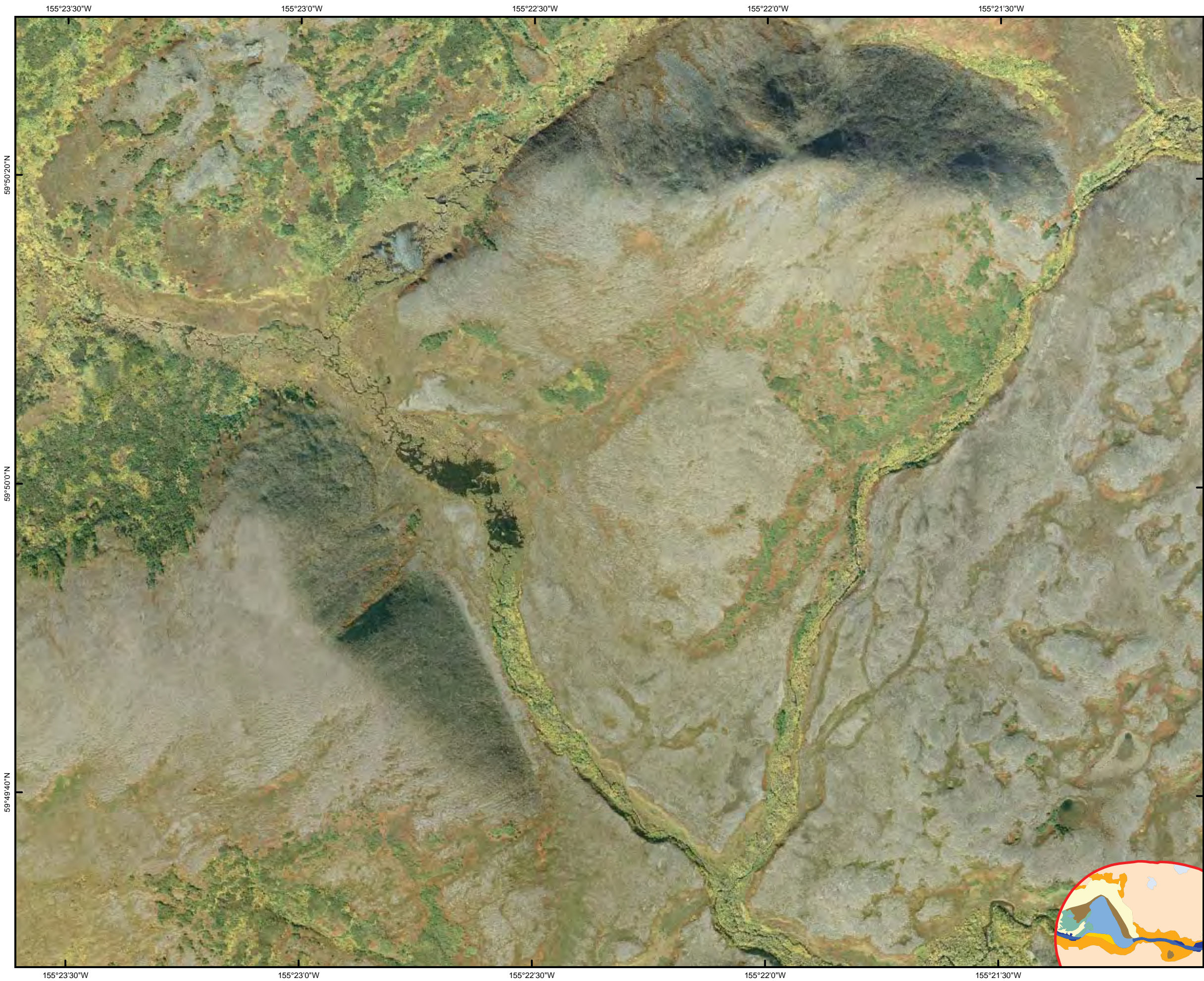
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



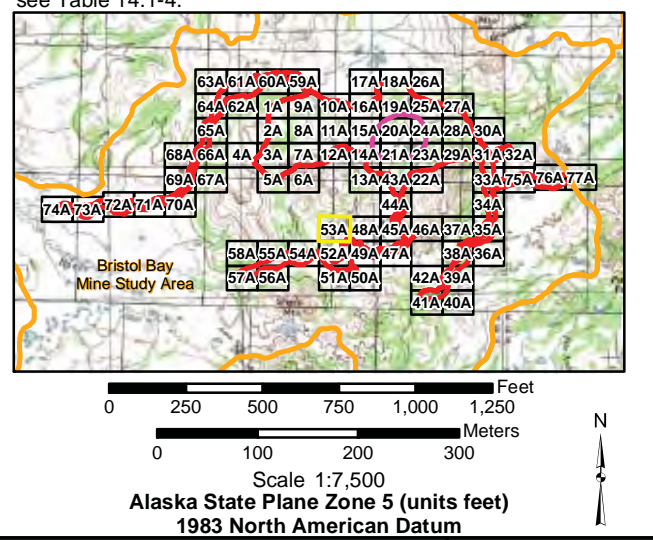


**Figure 14.1- 4, Tile 53A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

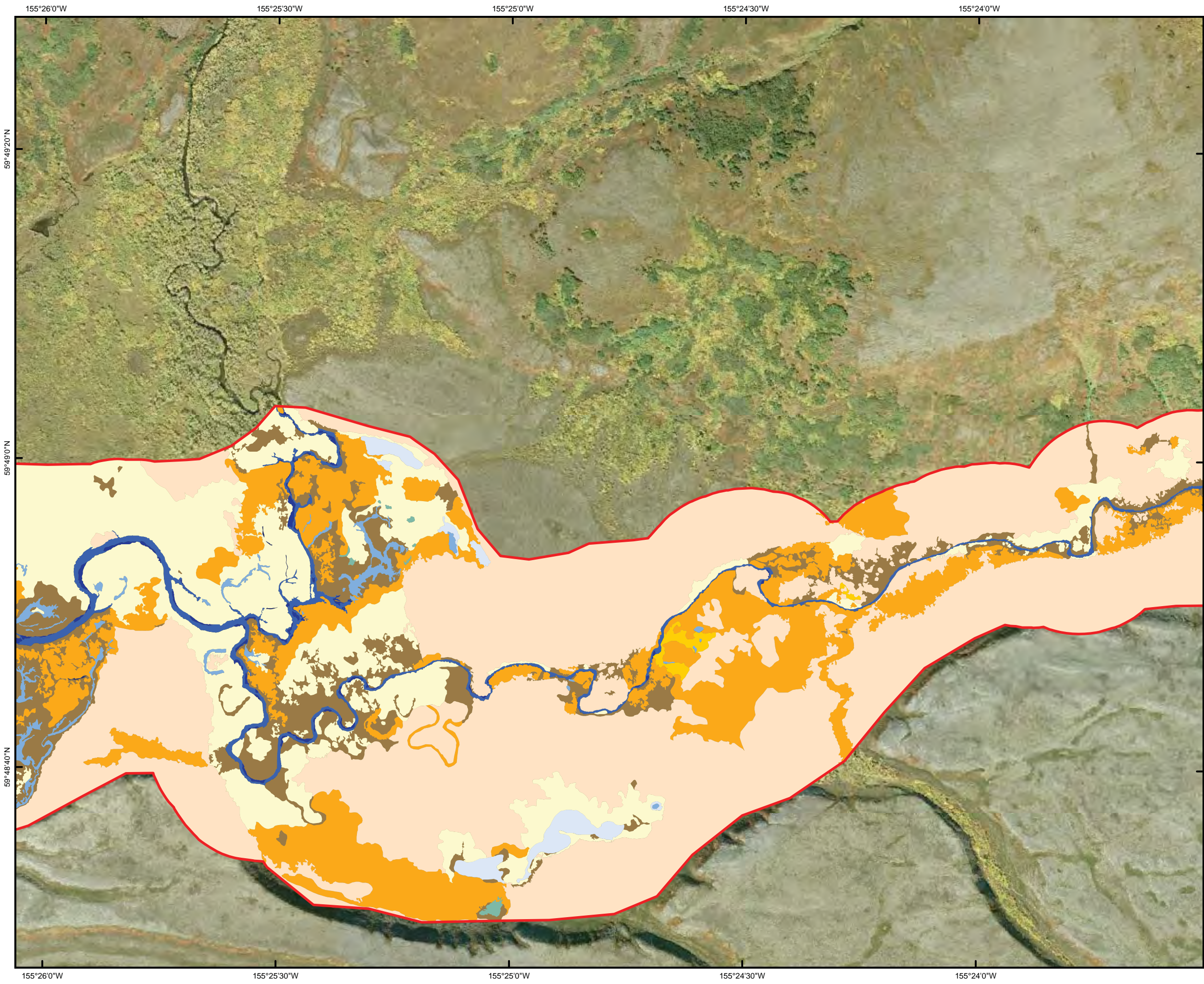
**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           |                    |
| Herbaceous         | Non-wetlands       |
| PEM1               | U                  |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.





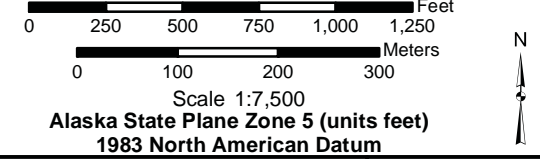
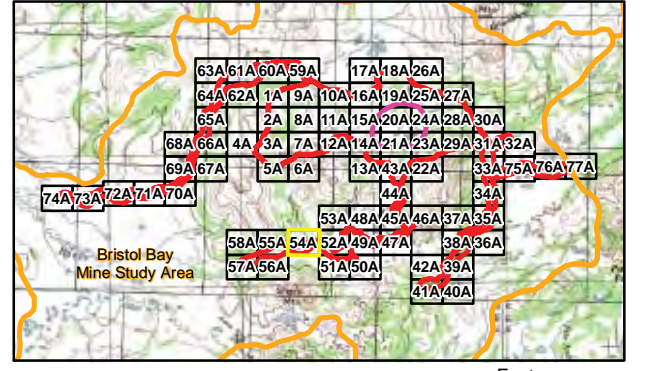


**Figure 14.1- 4, Tile 54A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

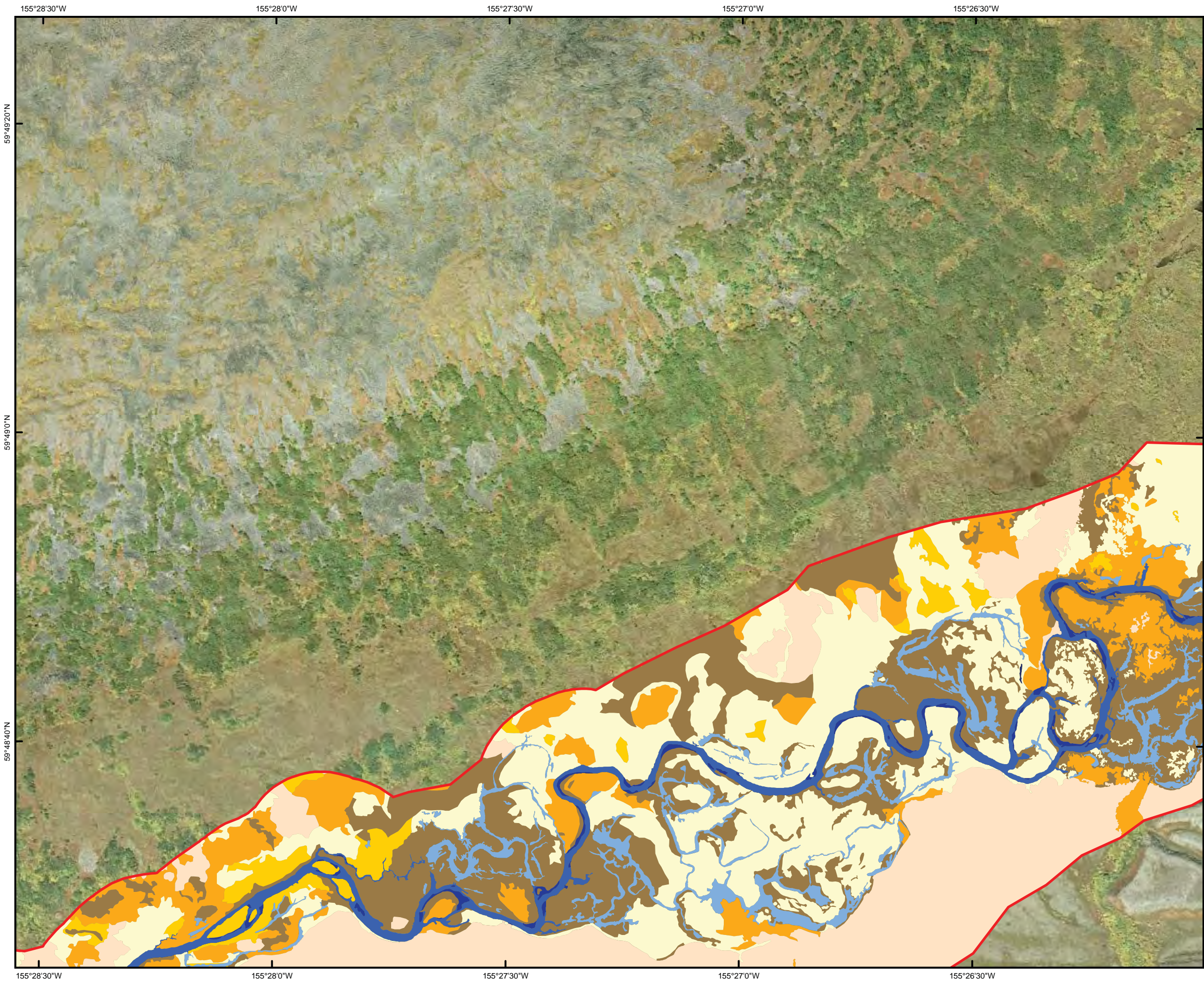
- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification**
- Deciduous Forests**
  - PFO1
  - PFO1/SS1
  - PSS1/FO1
- Coniferous Forests**
  - PSS1/FO4
- Shrub**
  - PSS1
  - PSS1/US
  - PSS1/ML1
- Shrub/Herbaceous**
  - PSS1/EM1
- Herbaceous/Shrub**
  - PEM1/SS1
- Herbaceous**
  - PEM1
  - PEM1/ML1
  - PEM1/2
  - PEM1/US
  - PUS/EM1
  - PEM2
- Aquatic Herbaceous**
  - PEM1
  - PAB
  - PEM1/US
  - PUS/EM1
  - R3AB
  - R3EM
- Lakes**
  - L
- Ponds**
  - PUB
  - PUS
- Rivers/Streams**
  - R3UBH
  - R3US
  - R4
- Non-wetlands**
  - U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



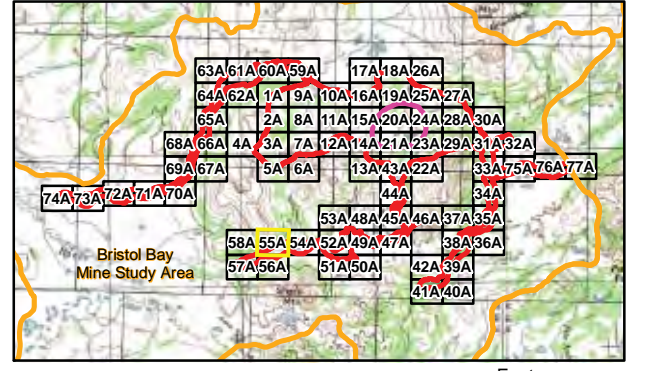


**Figure 14.1- 4, Tile 55A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
| Coniferous Forests | PUS/EM1            |
| PSS1/FO4           | R3AB               |
|                    | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
| Shrub/Herbaceous   | PUS                |
| PSS1/EM1           | Rivers/Streams     |
| Herbaceous/Shrub   | R3UBH              |
| PEM1/SS1           | R3US               |
| Herbaceous         | R4                 |
| PEM1               | Non-wetlands       |
| PEM1/ML1           | U                  |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

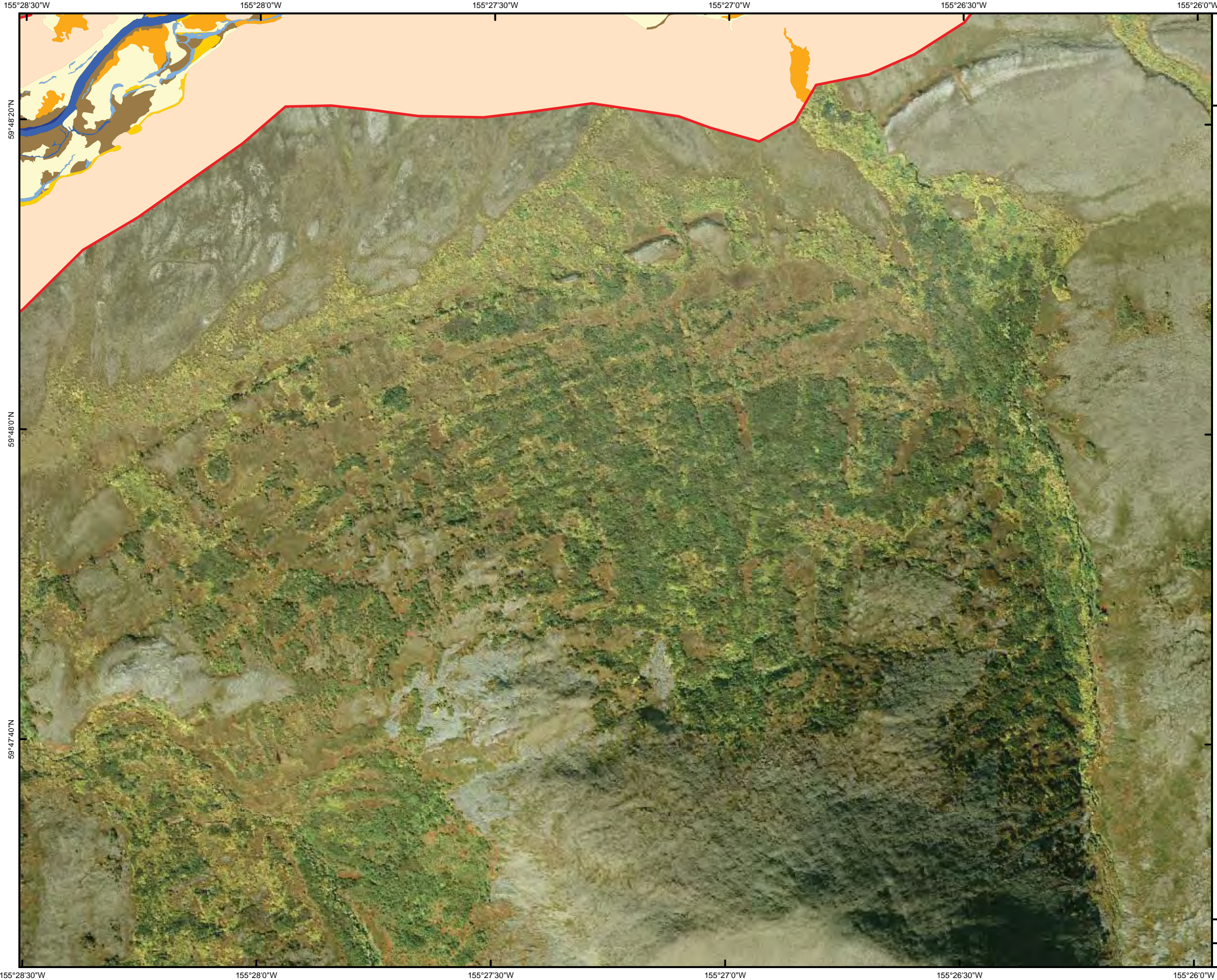
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



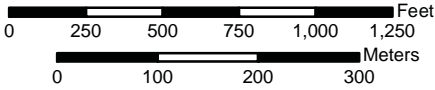
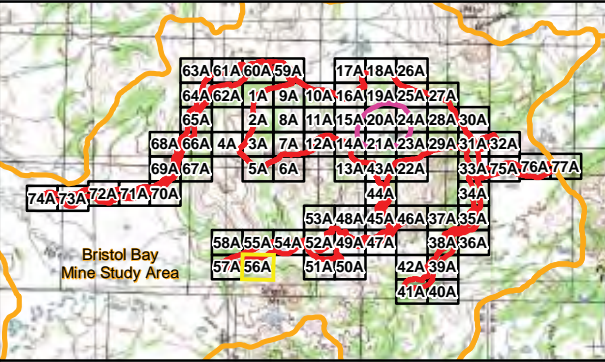


**Figure 14.1- 4, Tile 56A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           |                    |
| Herbaceous         | Non-wetlands       |
| PEM1               | U                  |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



155°31'0"W 155°30'30"W 155°30'0"W 155°29'30"W 155°29'0"W 155°28'30"W

59°48'20"N

59°48'0"N

59°47'40"N

155°30'30"W 155°30'0"W 155°29'30"W 155°29'0"W 155°28'30"W



Figure 14.1- 4, Tile 57A  
Enhanced National Wetlands  
Inventory Mapping,  
Mine Study Area 2004-2008

Legend

- Mine Mapping Area

Mine Study Area

General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- Deciduous Forests

PFO1

PFO1/SS1

PSS1/FO1

Coniferous Forests

PSS1/FO4

Shrub

PSS1

PSS1/US

PSS1/ML1

Shrub/Herbaceous

PSS1/EM1

Herbaceous/Shrub

PEM1/SS1

Herbaceous

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2
- Aquatic Herbaceous

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

Lakes

L

Ponds

PUB

PUS

Rivers/Streams

R3UBH

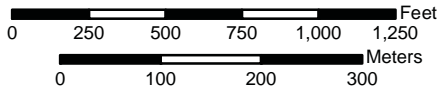
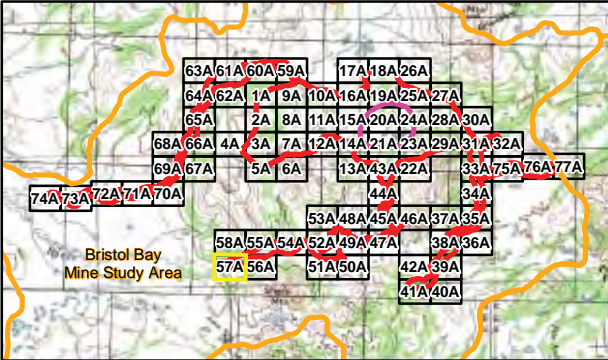
R3US

R4

Non-wetlands

U

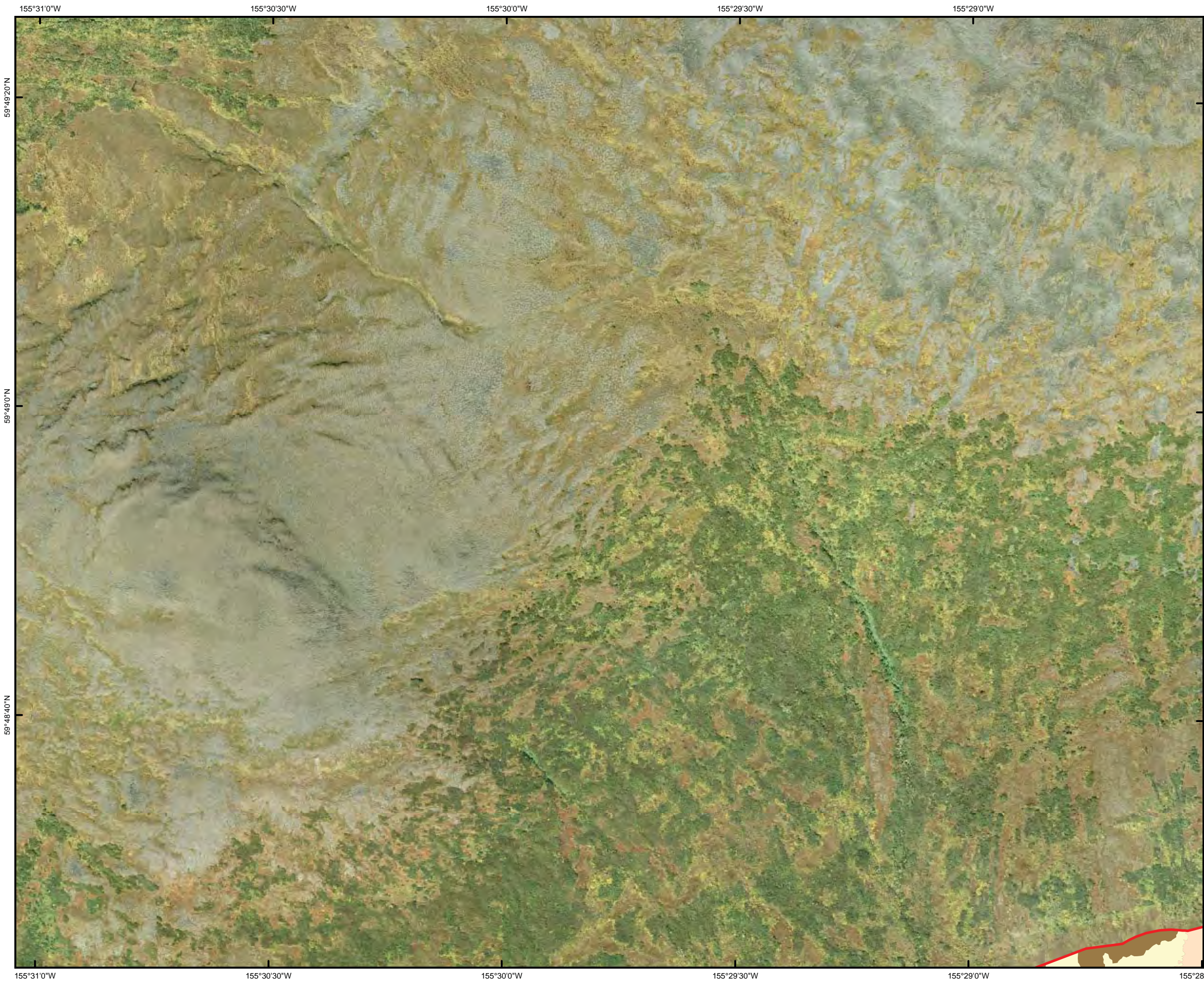
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



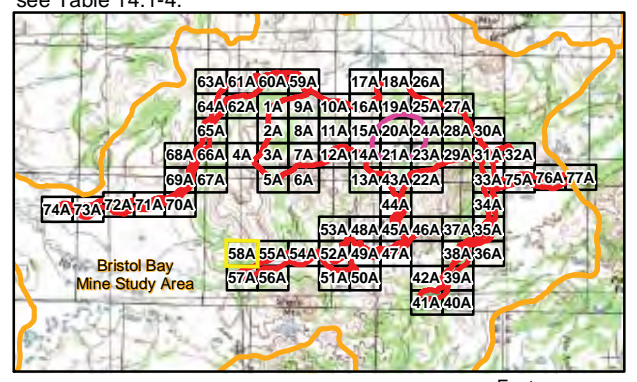


**Figure 14.1- 4, Tile 58A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           |                    |
| Herbaceous         | Non-wetlands       |
| PEM1               | U                  |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

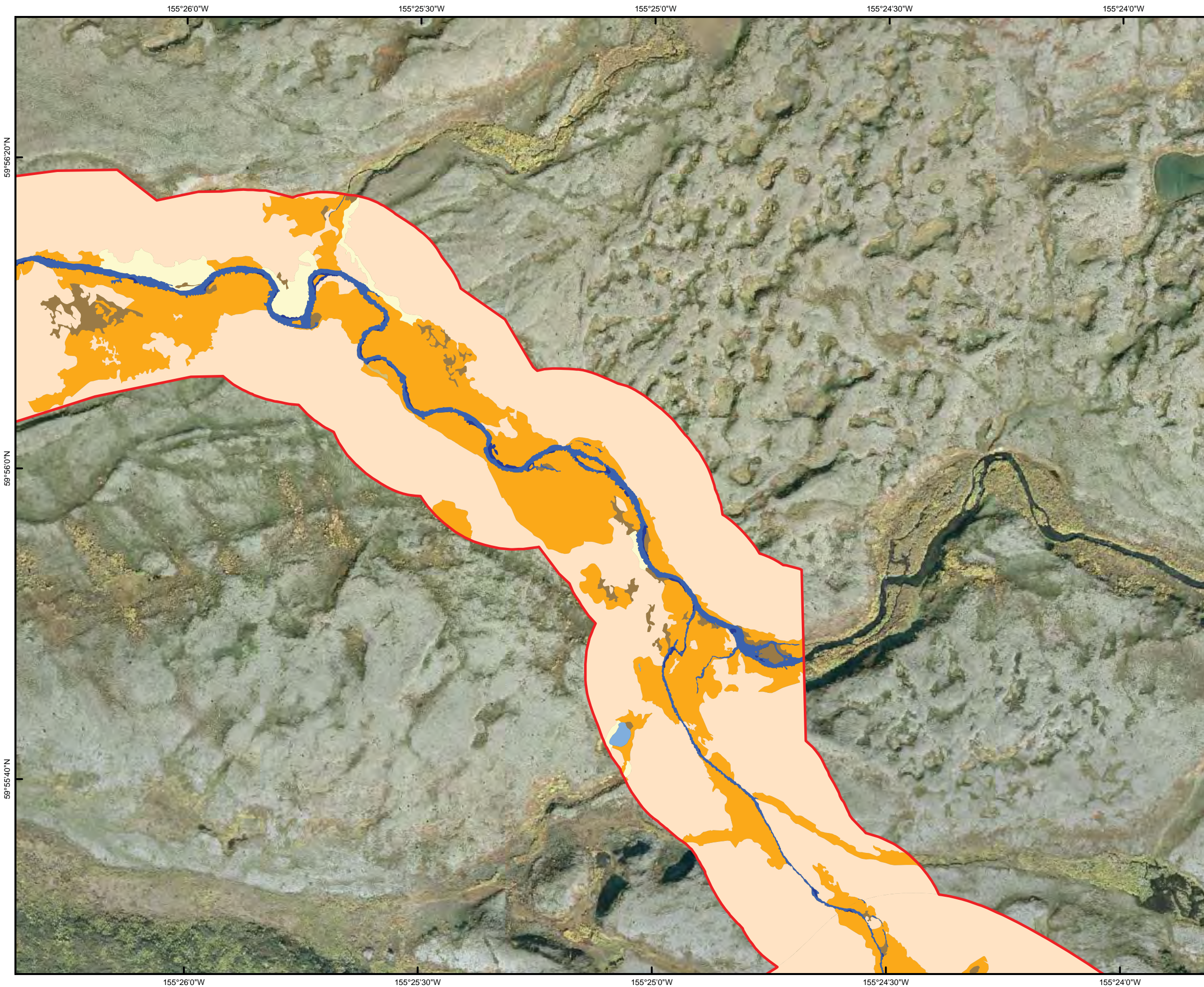
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 59A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

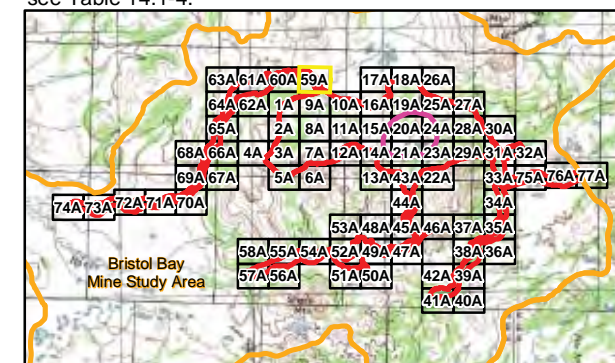
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

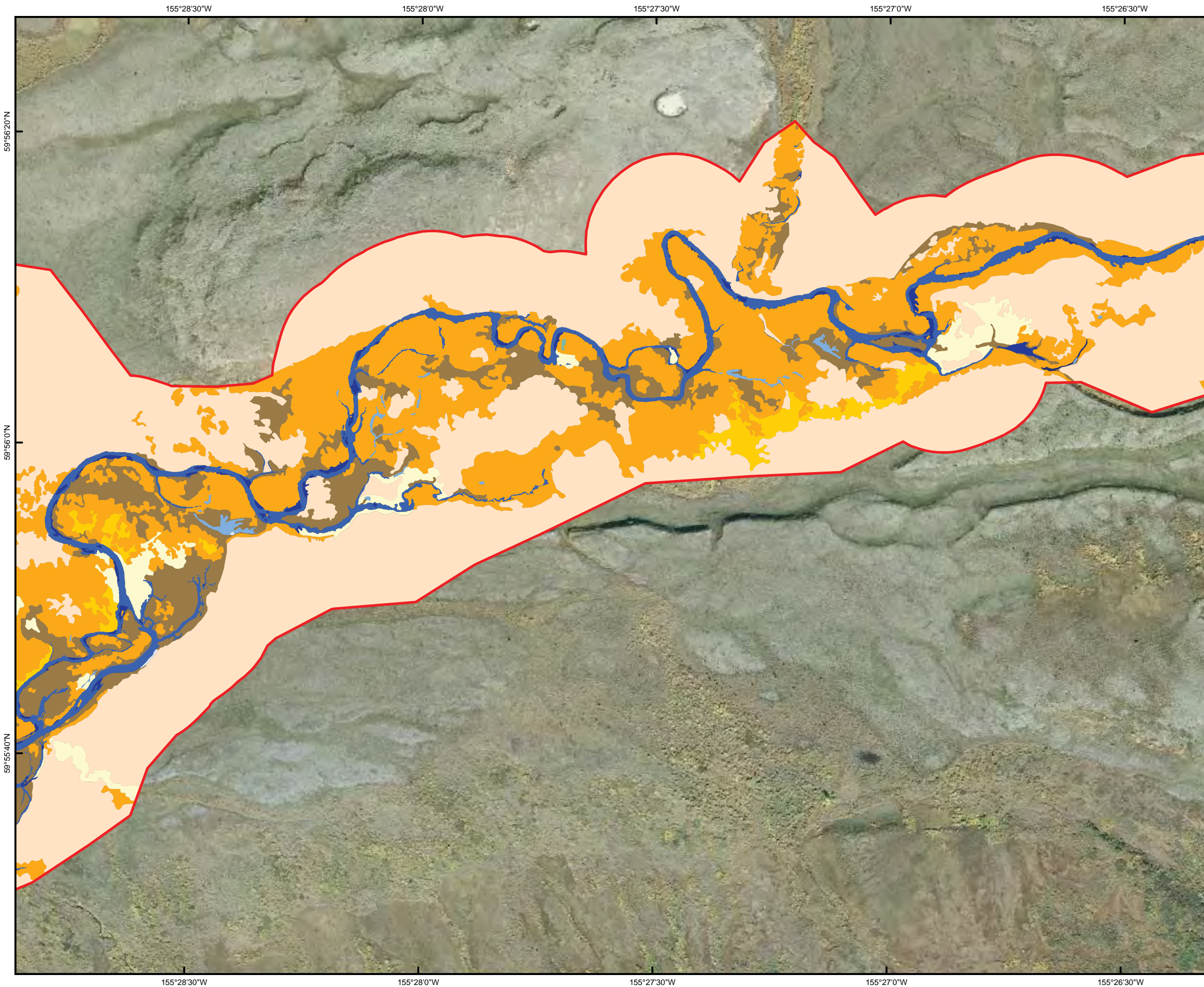
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 60A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

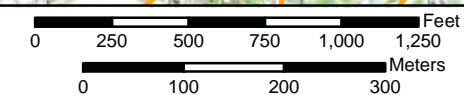
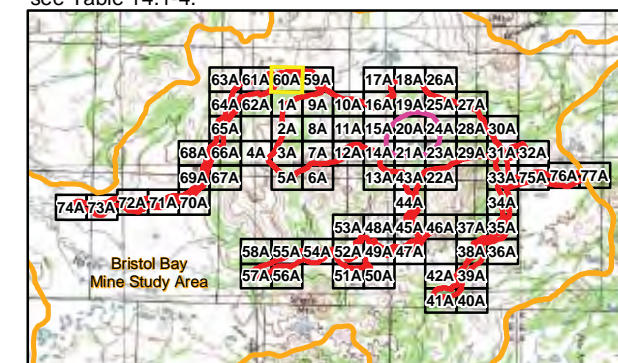
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

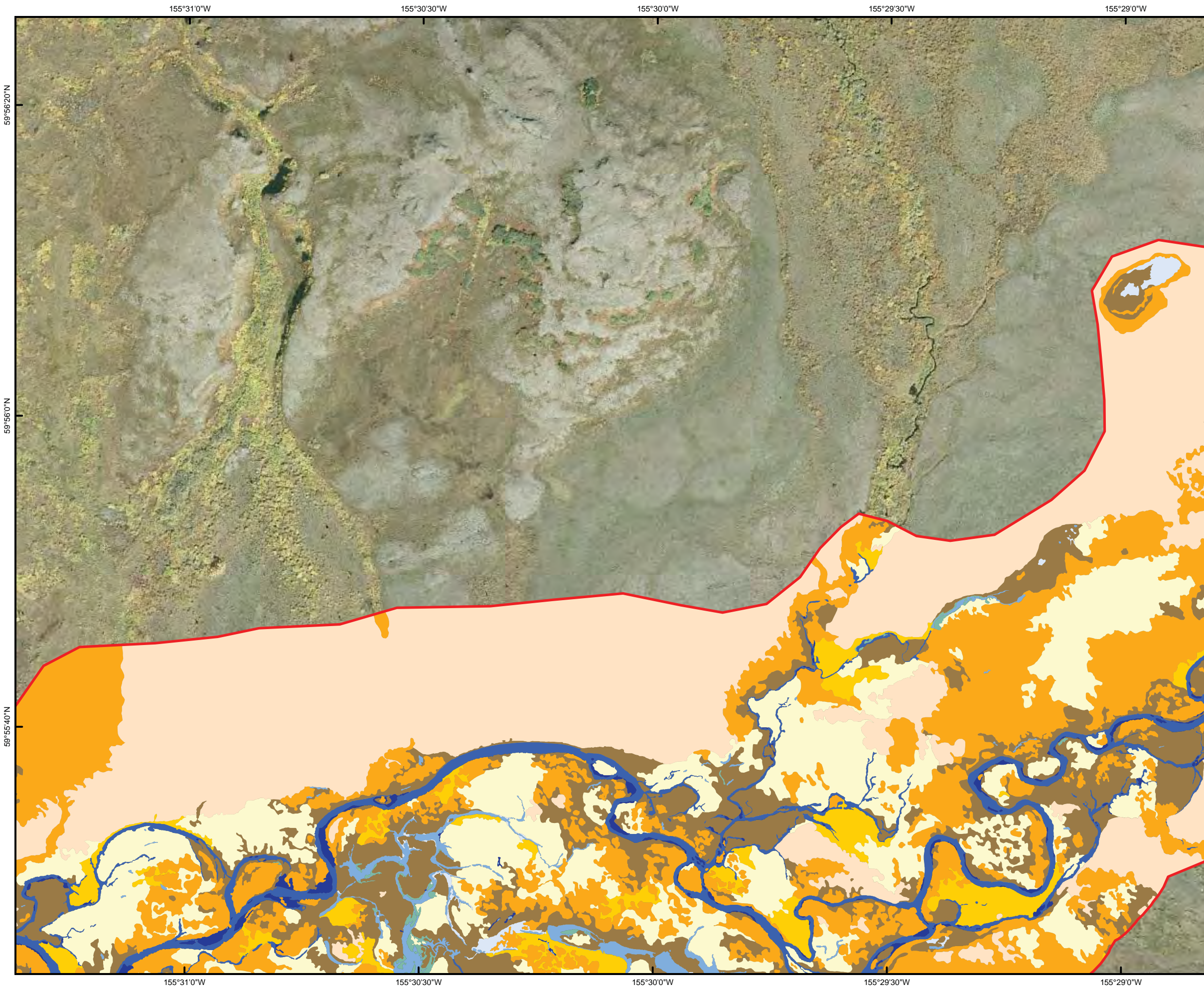
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 61A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

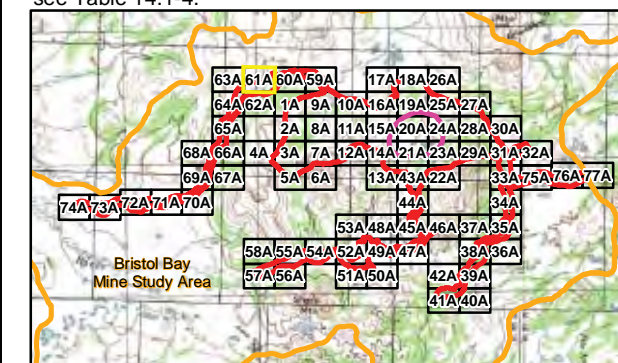
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

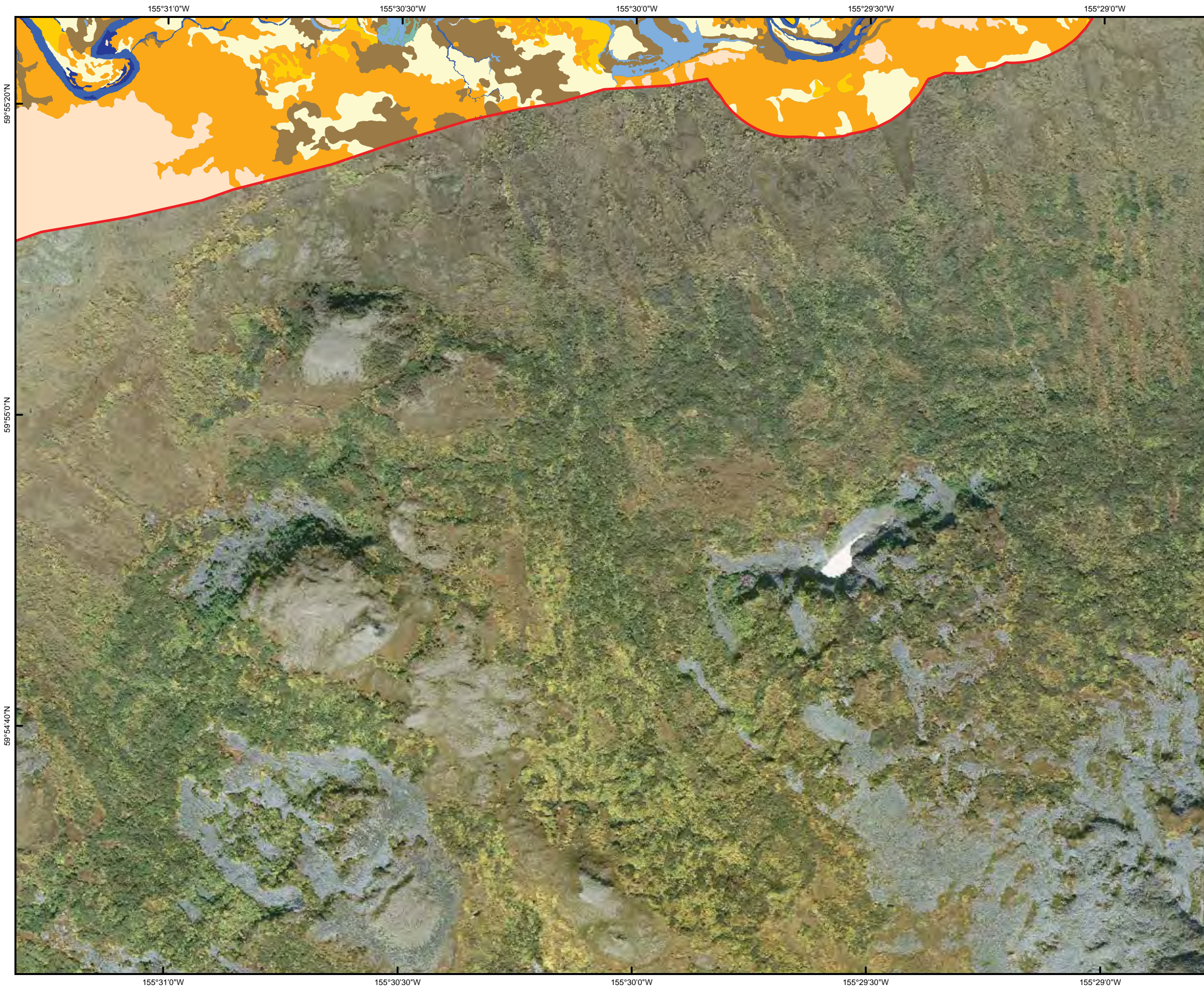
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



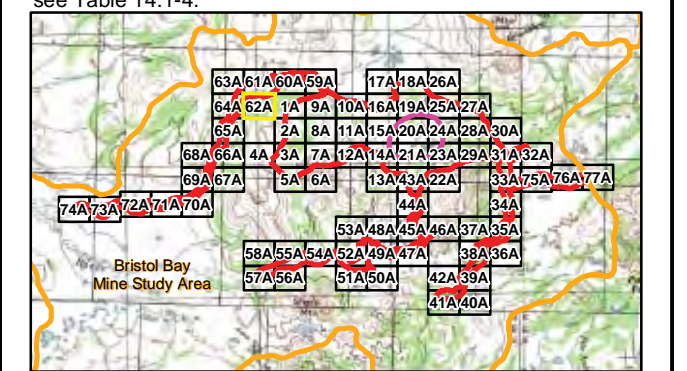


**Figure 14.1- 4, Tile 62A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
|                    | PUS/EM1            |
| Coniferous Forests | R3AB               |
| PSS1/FO4           | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
|                    | PUS                |
| Shrub/Herbaceous   | Rivers/Streams     |
| PSS1/EM1           | R3UBH              |
|                    | R3US               |
| Herbaceous/Shrub   | R4                 |
| PEM1/SS1           | Non-wetlands       |
| Herbaceous         | U                  |
| PEM1               |                    |
| PEM1/ML1           |                    |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 63A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

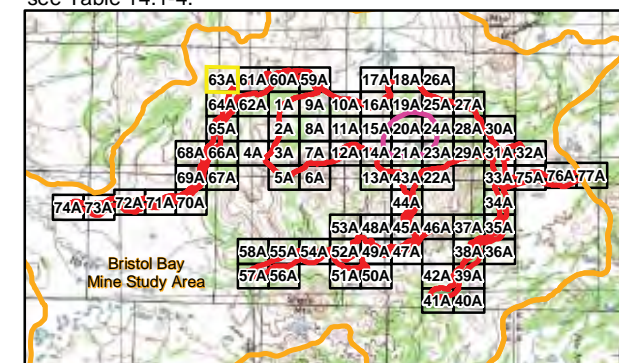
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

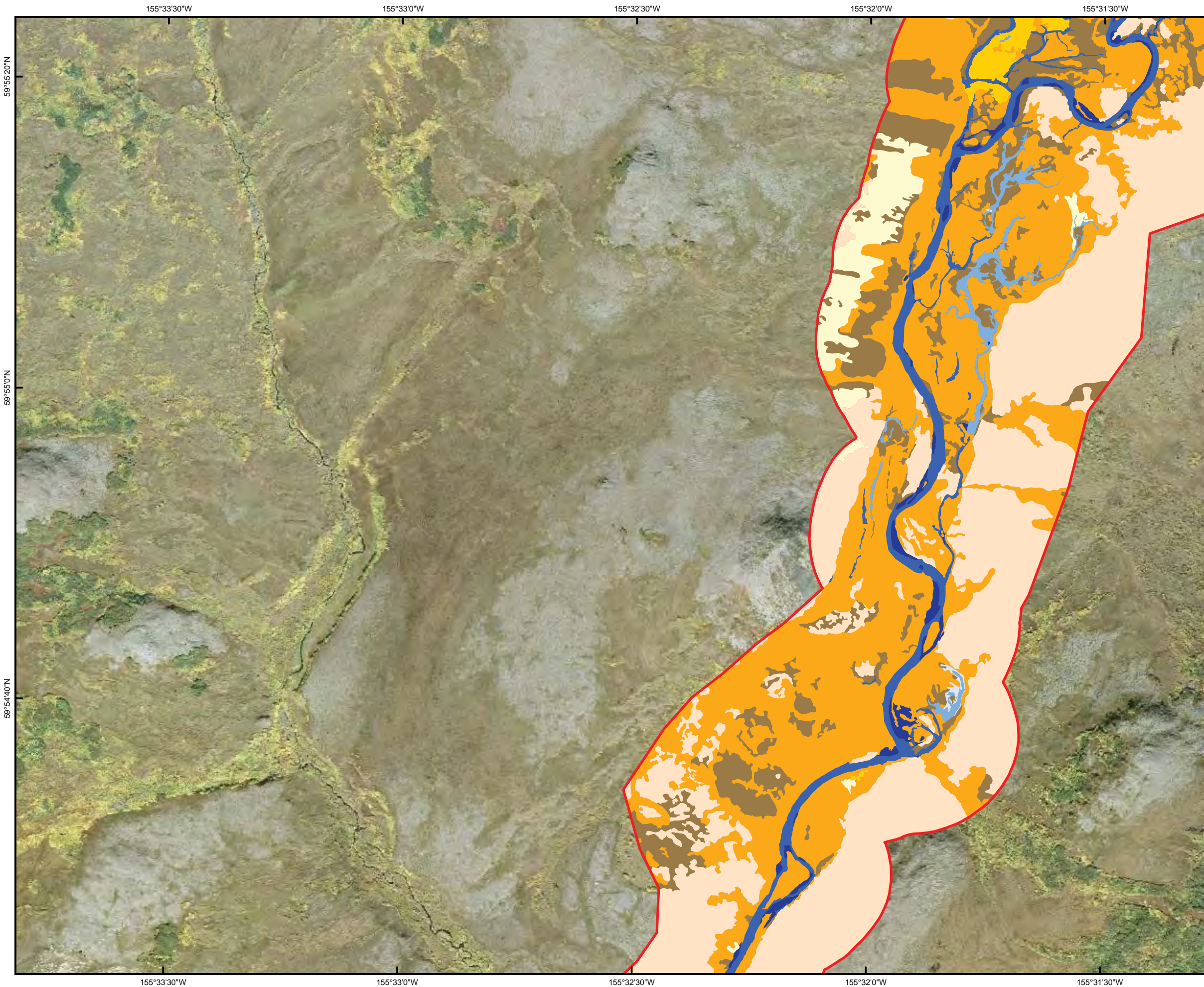
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 64A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

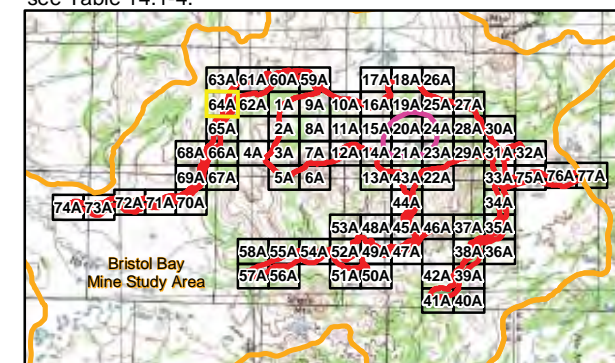
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

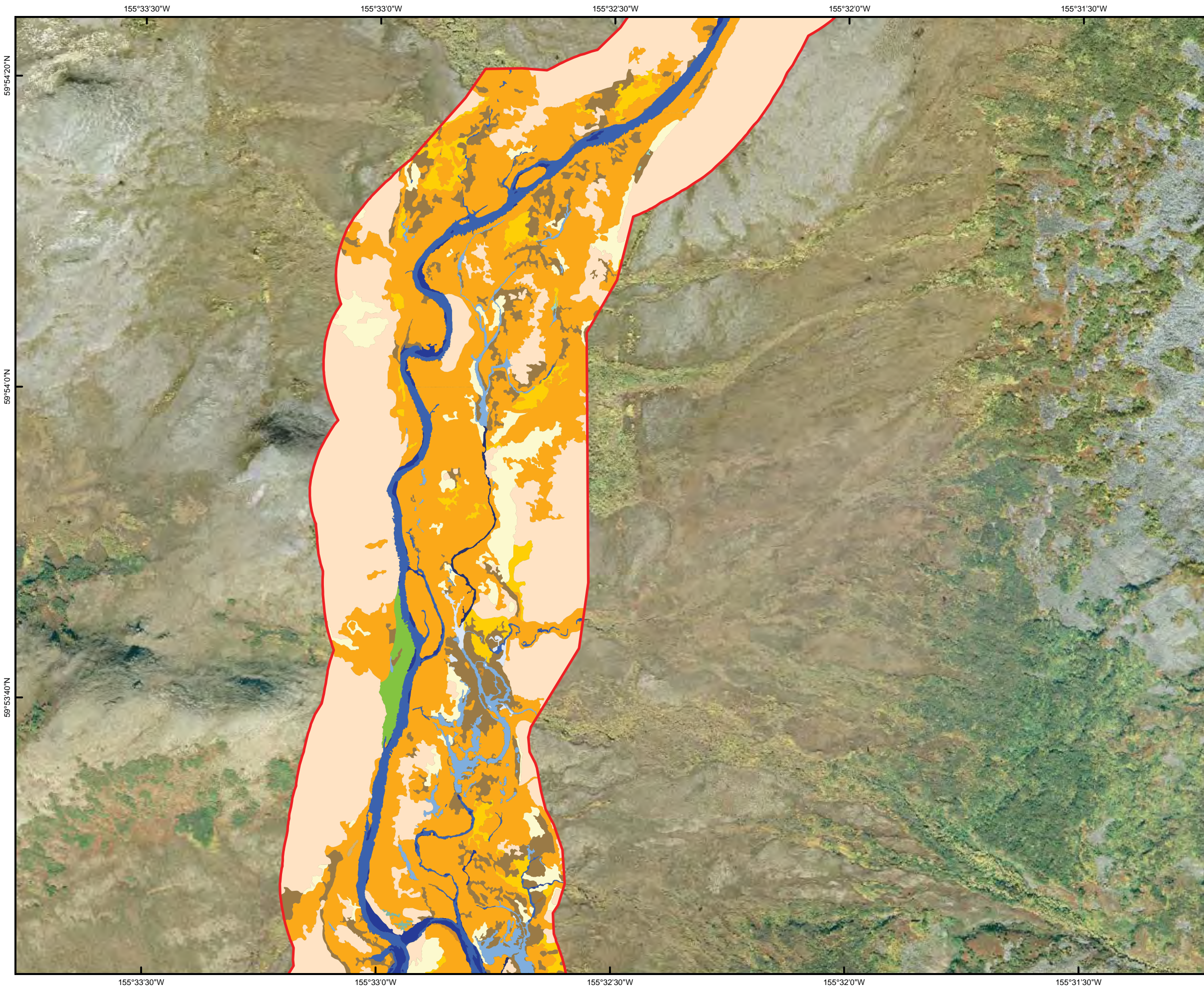
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS





**Figure 14.1- 4, Tile 65A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

Enhanced National Wetlands Inventory (ENWI) Classification

Deciduous Forests

PFO1

PFO1/SS1

PSS1/FO1

Coniferous Forests

PSS1/FO4

Shrub

PSS1

PSS1/US

PSS1/ML1

Shrub/Herbaceous

PSS1/EM1

Herbaceous/Shrub

PEM1/SS1

Herbaceous

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

Aquatic Herbaceous

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

Lakes

L

Ponds

PUB

PUS

Rivers/Streams

R3UBH

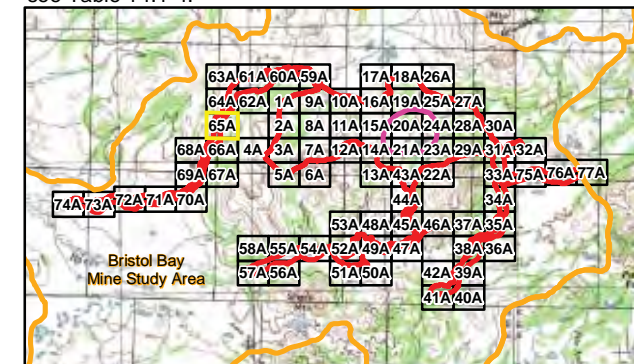
R3US

R4

Non-wetlands

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

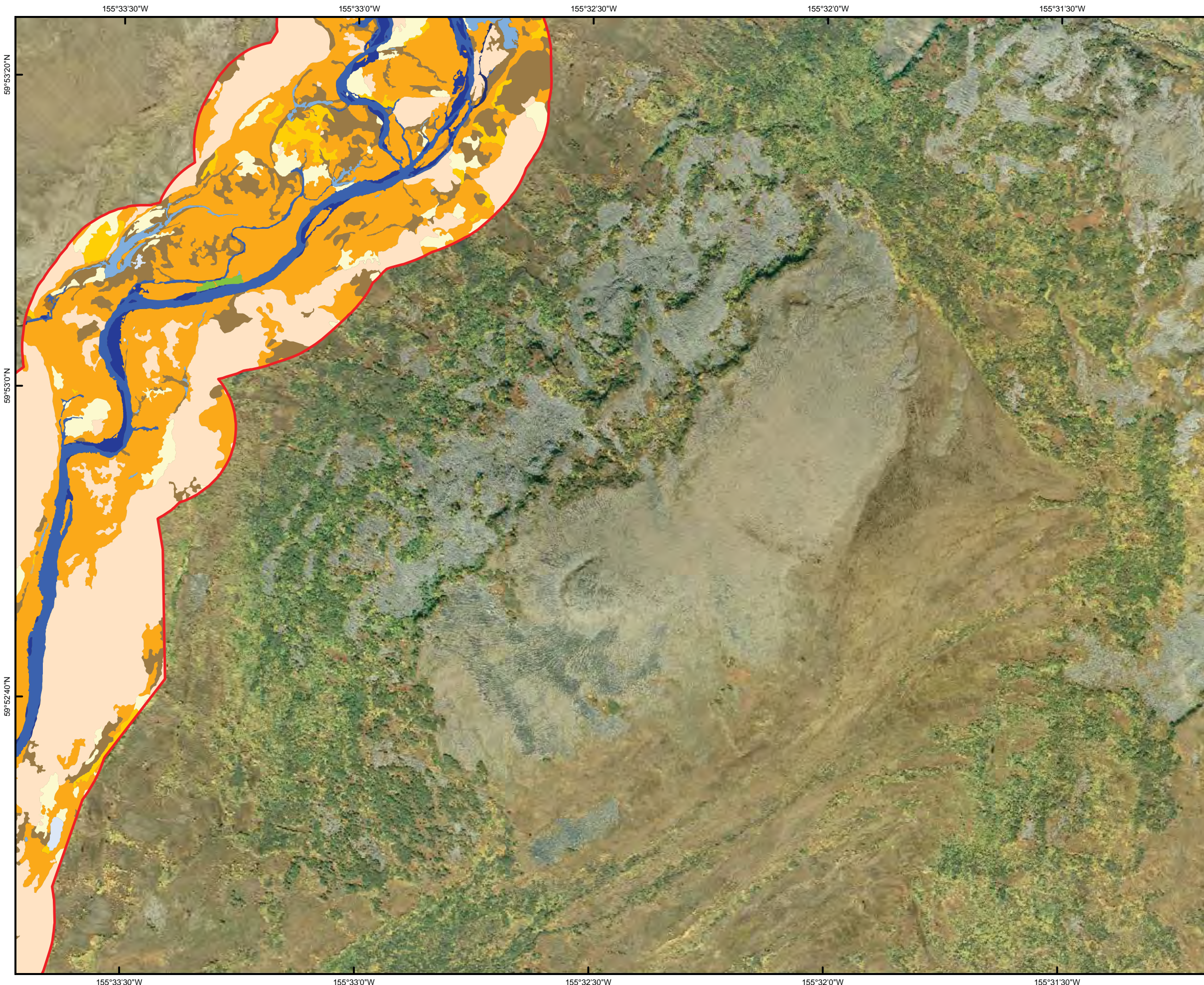
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



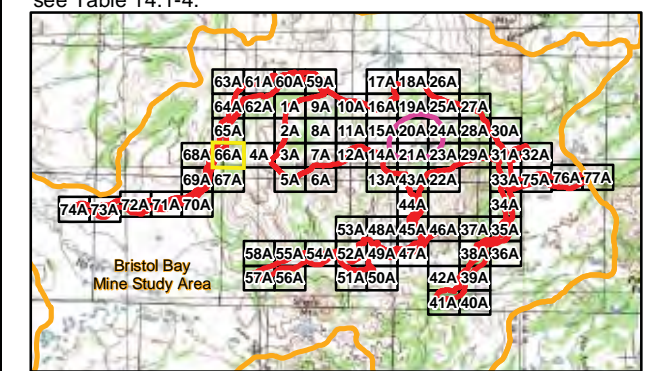


**Figure 14.1- 4, Tile 66A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| <b>Deciduous Forests</b>   | <b>Aquatic Herbaceous</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #B0E0D0; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #E0F0E0; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #4CAF50; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #546E7A; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #2E8B57; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF8C00; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF69B4; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>  |
| <b>Shrub/Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #6495ED; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFFE0; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #ADD8E6; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>  | <b>Rivers/Streams</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4682B4; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4169E1; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A08060; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #191970; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #CD853F; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; margin-right: 5px;"></span> PEM2     |   |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.

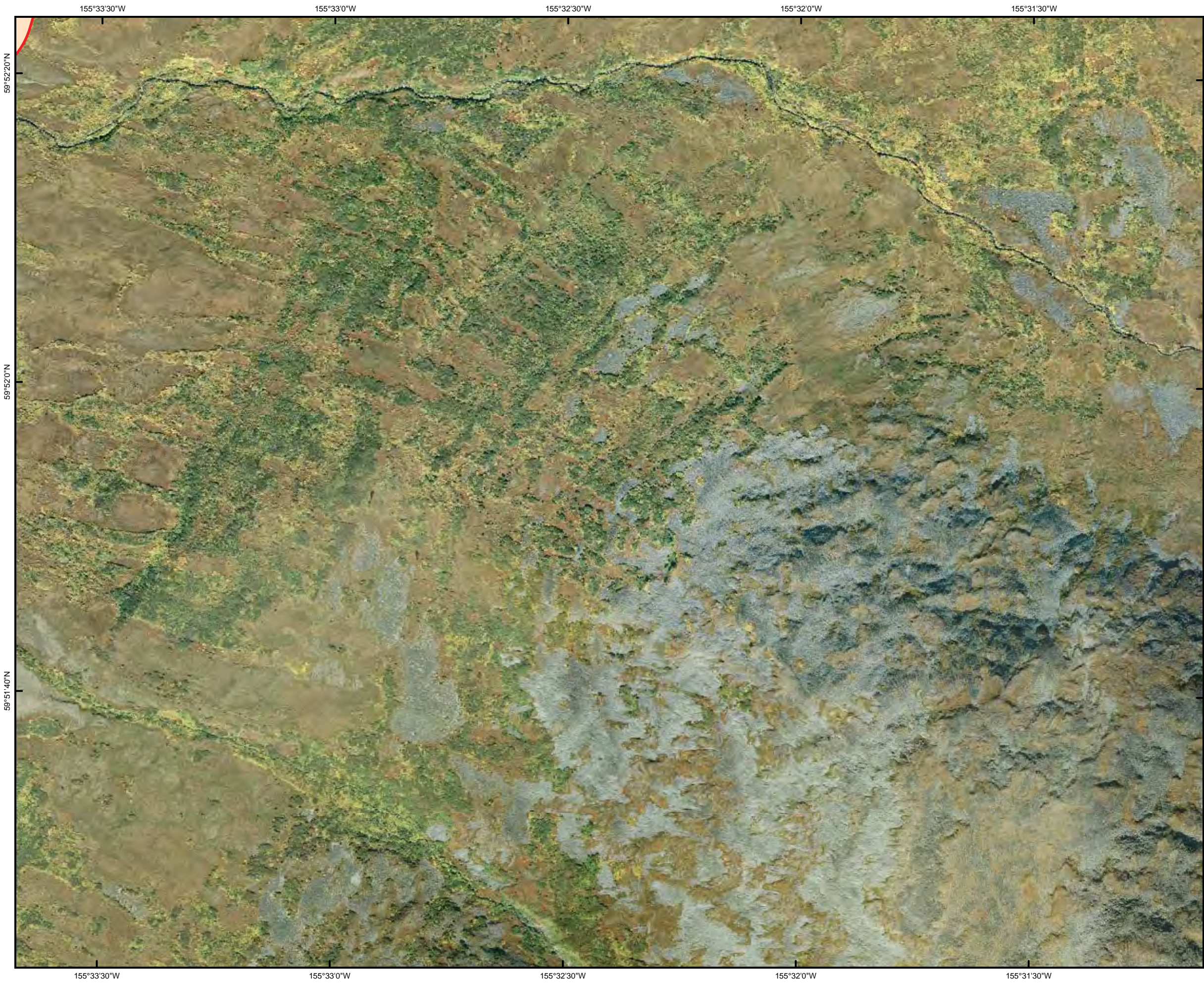


0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



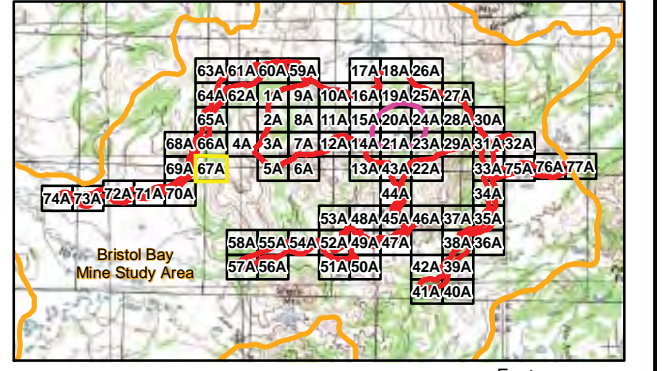


**Figure 14.1- 4, Tile 67A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

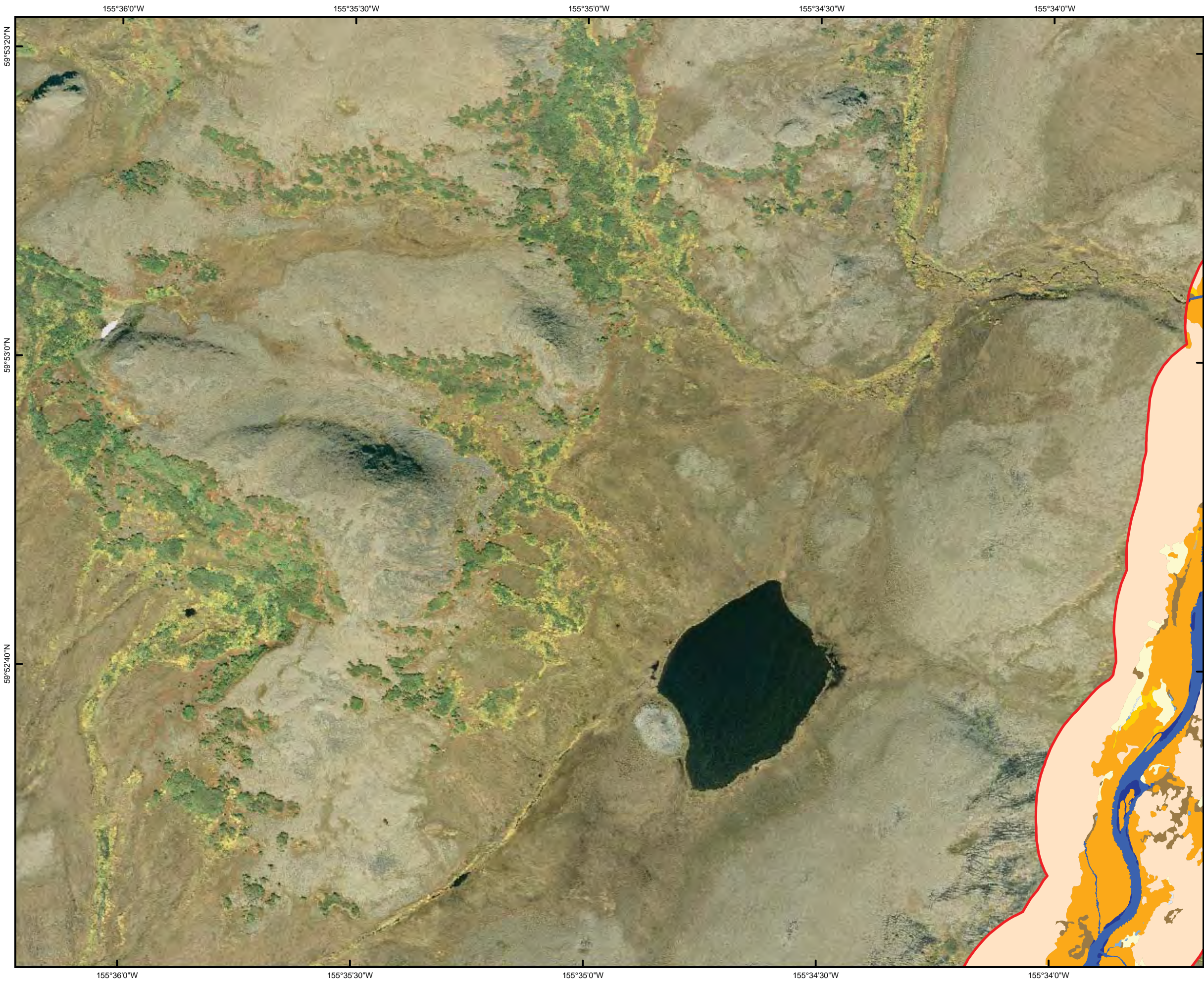
**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
| Coniferous Forests | PUS/EM1            |
| PSS1/FO4           | R3AB               |
|                    | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
| Shrub/Herbaceous   | PUS                |
| PSS1/EM1           | Rivers/Streams     |
| Herbaceous/Shrub   | R3UBH              |
| PEM1/SS1           | R3US               |
| Herbaceous         | R4                 |
| PEM1               | Non-wetlands       |
| PEM1/ML1           | U                  |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.





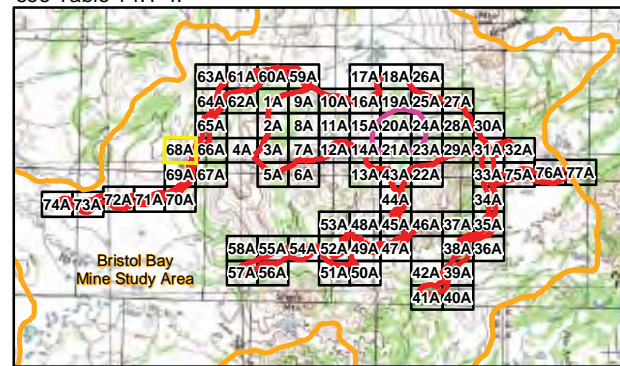


**Figure 14.1- 4, Tile 68A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                           |                           |
|---------------------------|---------------------------|
| <b>Deciduous Forests</b>  | <b>Aquatic Herbaceous</b> |
| PFO1                      | PEM1                      |
| PFO1/SS1                  | PAB                       |
| PSS1/FO1                  | PEM1/US                   |
| <b>Coniferous Forests</b> | PUS/EM1                   |
| PSS1/FO4                  | R3AB                      |
| <b>Shrub</b>              | R3EM                      |
| PSS1                      | <b>Lakes</b>              |
| PSS1/US                   | L                         |
| PSS1/ML1                  | <b>Ponds</b>              |
| <b>Shrub/Herbaceous</b>   | PUB                       |
| PSS1/EM1                  | PUS                       |
| <b>Herbaceous/Shrub</b>   | <b>Rivers/Streams</b>     |
| PEM1/SS1                  | R3UBH                     |
| <b>Herbaceous</b>         | R3US                      |
| PEM1                      | R4                        |
| PEM1/ML1                  | <b>Non-wetlands</b>       |
| PEM1/2                    | U                         |
| PEM1/US                   |                           |
| PUS/EM1                   |                           |
| PEM2                      |                           |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.

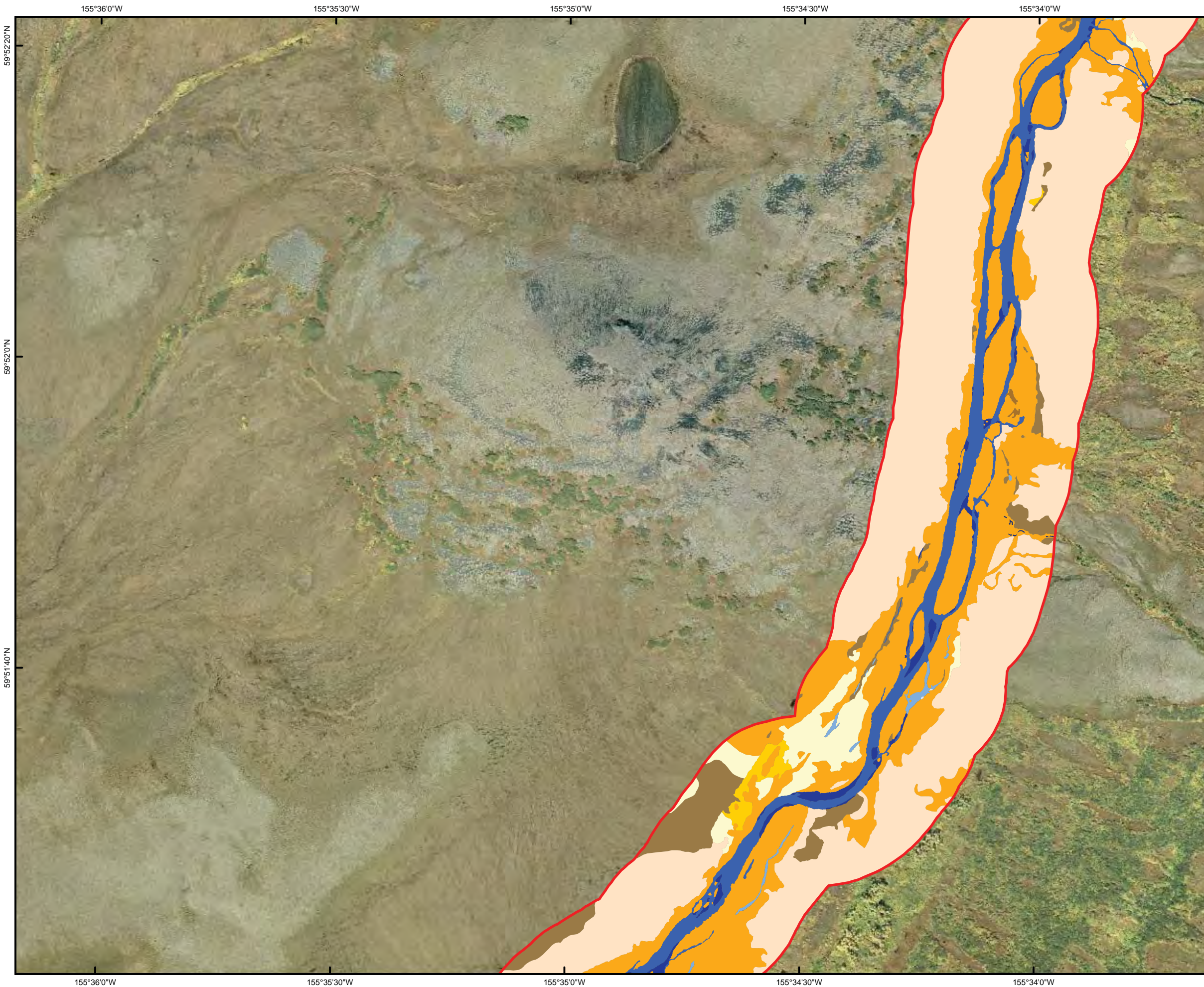


0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 69A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

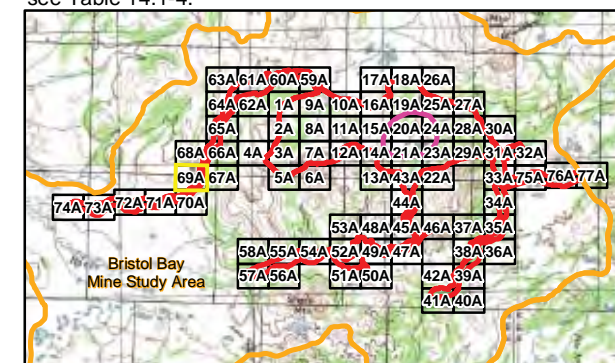
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

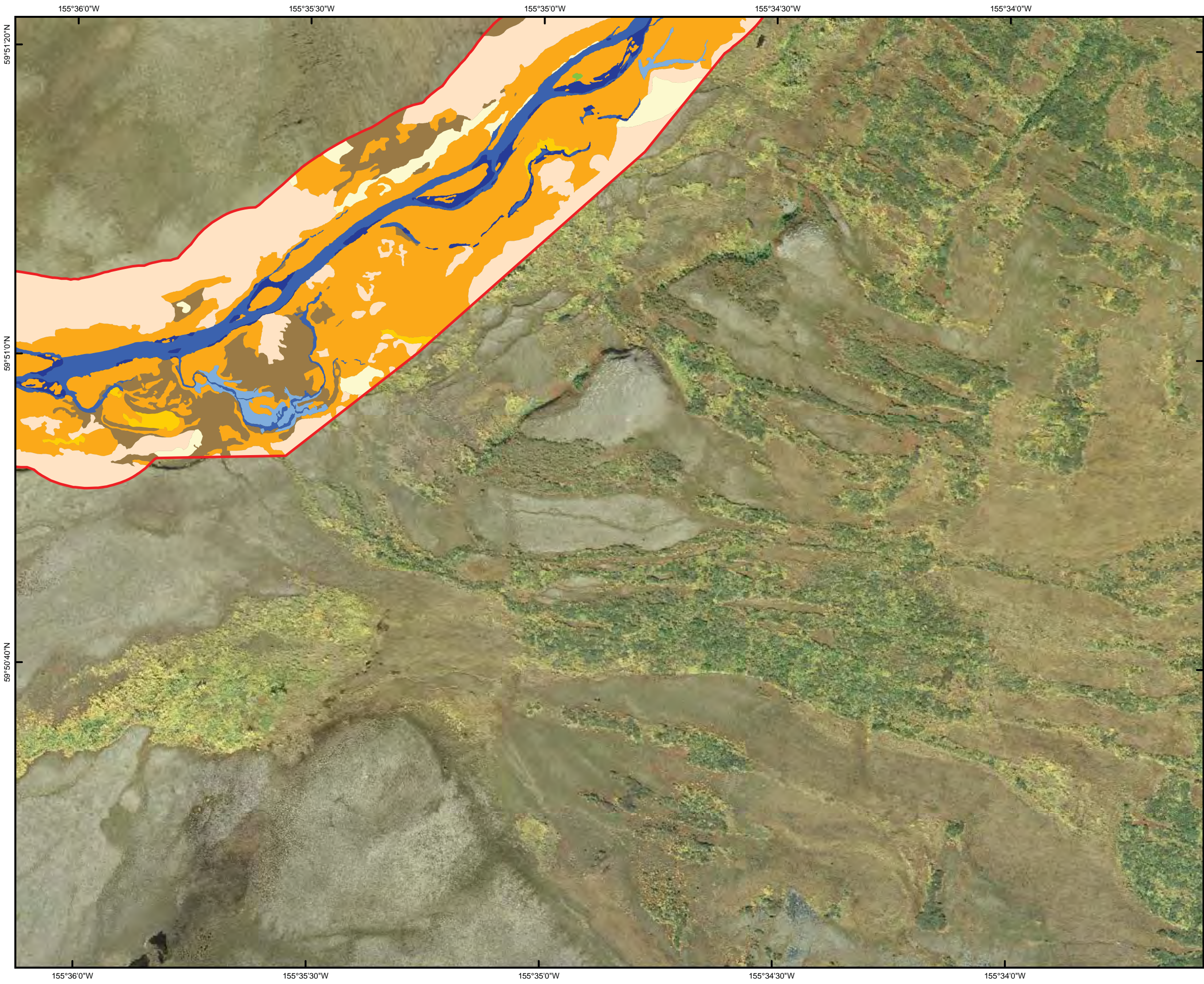
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



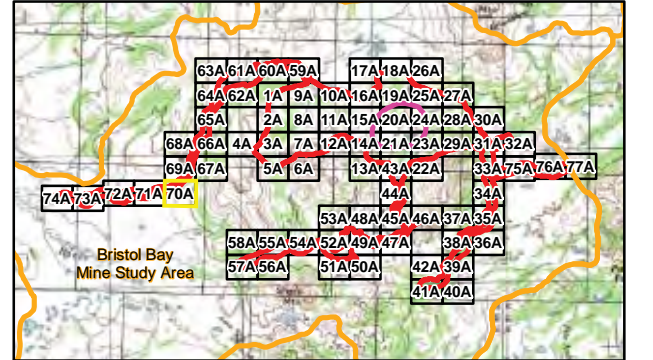


**Figure 14.1- 4, Tile 70A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |   |  |
|---|--|
| <b>Deciduous Forests</b>  | <b>Aquatic Herbaceous</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #B0E0E6; border: 1px solid black; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #87CEEB; border: 1px solid black; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C8E6C9; border: 1px solid black; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4DB6AC; border: 1px solid black; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4DB6AC; border: 1px solid black; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #2ECC71; border: 1px solid black; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #34495E; border: 1px solid black; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #008080; border: 1px solid black; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; border: 1px solid black; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF8C00; border: 1px solid black; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; border: 1px solid black; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF69B4; border: 1px solid black; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>   |
| <b>Shrub/Herbaceous</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #6495ED; border: 1px solid black; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFFE0; border: 1px solid black; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #B0C4DE; border: 1px solid black; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>   | <b>Rivers/Streams</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; border: 1px solid black; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #191970; border: 1px solid black; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00008B; border: 1px solid black; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; border: 1px solid black; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00008B; border: 1px solid black; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; border: 1px solid black; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #654321; border: 1px solid black; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; border: 1px solid black; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; border: 1px solid black; margin-right: 5px;"></span> PEM1/US  |  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; border: 1px solid black; margin-right: 5px;"></span> PUS/EM1  |  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; border: 1px solid black; margin-right: 5px;"></span> PEM2     |  |

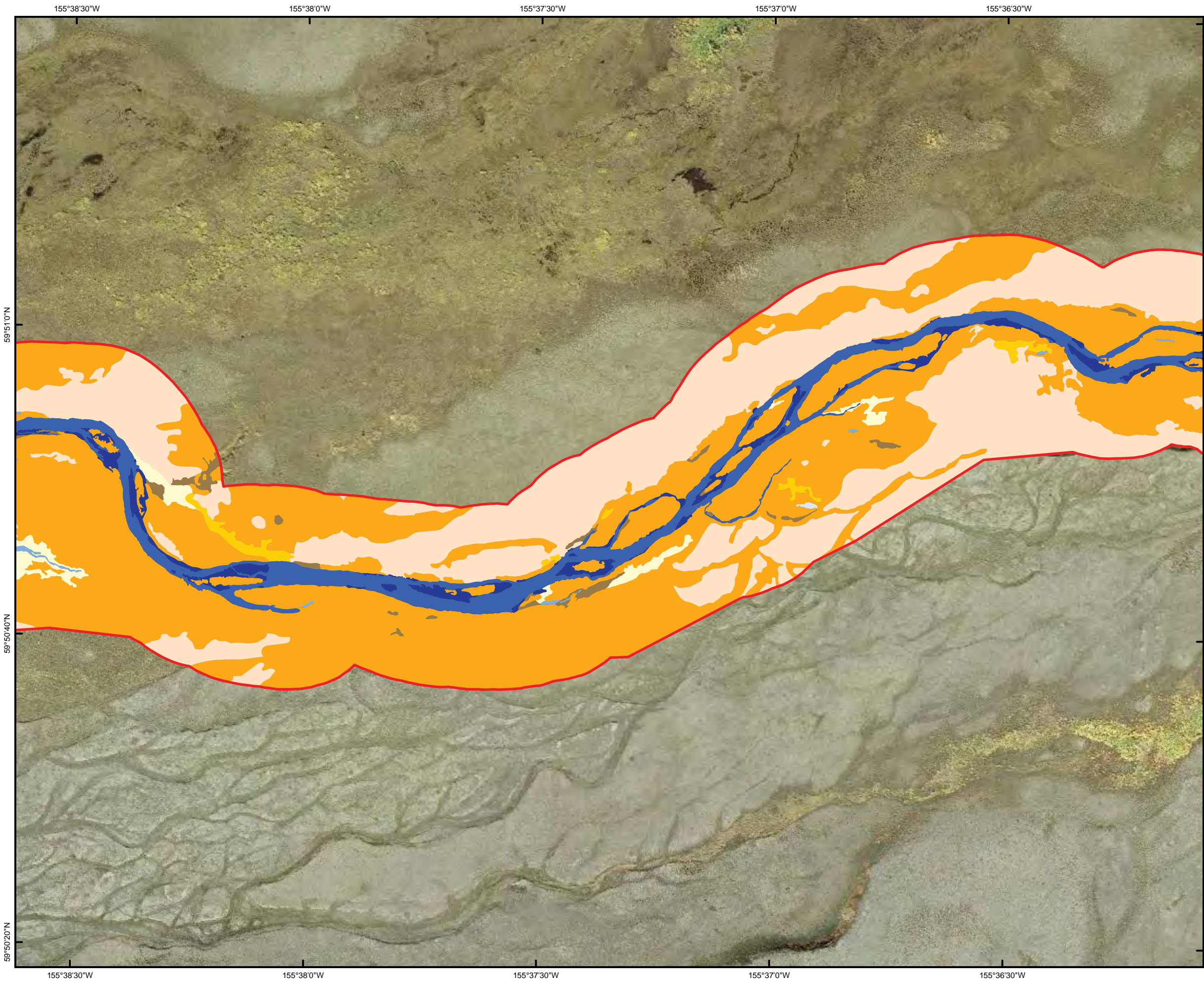
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



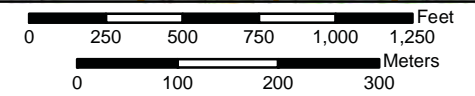
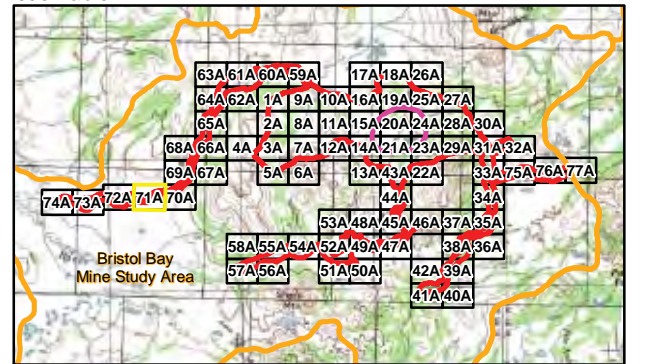


**Figure 14.1- 4, Tile 71A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| <b>Deciduous Forests</b>   | <b>Aquatic Herbaceous</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C8E6C9; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #80CBC4; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #4CAF50; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #546E7A; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #008080; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF69B4; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>  |
| <b>Shrub/Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #6495ED; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFFE0; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #ADD8E6; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>  | <b>Rivers/Streams</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4682B4; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4169E1; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A08060; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #191970; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2691E; margin-right: 5px;"></span> PEM2     |   |

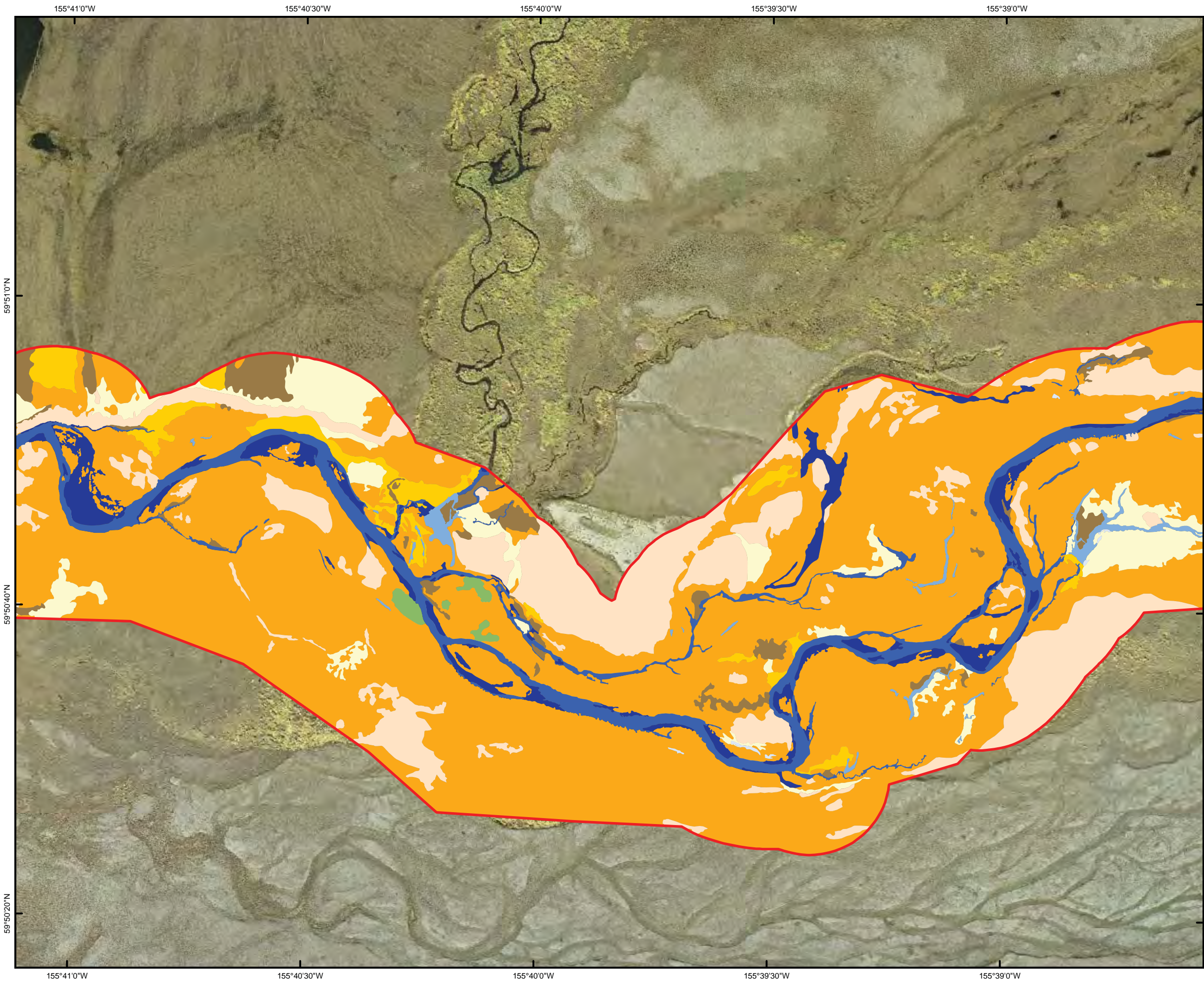
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



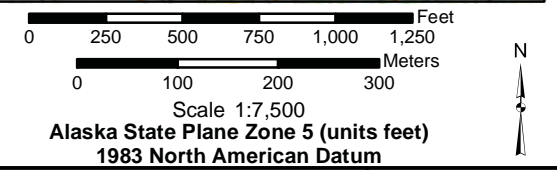
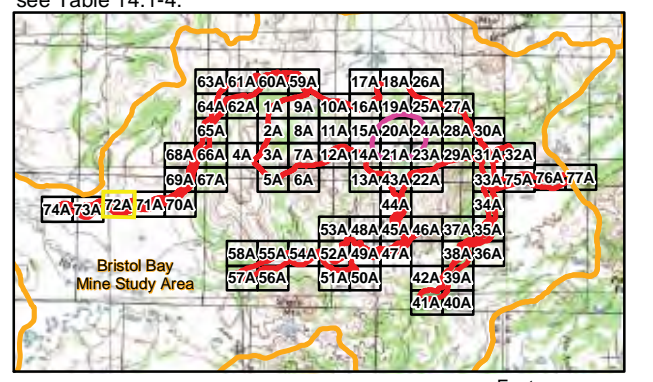


**Figure 14.1- 4, Tile 72A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| <b>Deciduous Forests</b>   | <b>Aquatic Herbaceous</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C8E6C9; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4DB6AC; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #81C784; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #4CAF50; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #546E7A; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #2E8B57; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFA500; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF69B4; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>  |
| <b>Shrub/Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #6495ED; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFFE0; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #B0C4DE; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>  | <b>Rivers/Streams</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4682B4; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #4169E1; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A08080; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #191970; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFDAB9; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM2     |   |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



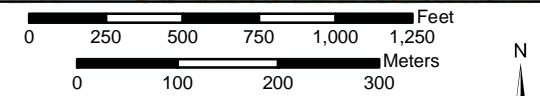
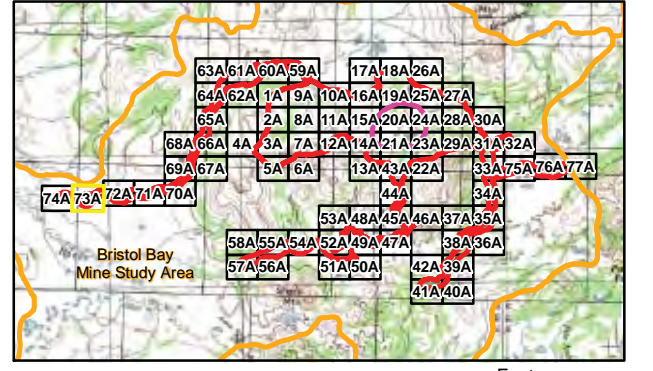


**Figure 14.1- 4, Tile 73A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |  |   |
|--|---|
| <b>Deciduous Forests</b>   | <b>Aquatic Herbaceous</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #D9EAD3; margin-right: 5px;"></span> PEM1    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #A2D4C9; margin-right: 5px;"></span> PAB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C8E6C9; margin-right: 5px;"></span> PSS1/FO1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #8BC34A; margin-right: 5px;"></span> PEM1/US |
| <b>Coniferous Forests</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #66BB6A; margin-right: 5px;"></span> PUS/EM1 |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #4CAF50; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #3E8E41; margin-right: 5px;"></span> R3AB    |
| <b>Shrub</b>   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #2E7D32; margin-right: 5px;"></span> R3EM    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFB74D; margin-right: 5px;"></span> PSS1     | <b>Lakes</b>  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF9800; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00B0F0; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF0000; margin-right: 5px;"></span> PSS1/ML1 | <b>Ponds</b>  |
| <b>Shrub/Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #64B5F6; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFF176; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #BBDEFB; margin-right: 5px;"></span> PUS     |
| <b>Herbaceous/Shrub</b>  | <b>Rivers/Streams</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFEB3B; margin-right: 5px;"></span> PEM1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #2196F3; margin-right: 5px;"></span> R3UBH   |
| <b>Herbaceous</b>  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #0070C0; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A52A2A; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> R4      |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #D2B48C; margin-right: 5px;"></span> PEM1/ML1 | <b>Non-wetlands</b>   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; margin-right: 5px;"></span> PEM1/2   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFCC99; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #A0522D; margin-right: 5px;"></span> PEM1/US  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #8B0000; margin-right: 5px;"></span> PUS/EM1  |   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #C8A2C8; margin-right: 5px;"></span> PEM2     |   |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



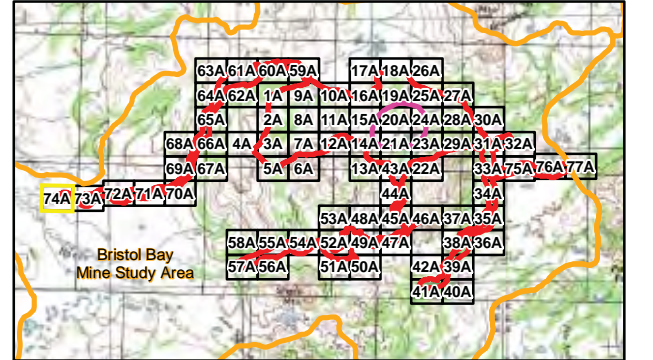


**Figure 14.1- 4, Tile 74A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification**
- Deciduous Forests**
  - PFO1
  - PFO1/SS1
  - PSS1/FO1
- Coniferous Forests**
  - PSS1/FO4
- Shrub**
  - PSS1
  - PSS1/US
  - PSS1/ML1
- Shrub/Herbaceous**
  - PSS1/EM1
- Herbaceous/Shrub**
  - PEM1/SS1
- Herbaceous**
  - PEM1
  - PEM1/ML1
  - PEM1/2
  - PEM1/US
  - PUS/EM1
  - PEM2
- Aquatic Herbaceous**
  - PEM1
  - PAB
  - PEM1/US
  - PUS/EM1
  - R3AB
  - R3EM
- Lakes**
  - L
- Ponds**
  - PUB
  - PUS
- Rivers/Streams**
  - R3UBH
  - R3US
  - R4
- Non-wetlands**
  - U

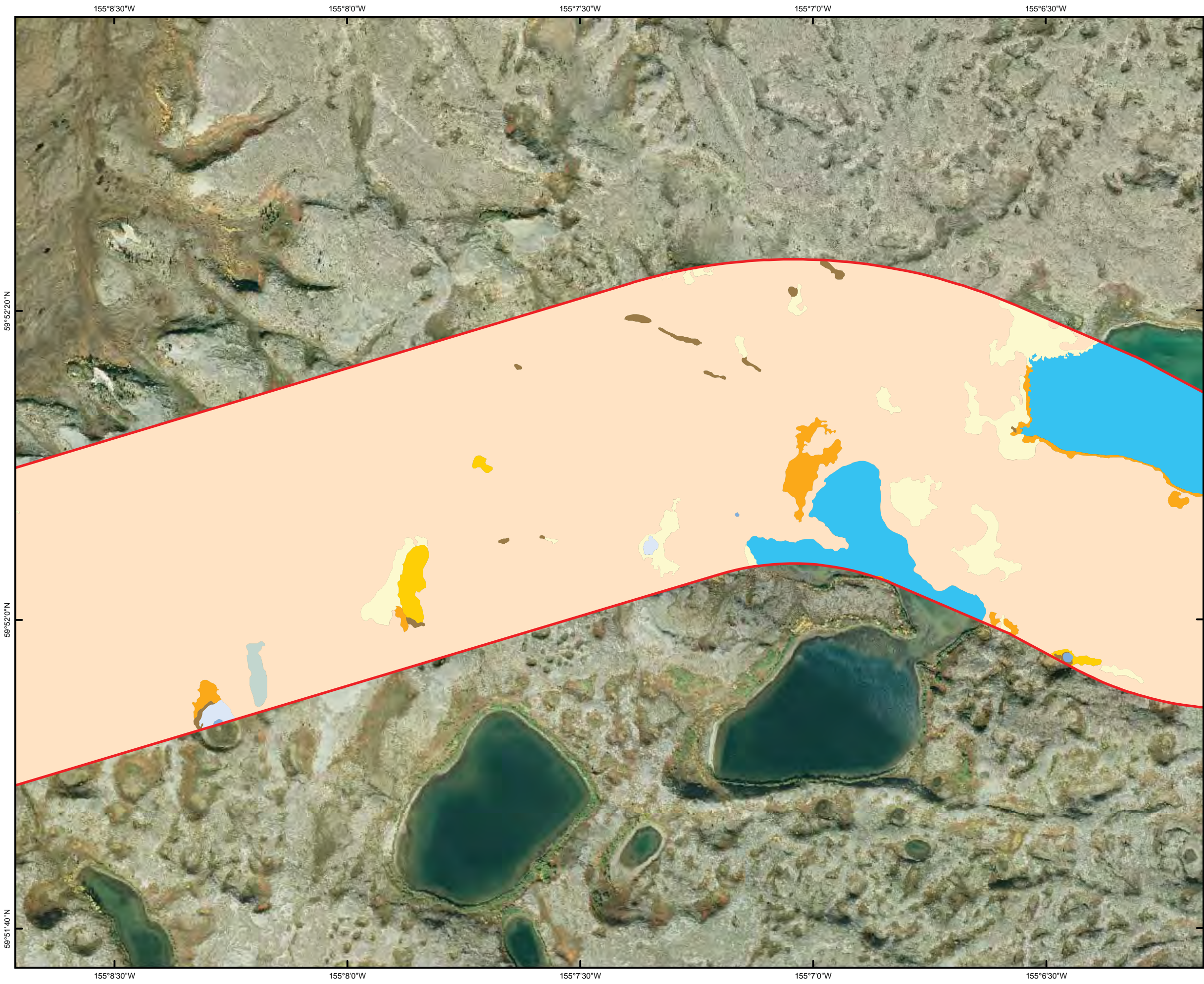
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



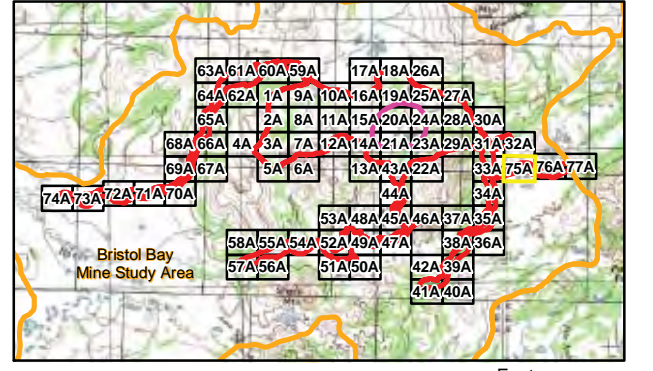


**Figure 14.1- 4, Tile 75A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
| Coniferous Forests | PUS/EM1            |
| PSS1/FO4           | R3AB               |
|                    | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
| Shrub/Herbaceous   | PUS                |
| PSS1/EM1           | Rivers/Streams     |
| Herbaceous/Shrub   | R3UBH              |
| PEM1/SS1           | R3US               |
| Herbaceous         | R4                 |
| PEM1               | Non-wetlands       |
| PEM1/ML1           | U                  |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.1- 4, Tile 76A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

Mine Mapping Area

Mine Study Area

General Deposit Location

**Enhanced National Wetlands Inventory (ENWI) Classification**

**Deciduous Forests**

PFO1

PFO1/SS1

PSS1/FO1

**Coniferous Forests**

PSS1/FO4

**Shrub**

PSS1

PSS1/US

PSS1/ML1

**Shrub/Herbaceous**

PSS1/EM1

**Herbaceous/Shrub**

PEM1/SS1

**Herbaceous**

PEM1

PEM1/ML1

PEM1/2

PEM1/US

PUS/EM1

PEM2

**Aquatic Herbaceous**

PEM1

PAB

PEM1/US

PUS/EM1

R3AB

R3EM

**Lakes**

L

**Ponds**

PUB

PUS

**Rivers/Streams**

R3UBH

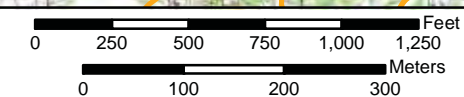
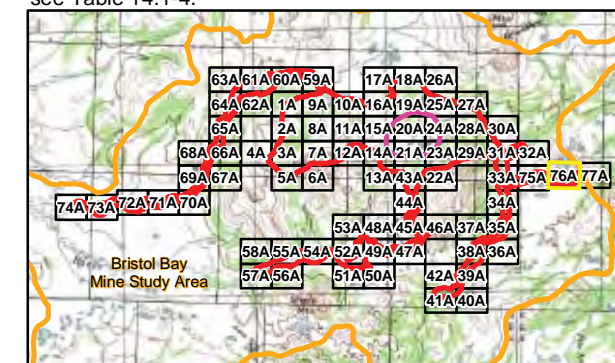
R3US

R4

**Non-wetlands**

U

Note: For full names of classification and descriptions of codes, see Table 14.1-4.



Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

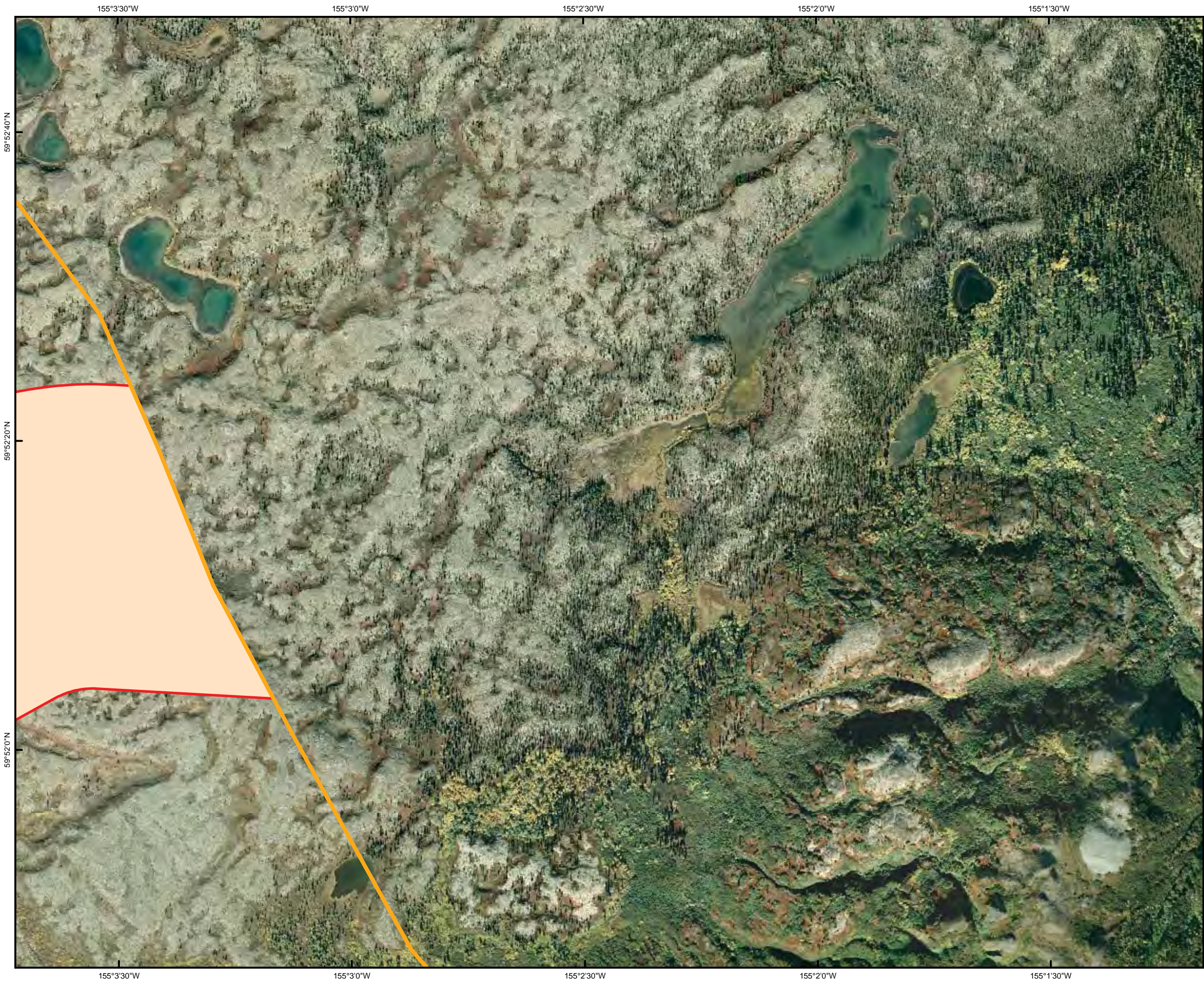
File: RDI\_3PP\_EBD\_ENWI\_Tiled\_Fig14.1-4\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS



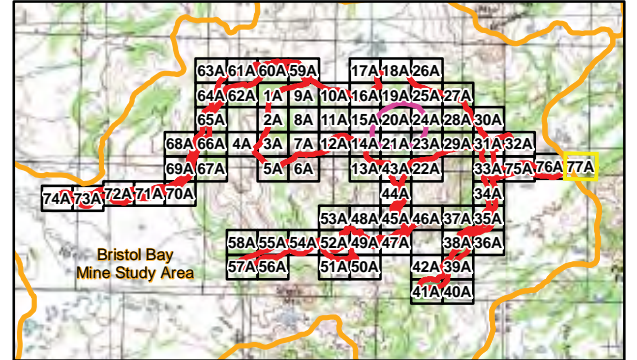


**Figure 14.1- 4, Tile 77A**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Mine Study Area 2004-2008**

**Legend**

- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
- Enhanced National Wetlands Inventory (ENWI) Classification
- |                    |                    |
|--------------------|--------------------|
| Deciduous Forests  | Aquatic Herbaceous |
| PFO1               | PEM1               |
| PFO1/SS1           | PAB                |
| PSS1/FO1           | PEM1/US            |
| Coniferous Forests | PUS/EM1            |
| PSS1/FO4           | R3AB               |
|                    | R3EM               |
| Shrub              | Lakes              |
| PSS1               | L                  |
| PSS1/US            | Ponds              |
| PSS1/ML1           | PUB                |
| Shrub/Herbaceous   | PUS                |
| PSS1/EM1           | Rivers/Streams     |
| Herbaceous/Shrub   | R3UBH              |
| PEM1/SS1           | R3US               |
| Herbaceous         | R4                 |
| PEM1               | Non-wetlands       |
| PEM1/ML1           | U                  |
| PEM1/2             |                    |
| PEM1/US            |                    |
| PUS/EM1            |                    |
| PEM2               |                    |

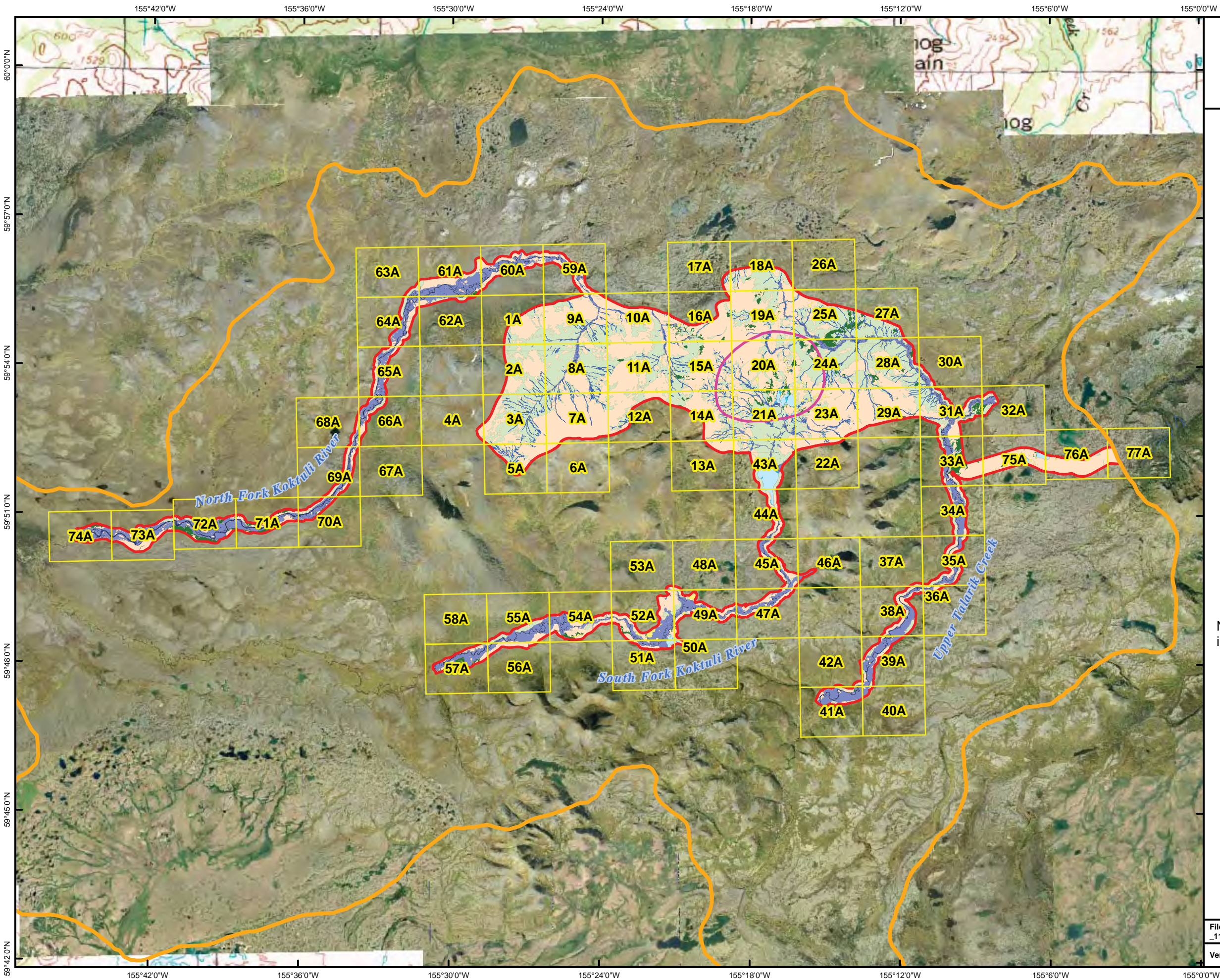
Note: For full names of classification and descriptions of codes, see Table 14.1-4.



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum





File: RDI_3PP_EBD_ENWI_Tiled_Fig14.1-4_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS













**Figure 14.1-5**  
**Overview**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area 2004-2008**

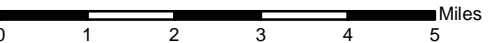
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
-  Grid for Detailed Mapping Tiles

**Hydrogeomorphic (HGM) Classification**

-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe

Note: For detailed HGM mapping, see individual tiles in this figure series.

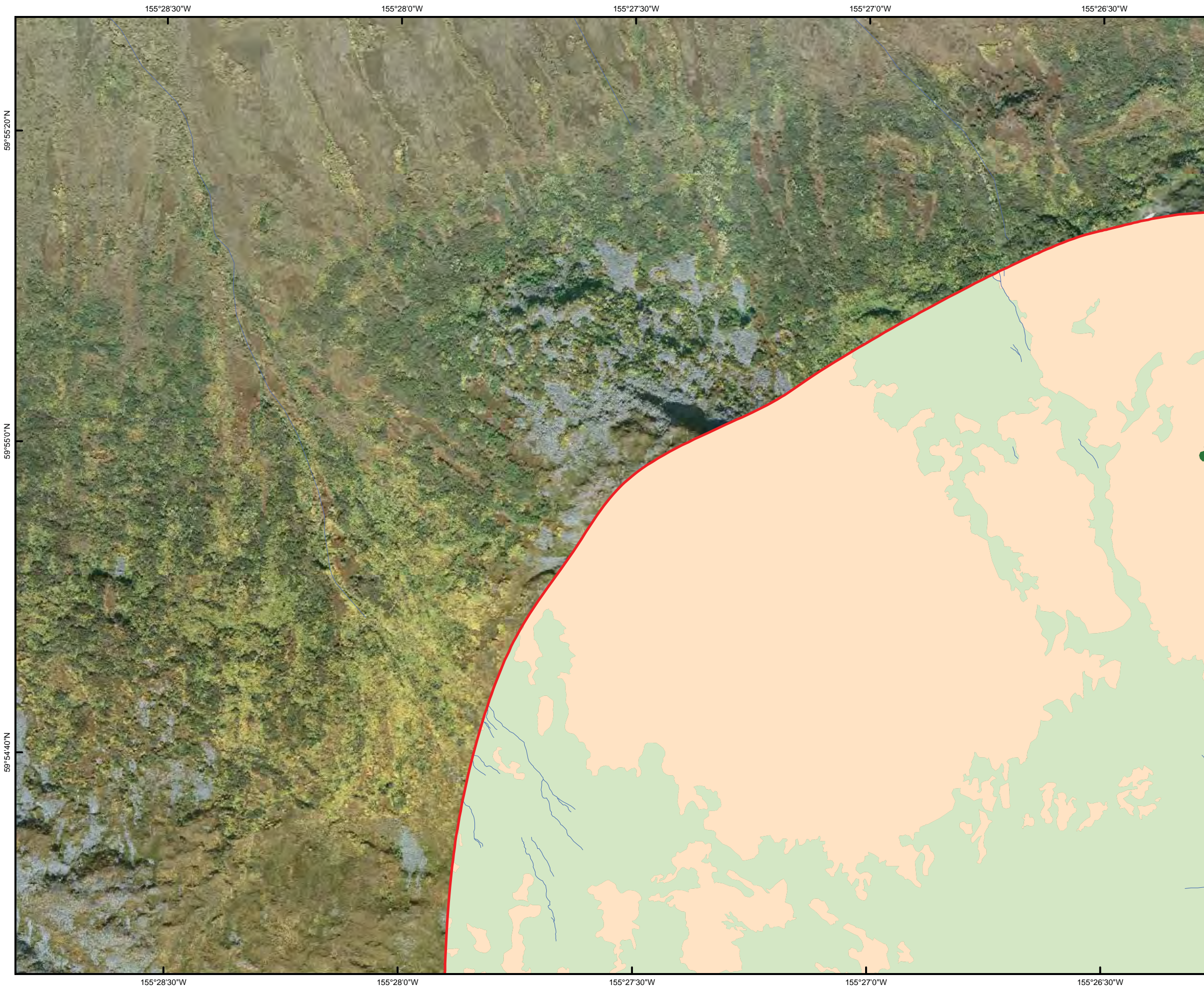


Scale 1:140,000

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDL_3PP_EBD_Fig14.1-5_HGM_11X17L_1of1_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

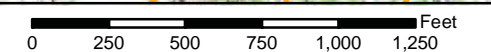
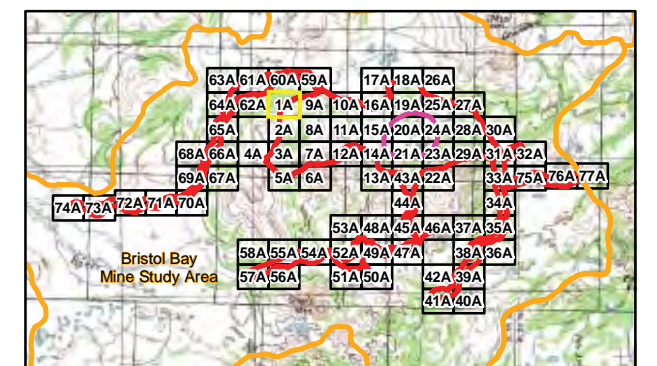




**Figure 14.1-5**  
**Tile 1A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe

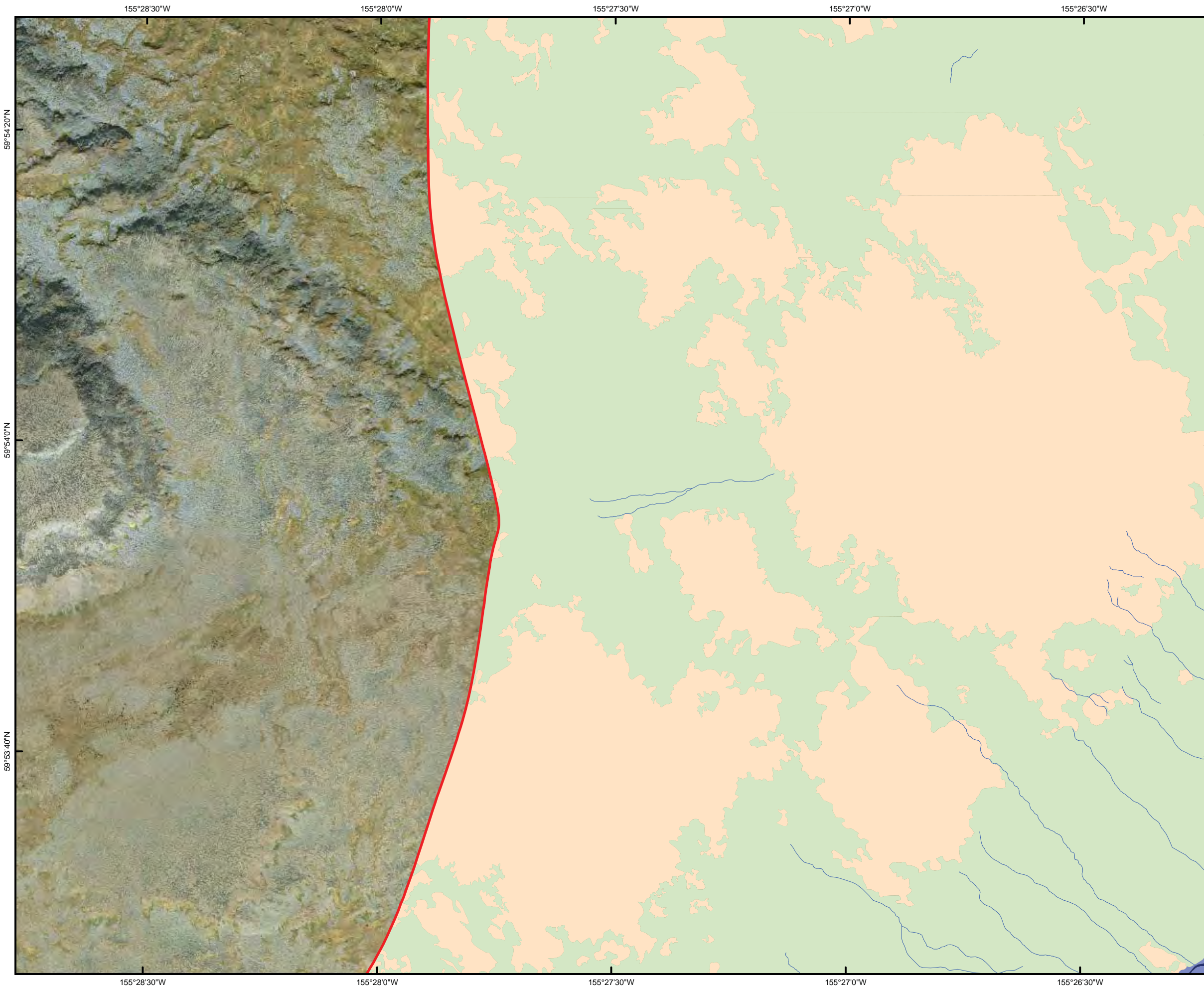


Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**




File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





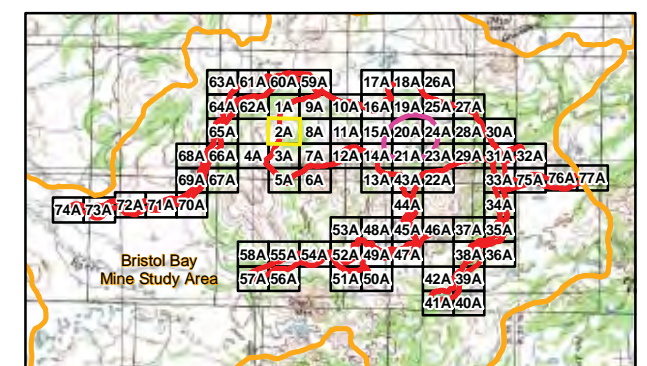
**Figure 14.1-5**  
**Tile 2A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location

**Hydrogeomorphic (HGM) Classification**

-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

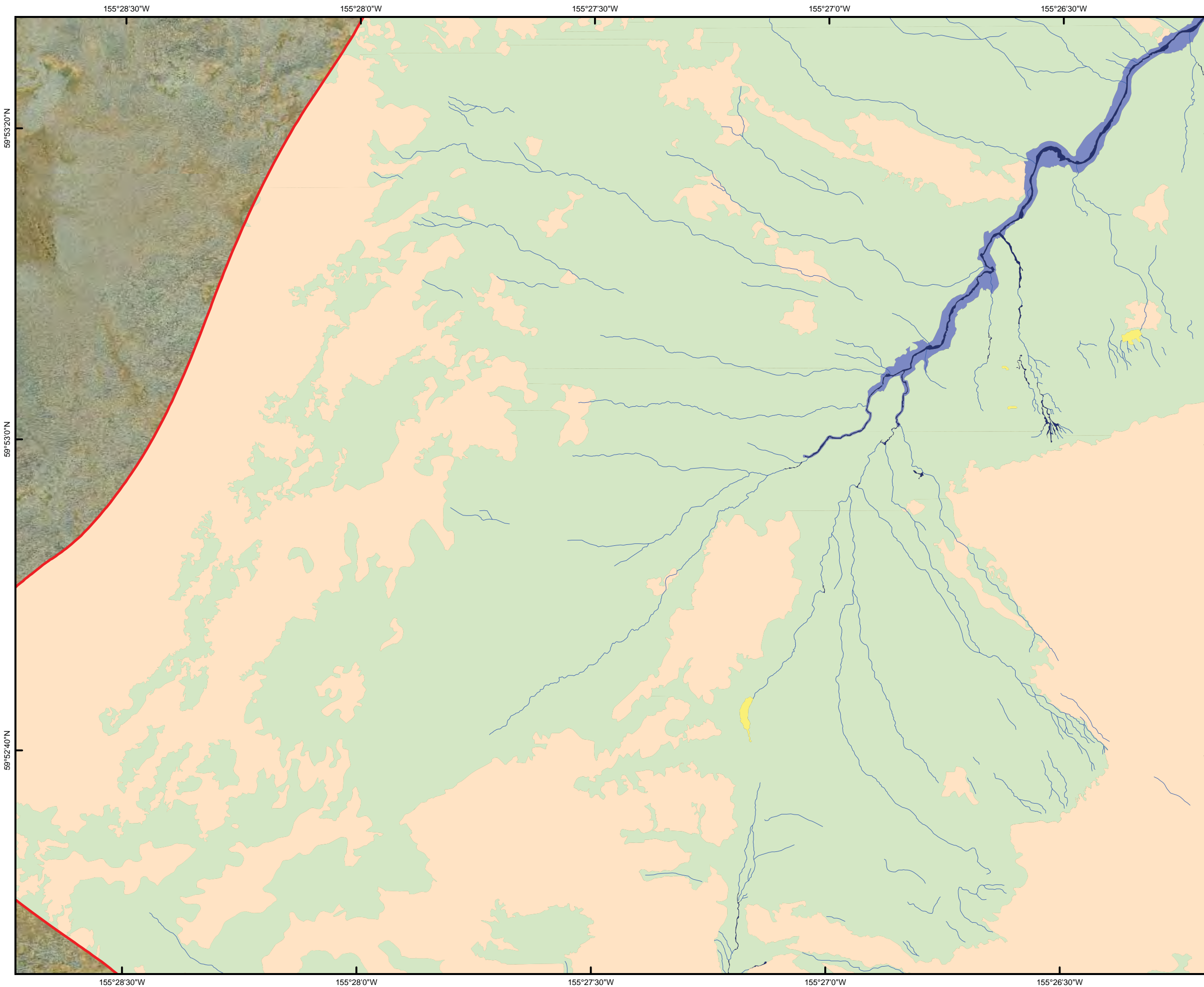
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

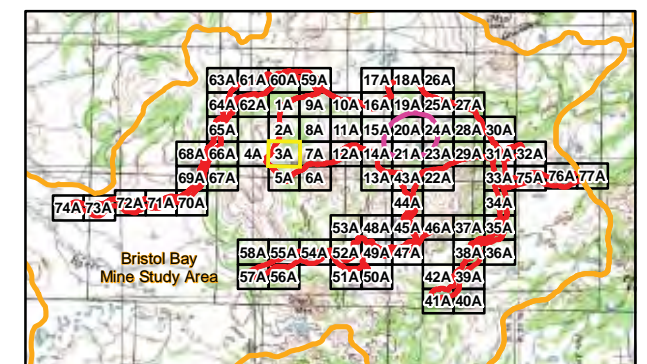




**Figure 14.1-5**  
**Tile 3A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

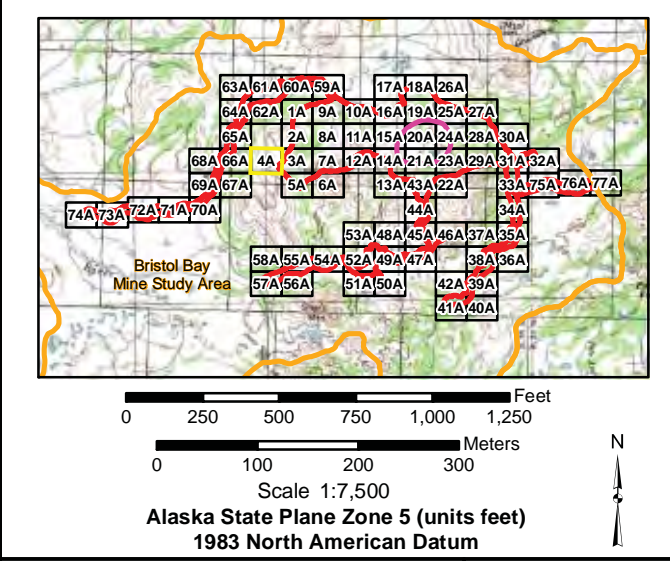




**Figure 14.1-5**  
**Tile 4A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

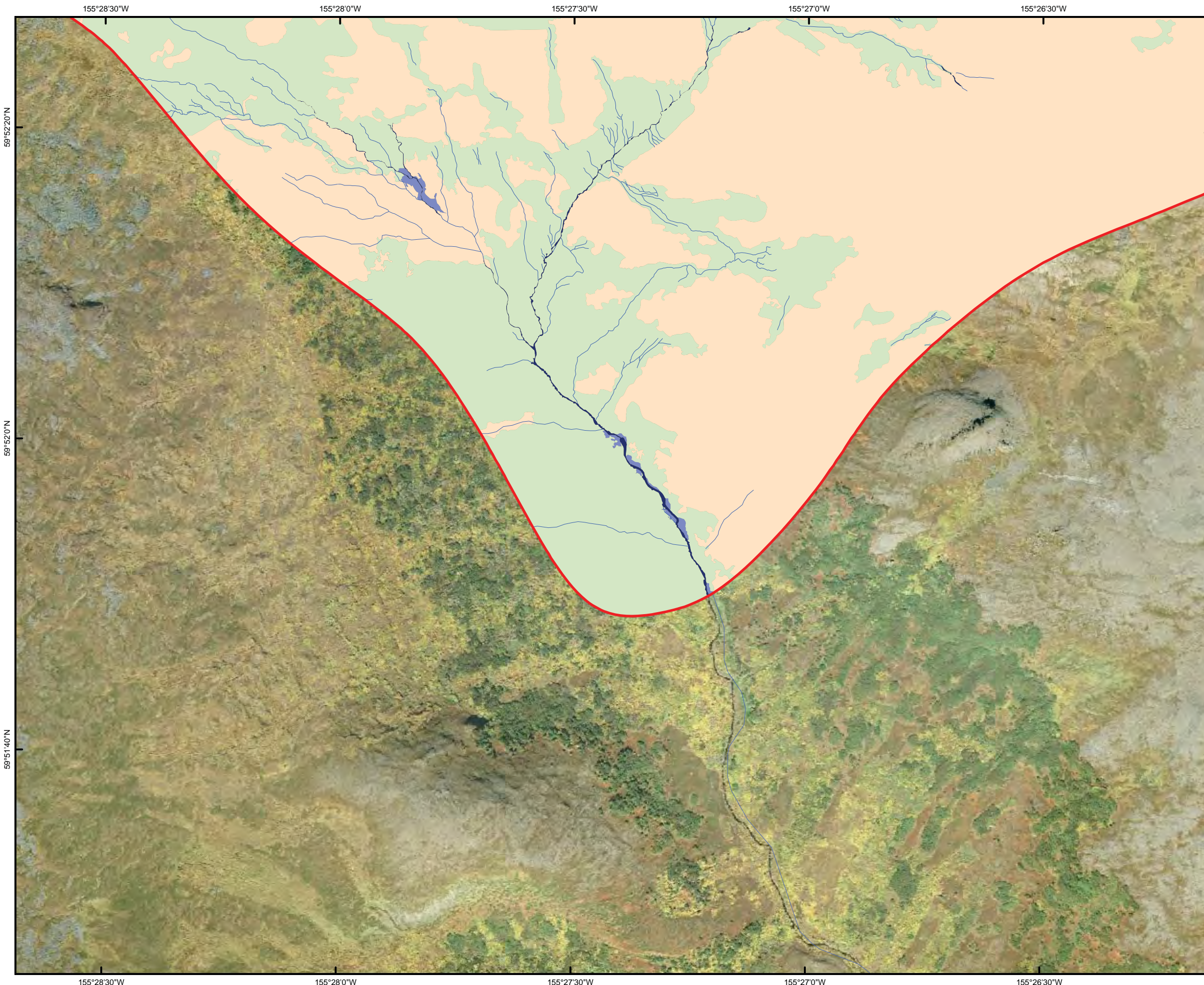
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

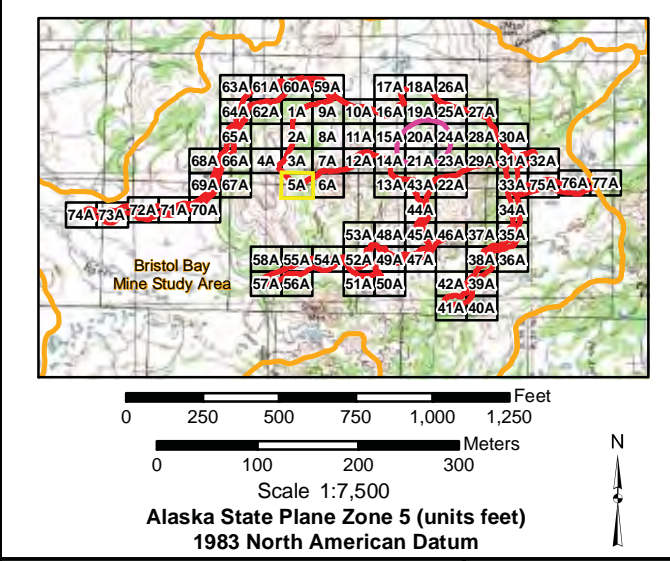




**Figure 14.1-5**  
**Tile 5A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Hydrogeomorphic (HGM) Classification
  - N/A - Non-wetlands
  - Slope
  - Flat
  - Depressional
  - Riverine
  - Riverine Channel
  - Lacustrine
  - Lacustrine Fringe














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

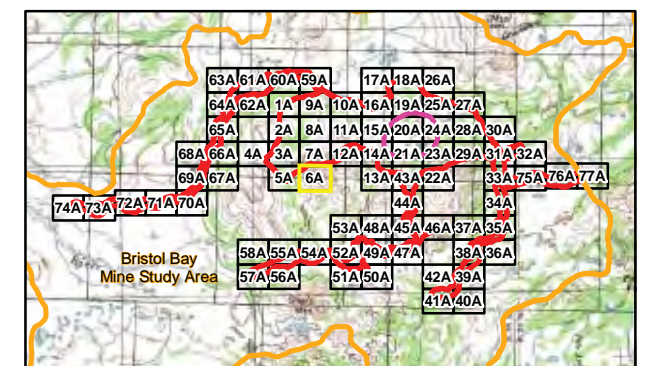




**Figure 14.1-5**  
**Tile 6A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

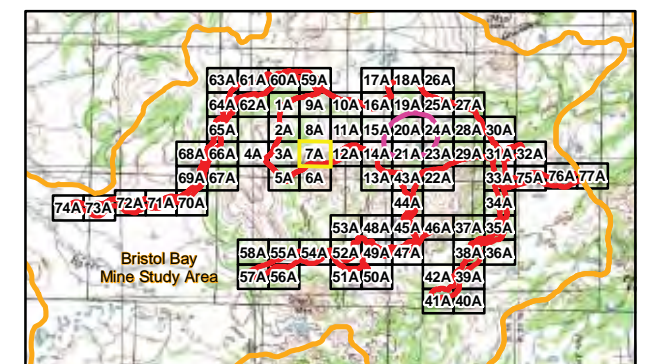




**Figure 14.1-5**  
**Tile 7A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**



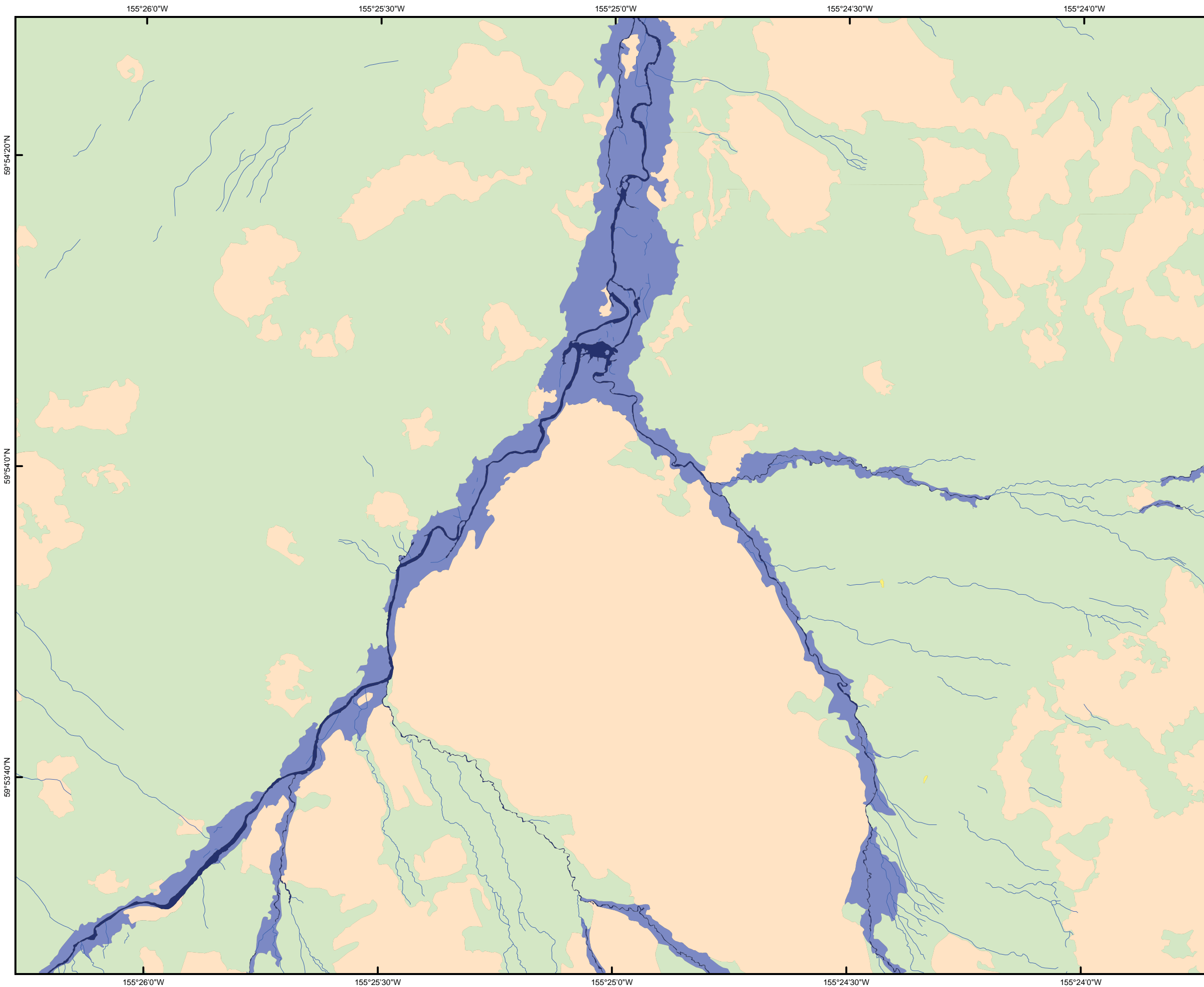
File: RDL\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

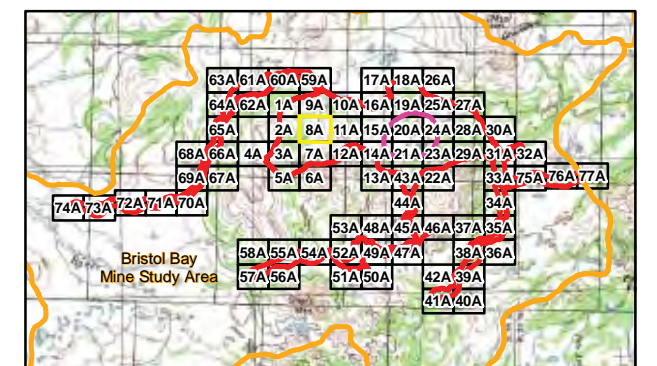




**Figure 14.1-5**  
**Tile 8A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area,**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**



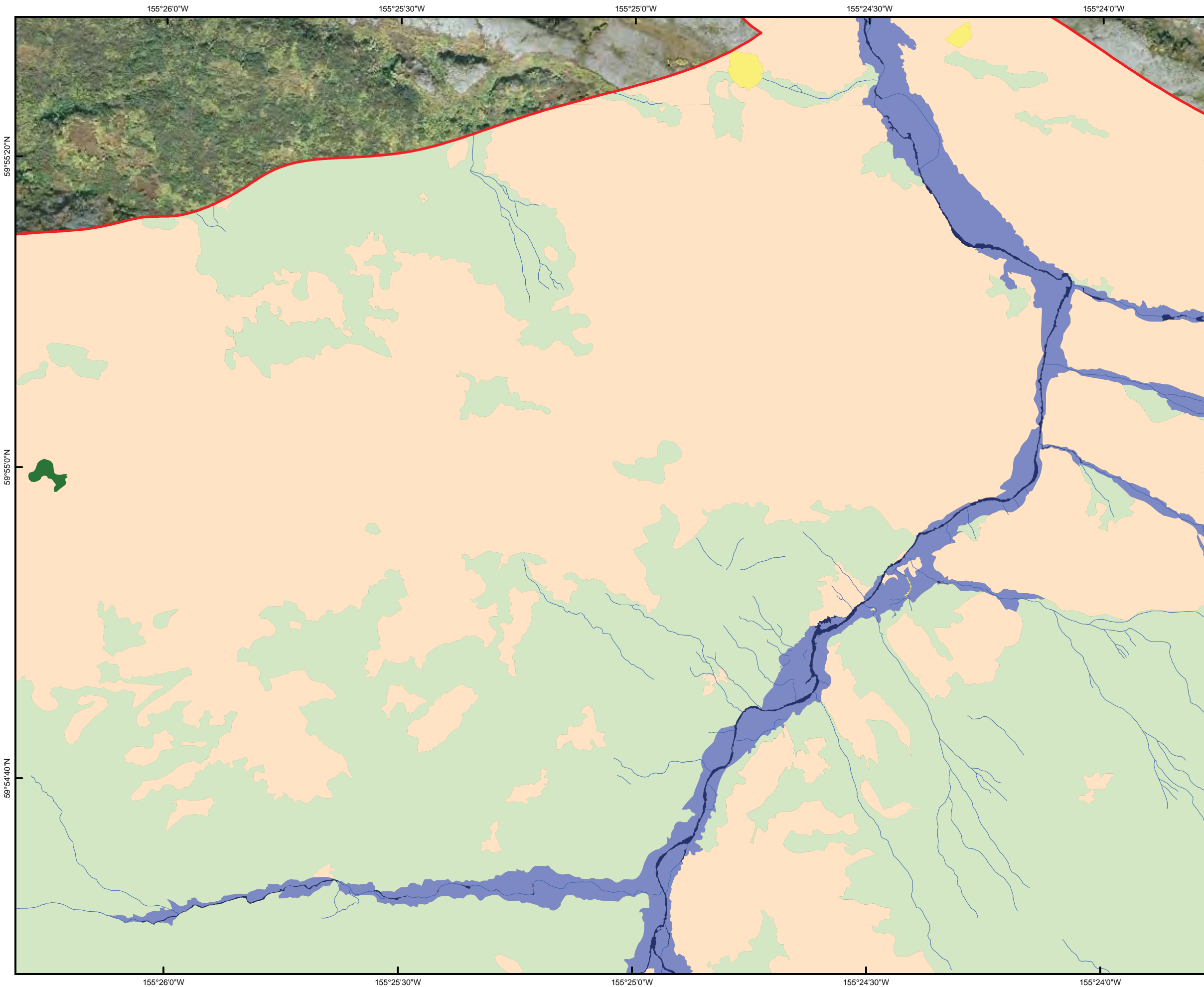
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D04.mxd

Date: July 11, 2011

Version: 4












Author: RDI-LS

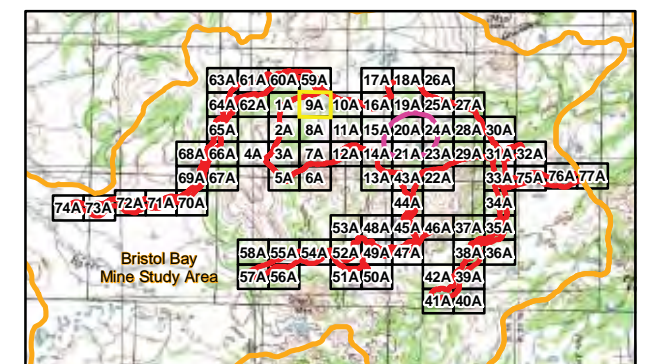




**Figure 14.1-5**  
**Tile 9A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

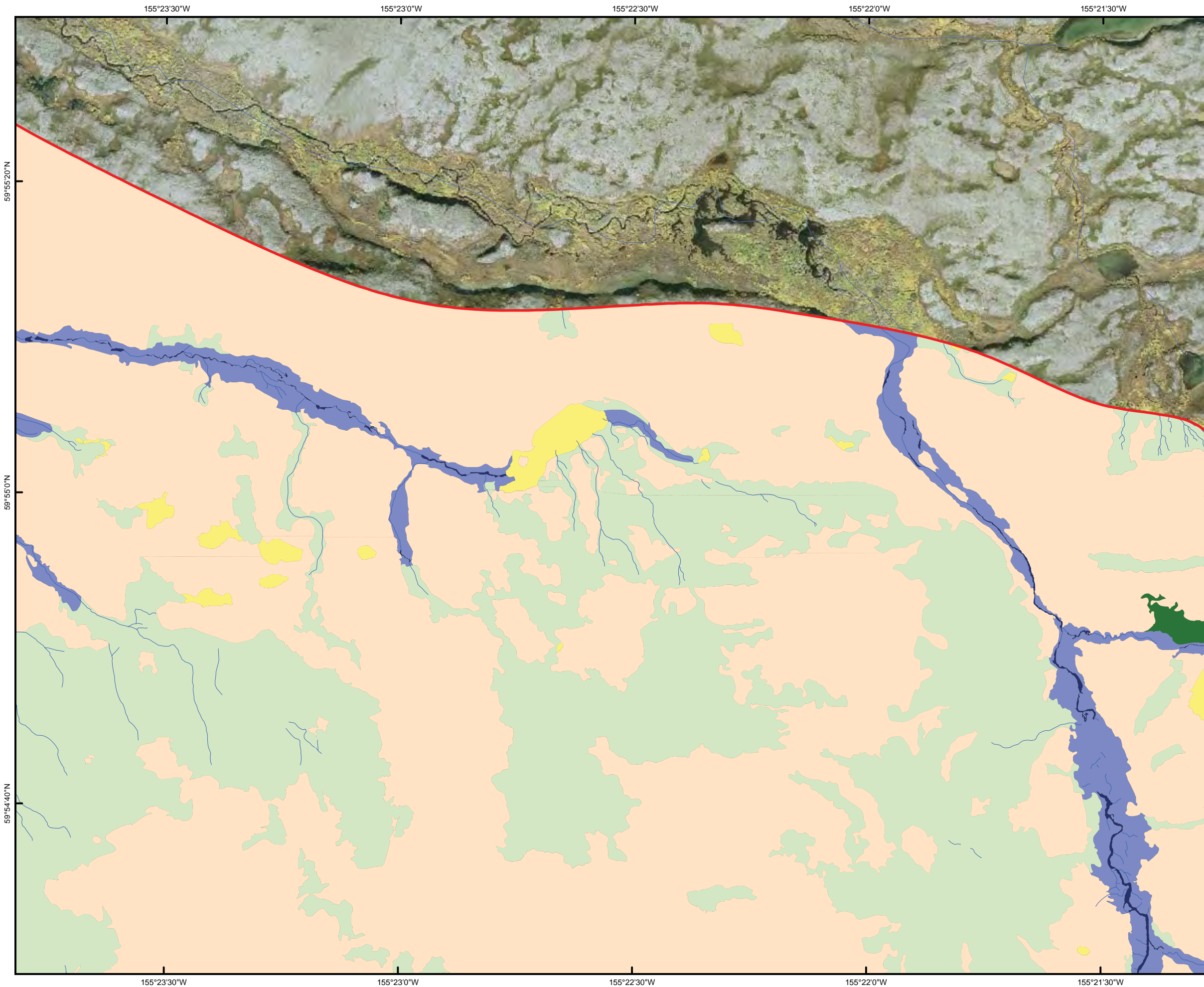
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3





Author: RDI-LS

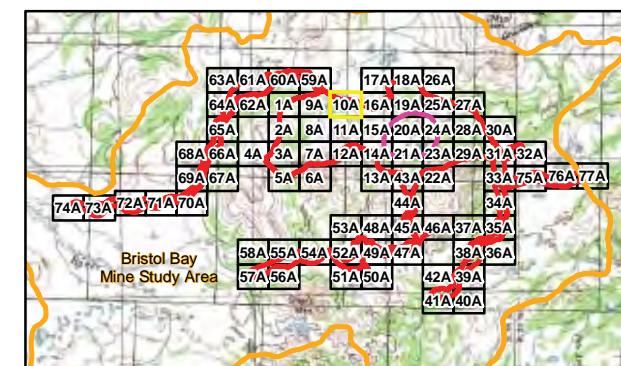




**Figure 14.1-5**  
**Tile 10A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

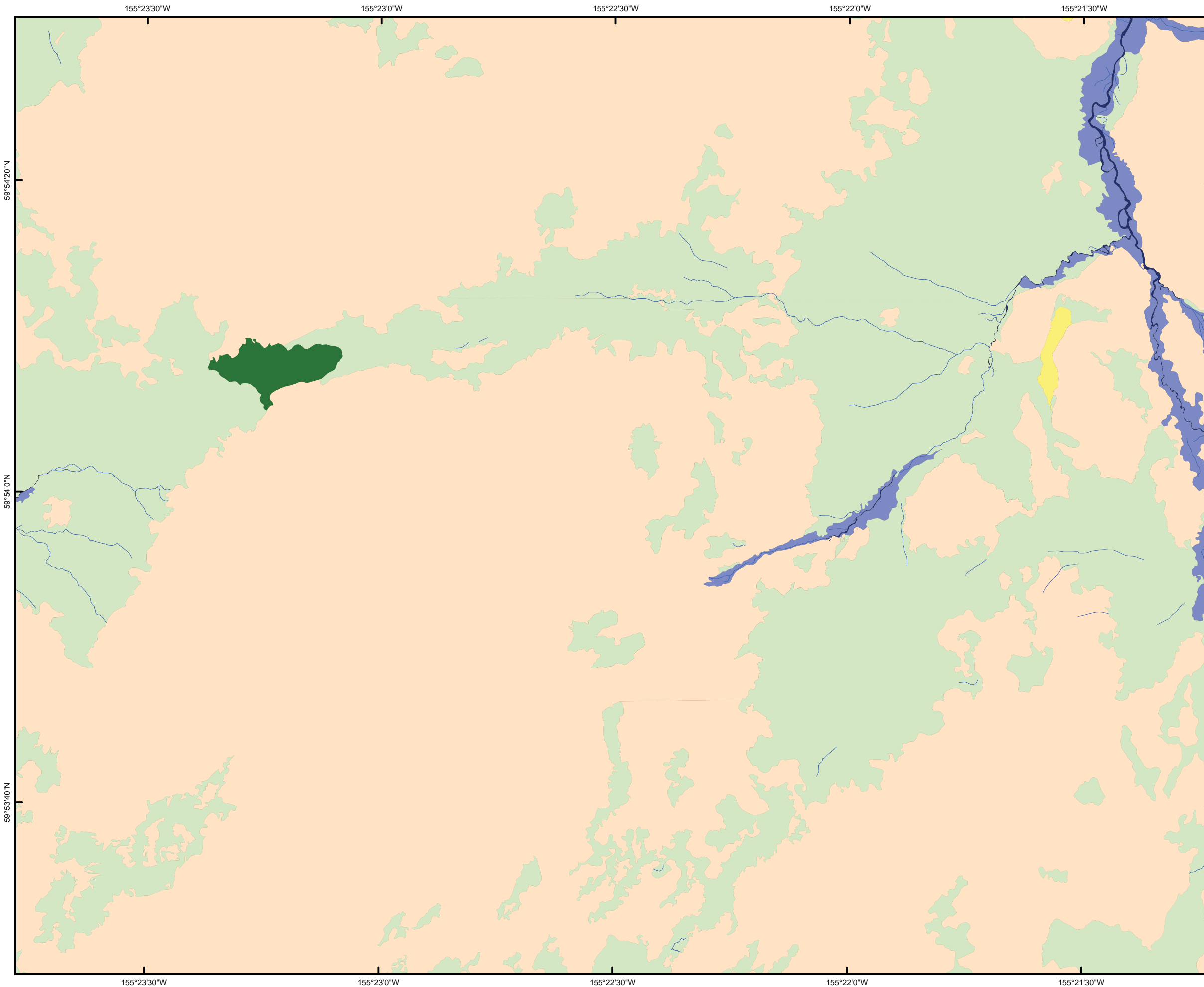
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

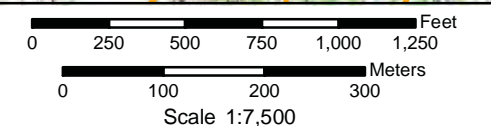
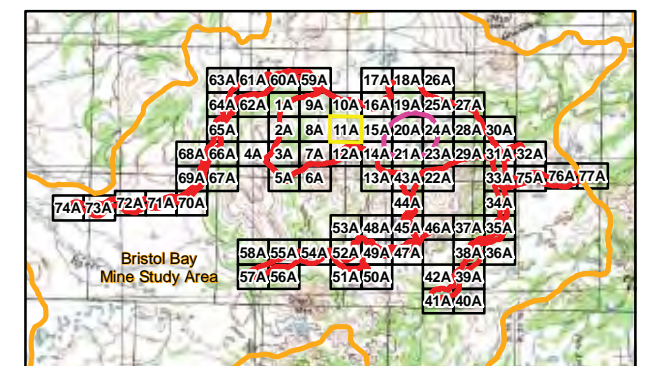




**Figure 14.1-5**  
**Tile 11A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

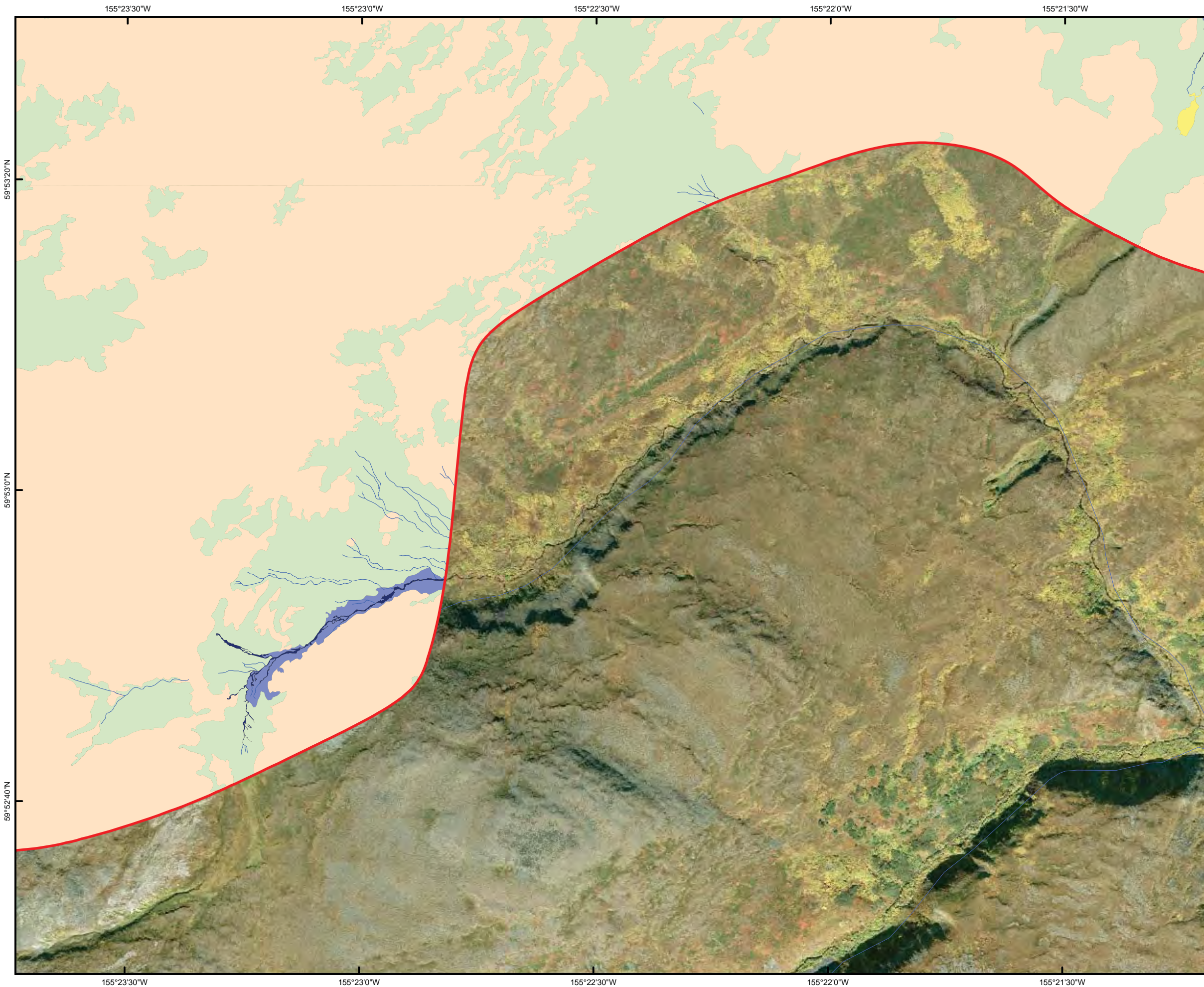
-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

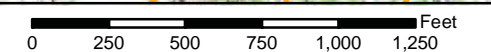
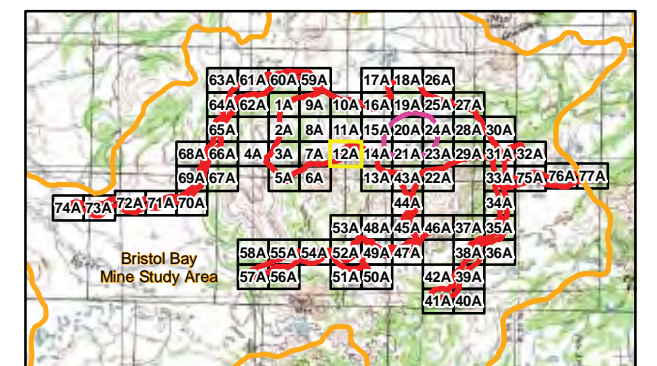




**Figure 14.1-5**  
**Tile 12A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe

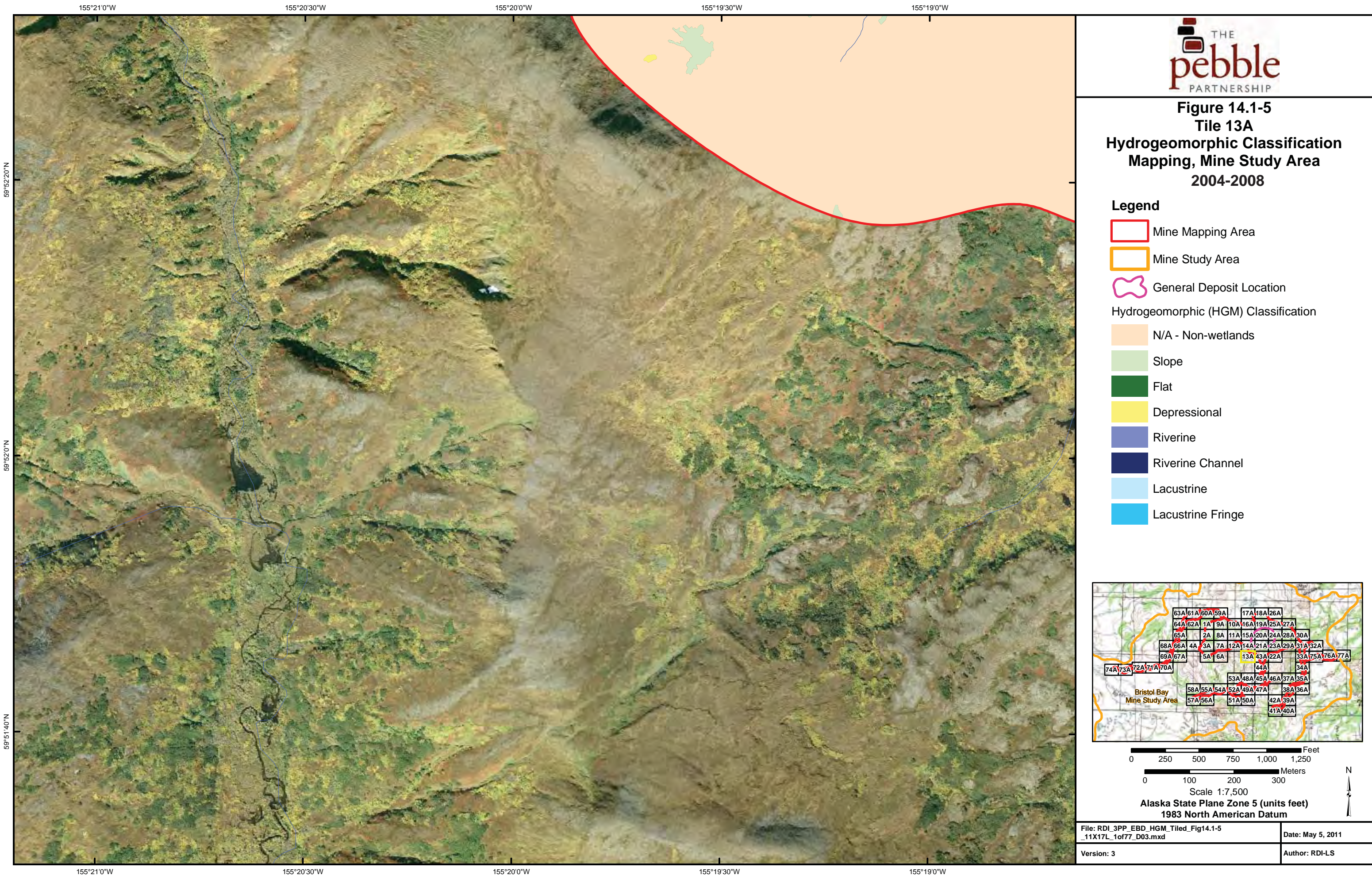


Scale 1:7,500












Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

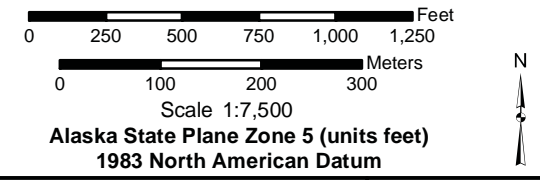
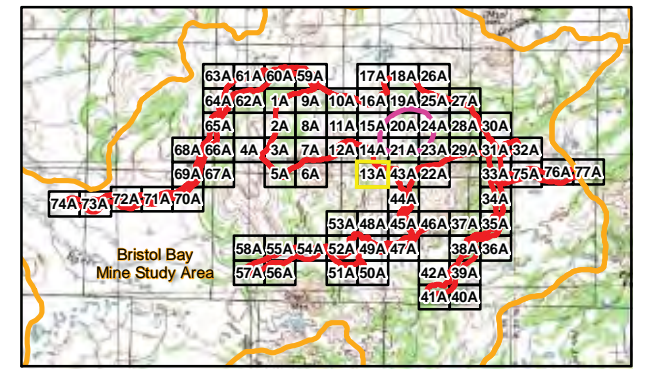
File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





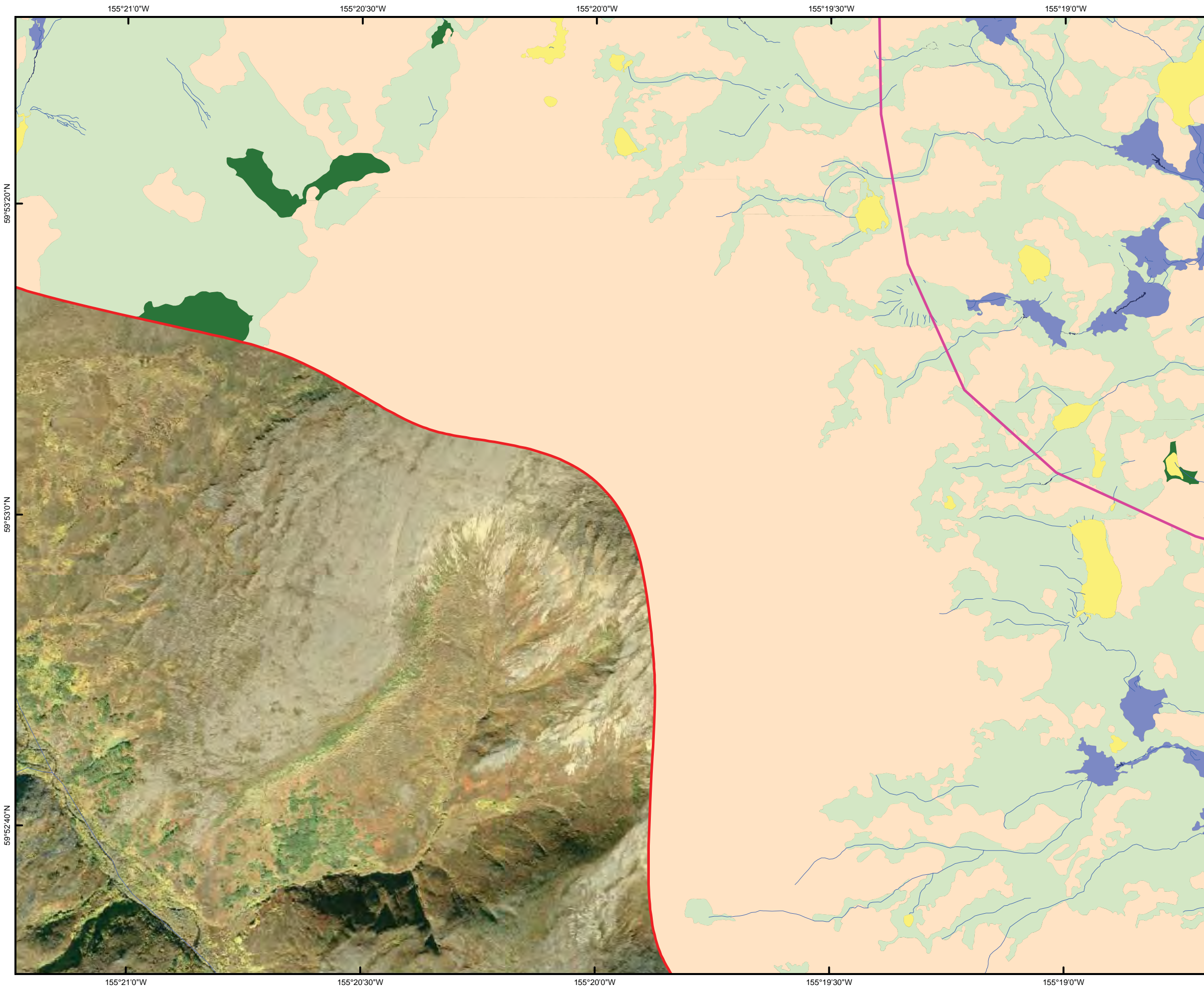
**Figure 14.1-5**  
**Tile 13A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

- Legend**
-  Mine Mapping Area
  -  Mine Study Area
  -  General Deposit Location
- Hydrogeomorphic (HGM) Classification
-  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

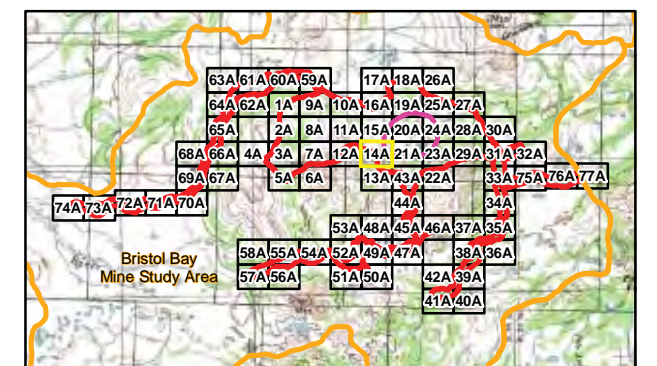




**Figure 14.1-5**  
**Tile 14A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

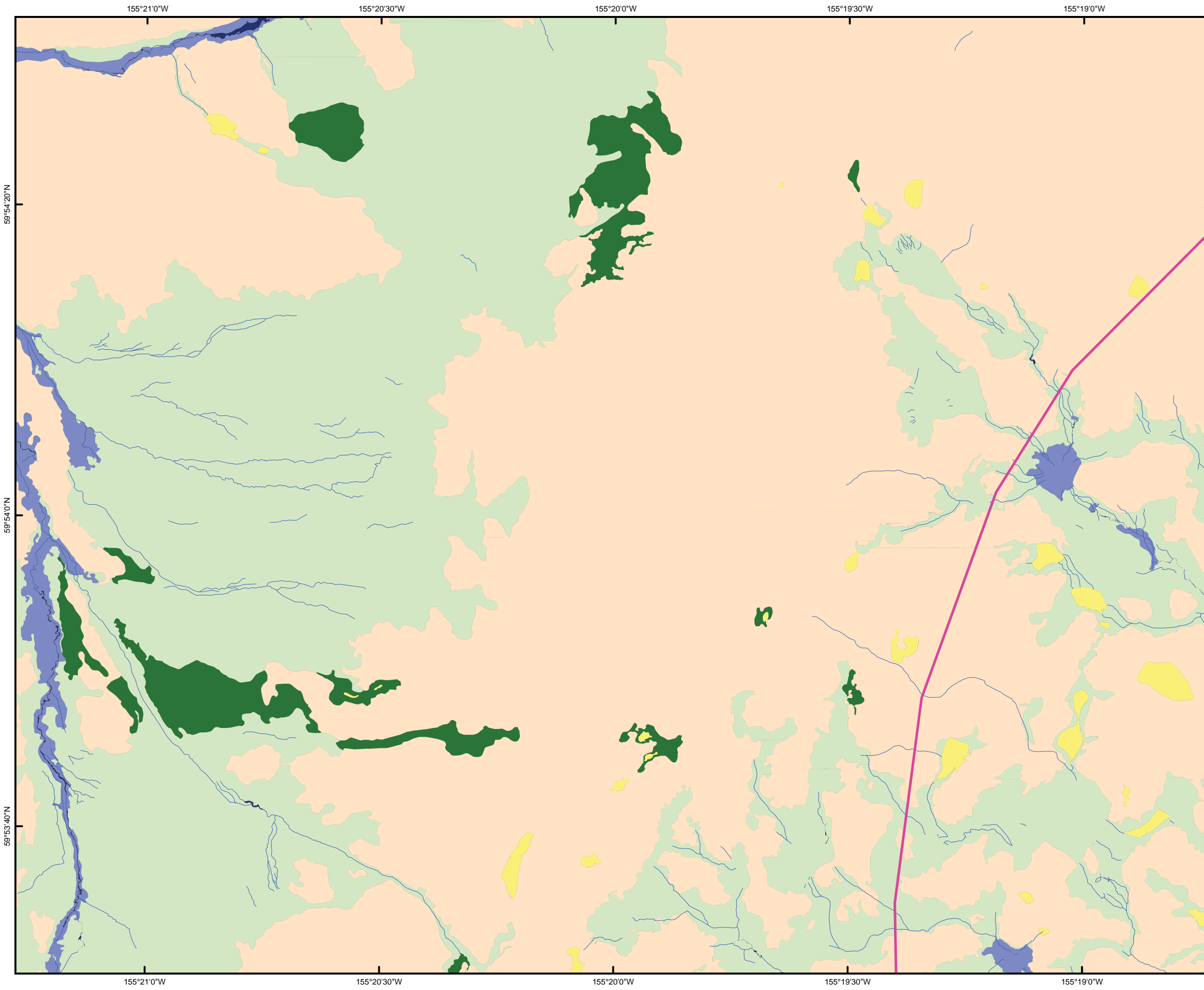
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

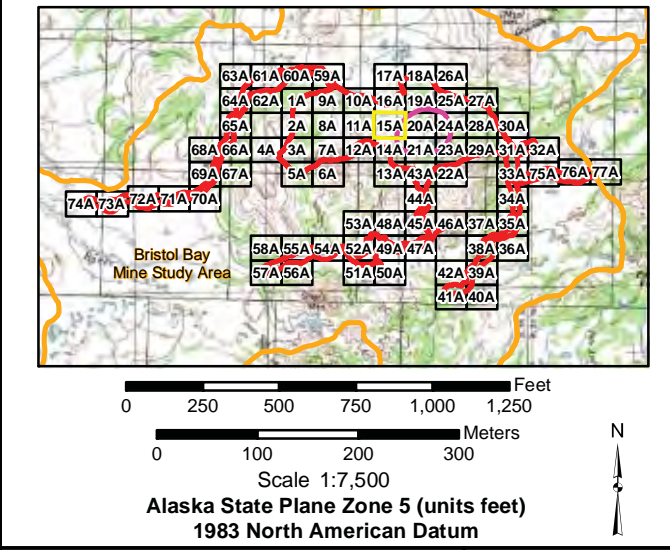




**Figure 14.1-5**  
**Tile 15A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

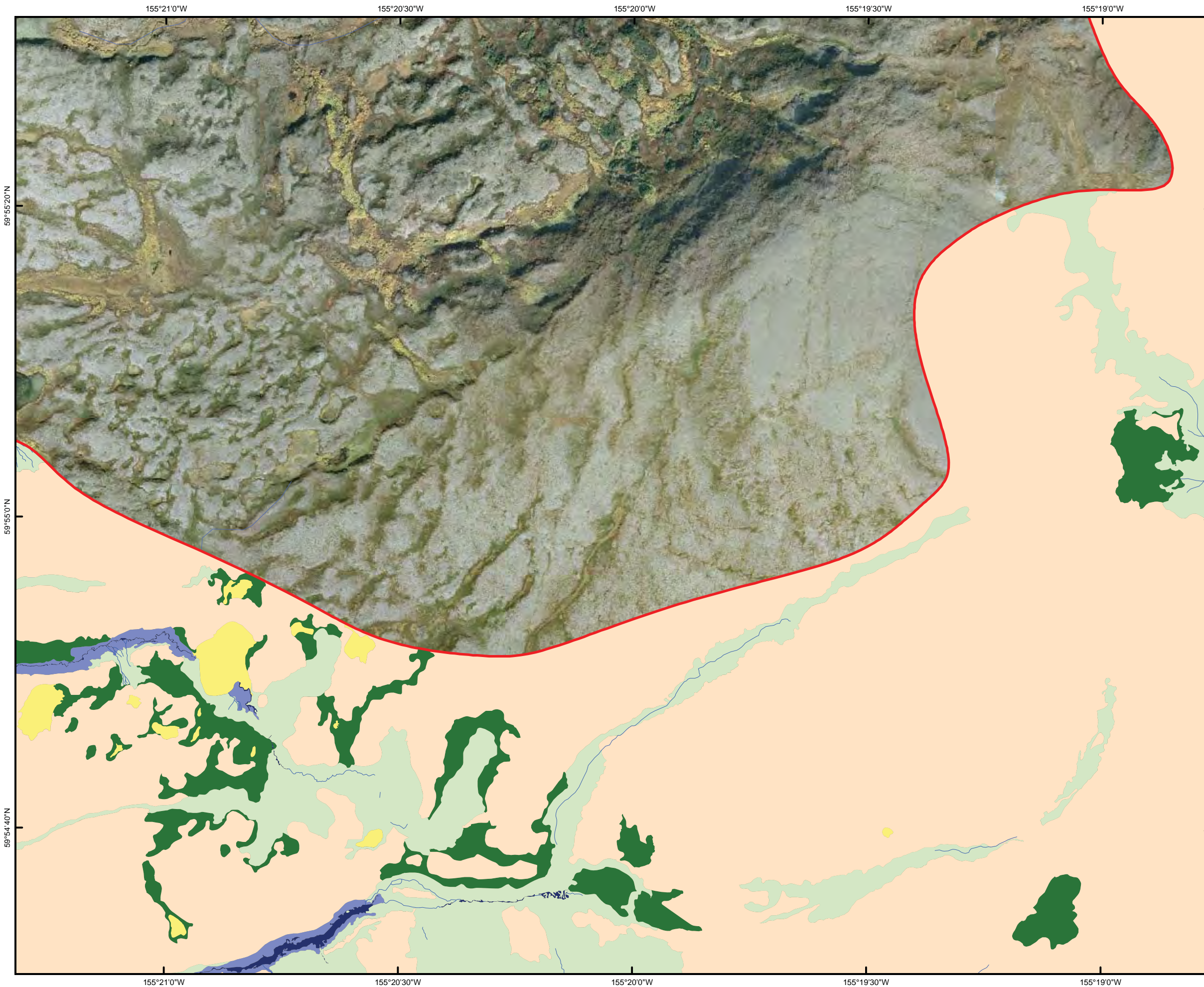
**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  - N/A - Non-wetlands
  - Slope
  - Flat
  - Depressional
  - Riverine
  - Riverine Channel
  - Lacustrine
  - Lacustrine Fringe














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

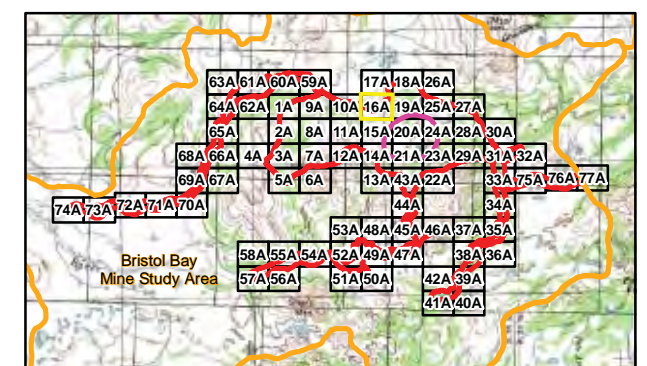




**Figure 14.1-5**  
**Tile 16A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

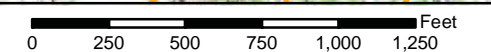
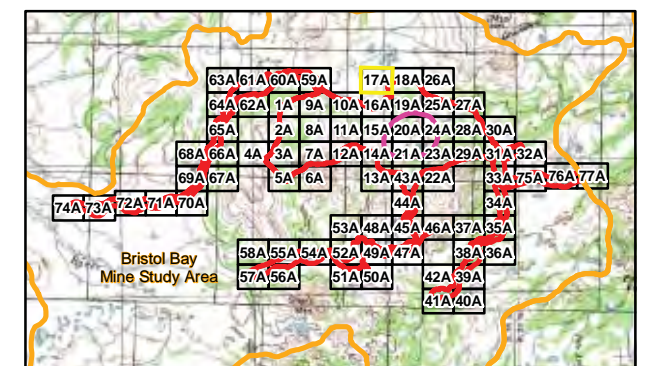




**Figure 14.1-5**  
**Tile 17A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe

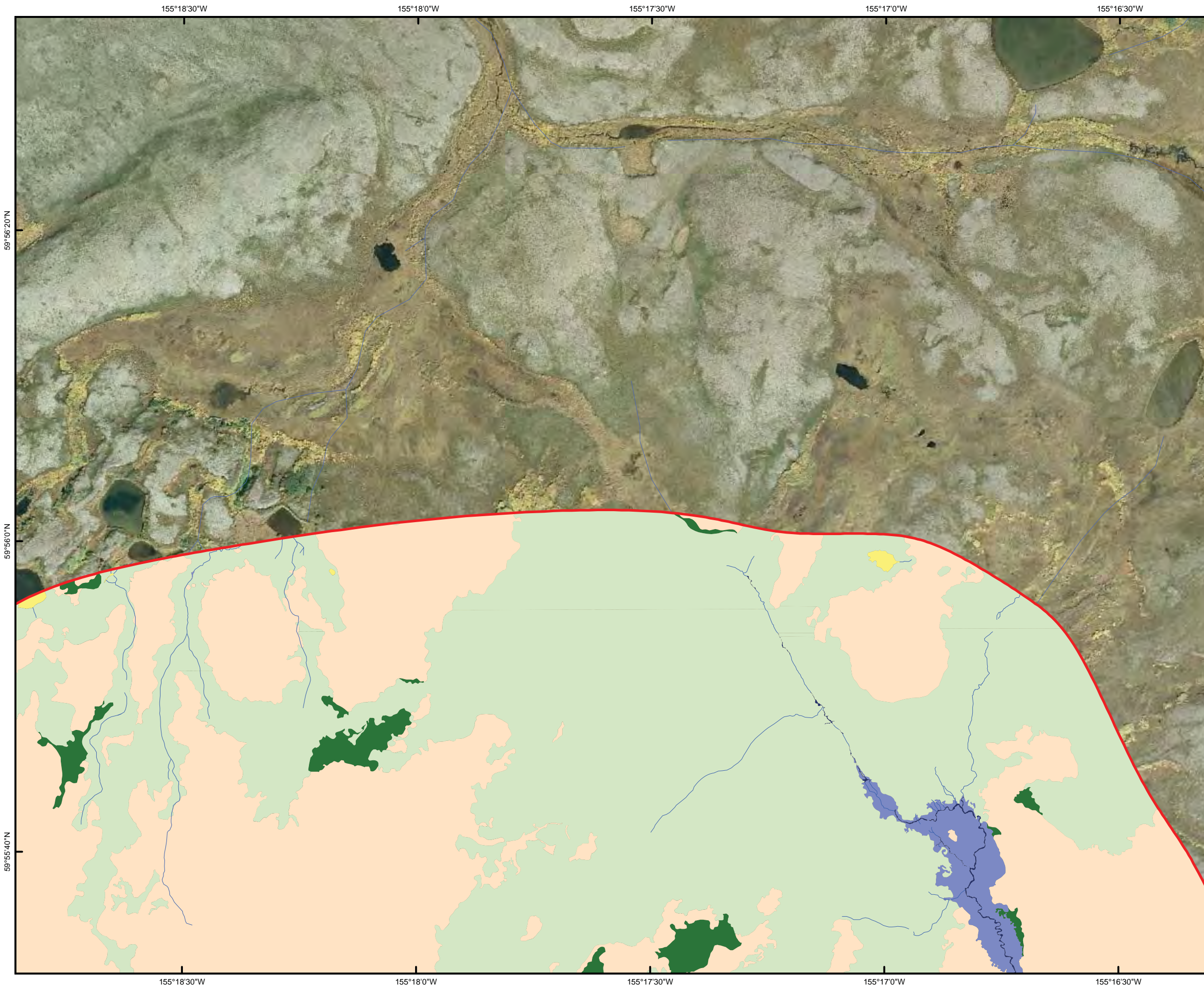


Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum












File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

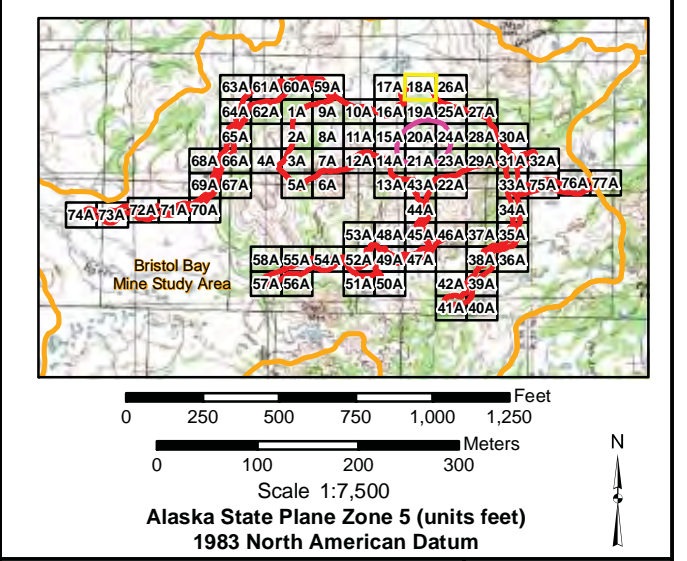




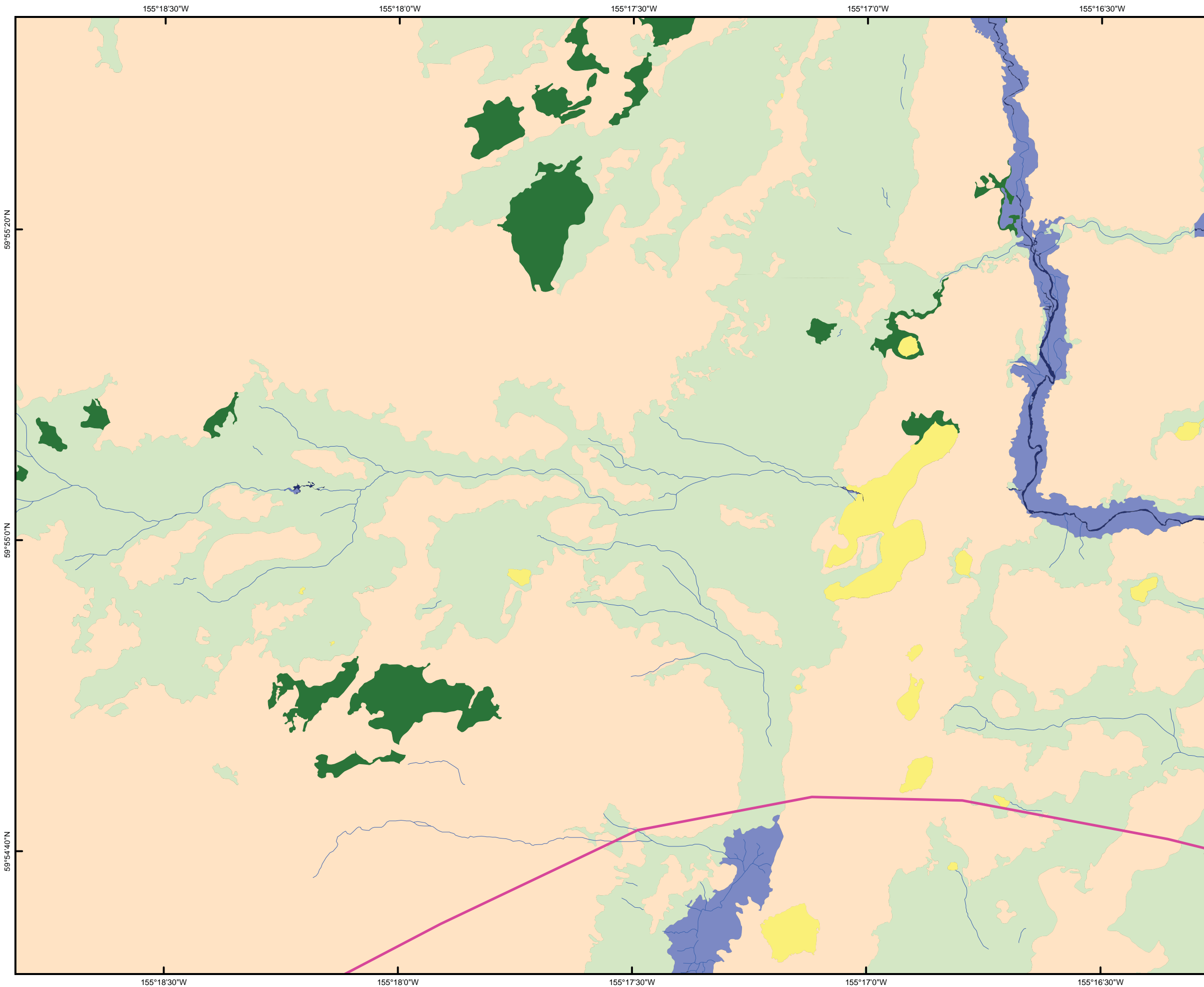
**Figure 14.1-5**  
**Tile 18A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe









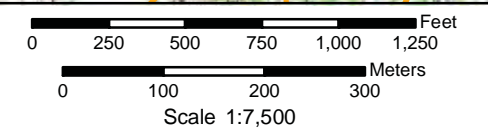
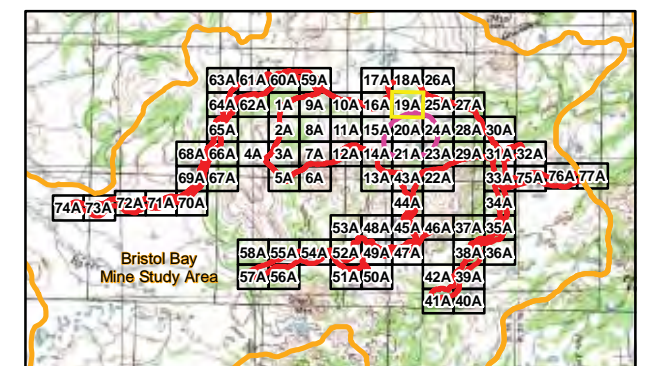




**Figure 14.1-5**  
**Tile 19A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

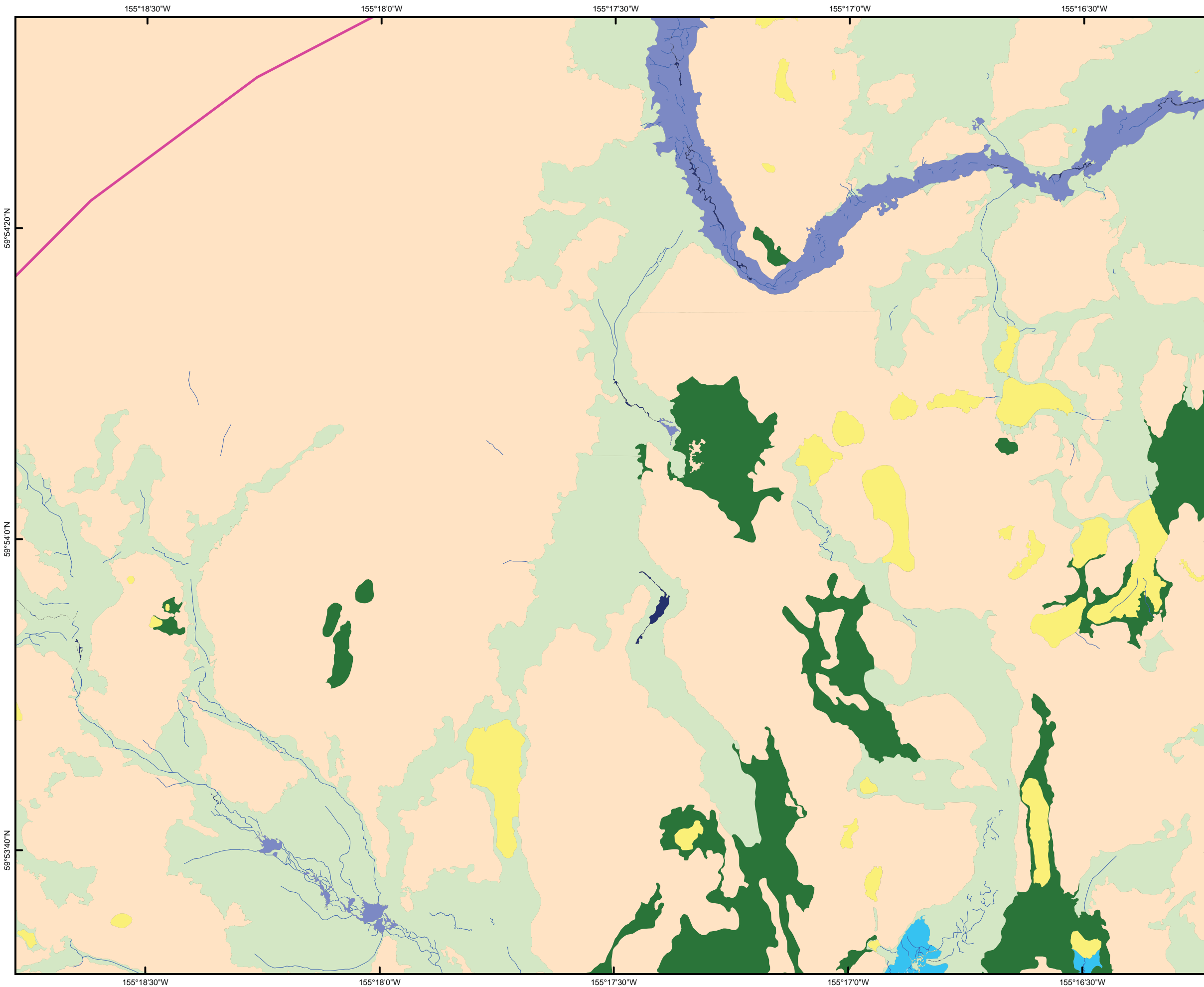
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

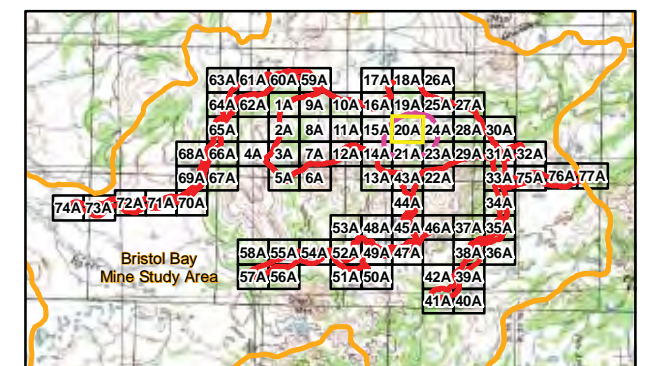




**Figure 14.1-5**  
**Tile 20A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  - N/A - Non-wetlands
  - Slope
  - Flat
  - Depressional
  - Riverine
  - Riverine Channel
  - Lacustrine
  - Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

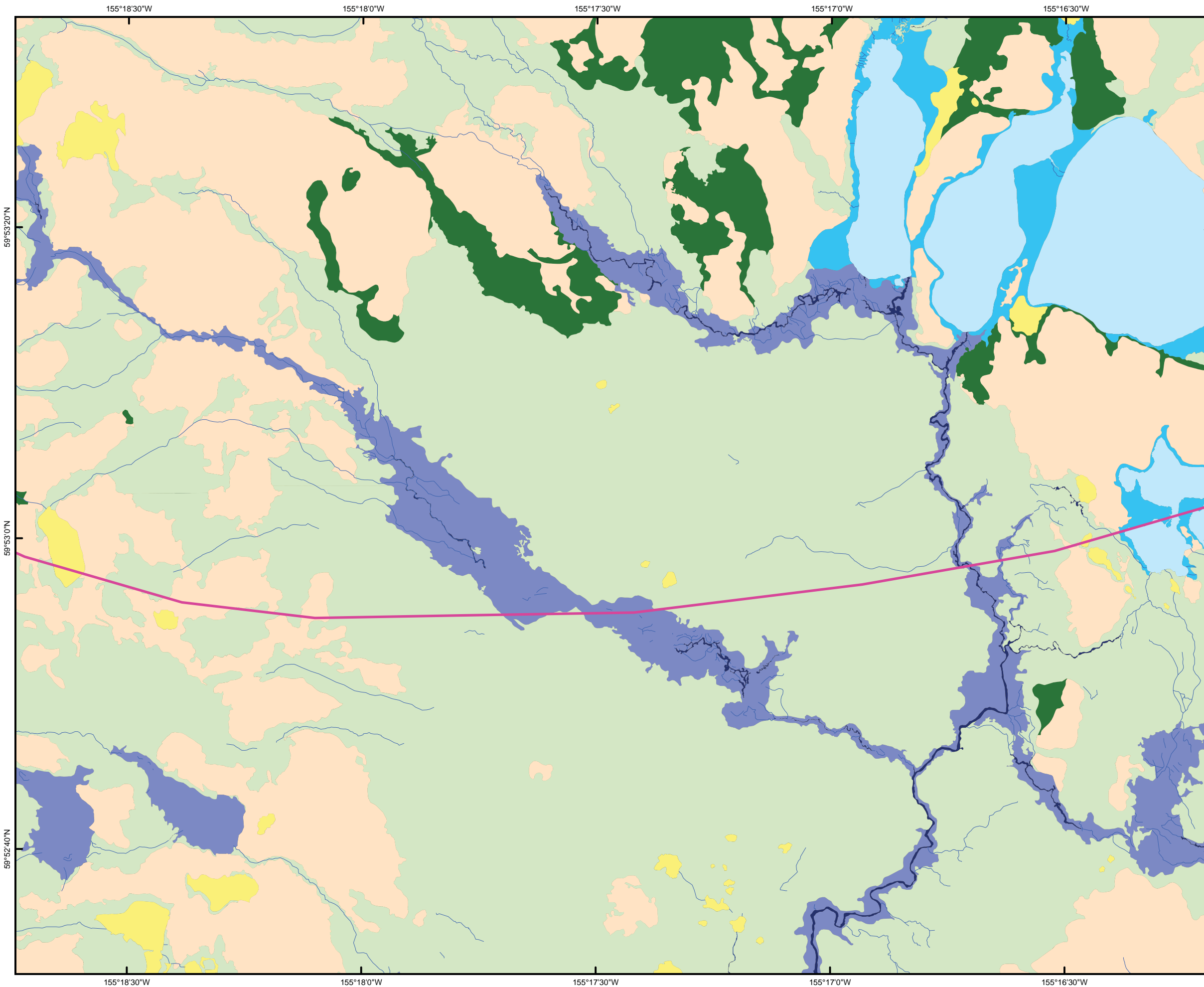
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3


Author: RDI-LS

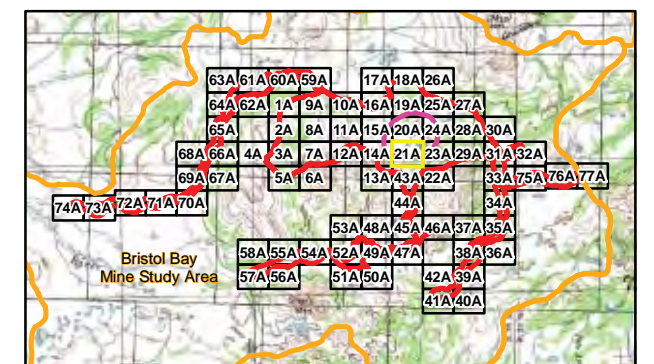




**Figure 14.1-5**  
**Tile 21A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

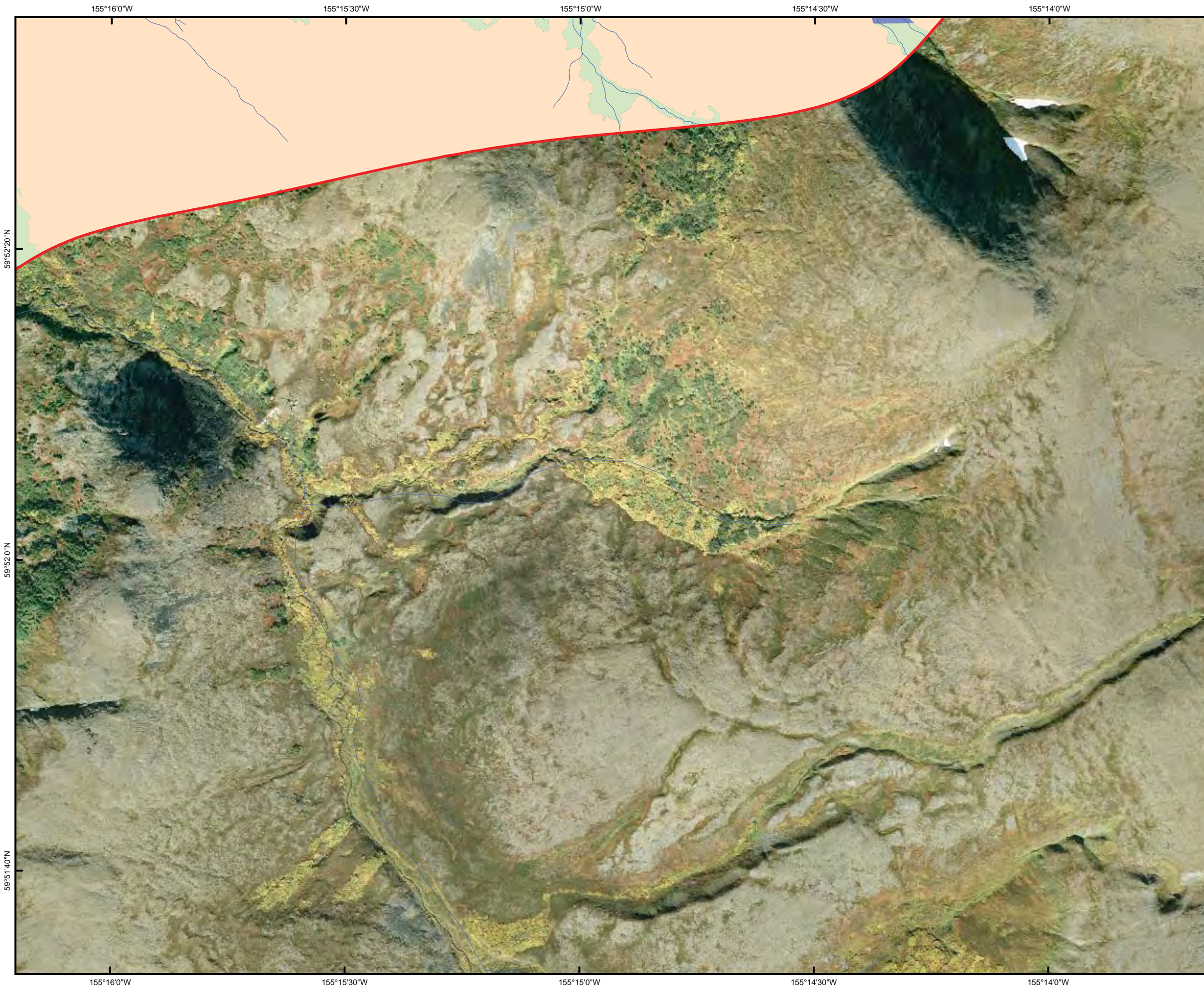
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

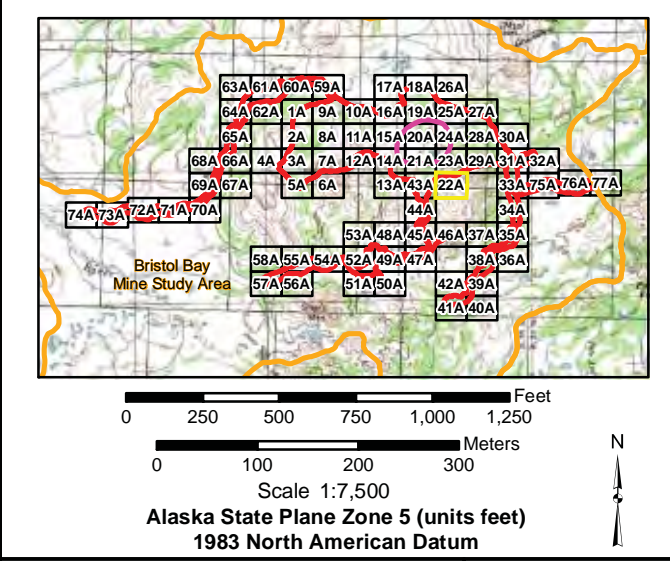




**Figure 14.1-5**  
**Tile 22A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

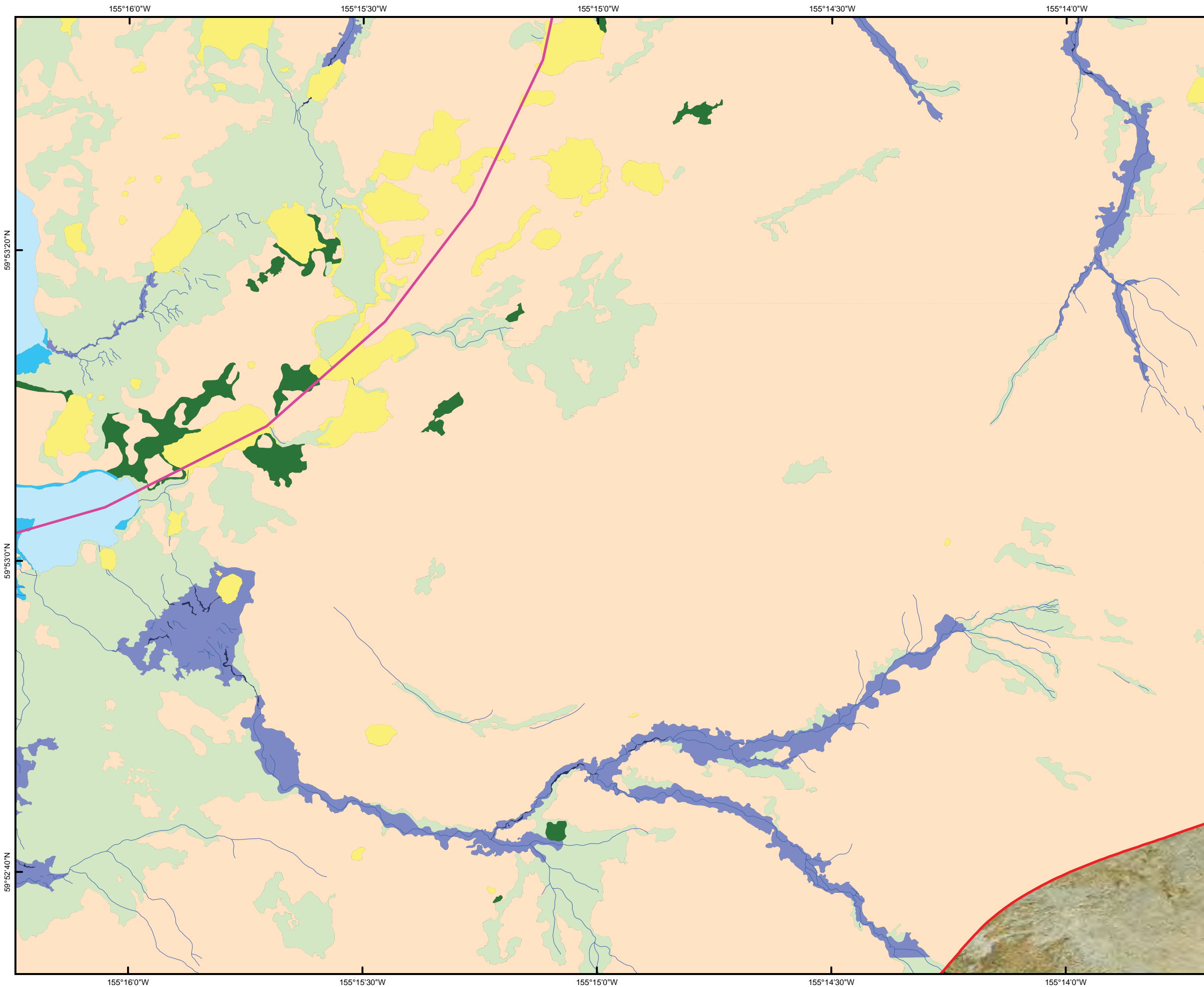
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

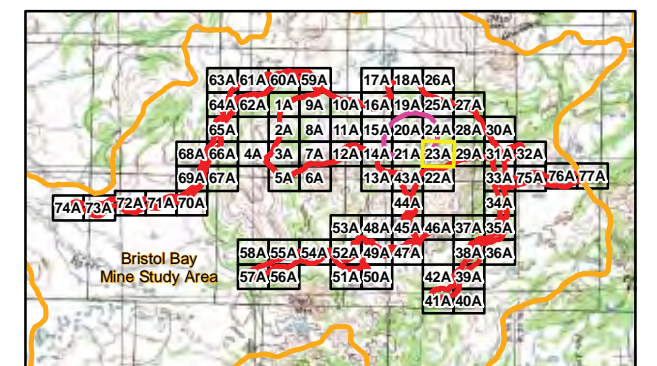




**Figure 14.1-5**  
**Tile 23A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

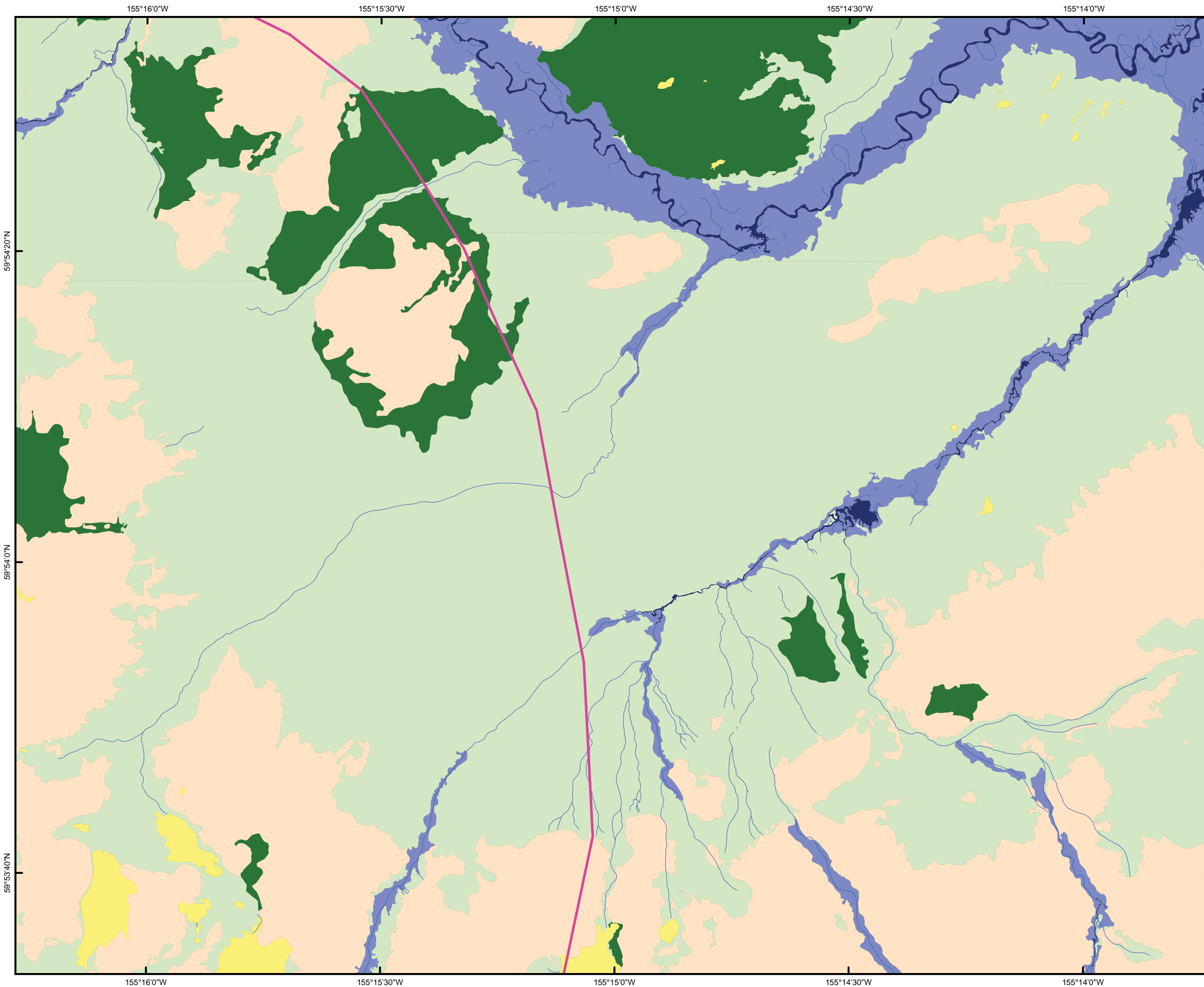
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3




Author: RDI-LS





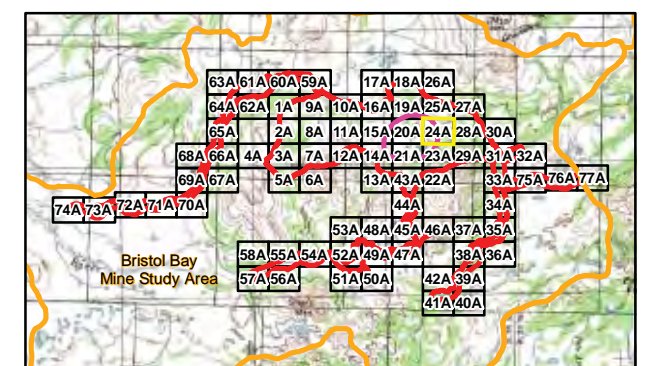
**Figure 14.1-5**  
**Tile 24A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location

**Hydrogeomorphic (HGM) Classification**

-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

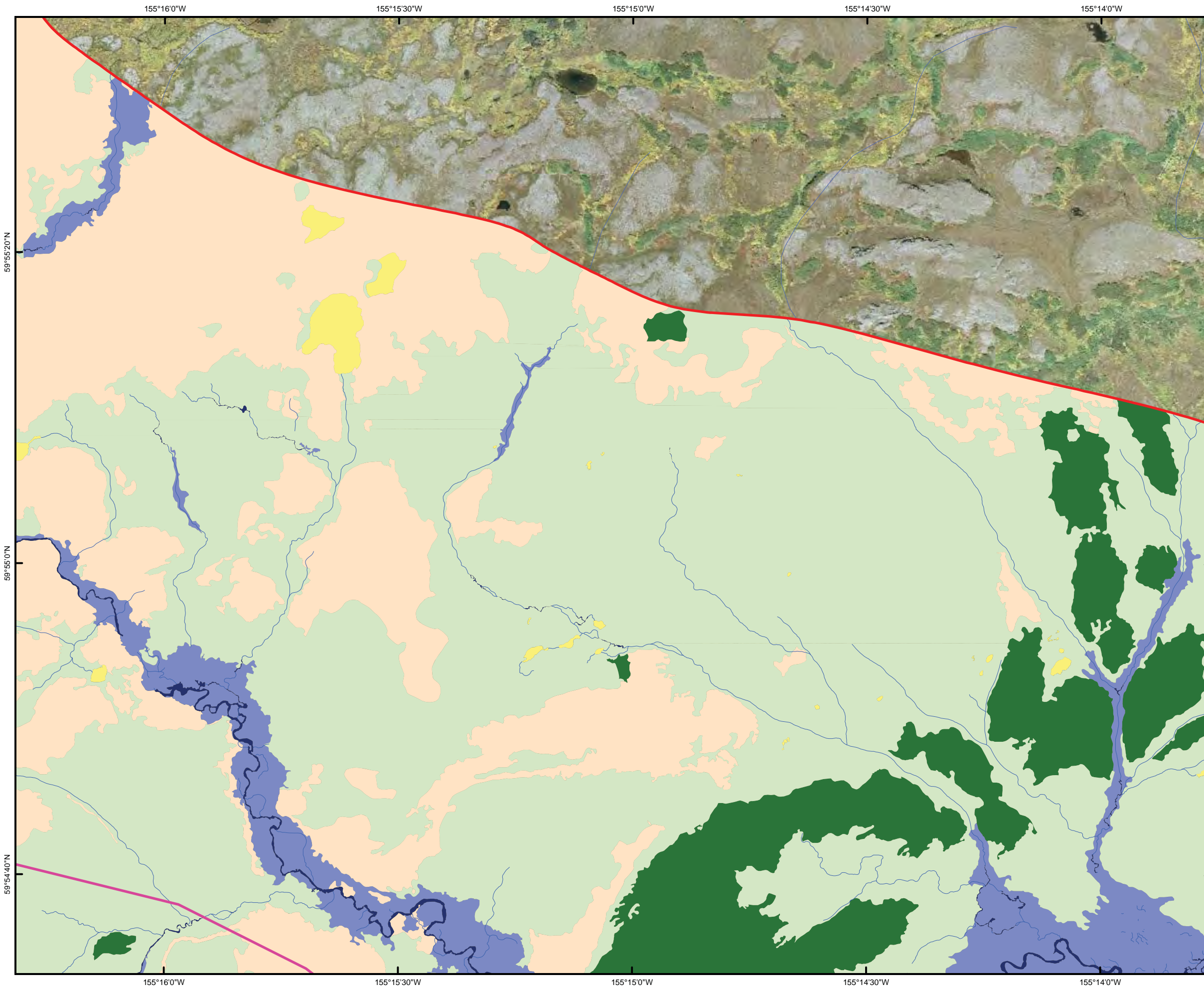
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

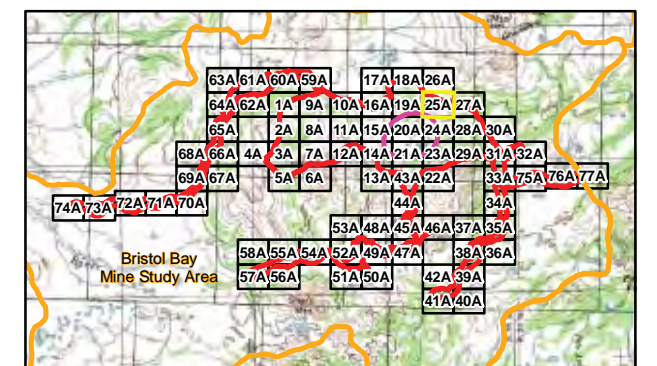




**Figure 14.1-5**  
**Tile 25A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  - N/A - Non-wetlands
  - Slope
  - Flat
  - Depressional
  - Riverine
  - Riverine Channel
  - Lacustrine
  - Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

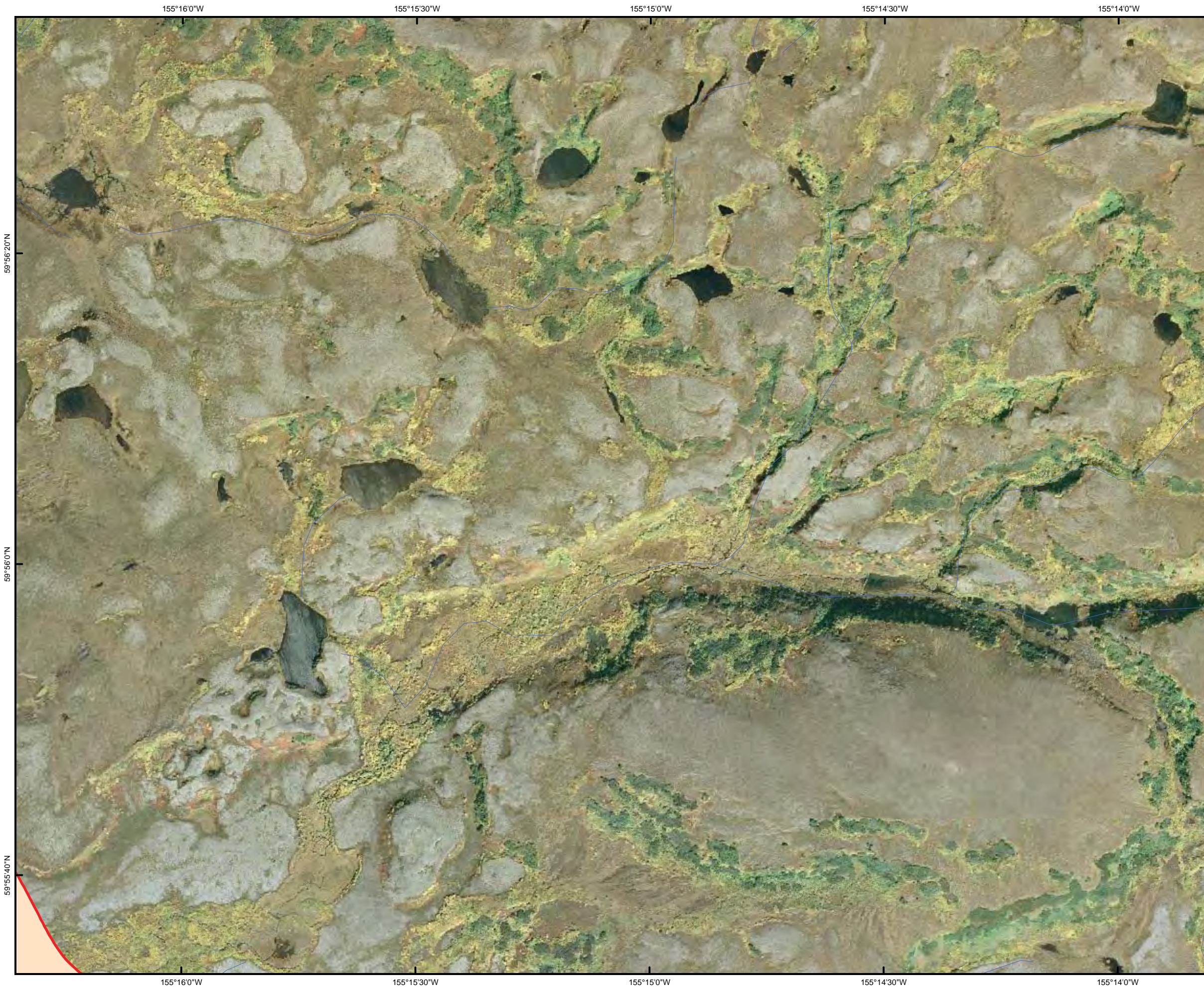
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3


Author: RDI-LS

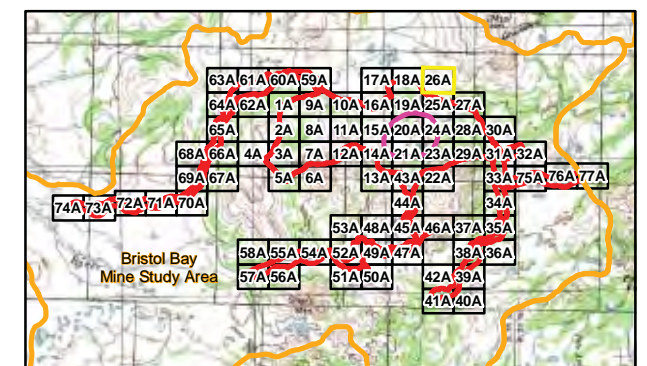




**Figure 14.1-5**  
**Tile 26A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

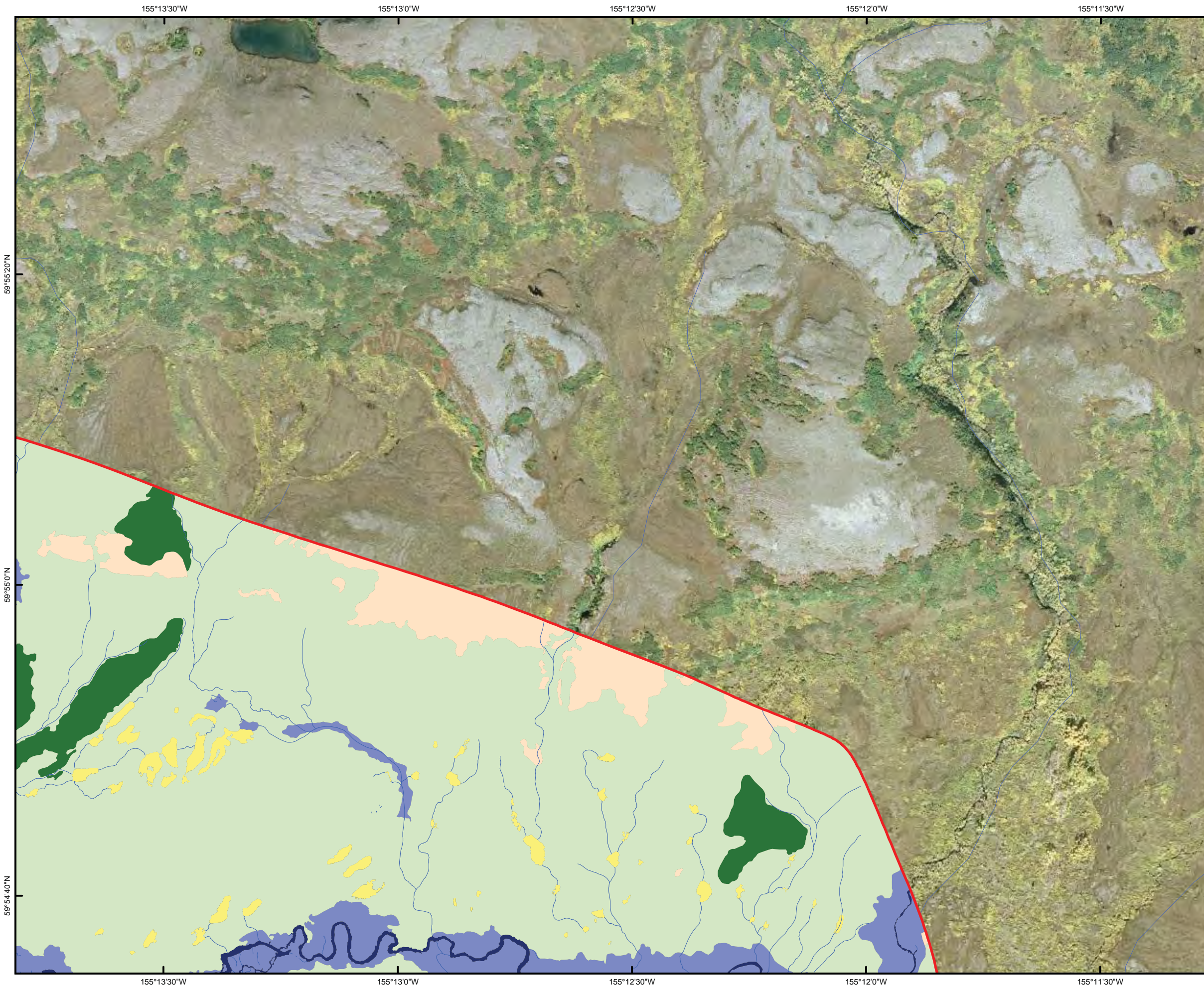
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

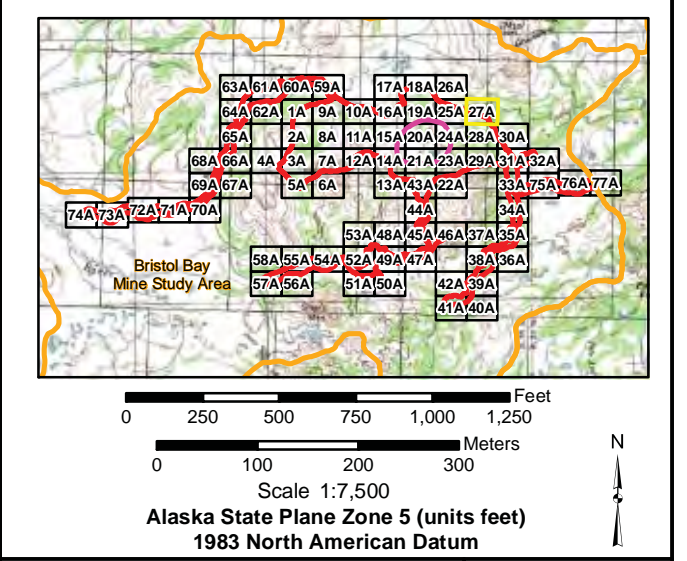




**Figure 14.1-5**  
**Tile 27A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

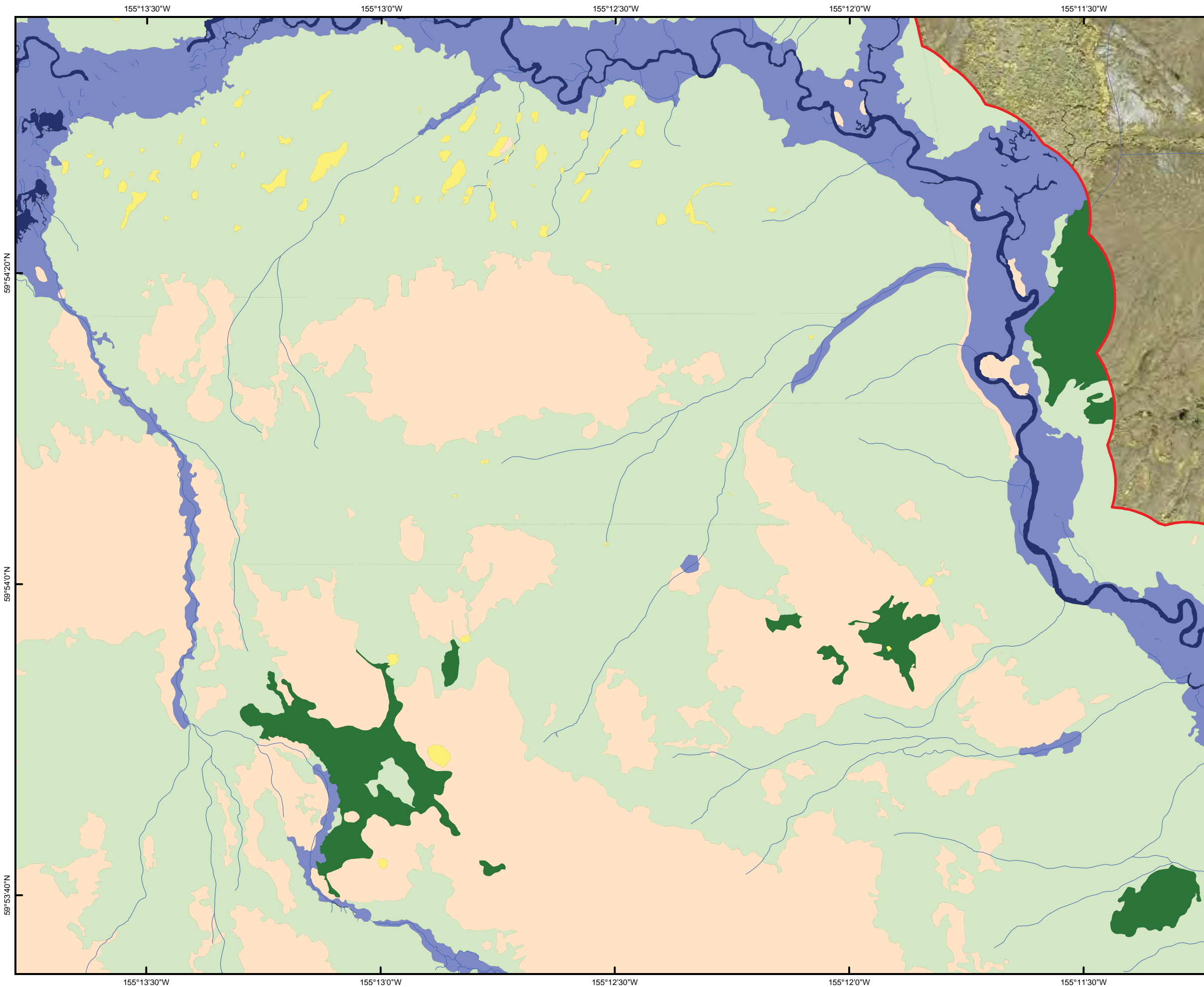
**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  - N/A - Non-wetlands
  - Slope
  - Flat
  - Depressional
  - Riverine
  - Riverine Channel
  - Lacustrine
  - Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

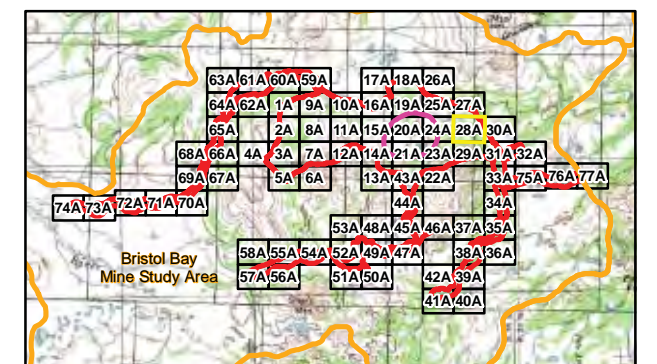




**Figure 14.1-5**  
**Tile 28A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

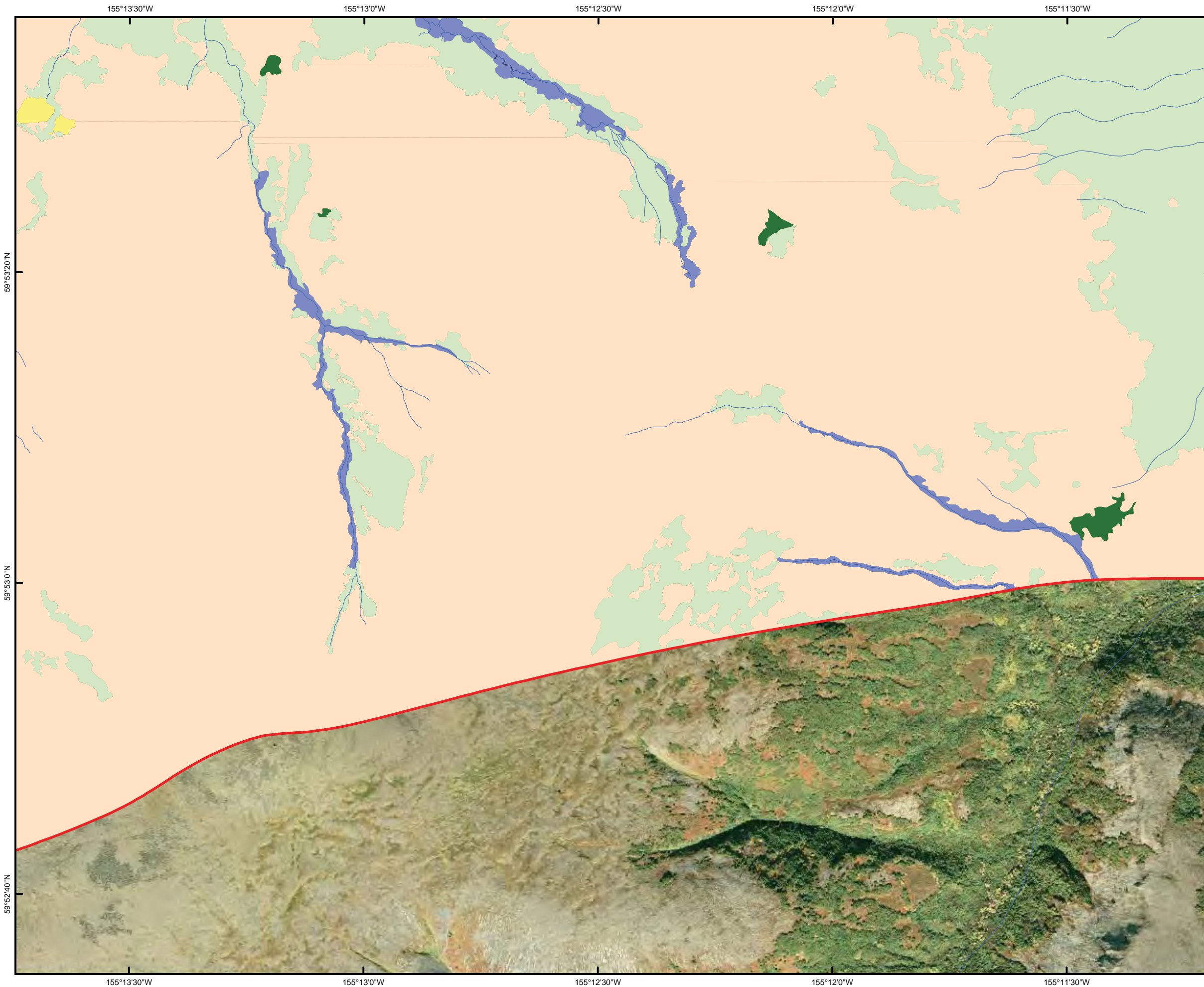
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

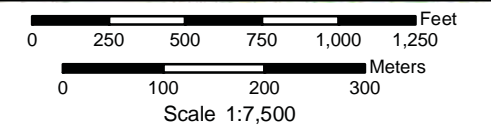
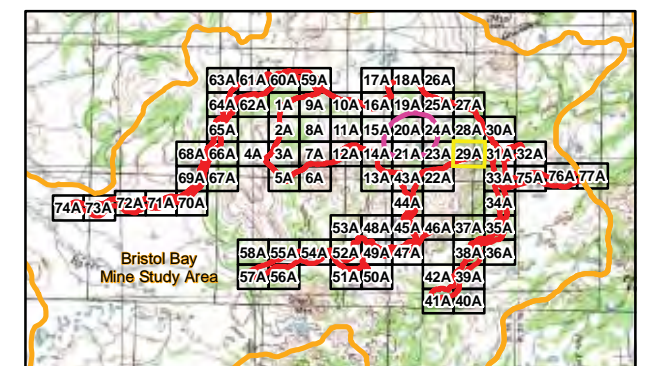




**Figure 14.1-5**  
**Tile 29A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

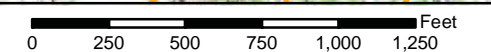
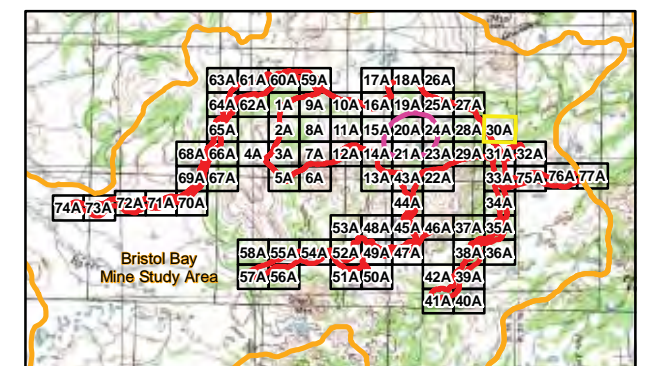




**Figure 14.1-5**  
**Tile 30A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe

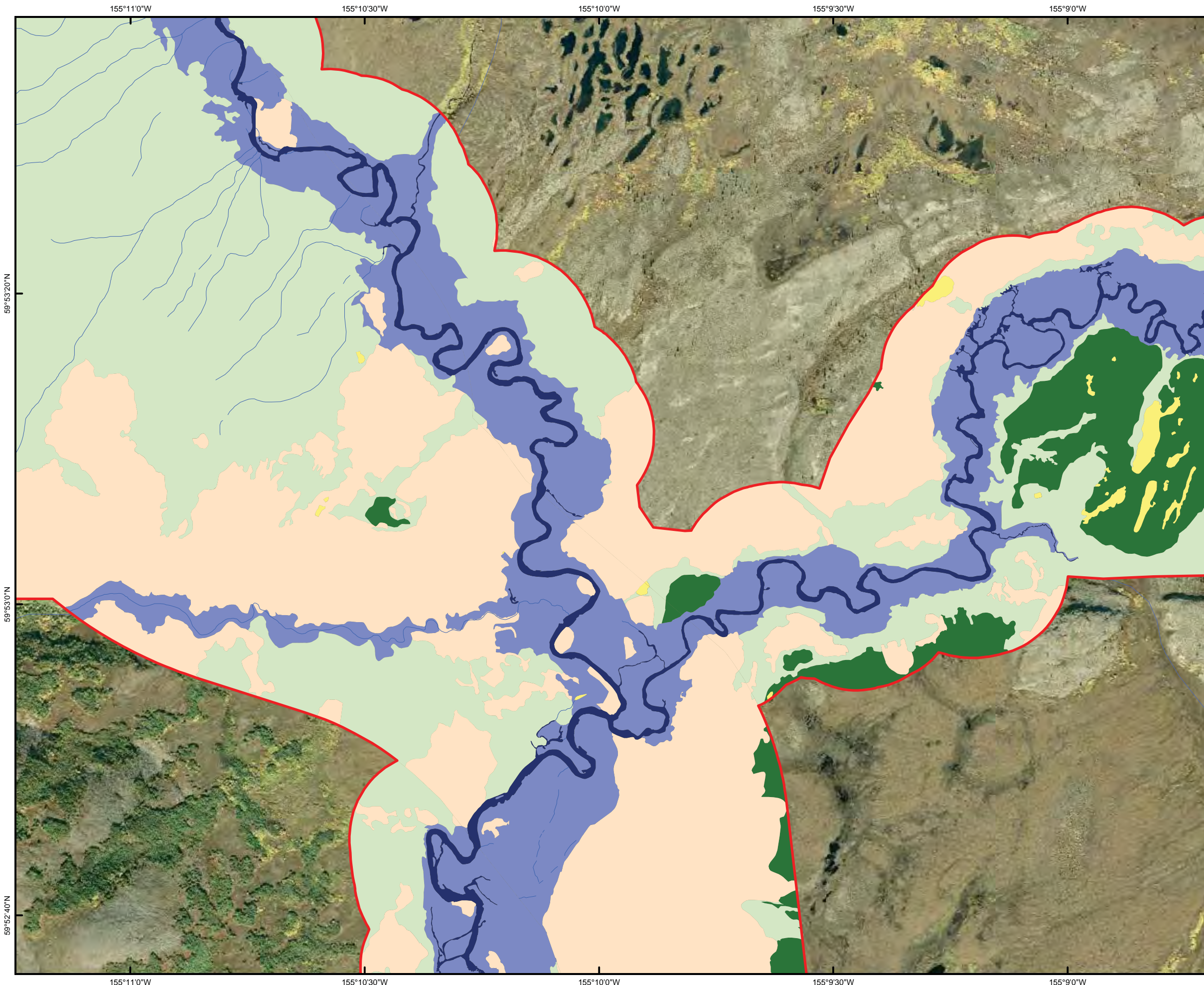


Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

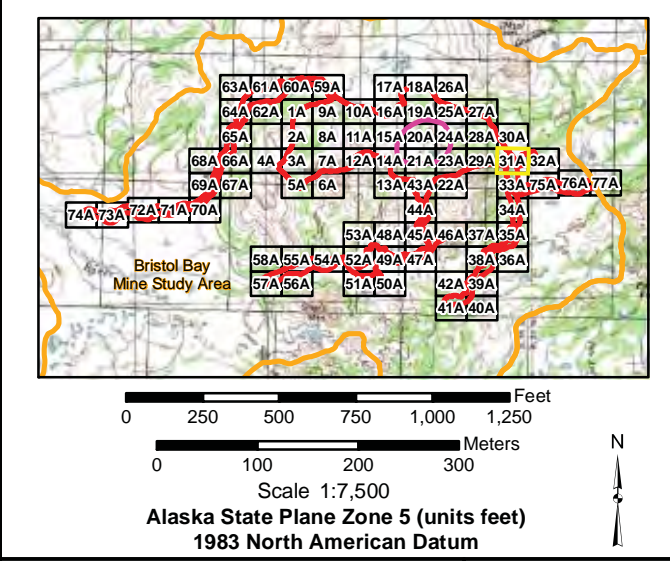
File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





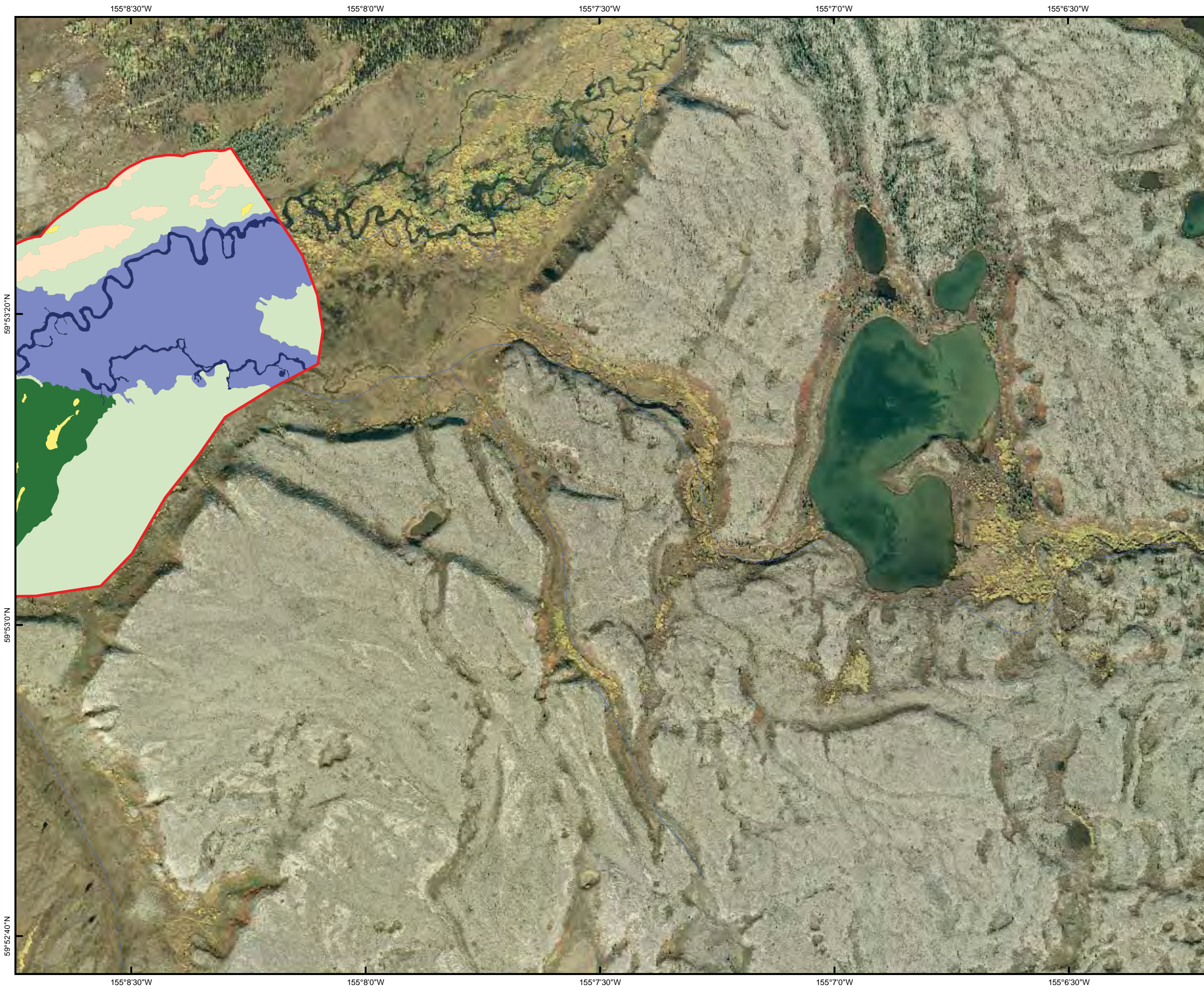
**Figure 14.1-5**  
**Tile 31A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

- Legend**
- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
  - Hydrogeomorphic (HGM) Classification**
    - N/A - Non-wetlands
    - Slope
    - Flat
    - Depressional
    - Riverine
    - Riverine Channel
    - Lacustrine
    - Lacustrine Fringe














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

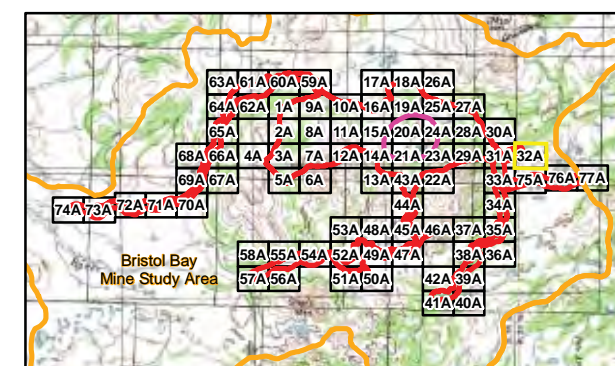




**Figure 14.1-5**  
**Tile 32A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

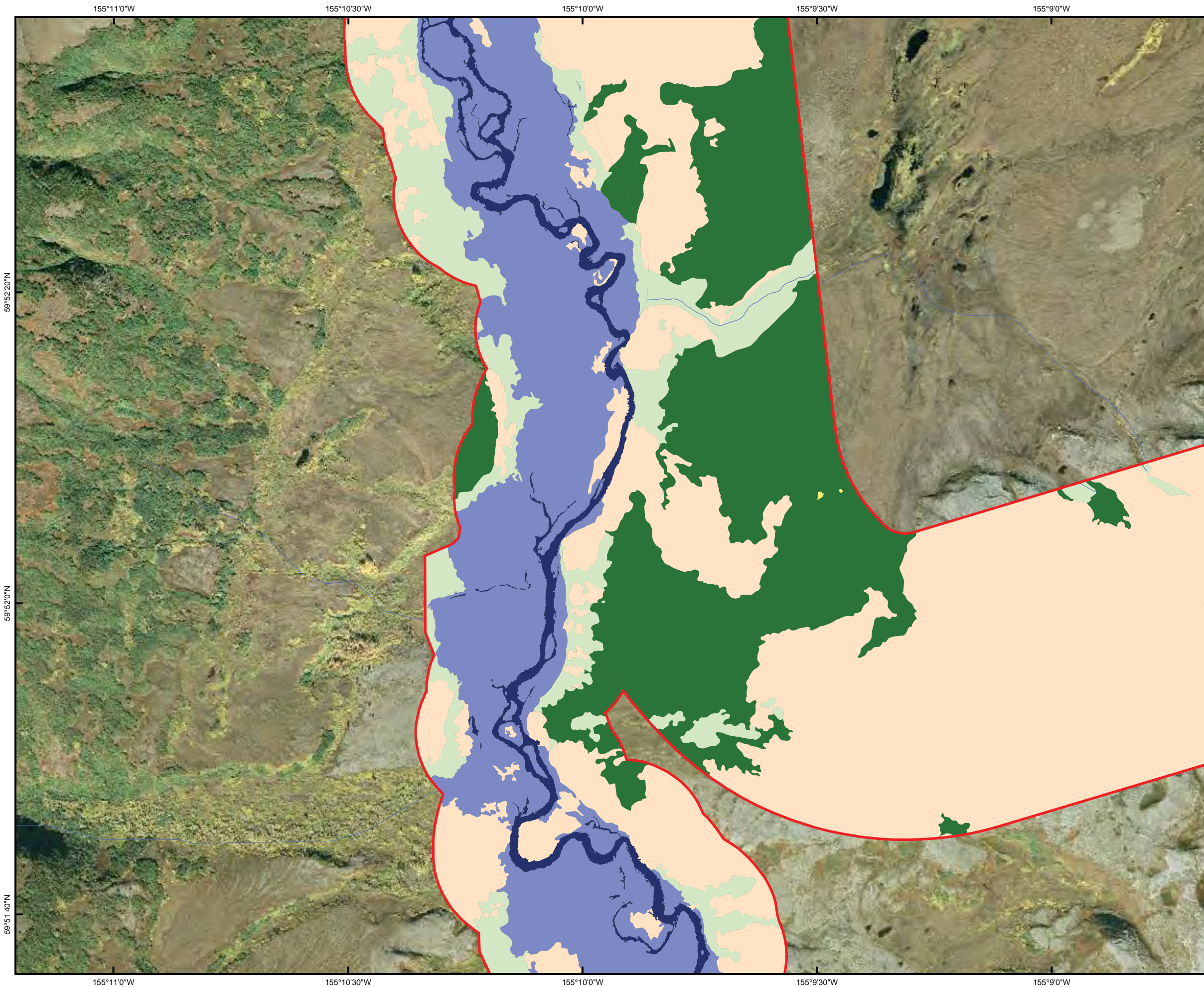
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

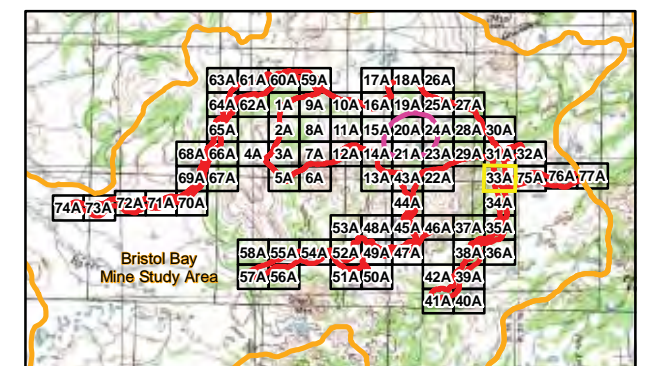




**Figure 14.1-5**  
**Tile 33A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe

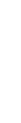


0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**



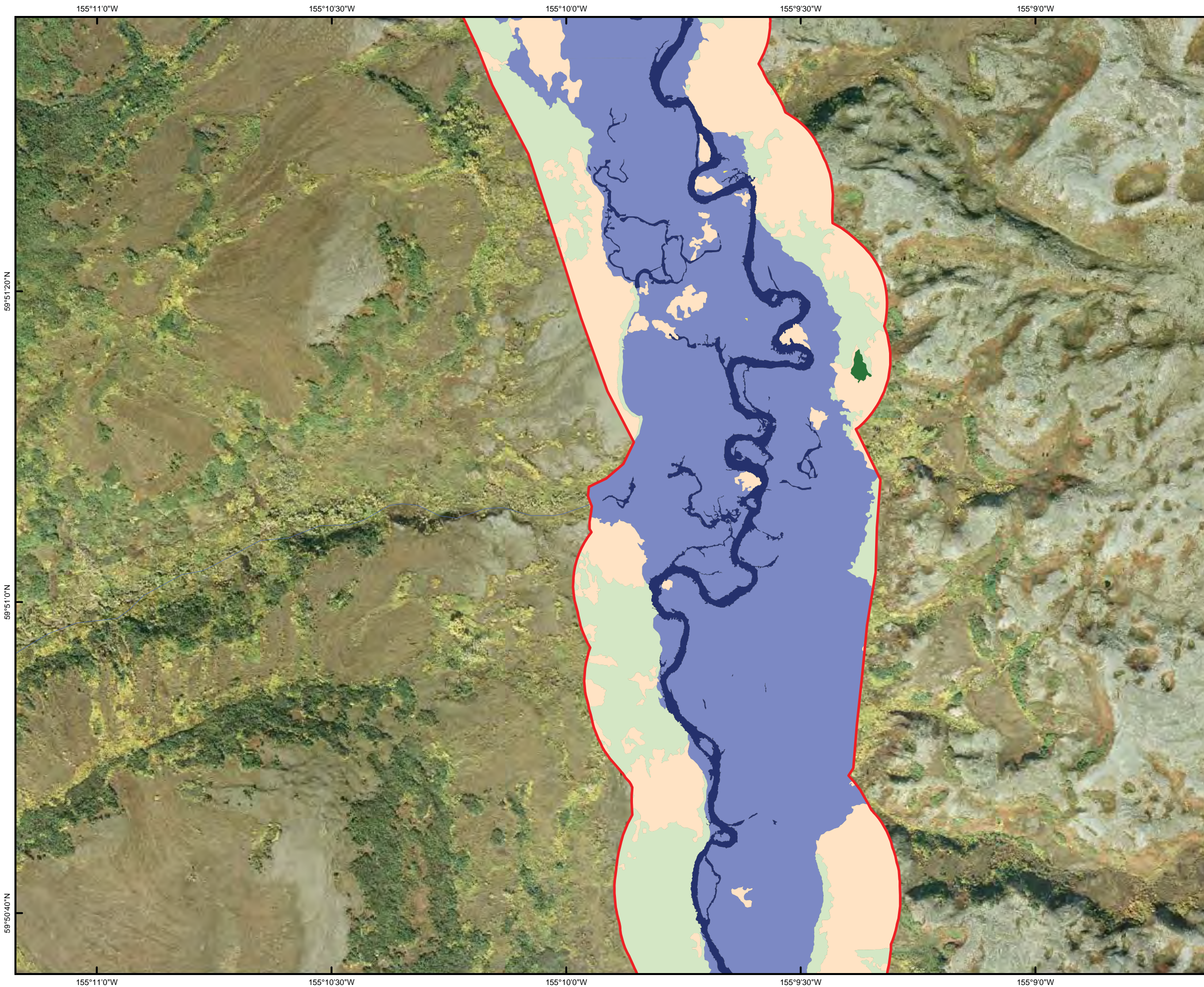
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

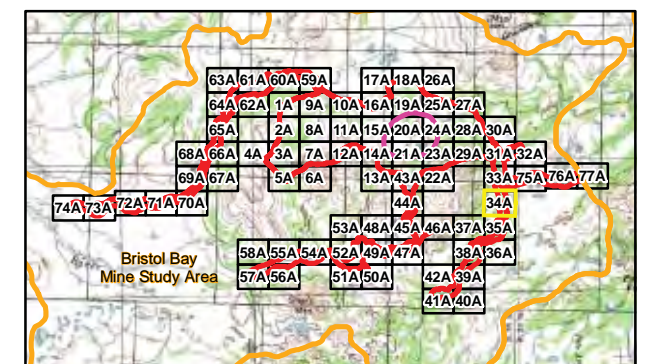




**Figure 14.1-5**  
**Tile 34A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

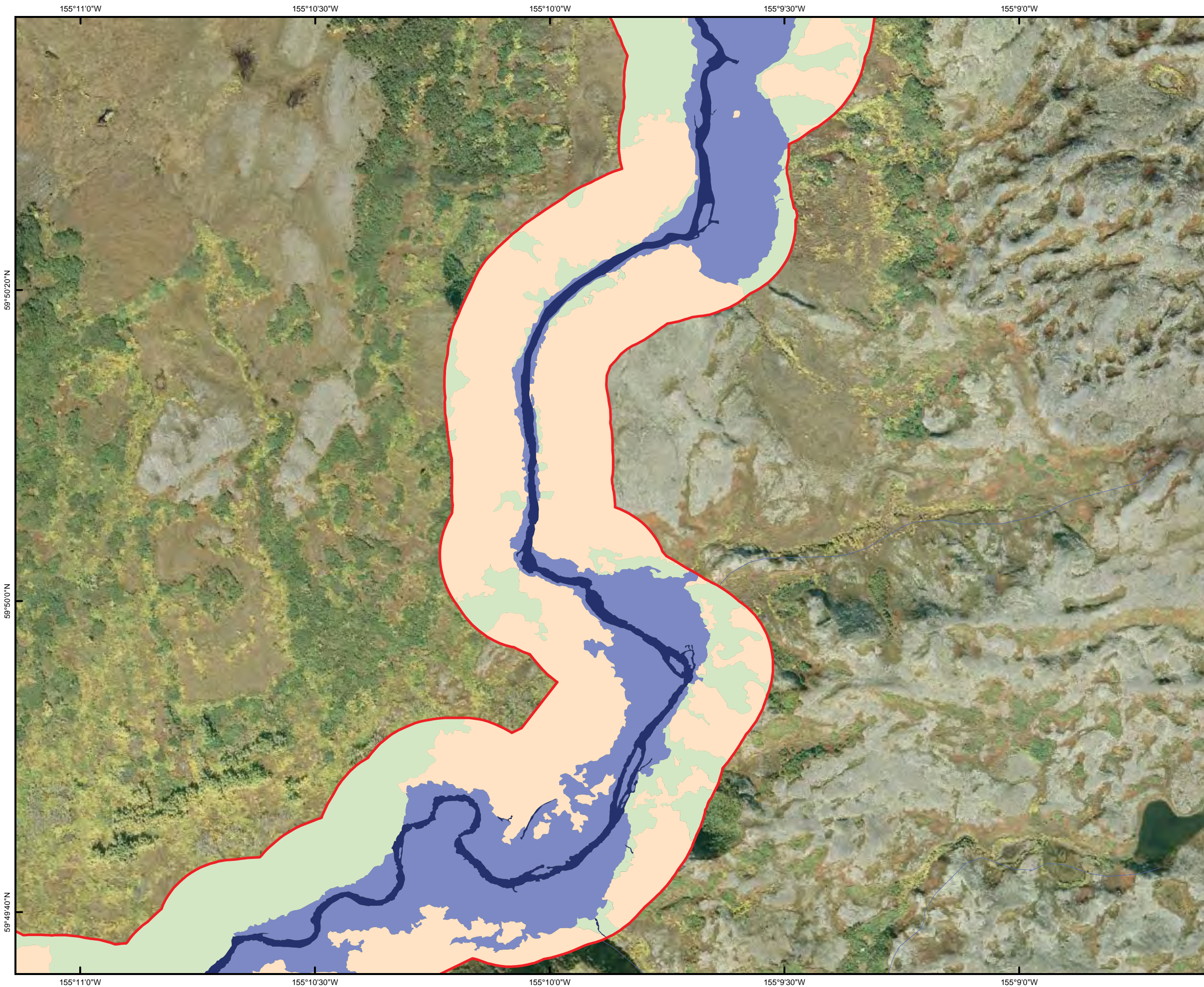
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

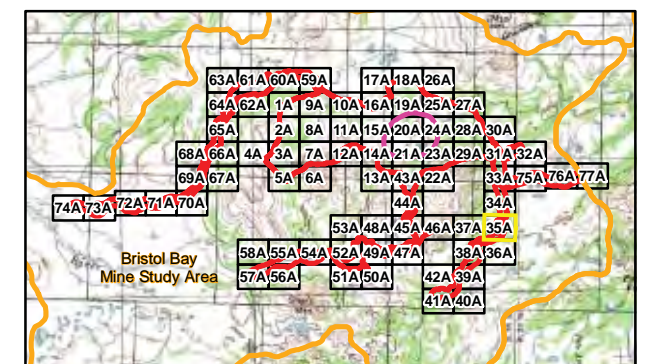




**Figure 14.1-5**  
**Tile 35A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

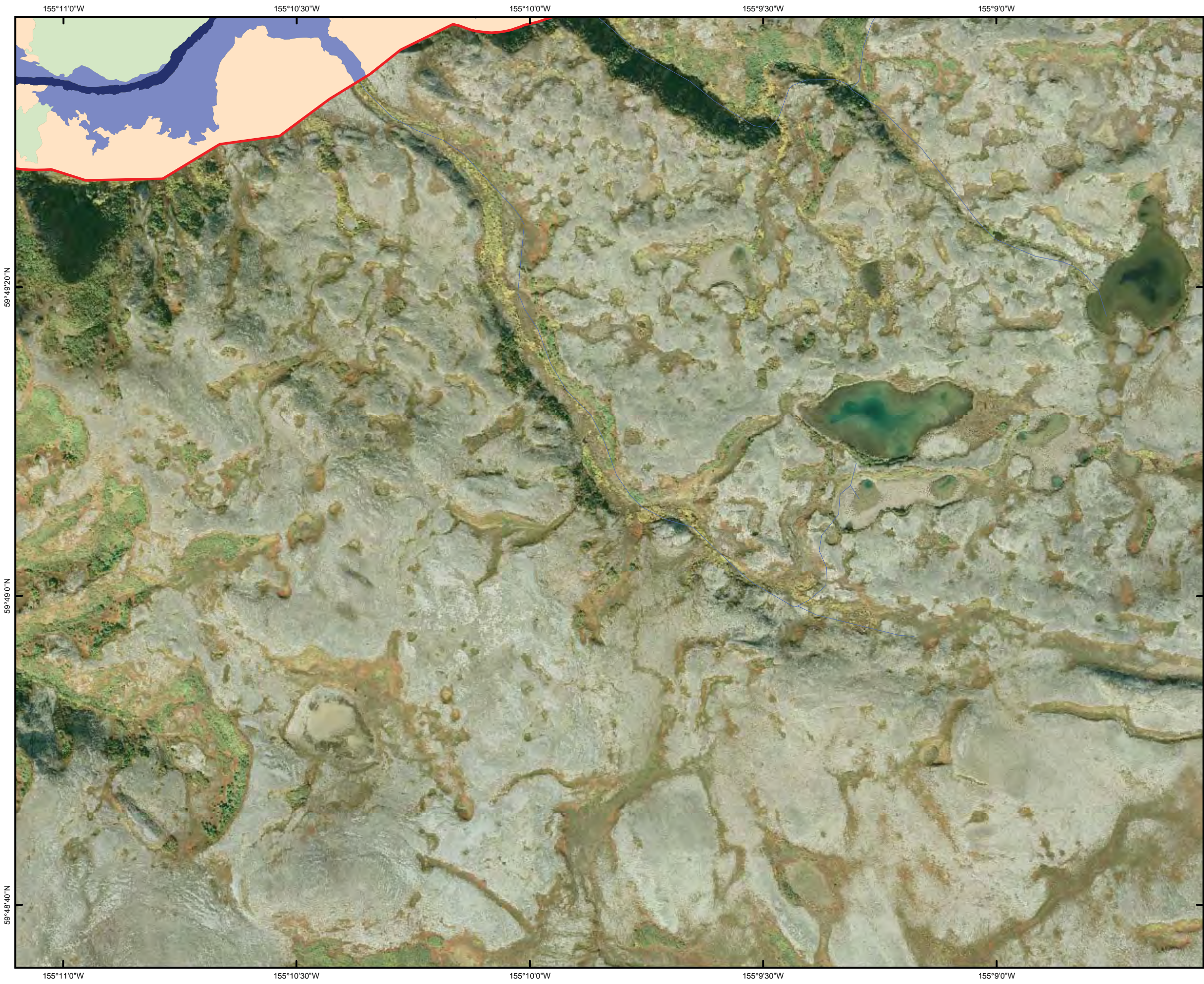
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3







Author: RDI-LS

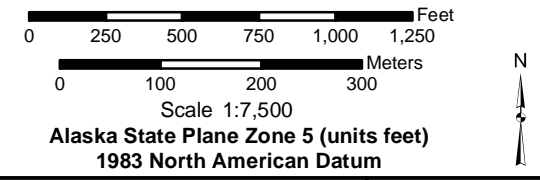
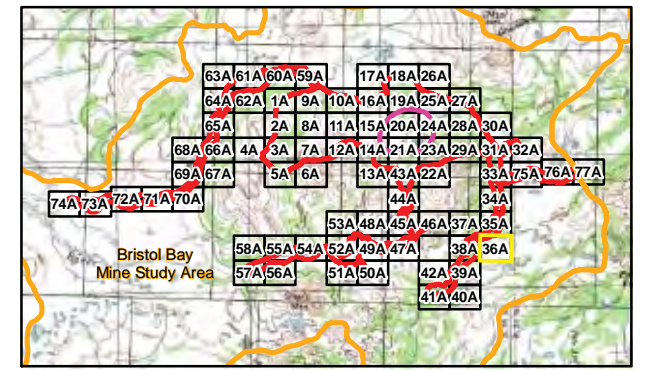




**Figure 14.1-5**  
**Tile 36A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

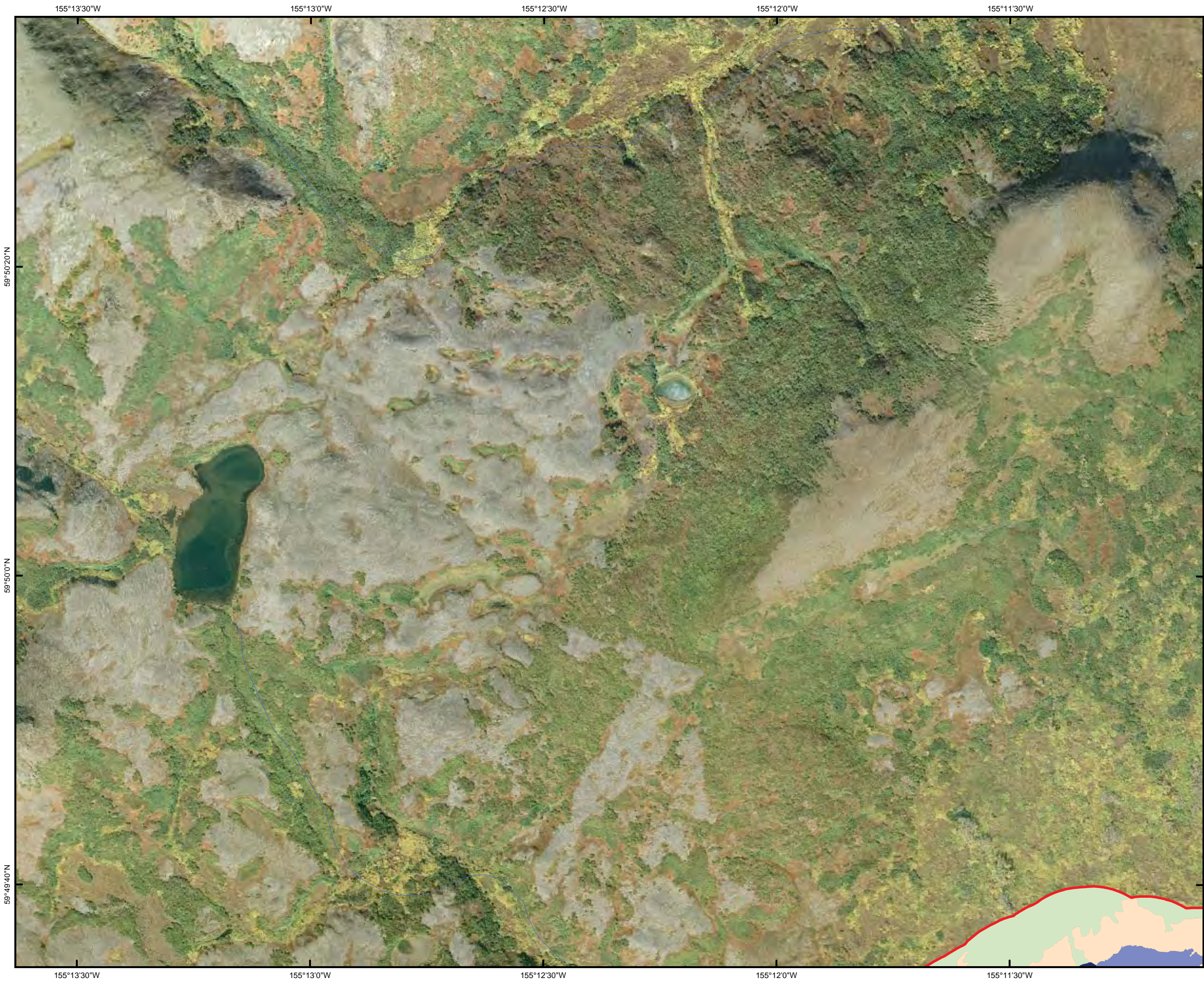
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe






File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





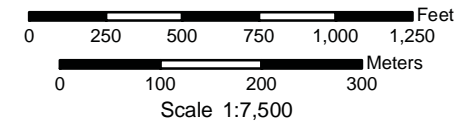
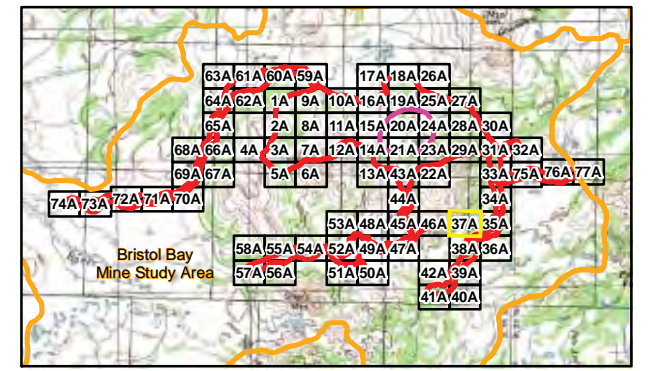
**Figure 14.1-5**  
**Tile 37A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location

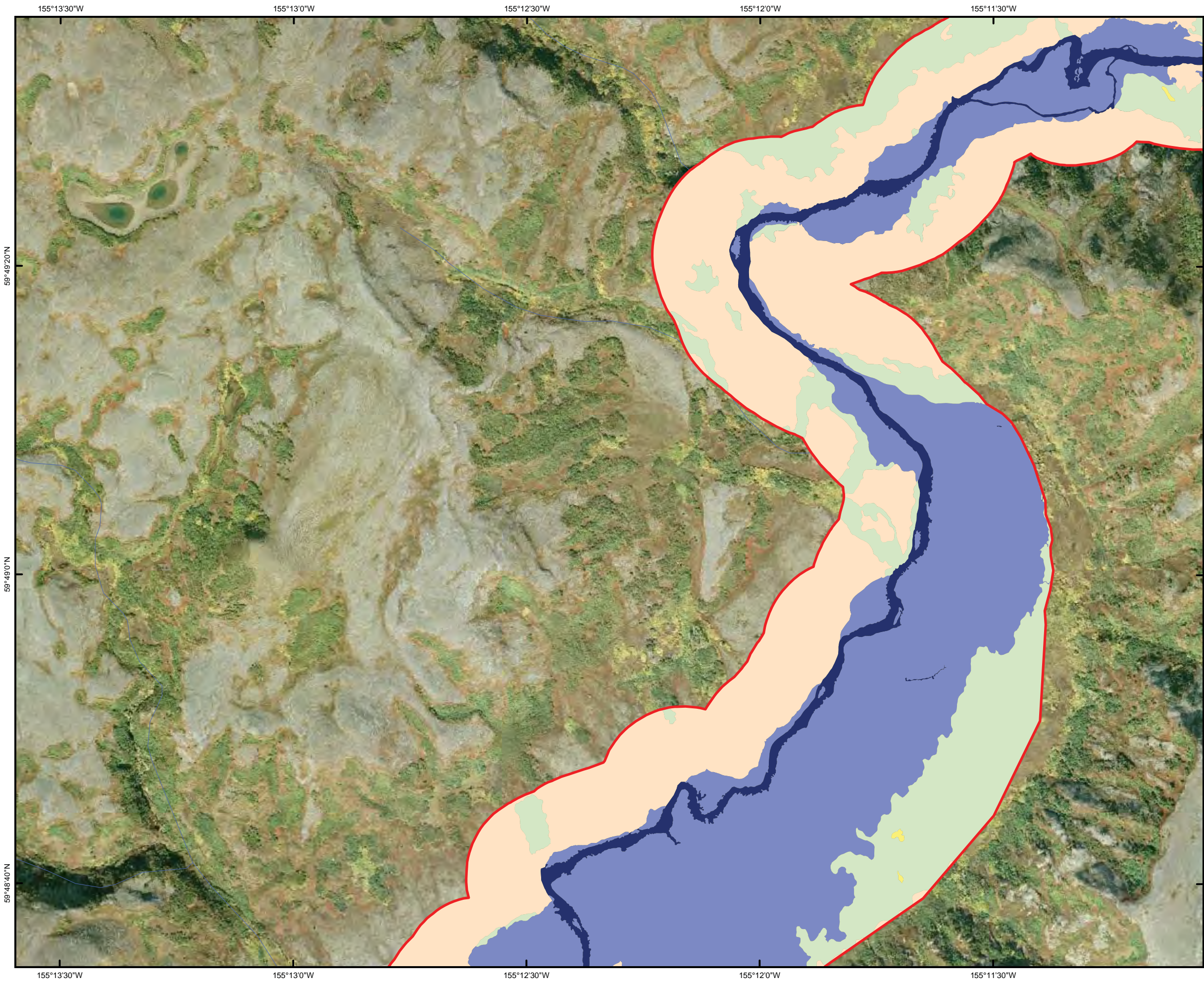
**Hydrogeomorphic (HGM) Classification**

-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





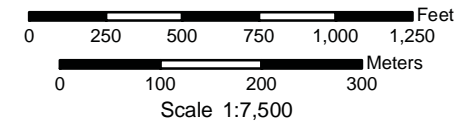
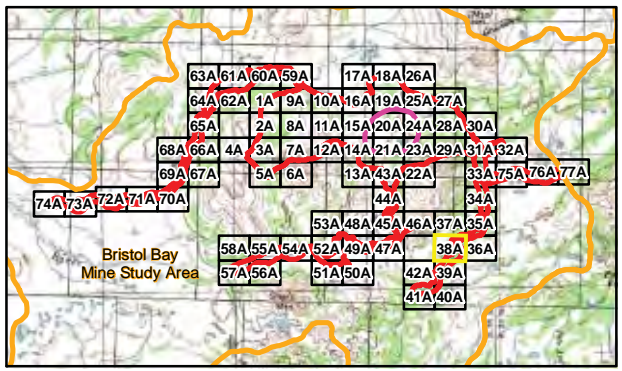
**Figure 14.1-5**  
**Tile 38A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location

**Hydrogeomorphic (HGM) Classification**

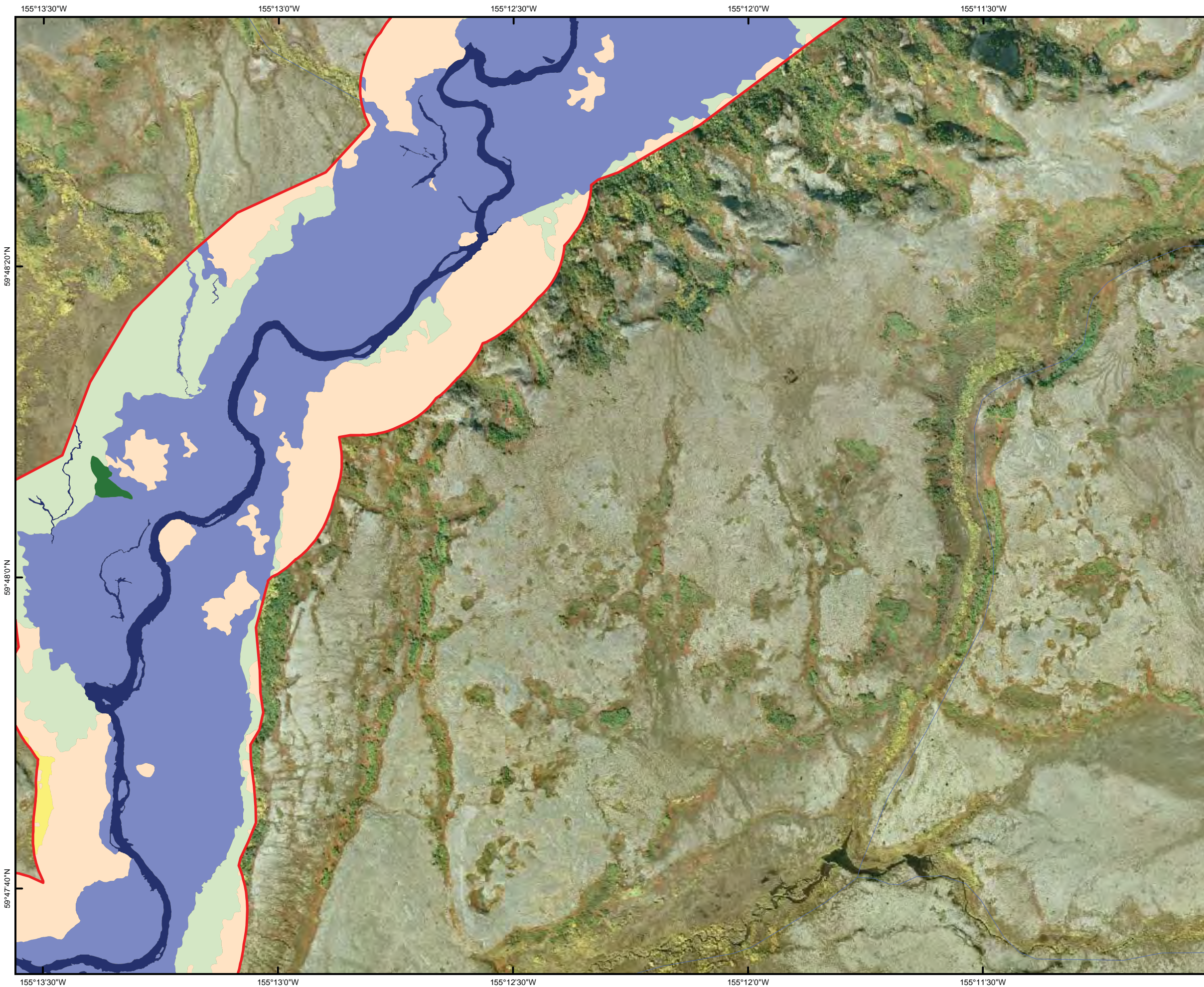
- N/A - Non-wetlands
- Slope
- Flat
- Depressional
- Riverine
- Riverine Channel
- Lacustrine
- Lacustrine Fringe



**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5 _11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

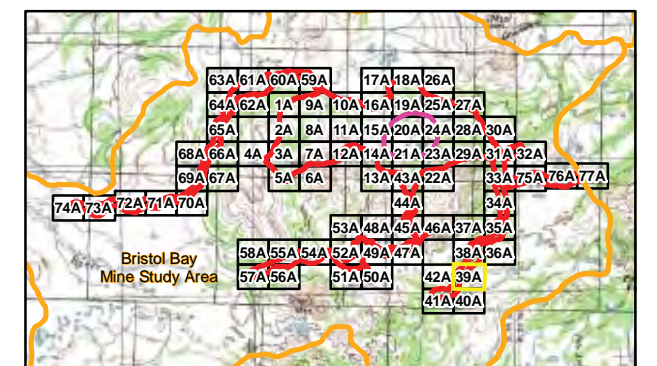




**Figure 14.1-5**  
**Tile 39A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**



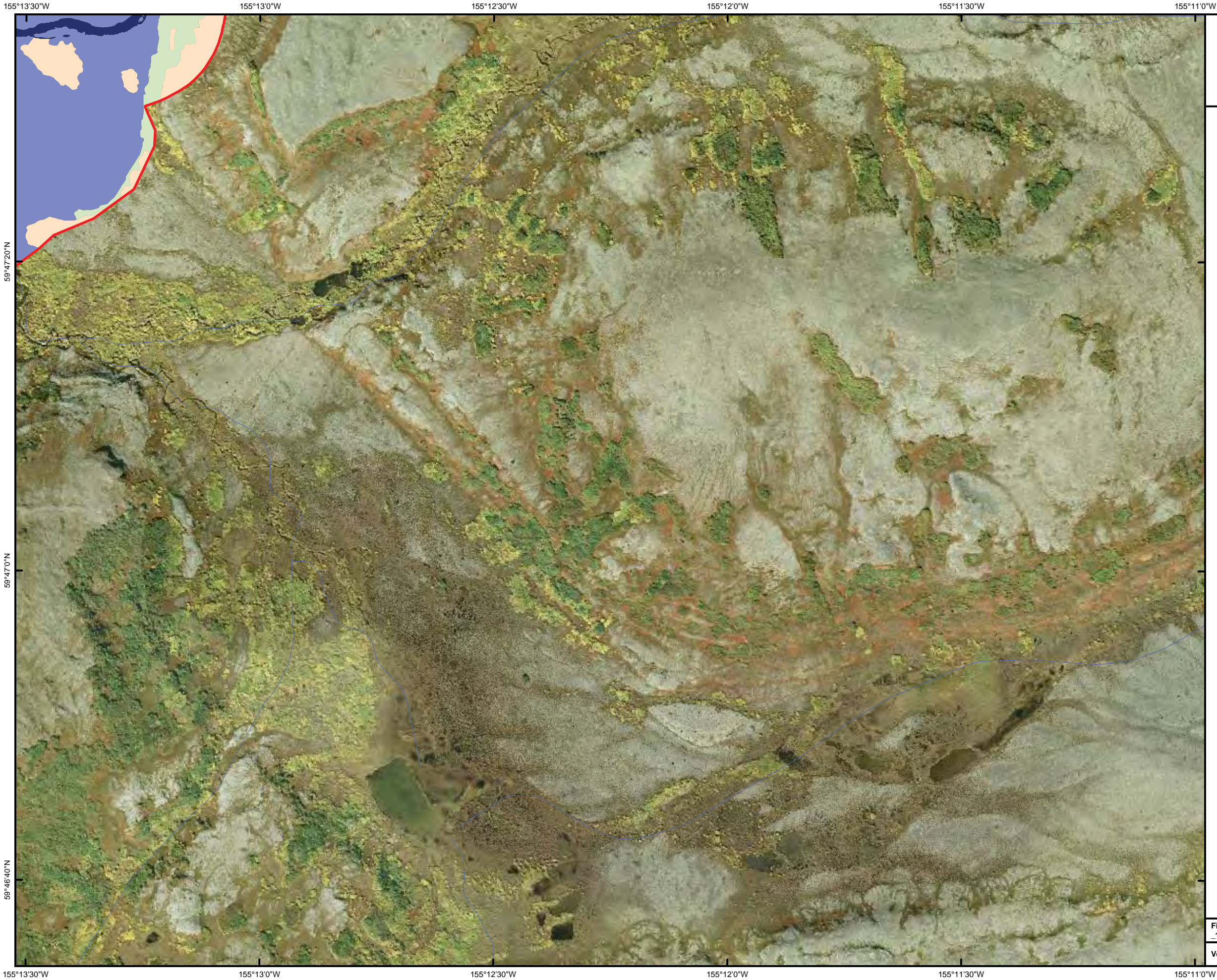
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

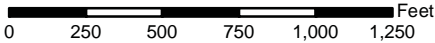
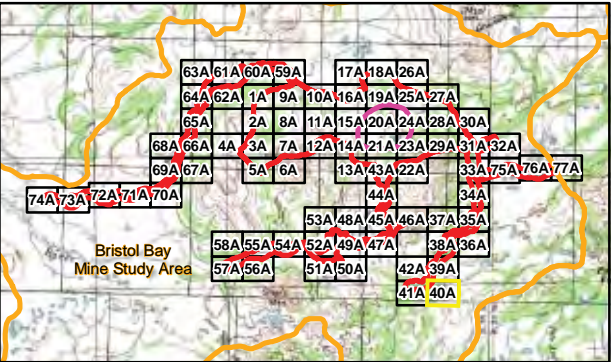




**Figure 14.1-5**  
**Tile 40A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  - N/A - Non-wetlands
  - Slope
  - Flat
  - Depressional
  - Riverine
  - Riverine Channel
  - Lacustrine
  - Lacustrine Fringe

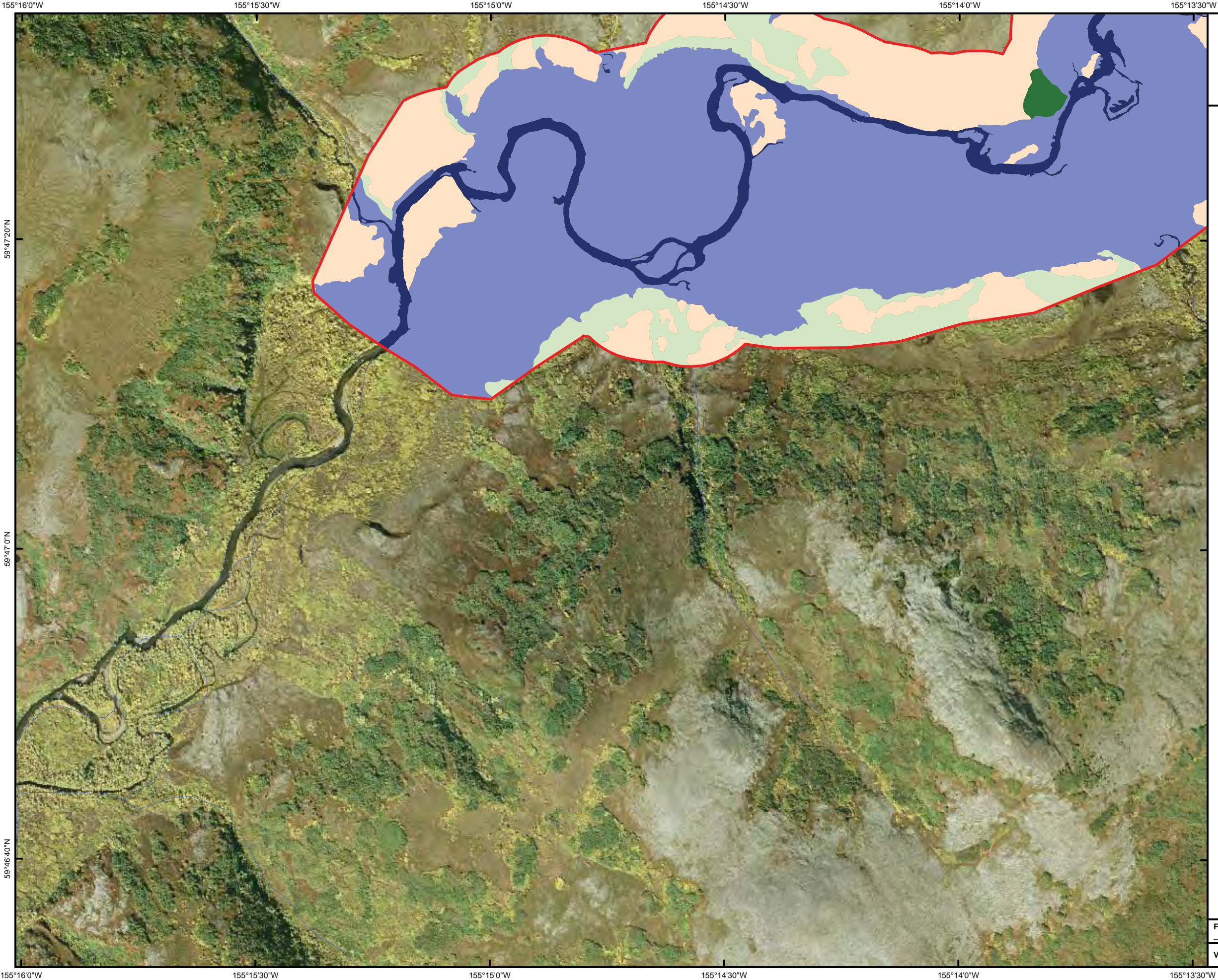


Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**












File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5 _11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

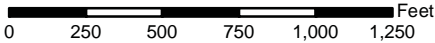
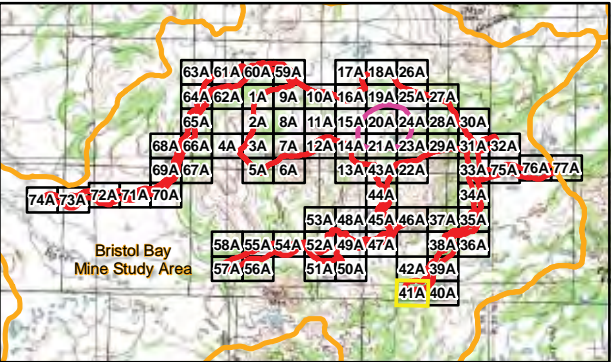




**Figure 14.1-5**  
**Tile 41A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe

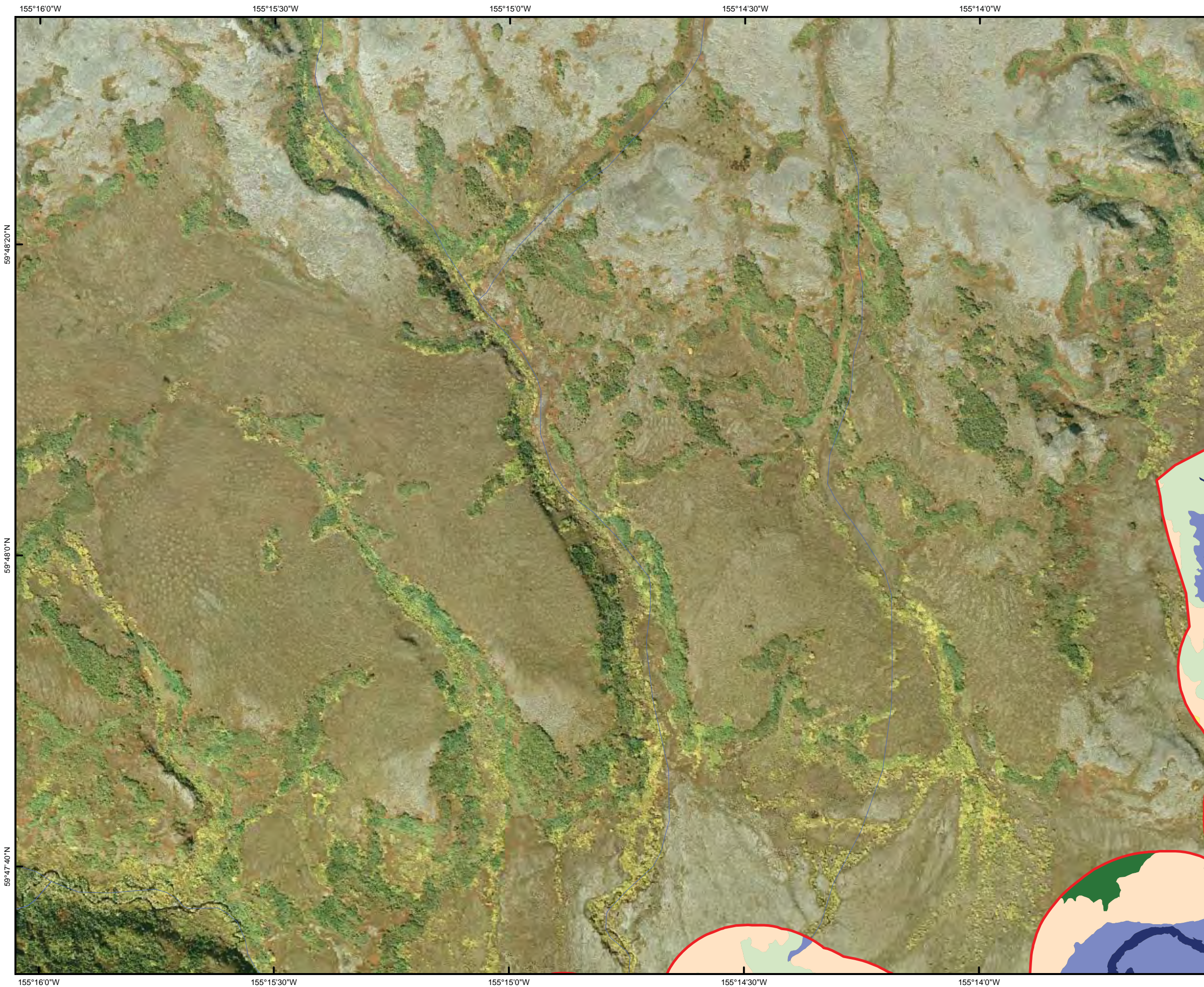


Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

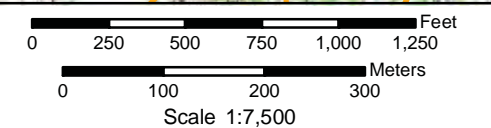
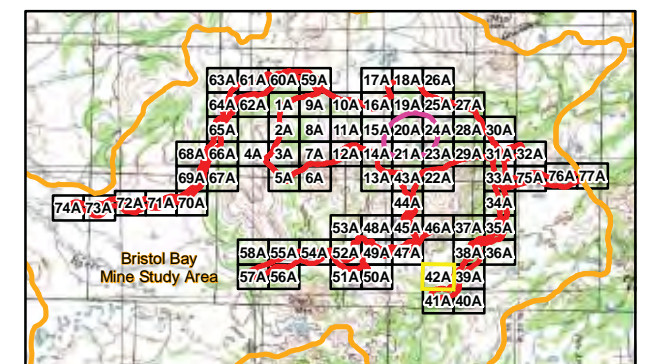




**Figure 14.1-5**  
**Tile 42A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

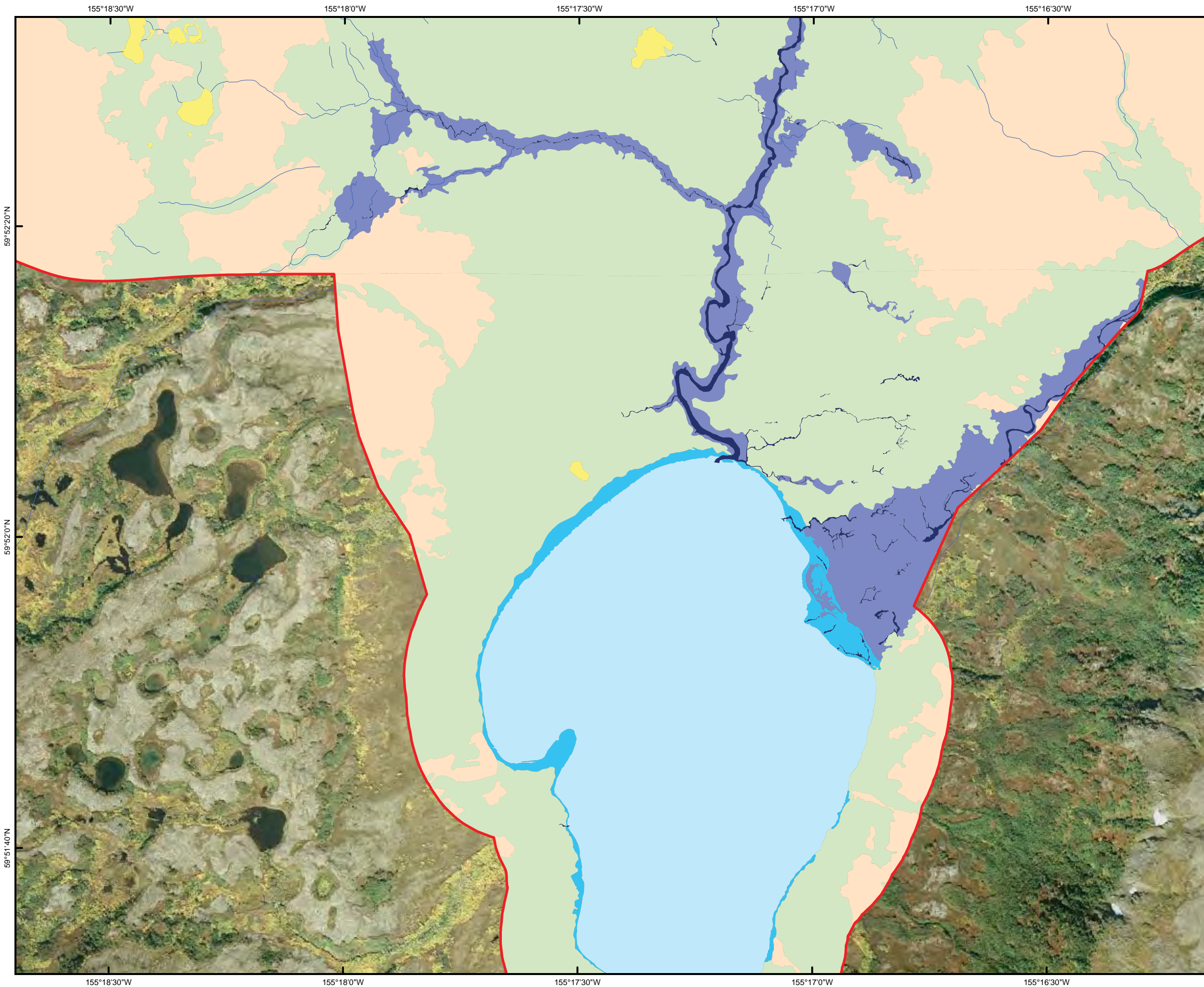
-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

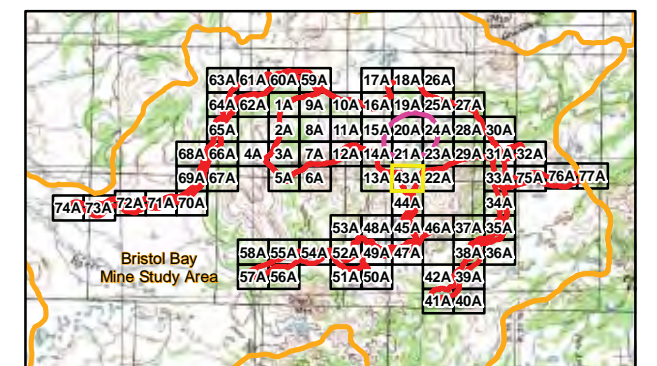




**Figure 14.1-5**  
**Tile 43A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

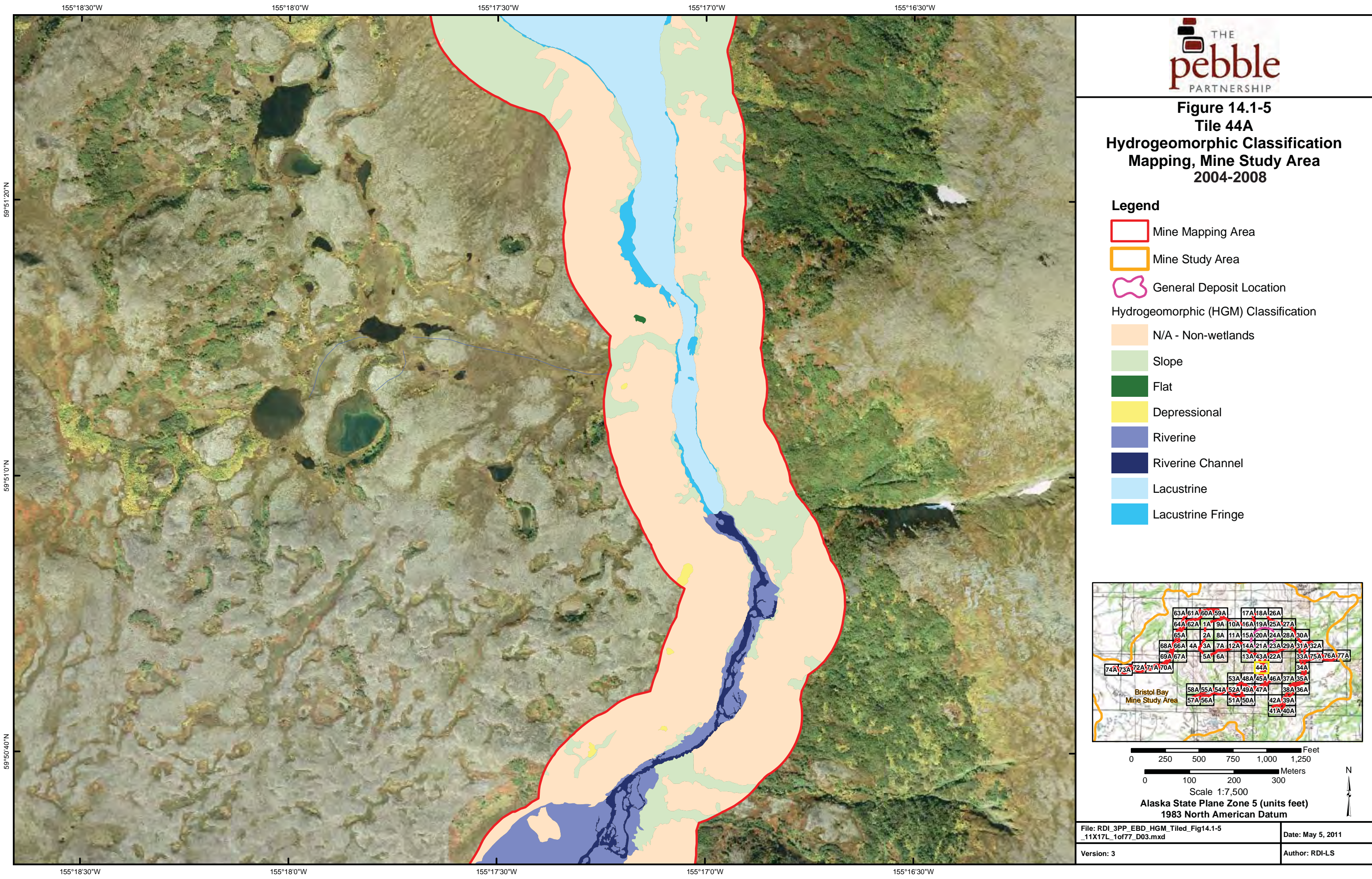
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

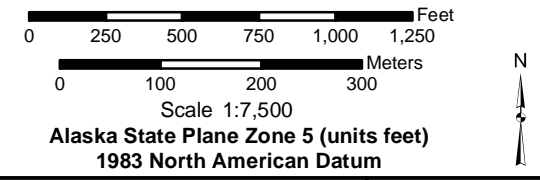
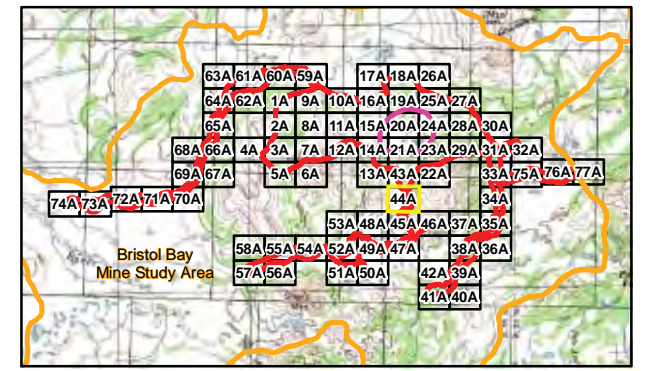




**Figure 14.1-5**  
**Tile 44A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

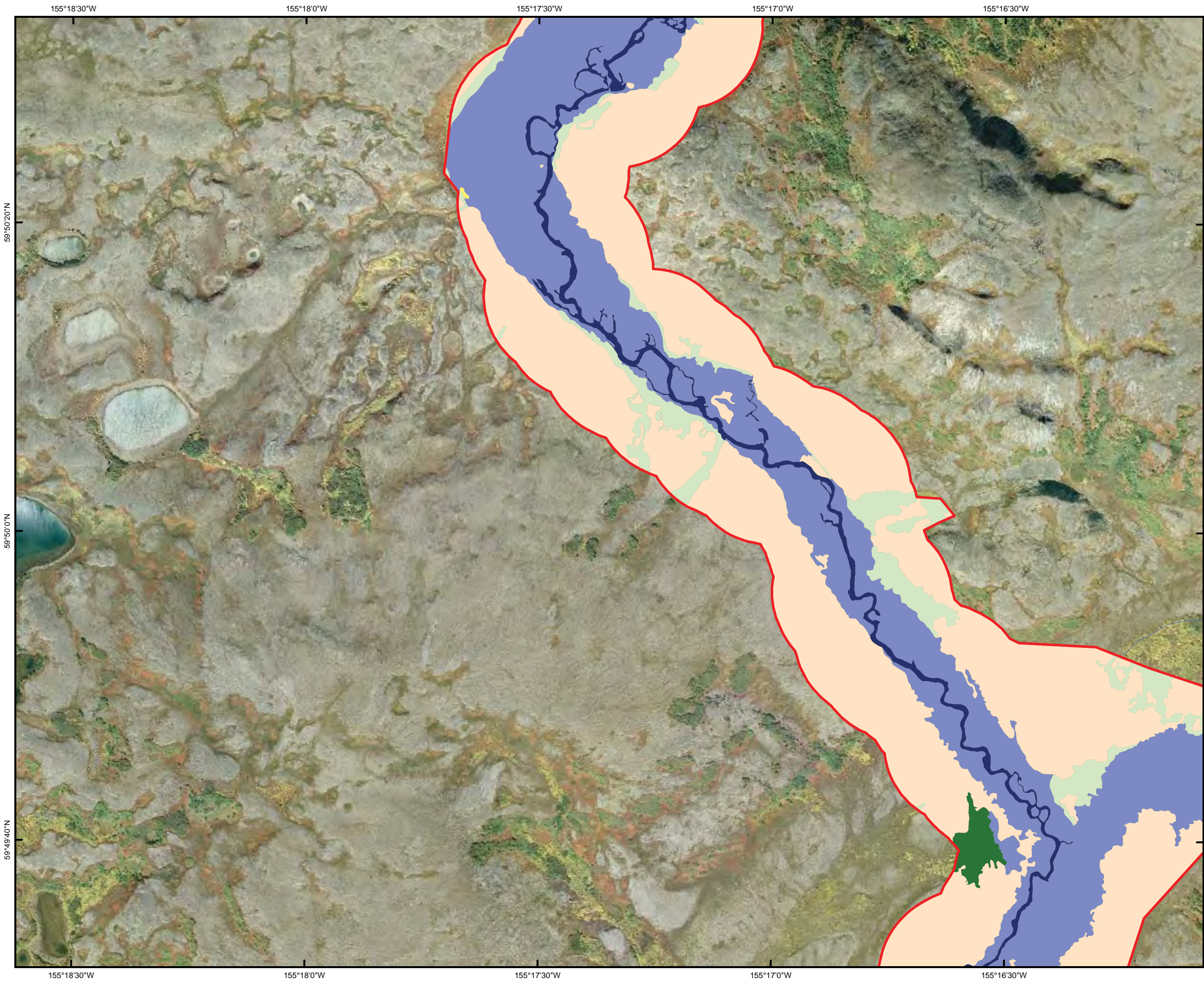
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





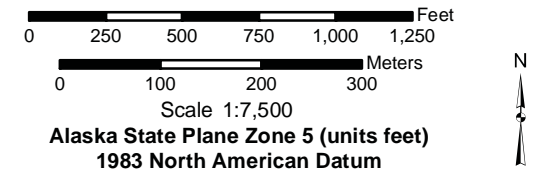
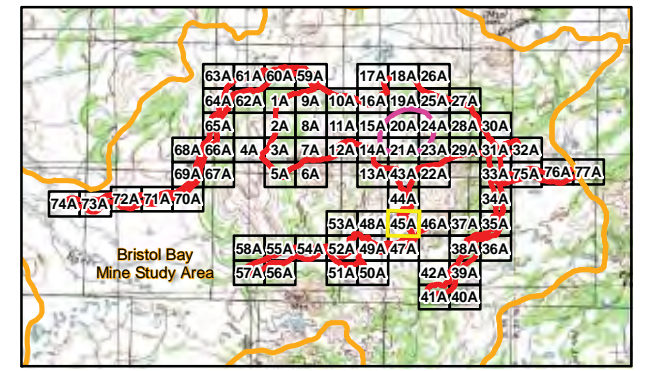
**Figure 14.1-5**  
**Tile 45A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location

**Hydrogeomorphic (HGM) Classification**

- N/A - Non-wetlands
- Slope
- Flat
- Depressional
- Riverine
- Riverine Channel
- Lacustrine
- Lacustrine Fringe

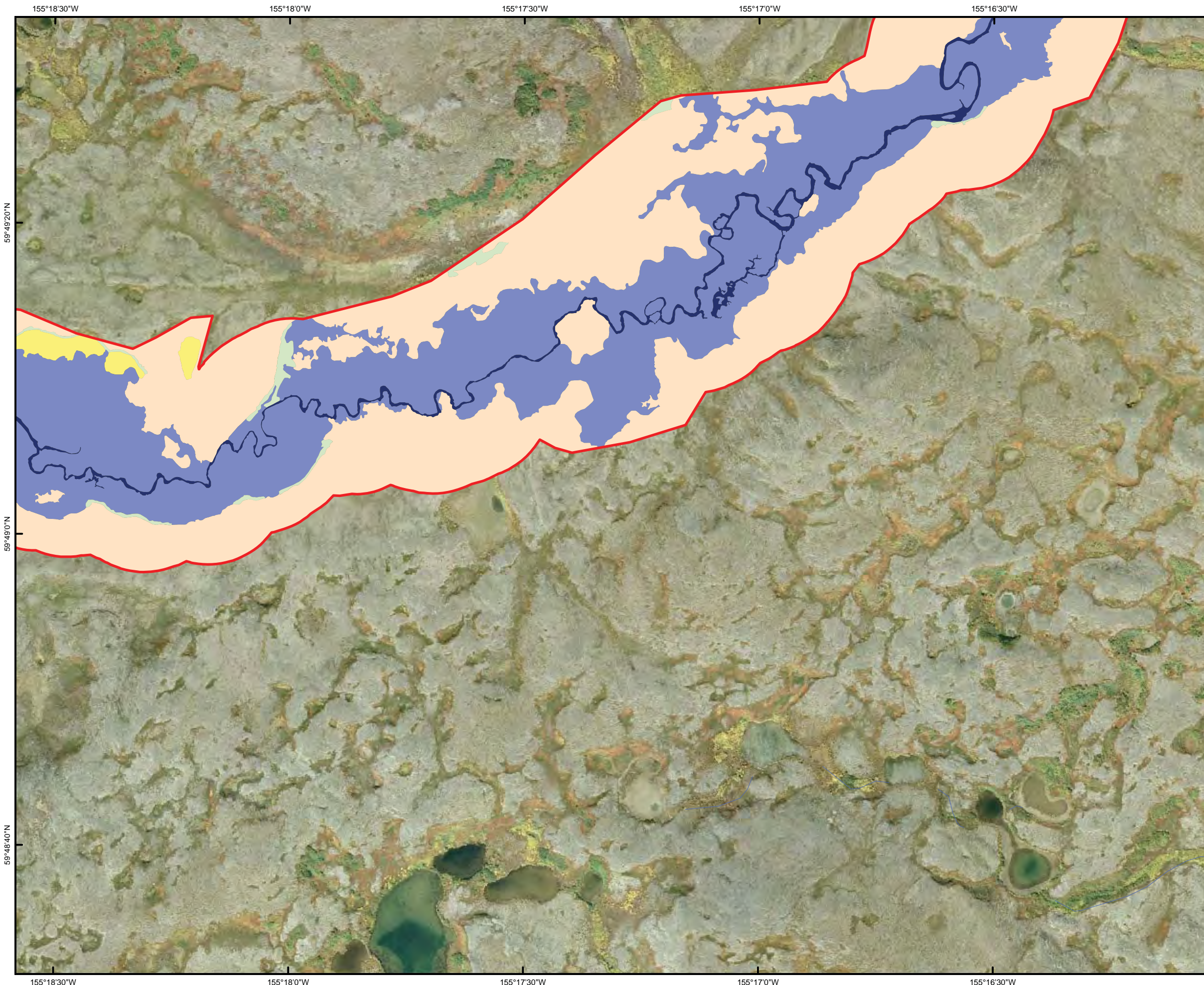


File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS



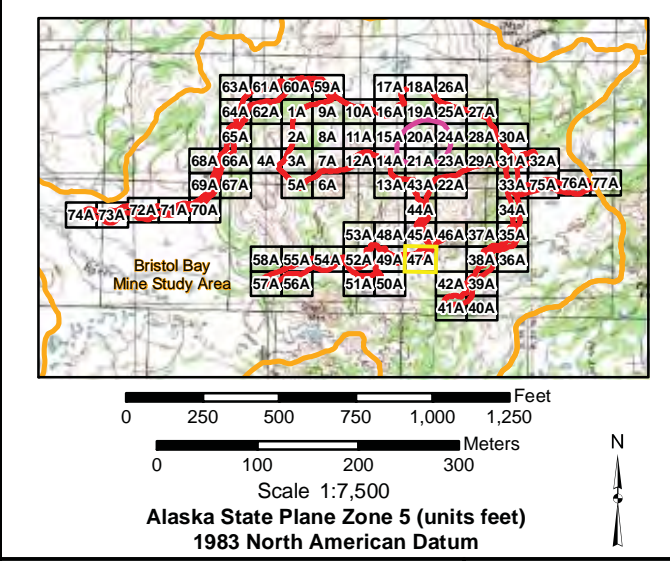




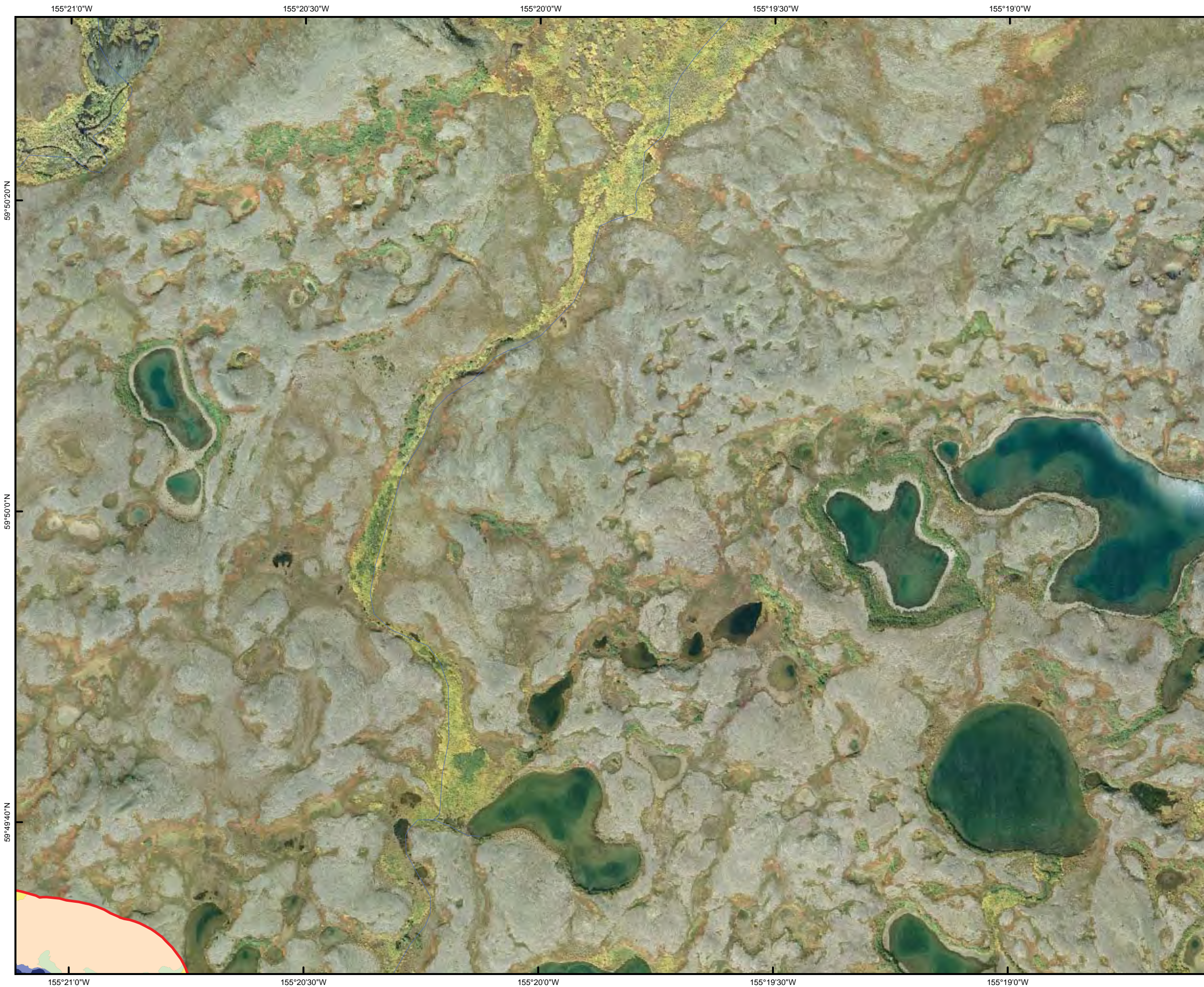


**Figure 14.1-5**  
**Tile 47A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

- Legend**
- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
  - Hydrogeomorphic (HGM) Classification**
    - N/A - Non-wetlands
    - Slope
    - Flat
    - Depressional
    - Riverine
    - Riverine Channel
    - Lacustrine
    - Lacustrine Fringe










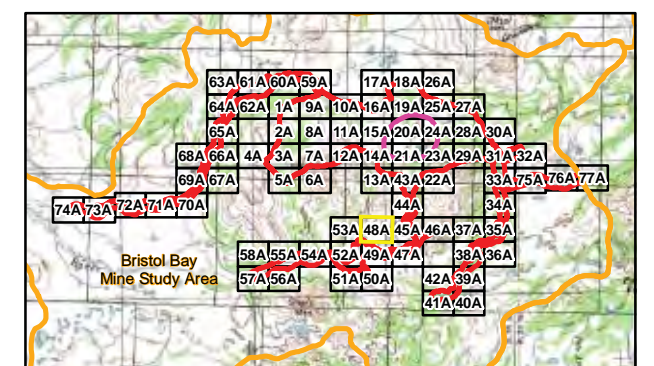
**Figure 14.1-5**  
**Tile 48A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location

**Hydrogeomorphic (HGM) Classification**

-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

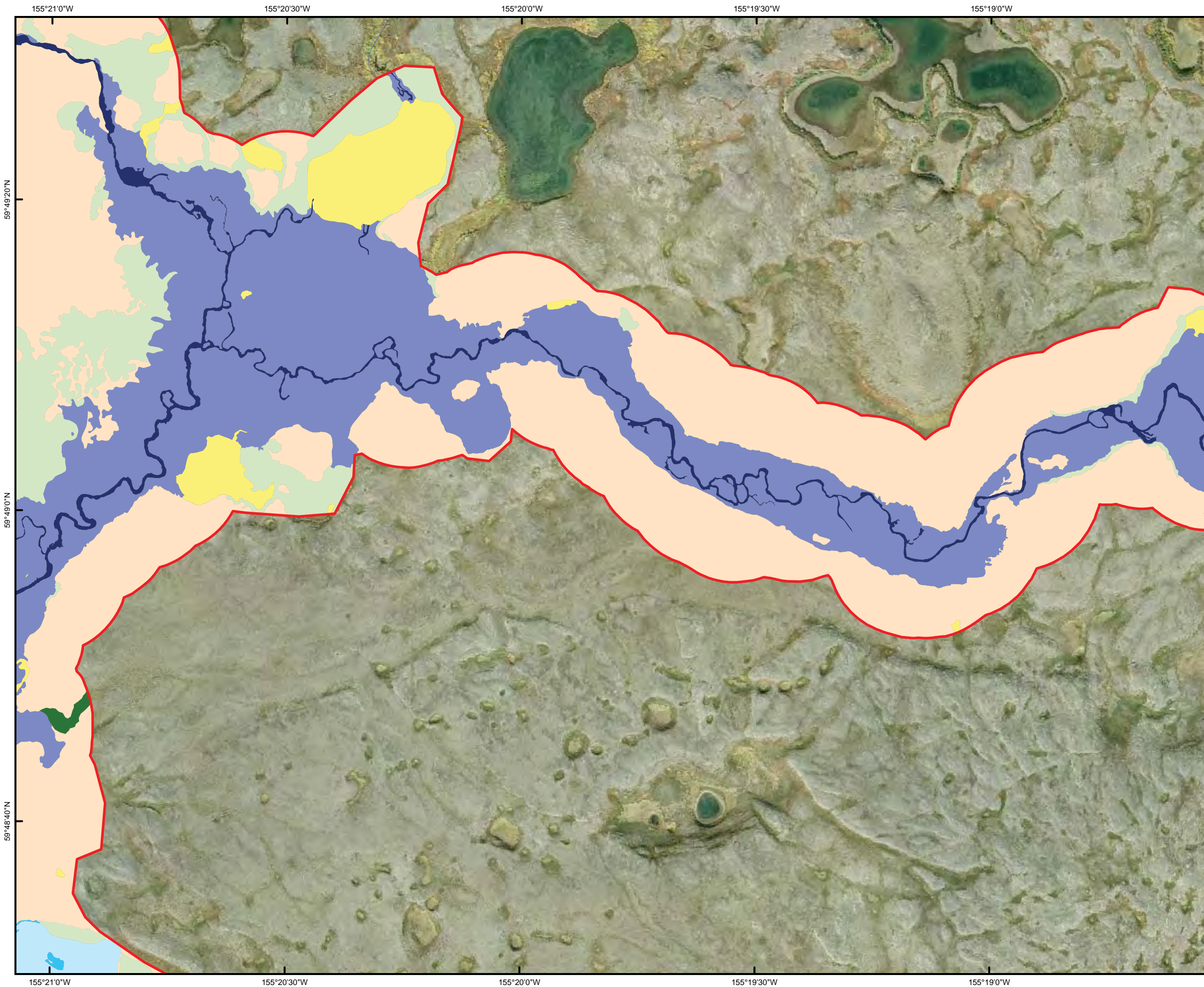
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3

Author: RDI-LS

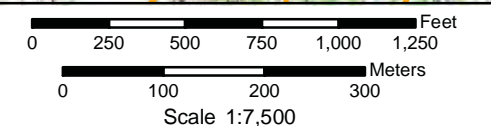
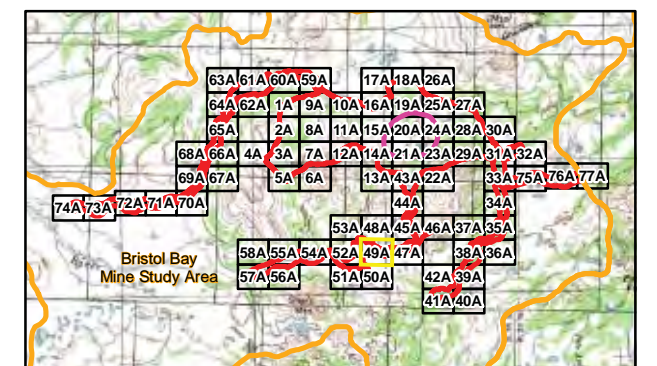




**Figure 14.1-5**  
**Tile 49A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

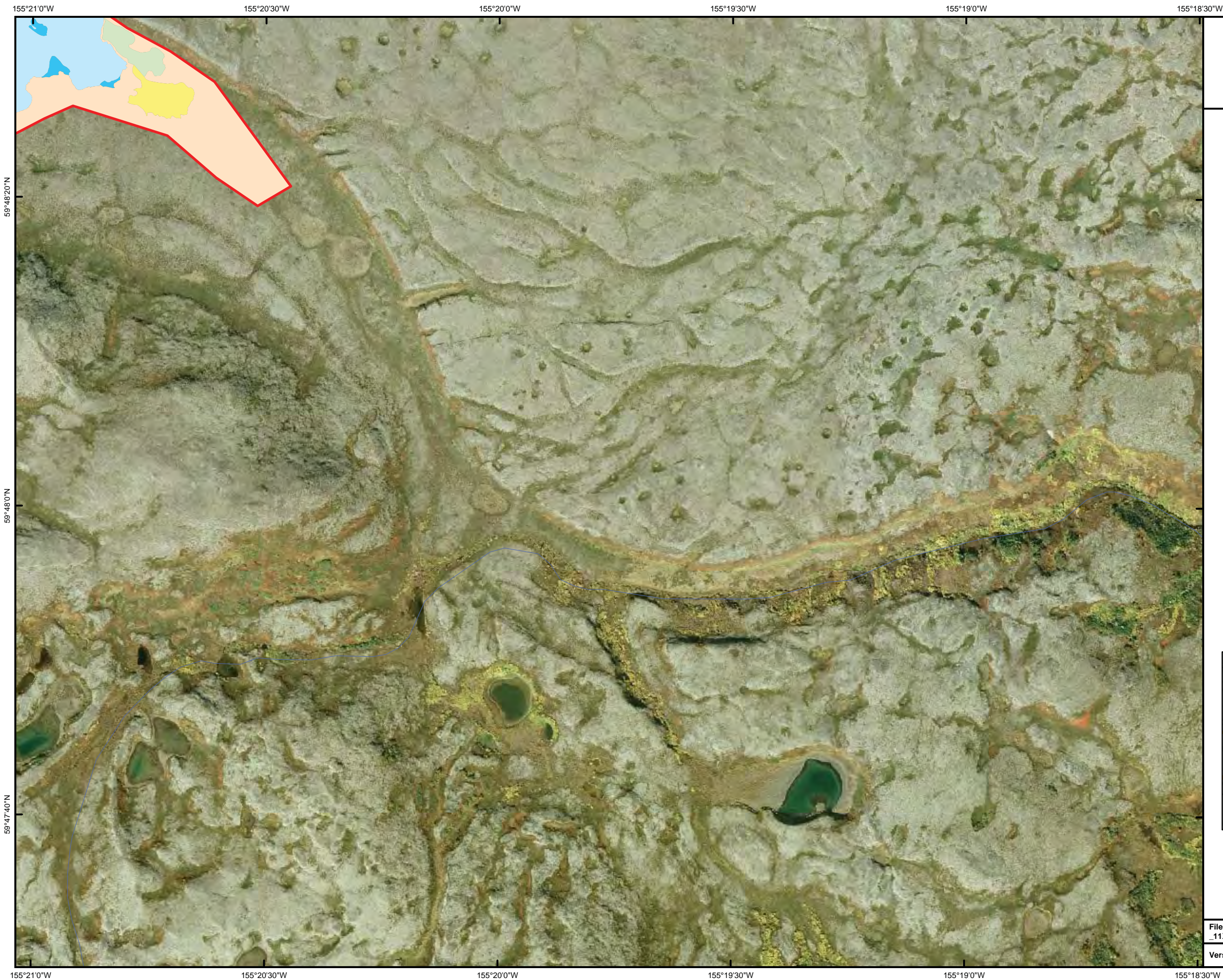
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe











File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

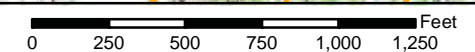
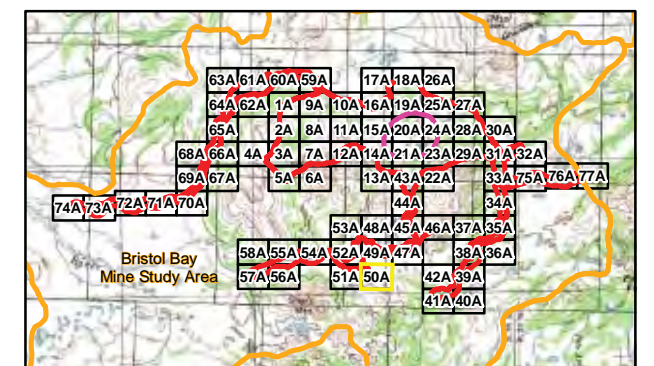




**Figure 14.1-5**  
**Tile 50A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe

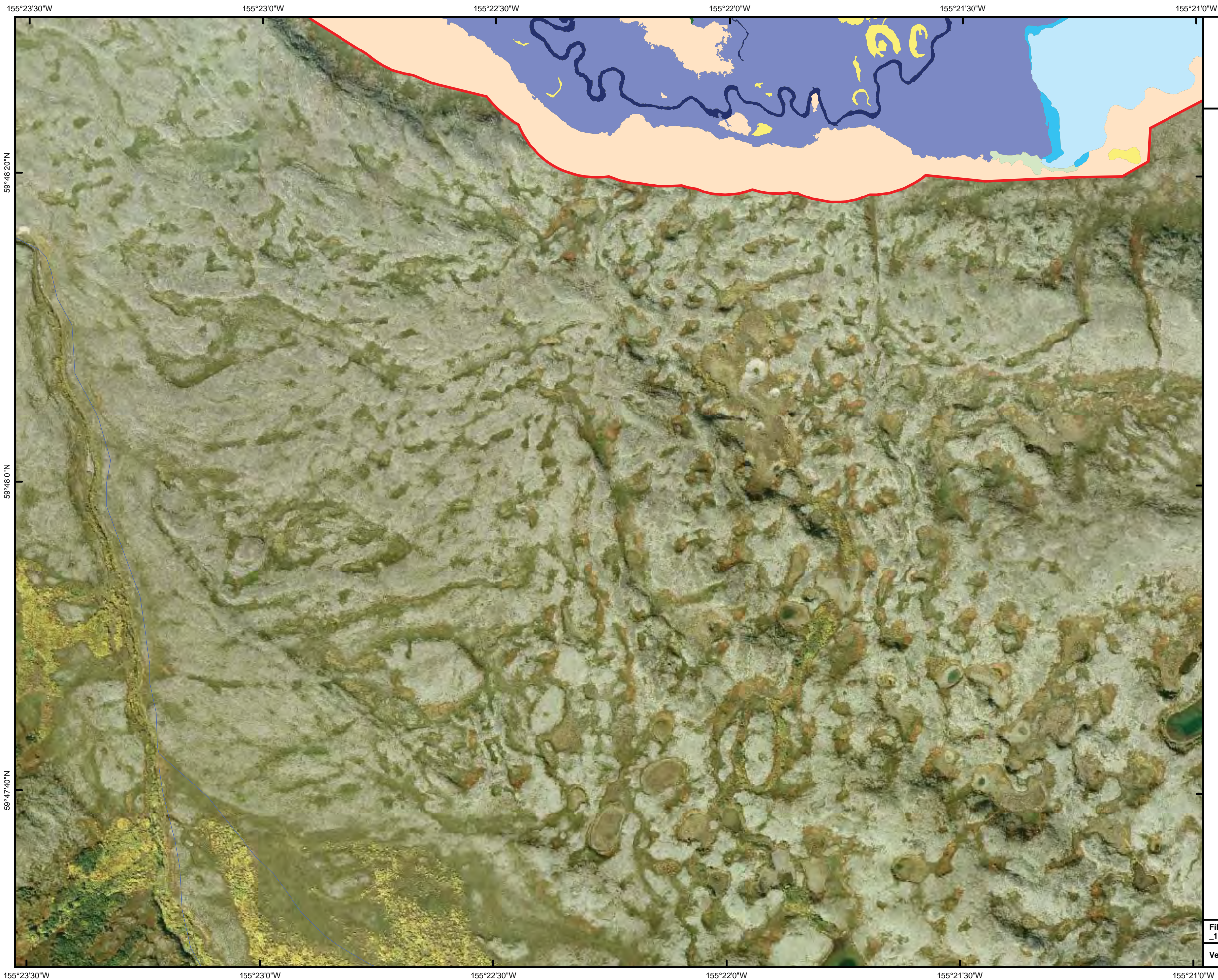


Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

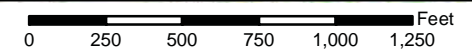
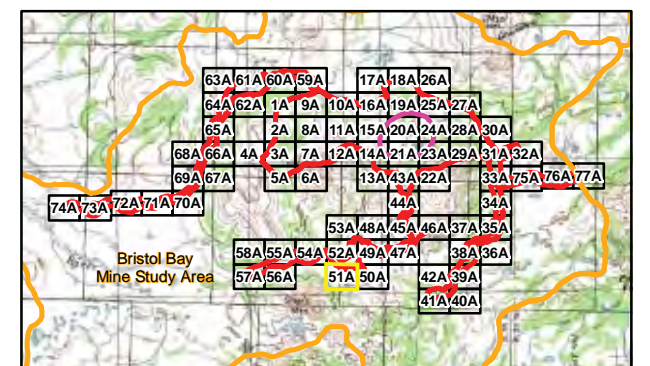




**Figure 14.1-5**  
**Tile 51A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



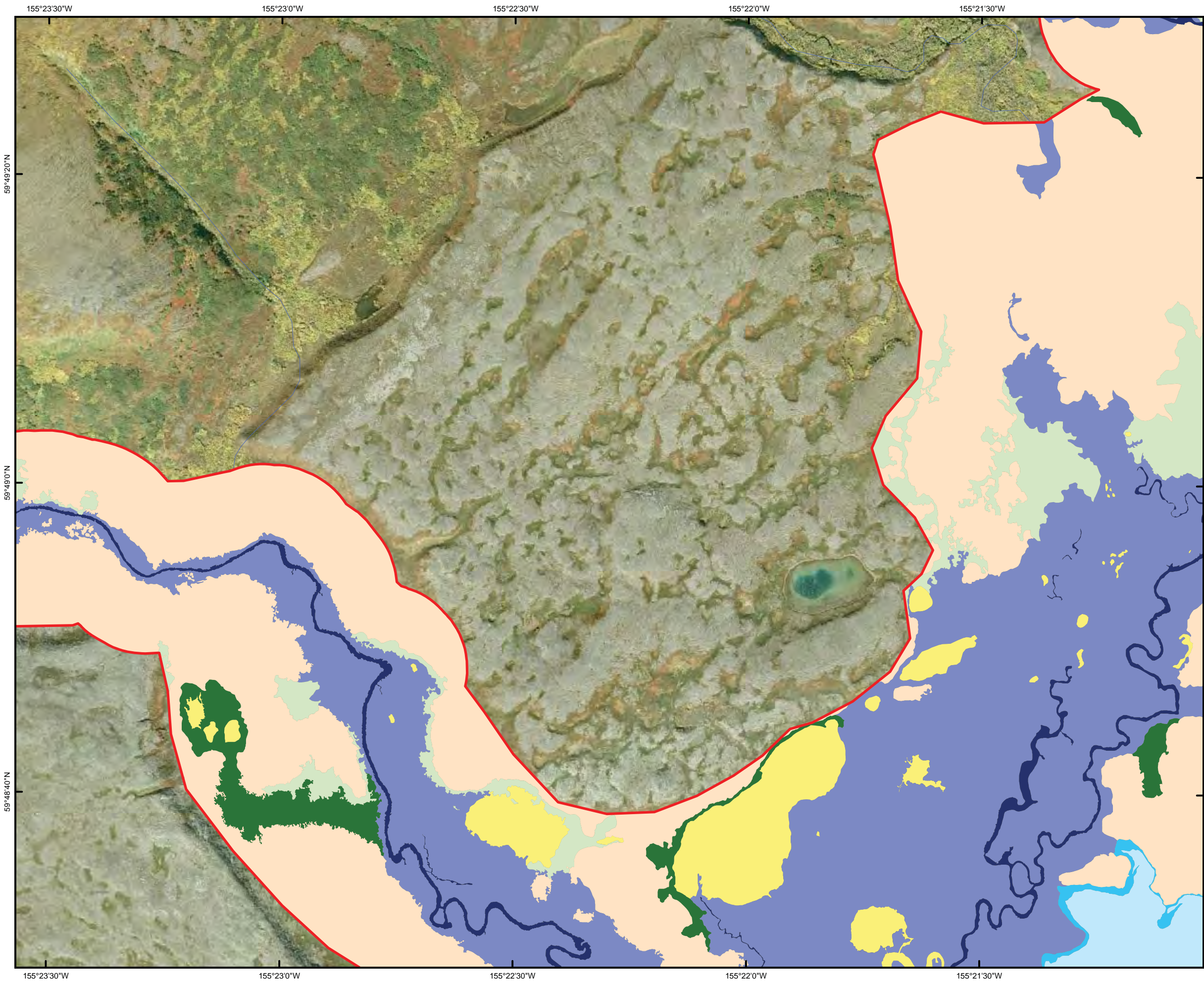
Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum









File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

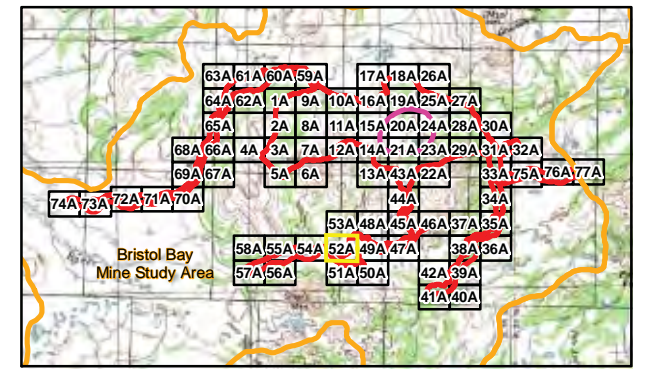




**Figure 14.1-5**  
**Tile 52A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

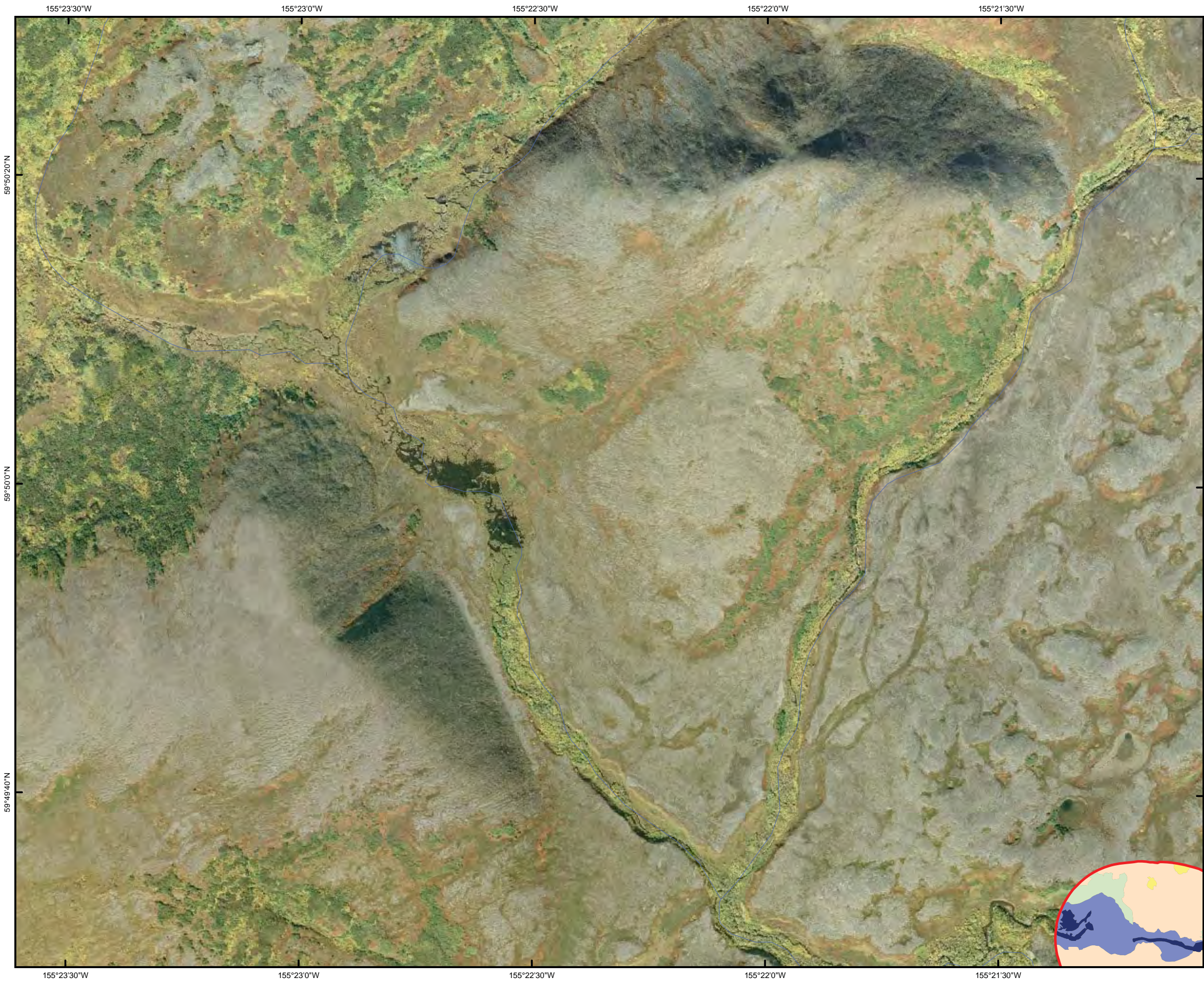
-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters  
Scale 1:7,500  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum




File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





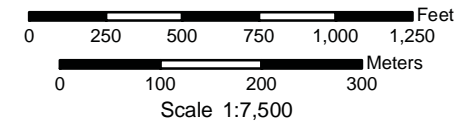
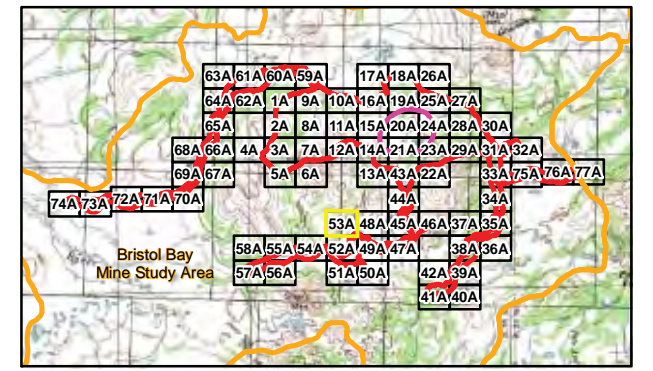
**Figure 14.1-5**  
**Tile 53A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location

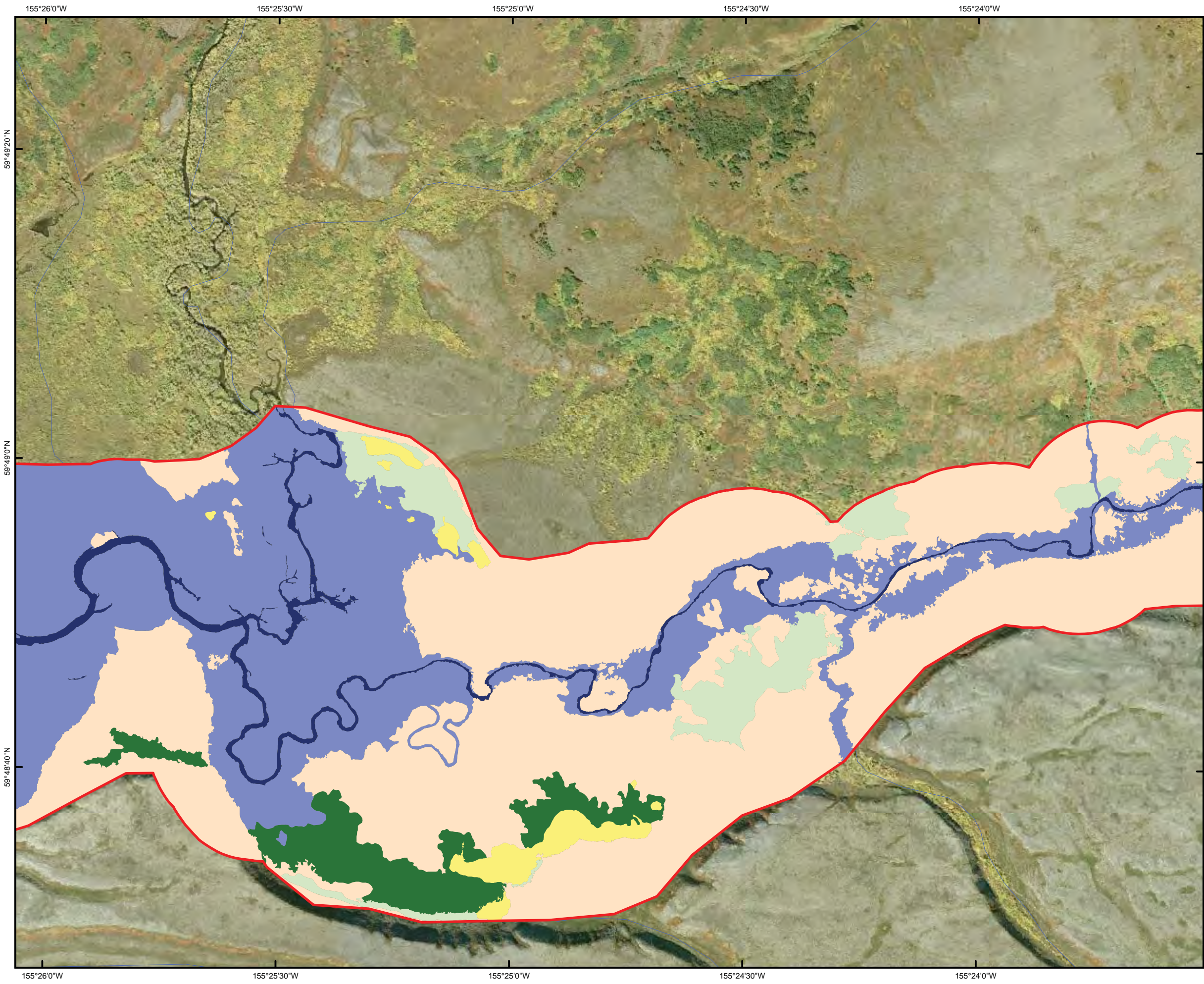
**Hydrogeomorphic (HGM) Classification**

-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





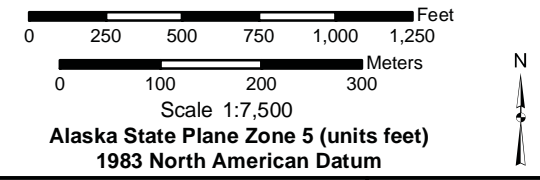
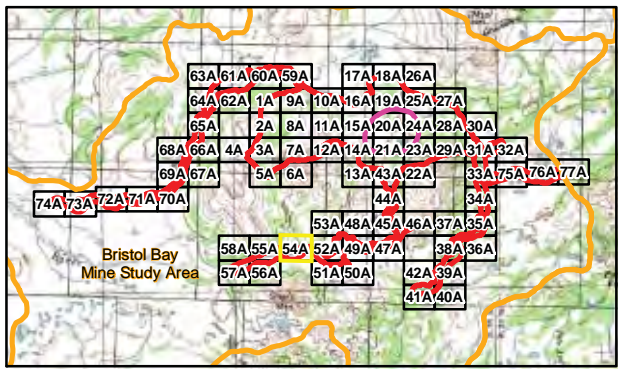
**Figure 14.1-5**  
**Tile 54A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

- Mine Mapping Area
- Mine Study Area
- General Deposit Location

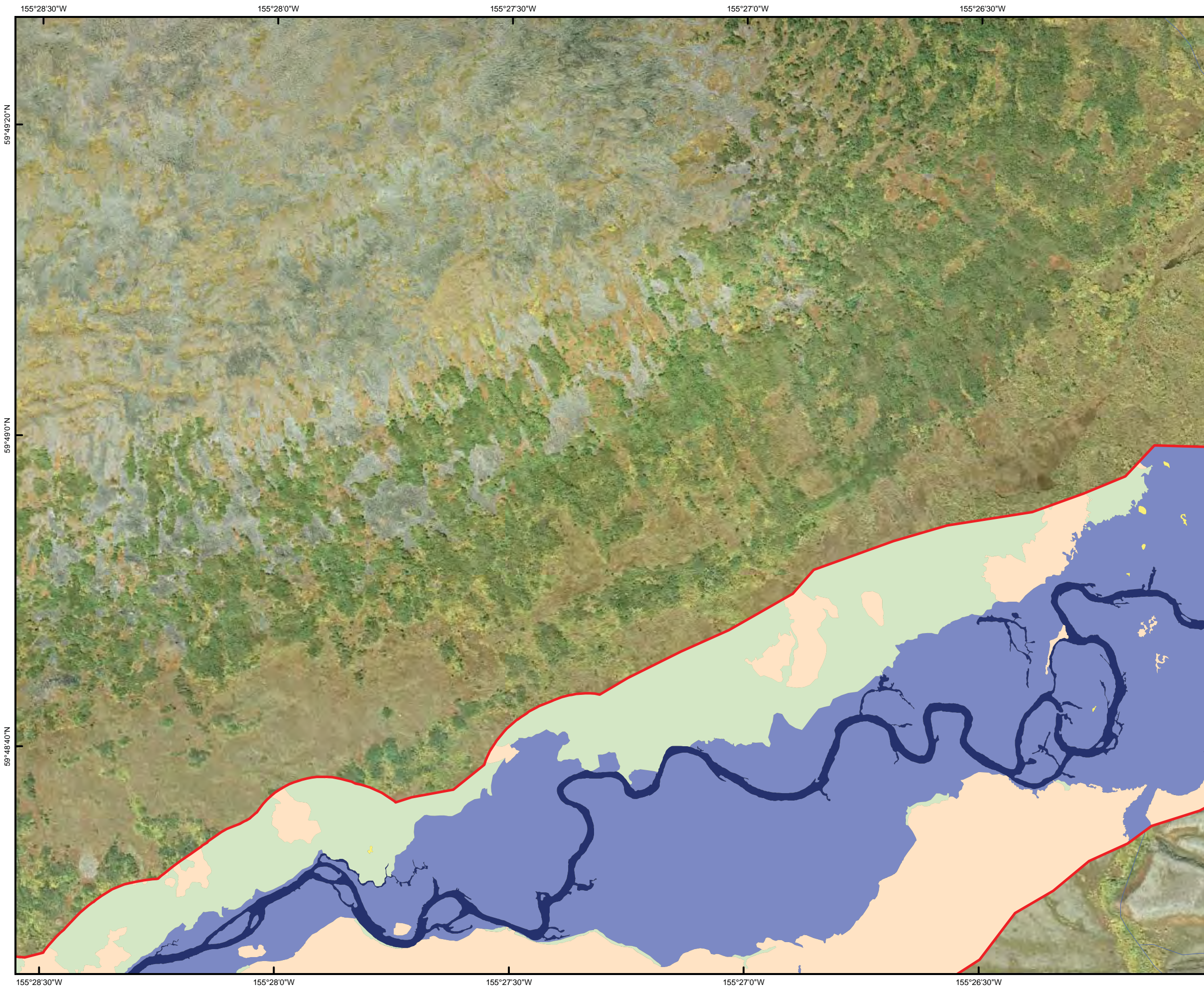
**Hydrogeomorphic (HGM) Classification**

- N/A - Non-wetlands
- Slope
- Flat
- Depressional
- Riverine
- Riverine Channel
- Lacustrine
- Lacustrine Fringe






File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





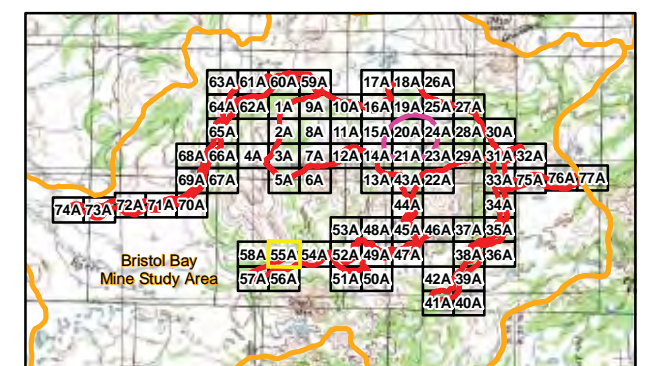
**Figure 14.1-5**  
**Tile 55A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location

**Hydrogeomorphic (HGM) Classification**

-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

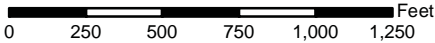
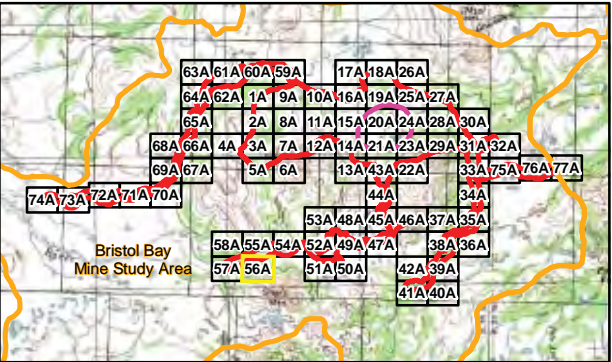




**Figure 14.1-5**  
**Tile 56A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe

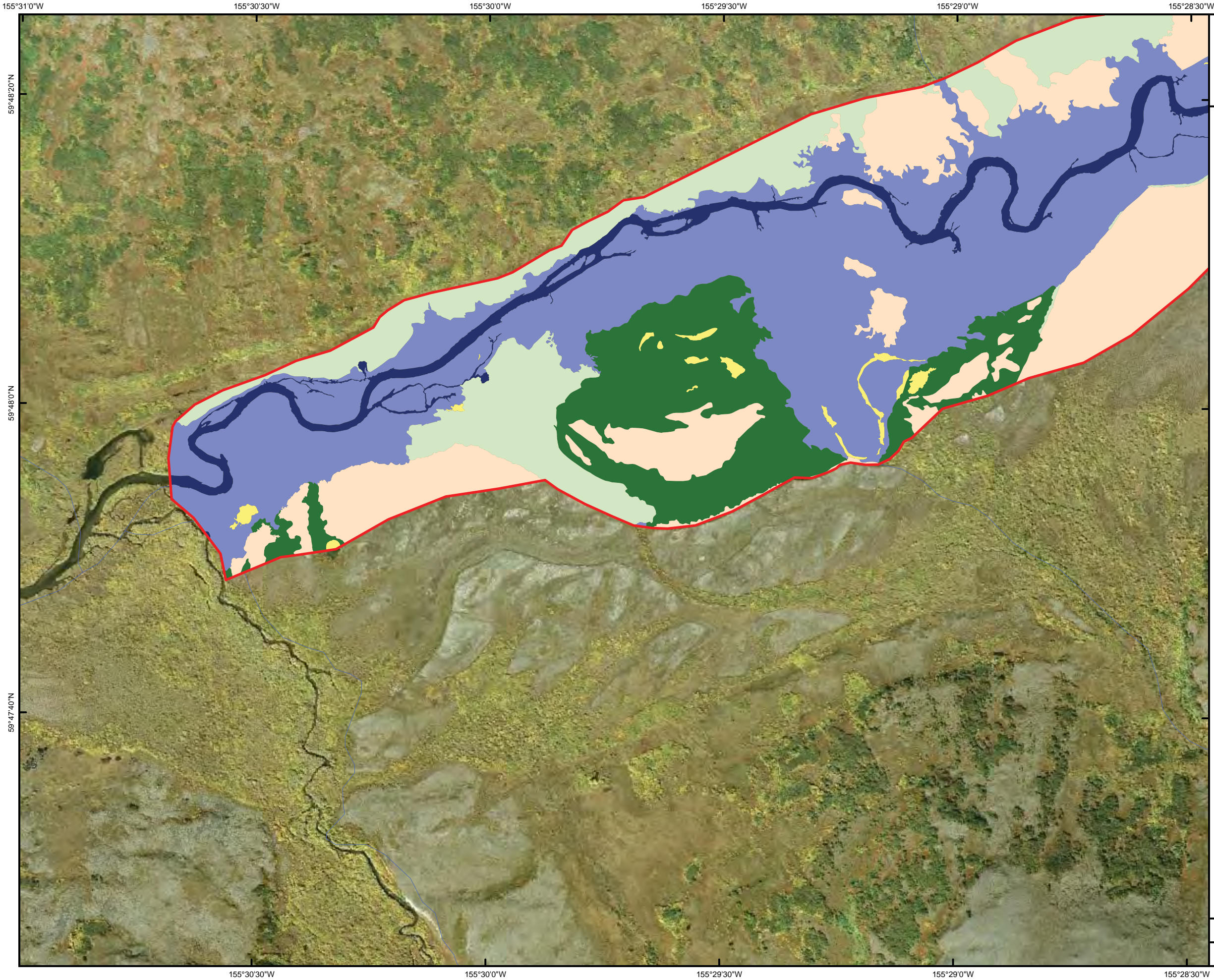


Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

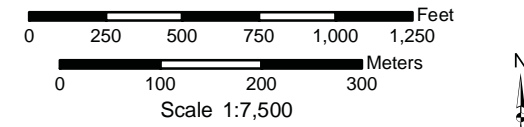
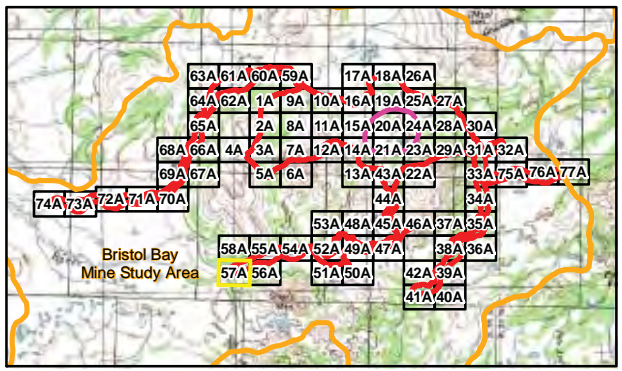
File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





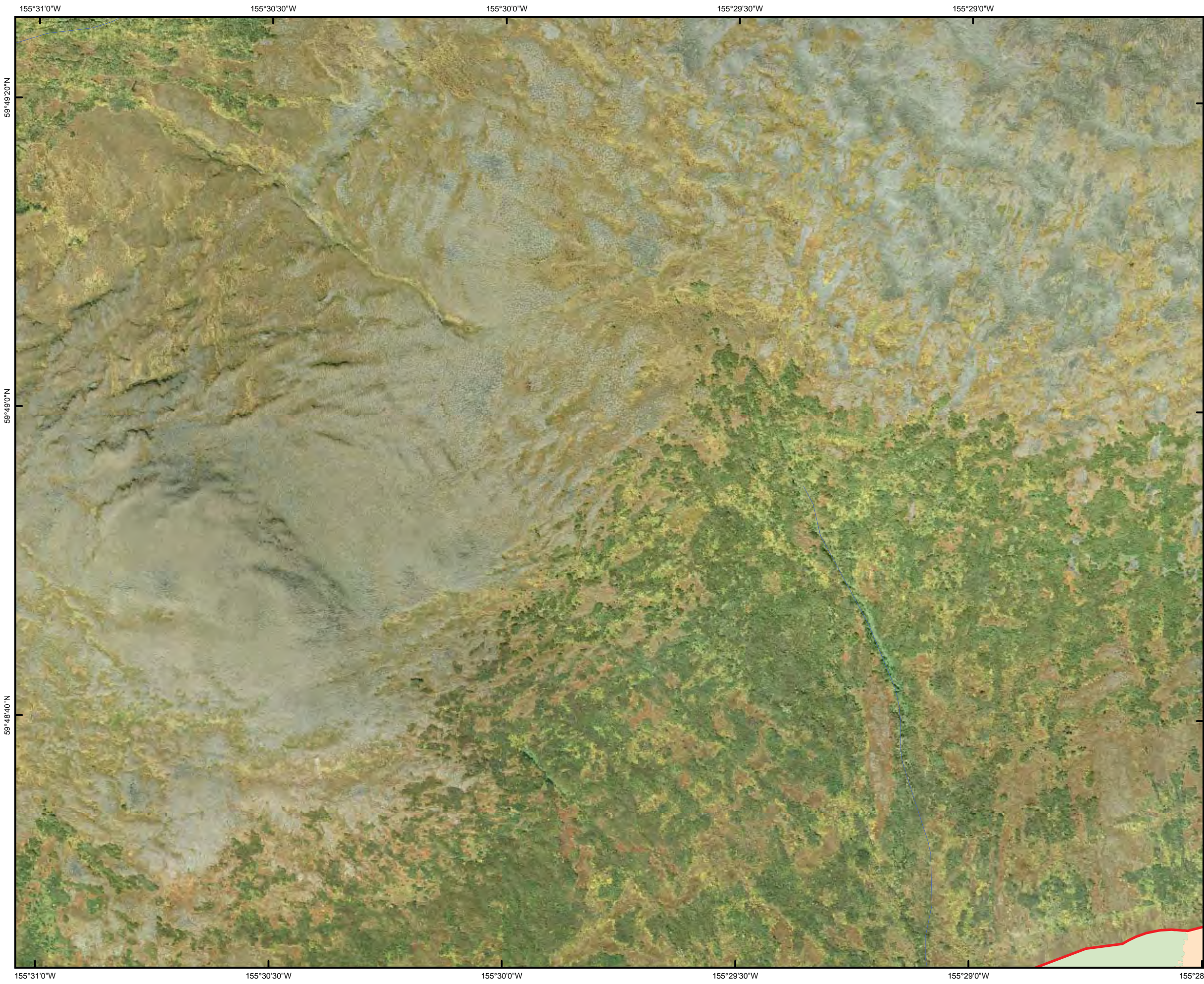
**Figure 14.1-5**  
**Tile 57A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

- Legend**
- Mine Mapping Area
  - Mine Study Area
  - General Deposit Location
  - Hydrogeomorphic (HGM) Classification**
    - N/A - Non-wetlands
    - Slope
    - Flat
    - Depressional
    - Riverine
    - Riverine Channel
    - Lacustrine
    - Lacustrine Fringe






File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





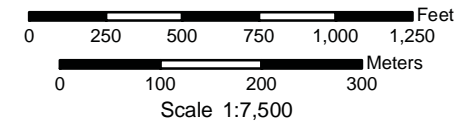
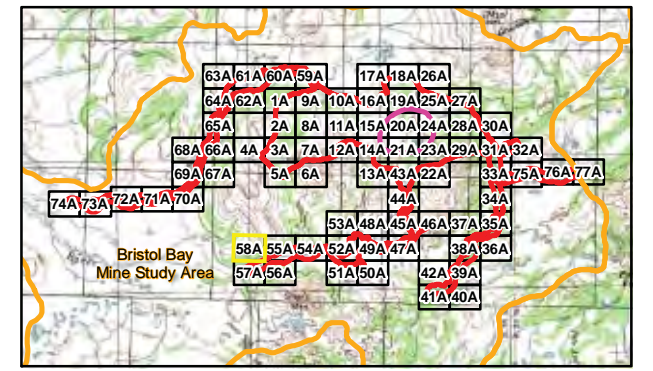
**Figure 14.1-5**  
**Tile 58A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location

**Hydrogeomorphic (HGM) Classification**

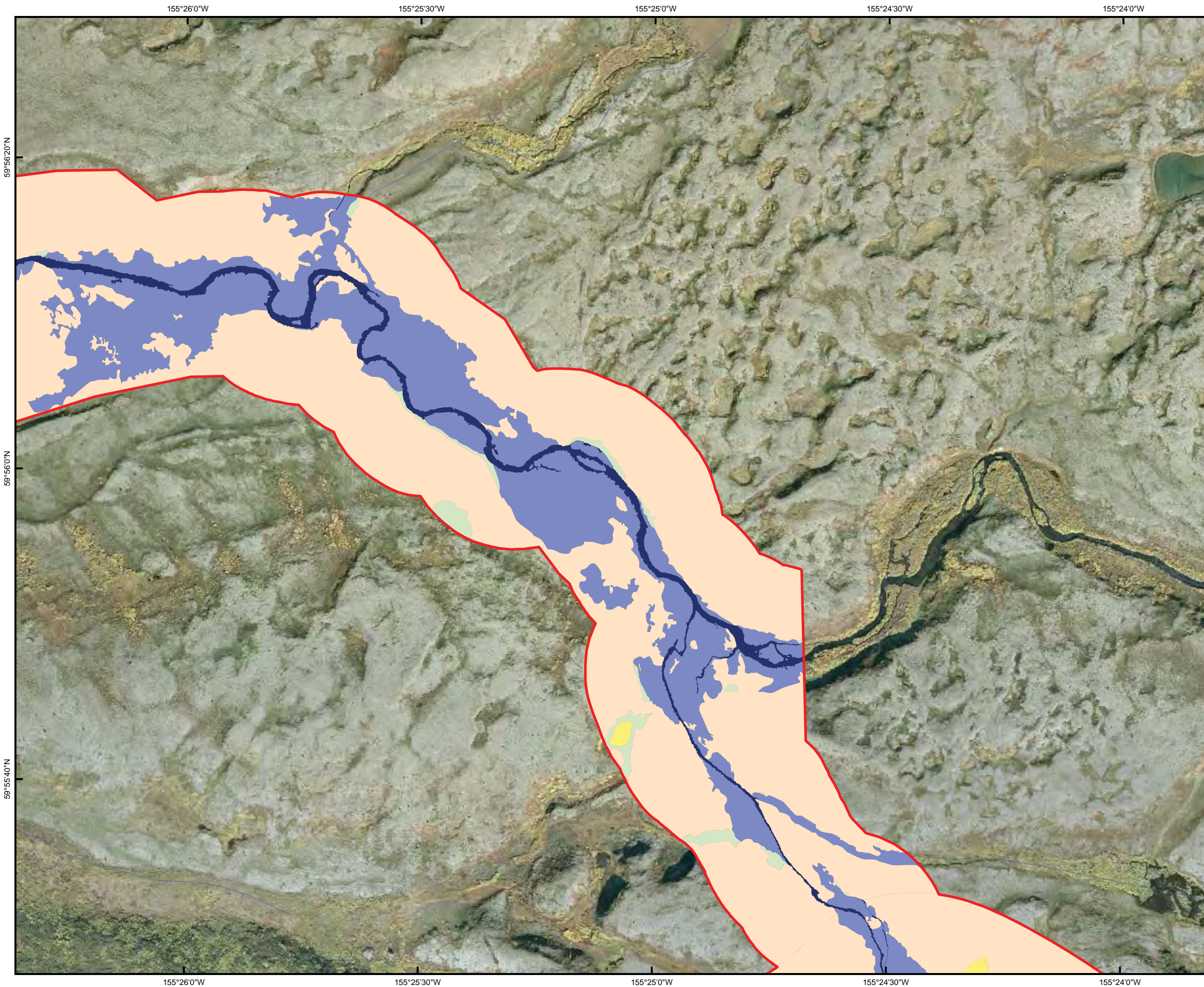
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**












File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

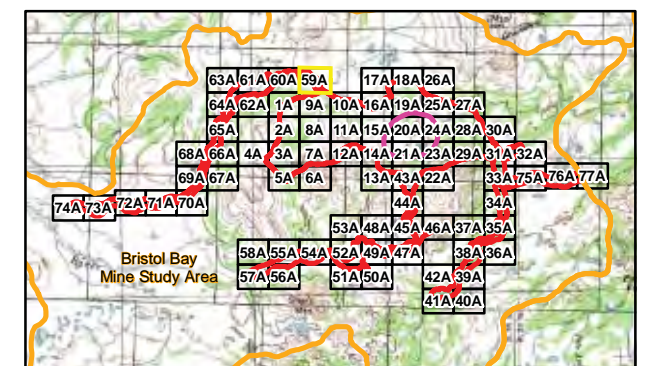




**Figure 14.1-5**  
**Tile 59A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



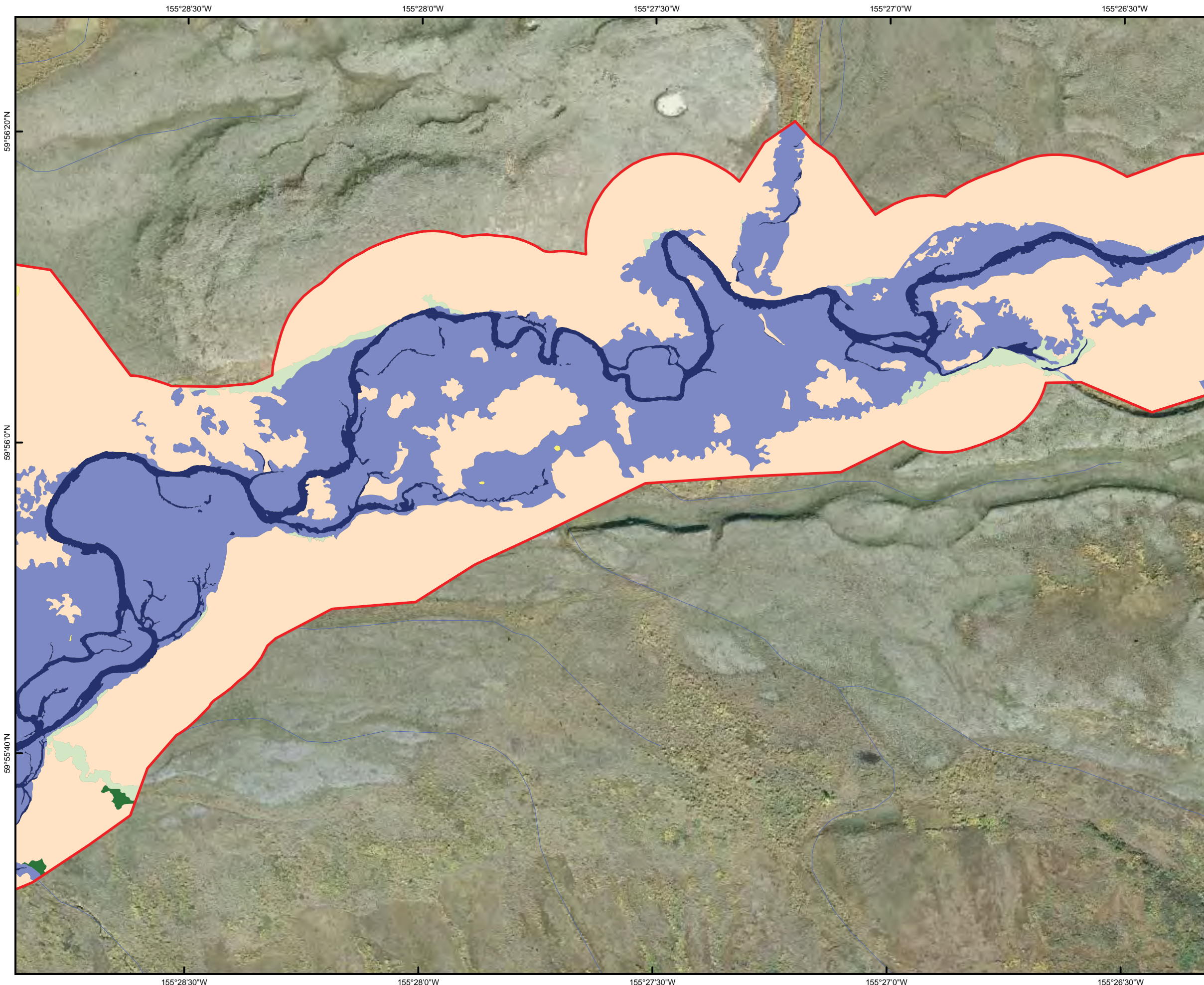
0 250 500 750 1,000 1,250 Feet  
0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum












File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

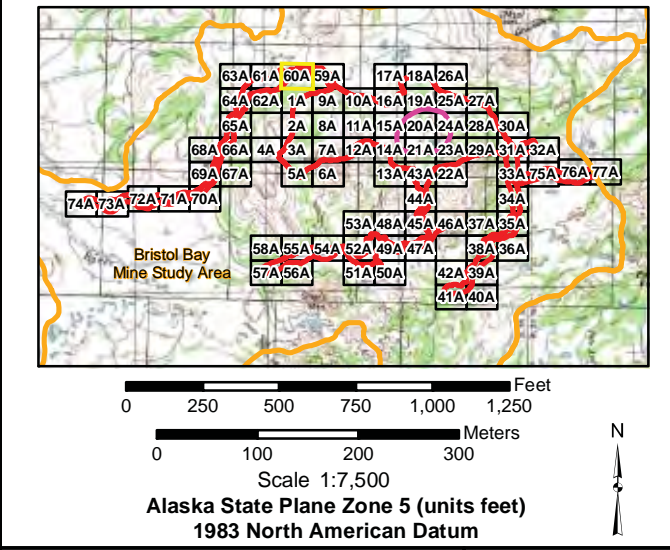




**Figure 14.1-5**  
**Tile 60A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

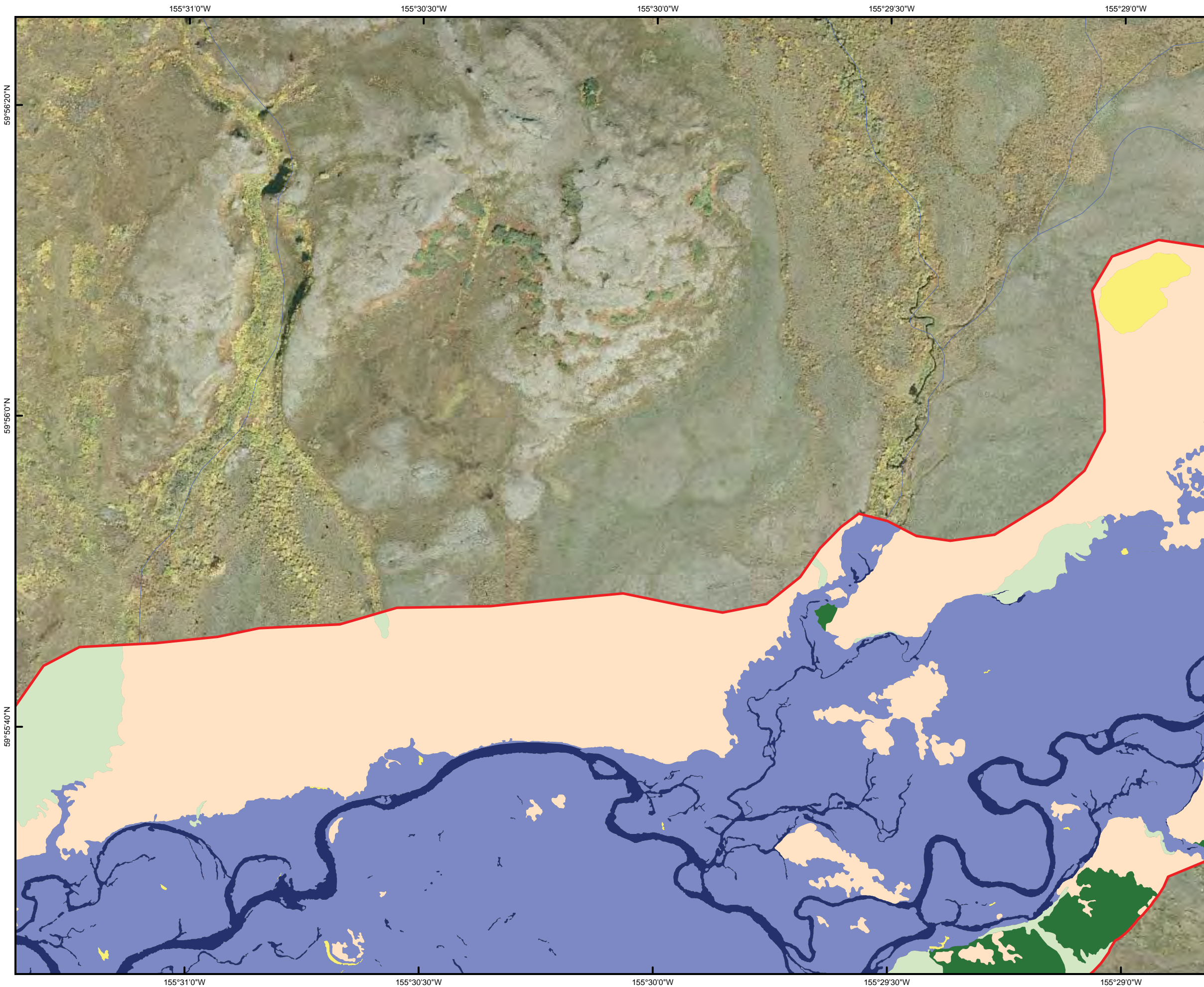
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe










File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

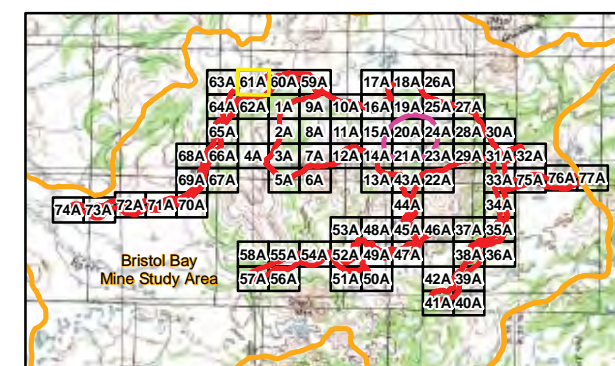




**Figure 14.1-5**  
**Tile 61A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

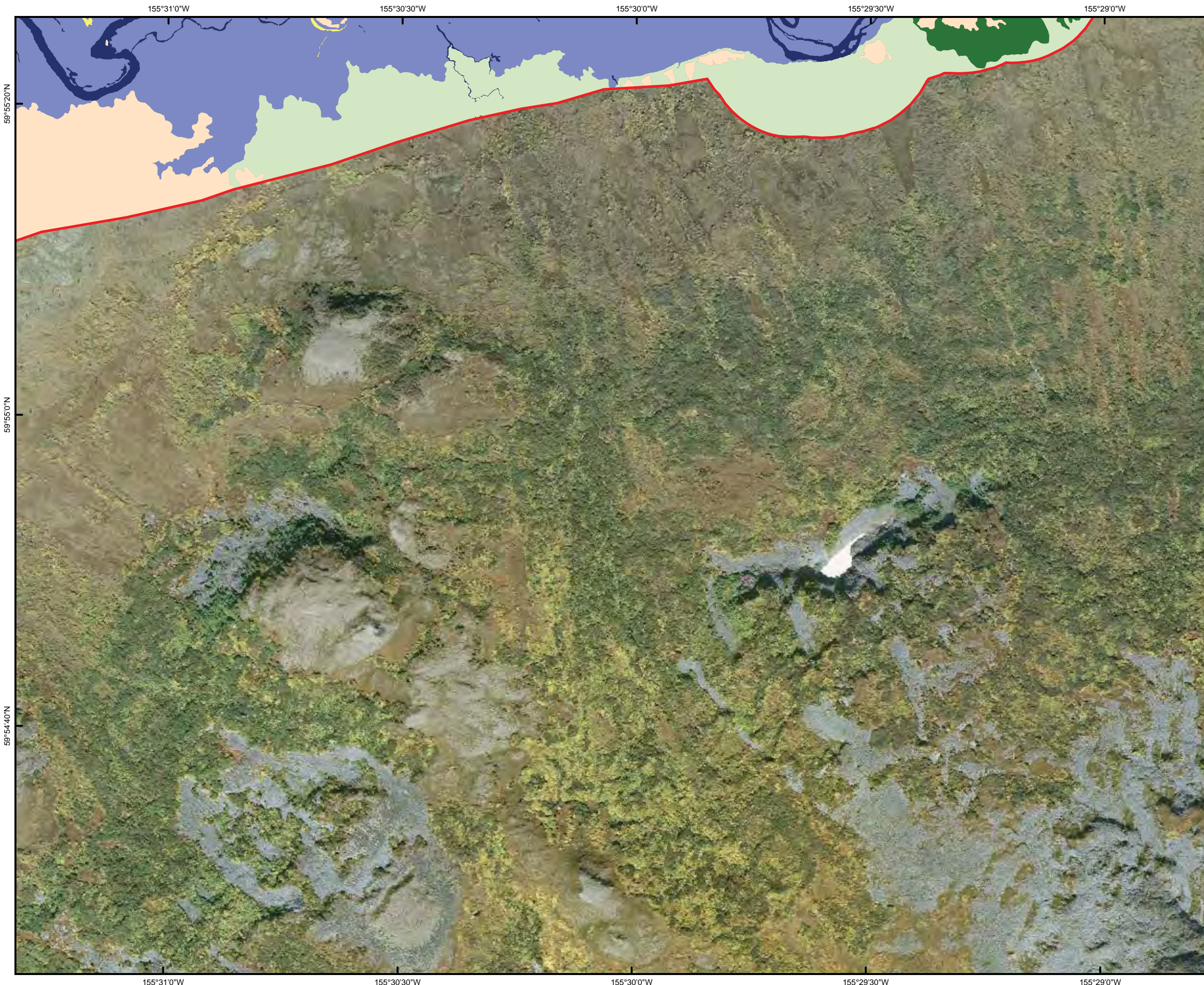
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

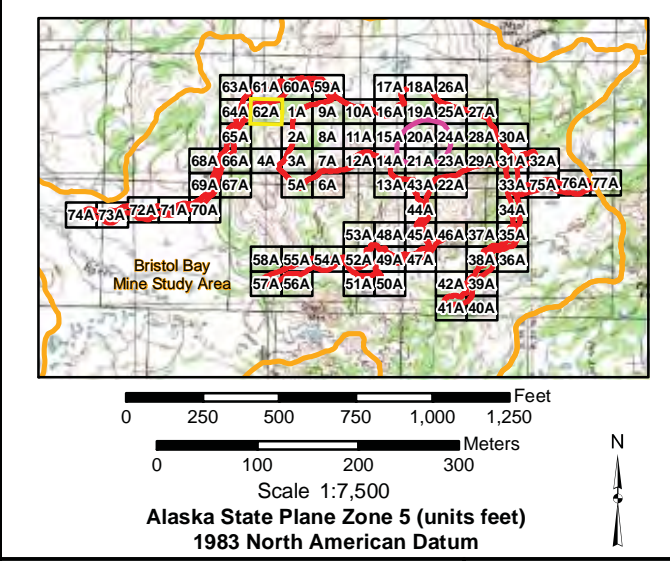




**Figure 14.1-5**  
**Tile 62A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

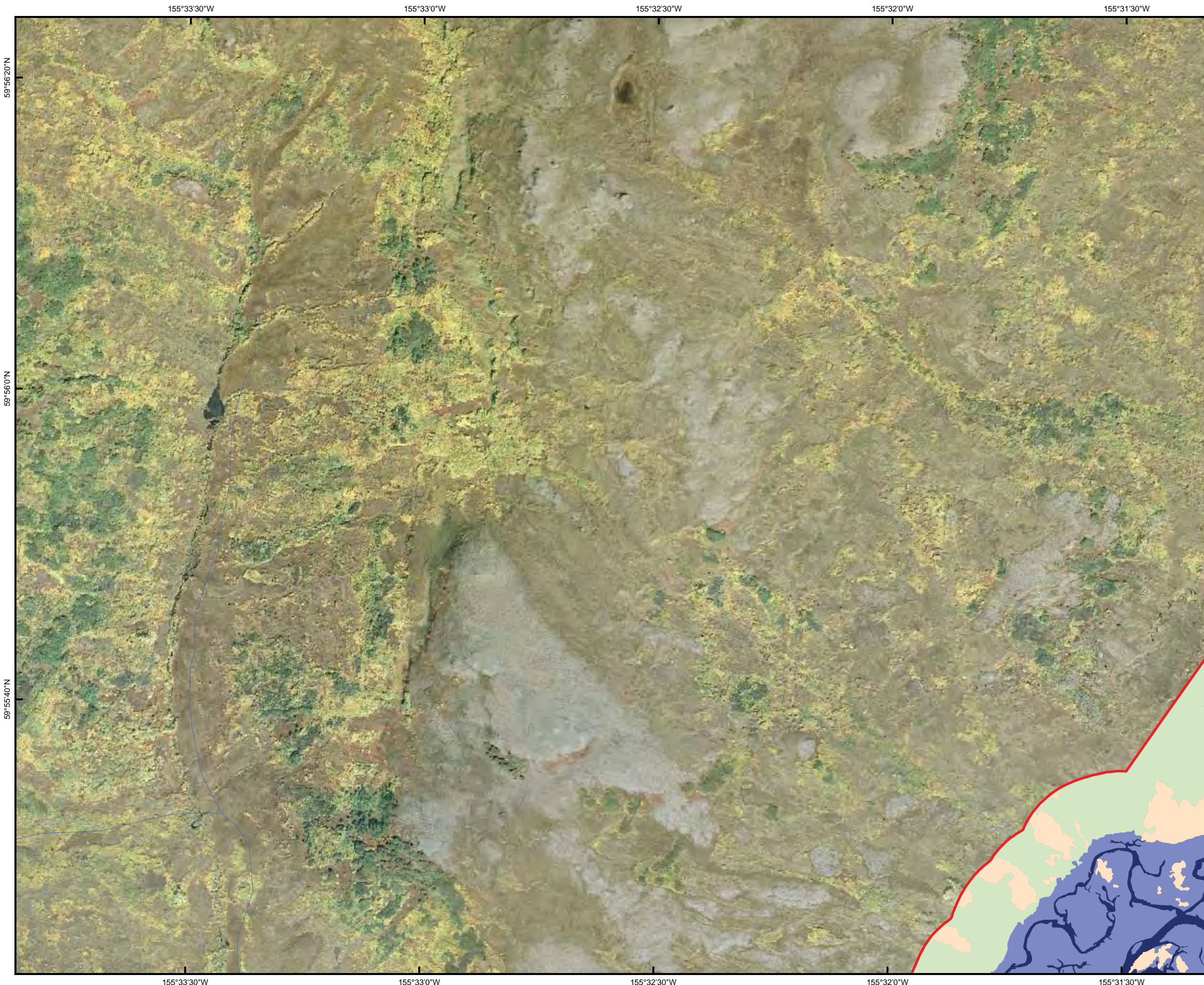
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

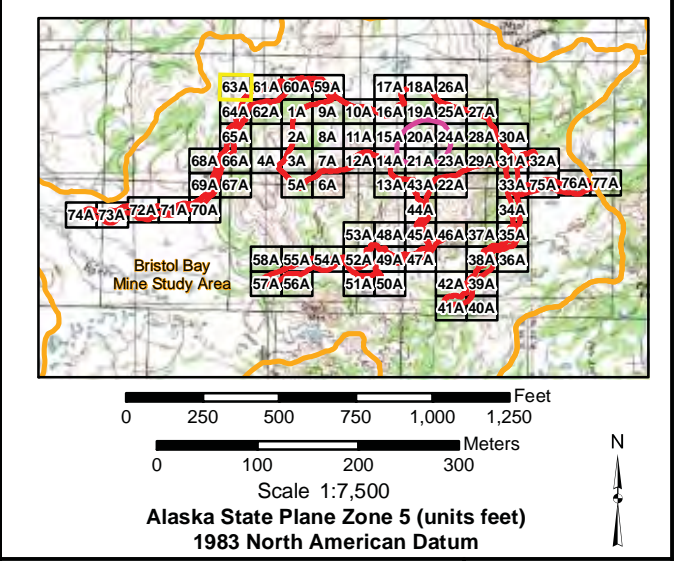




**Figure 14.1-5**  
**Tile 63A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

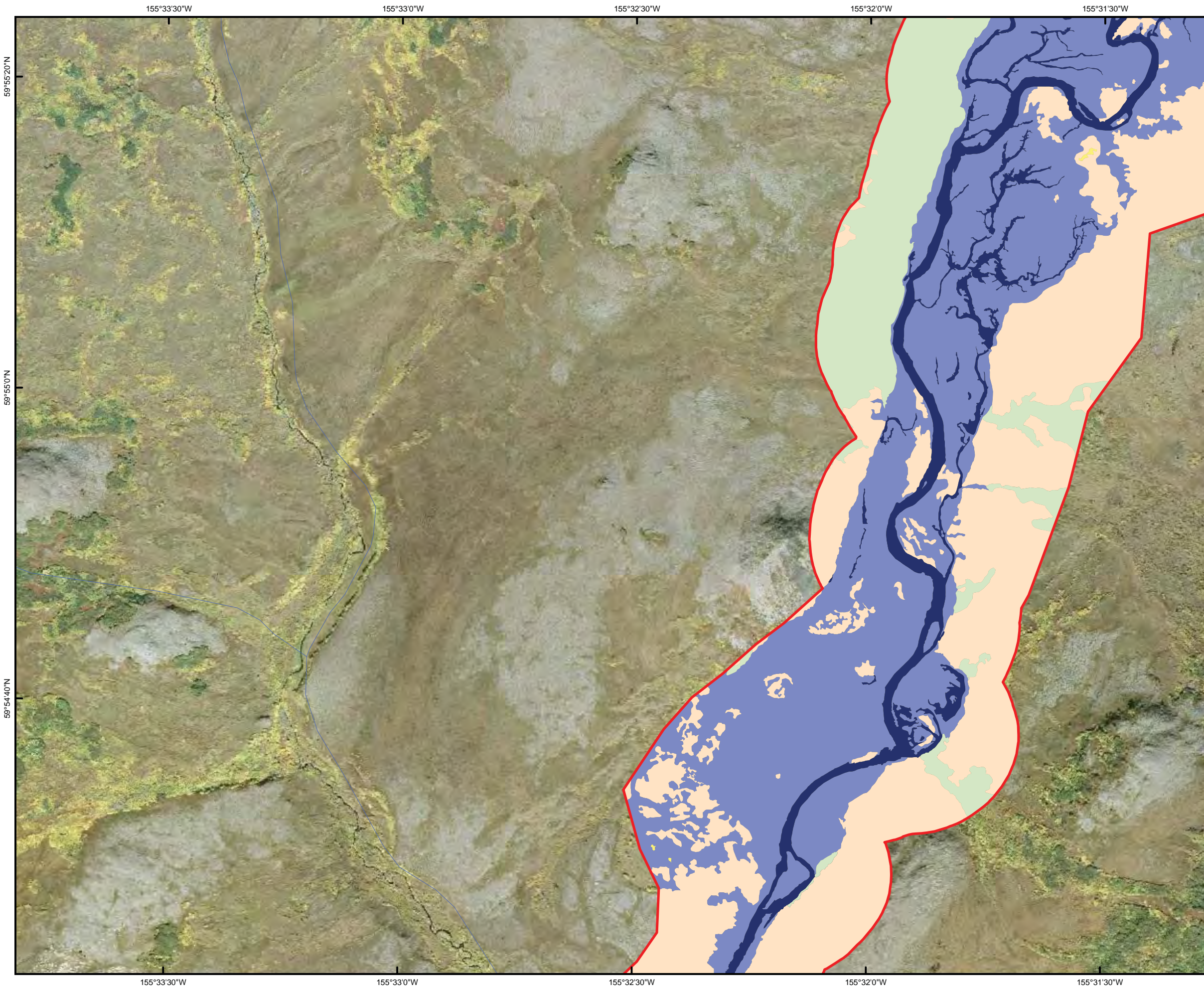
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

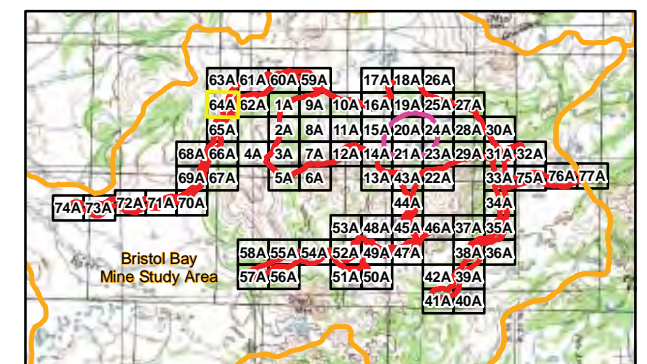




**Figure 14.1-5**  
**Tile 64A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

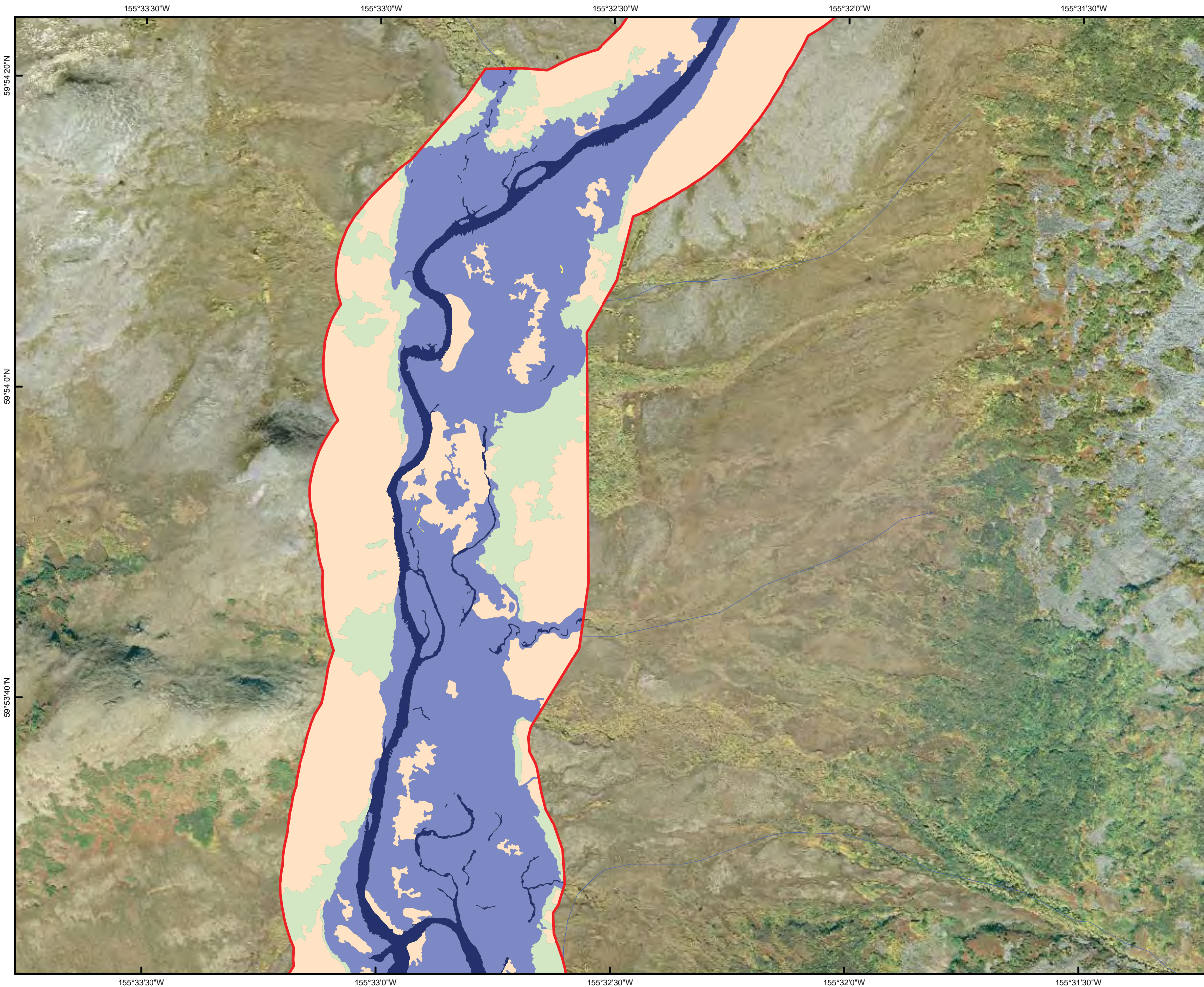
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3








Author: RDI-LS

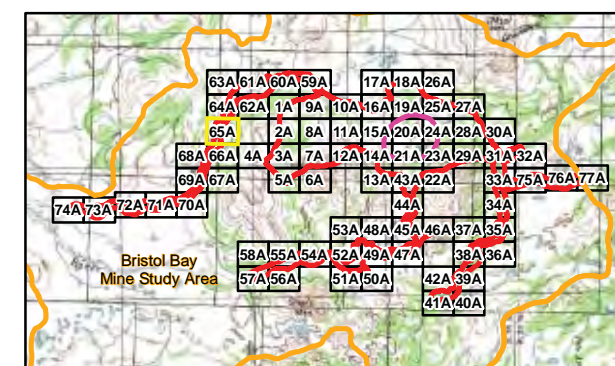




**Figure 14.1-5**  
**Tile 65A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum



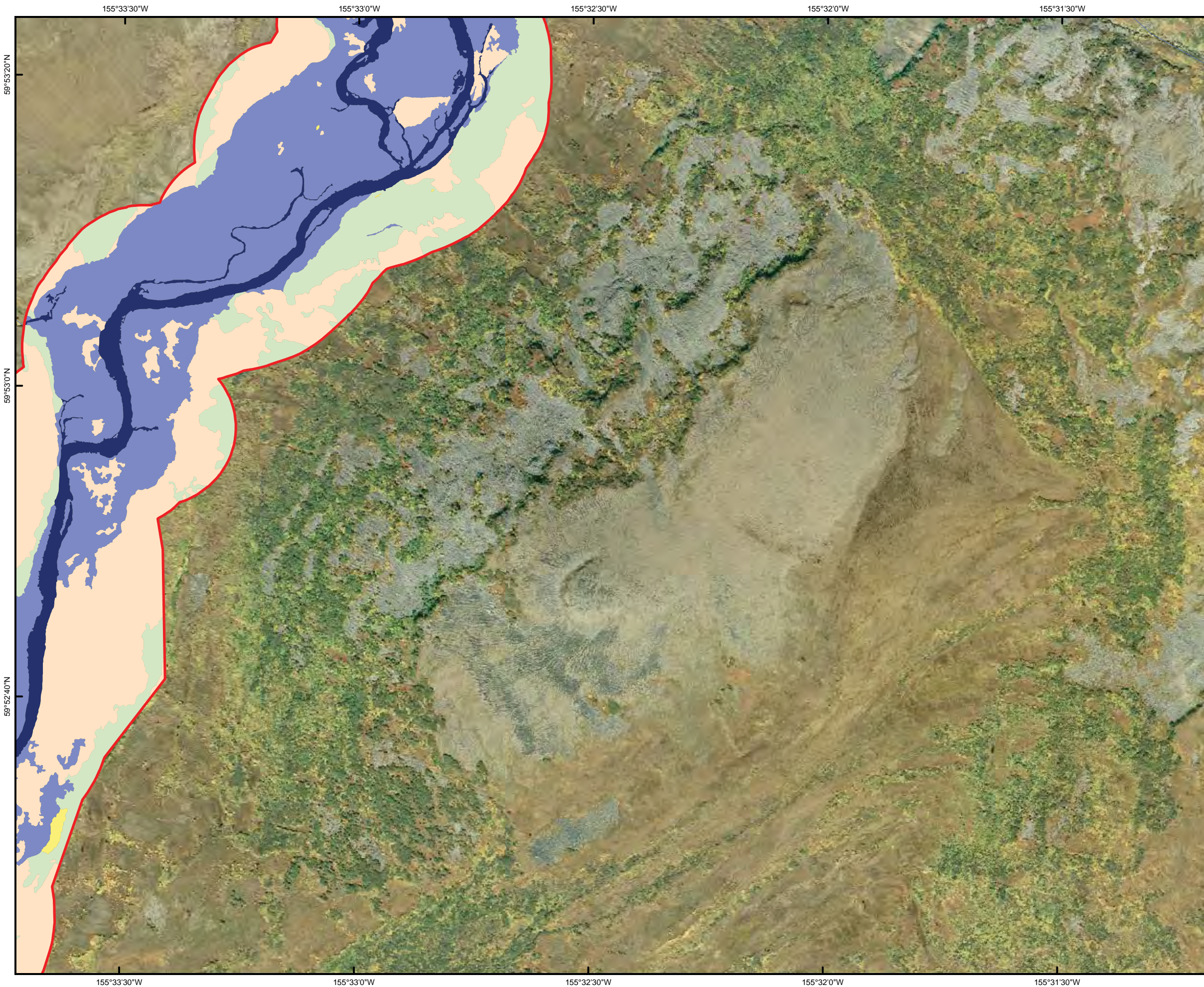
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

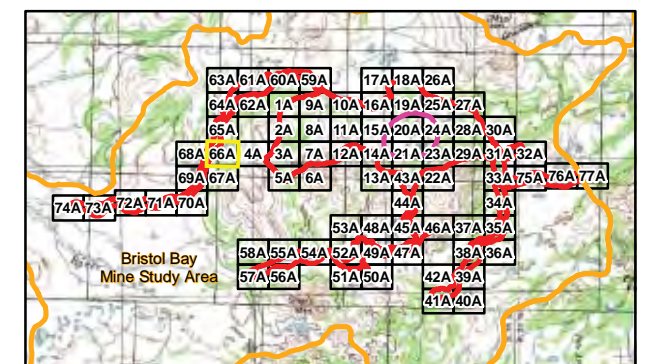




**Figure 14.1-5**  
**Tile 66A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

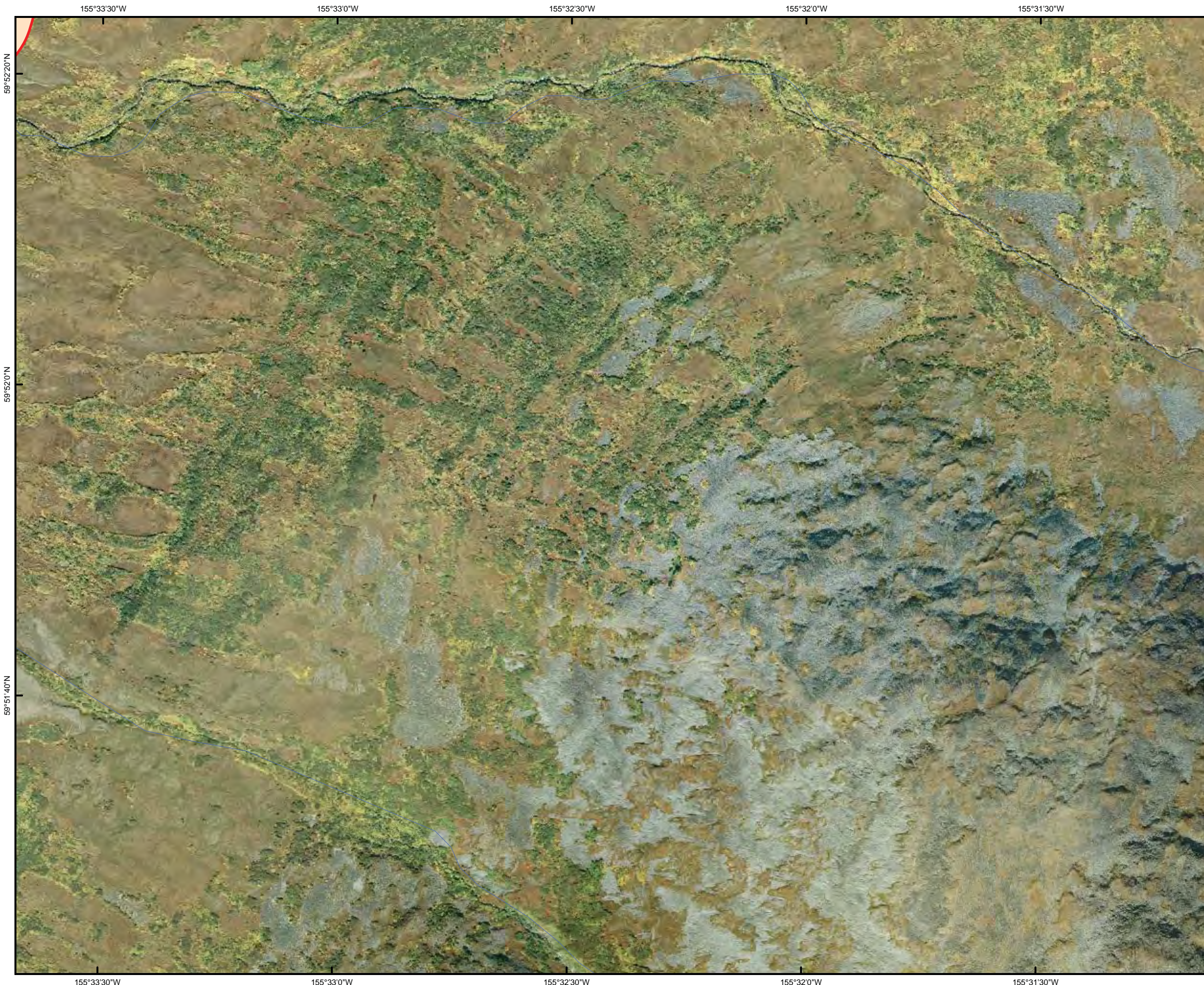
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3












Author: RDI-LS

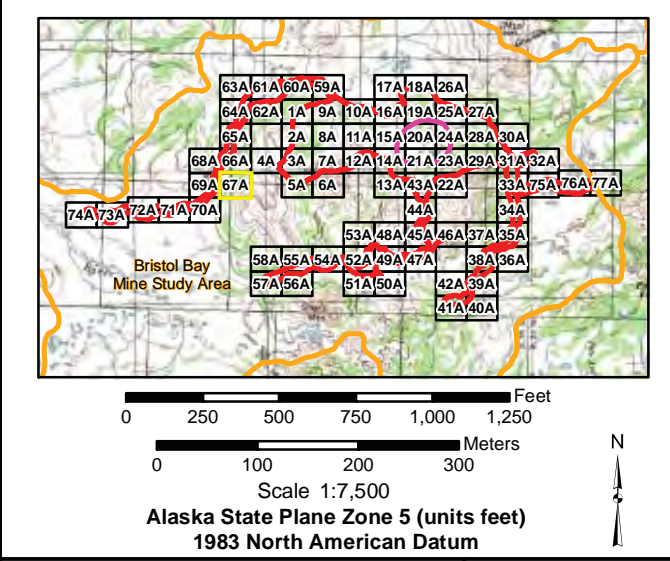




**Figure 14.1-5**  
**Tile 67A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

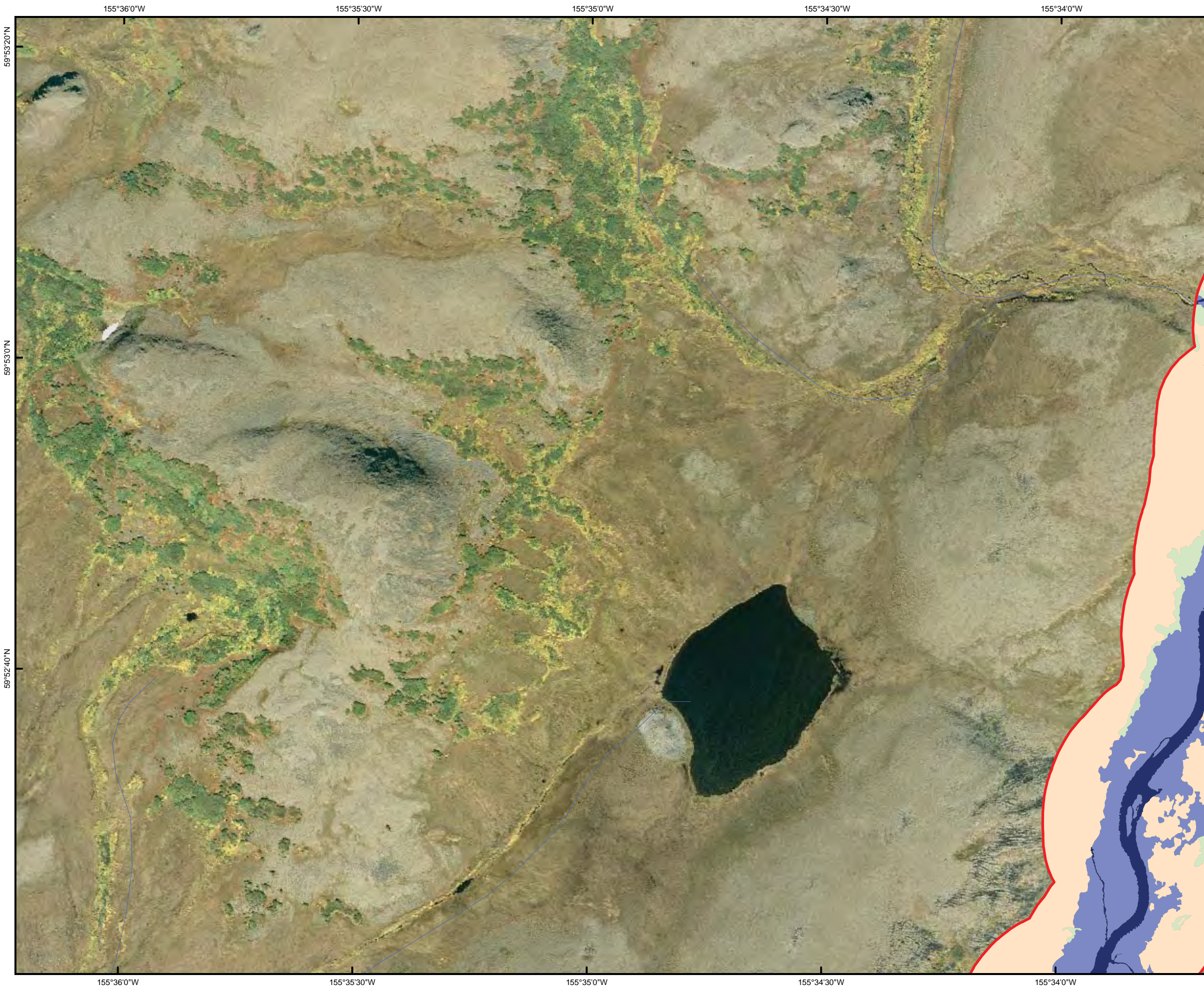
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

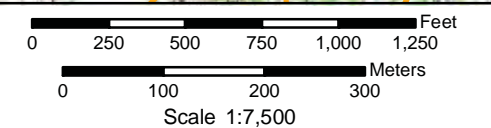
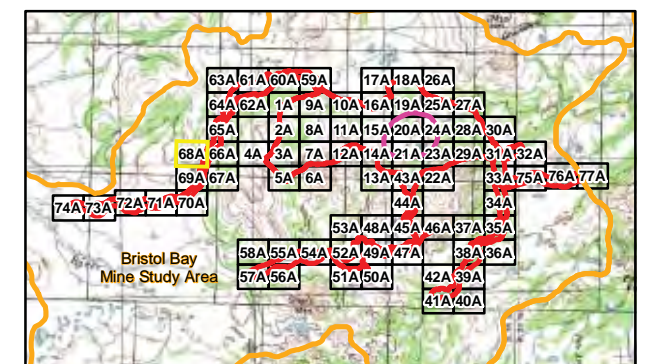




**Figure 14.1-5**  
**Tile 68A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

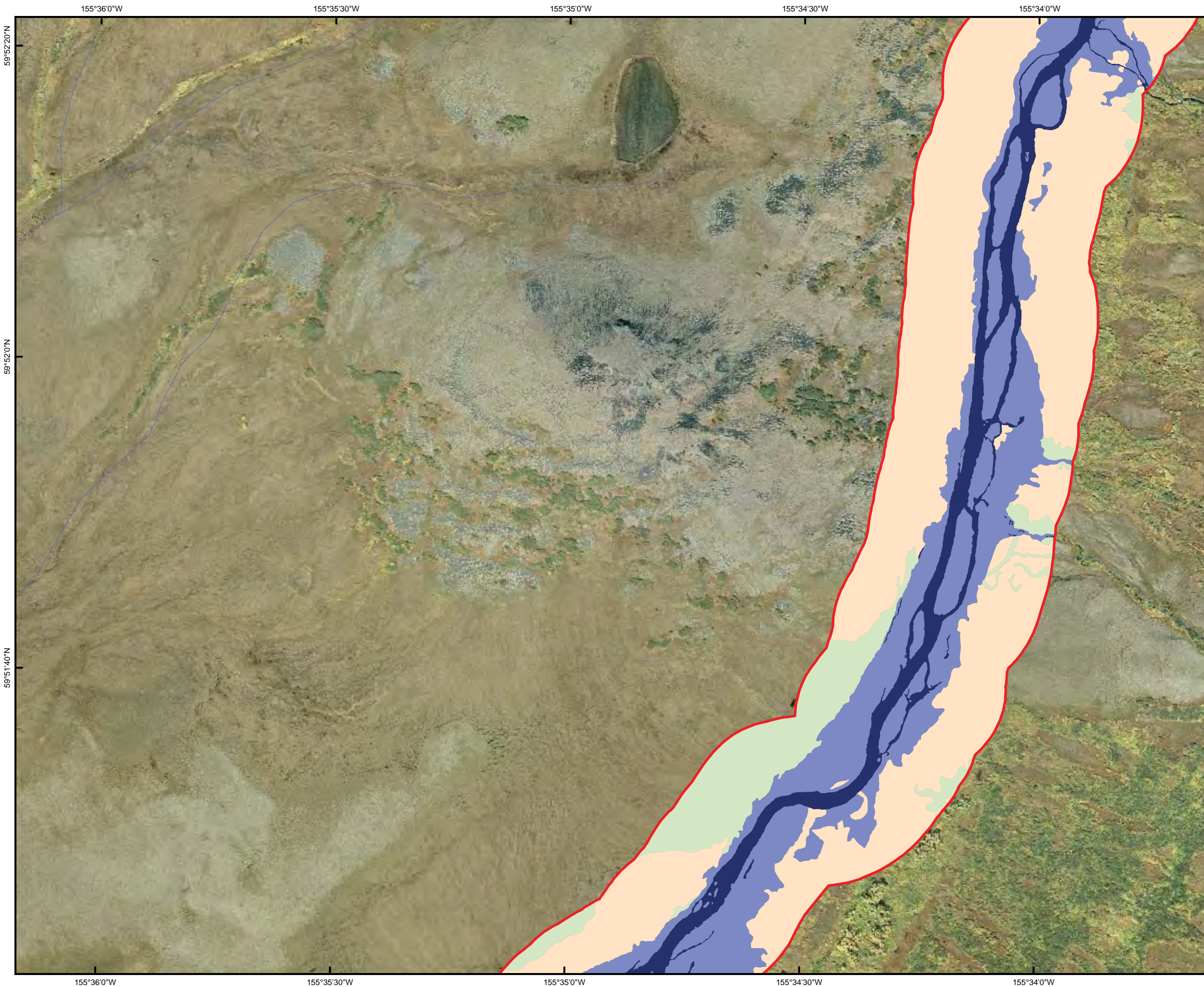
-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**












File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

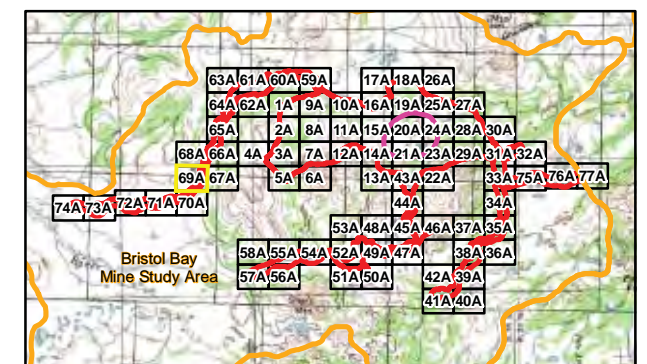




**Figure 14.1-5**  
**Tile 69A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

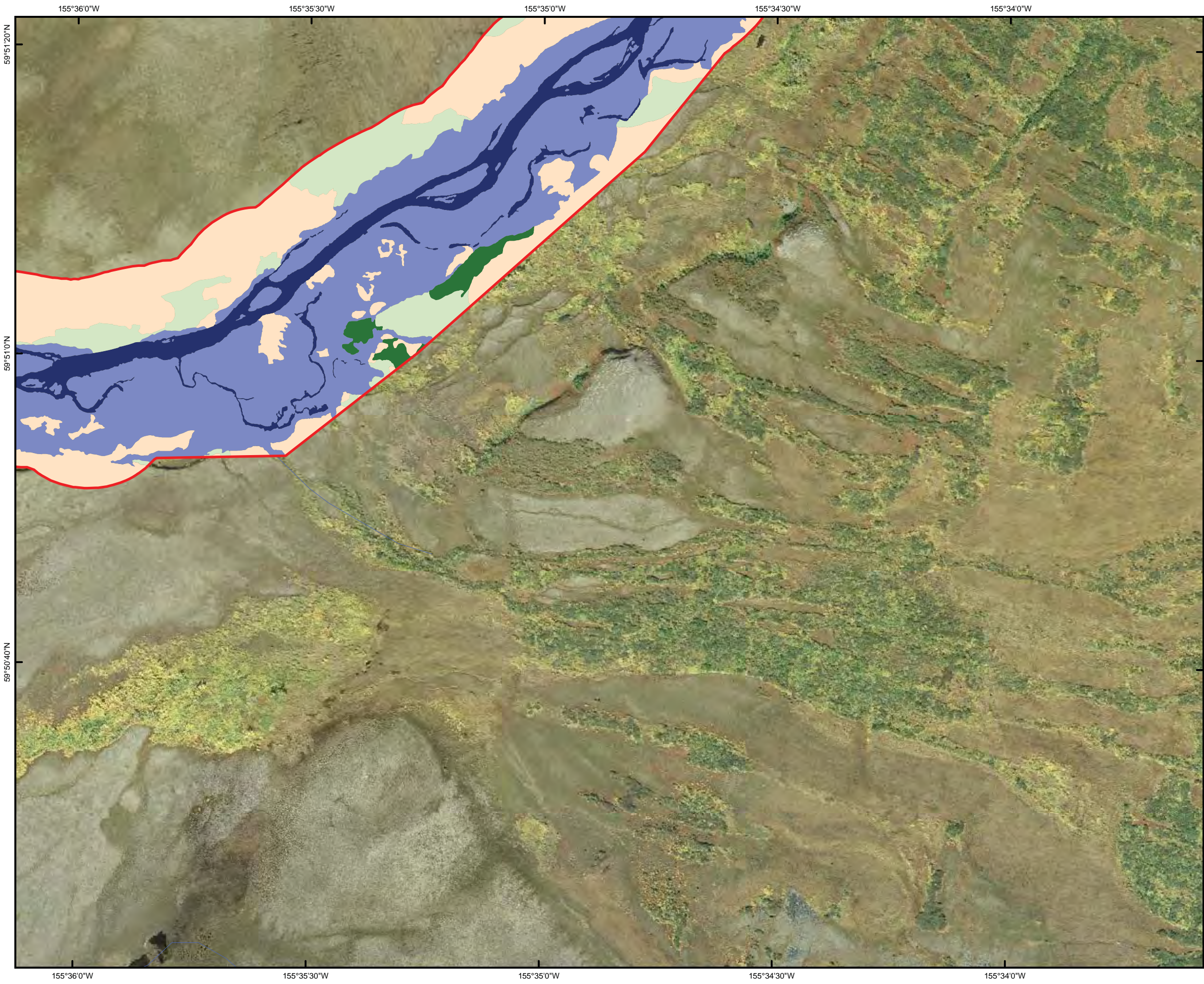
File: RDI\_3PP\_EBD\_HGM\_Tiled\_Fig14.1-5  
\_11X17L\_1of77\_D03.mxd

Date: May 5, 2011

Version: 3







Author: RDI-LS

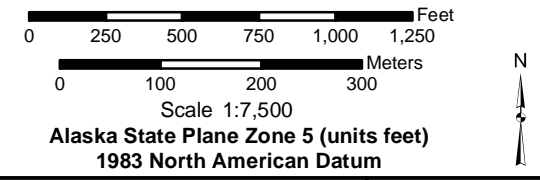
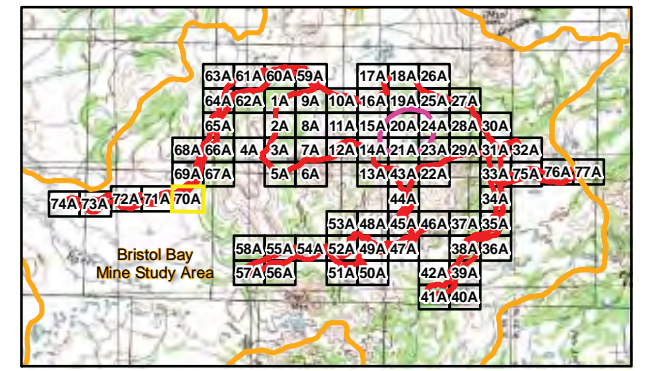




**Figure 14.1-5**  
**Tile 70A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

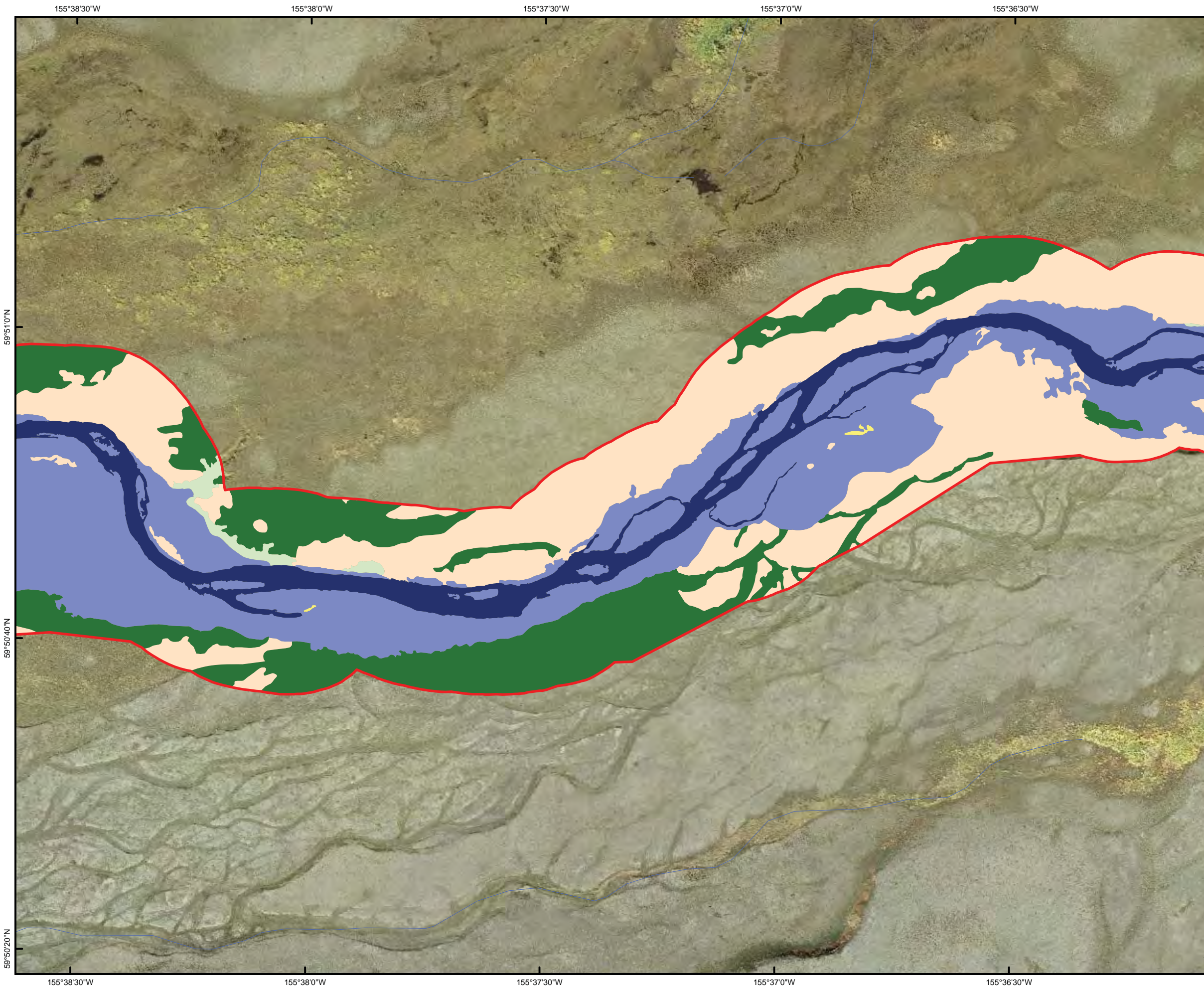
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

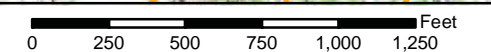
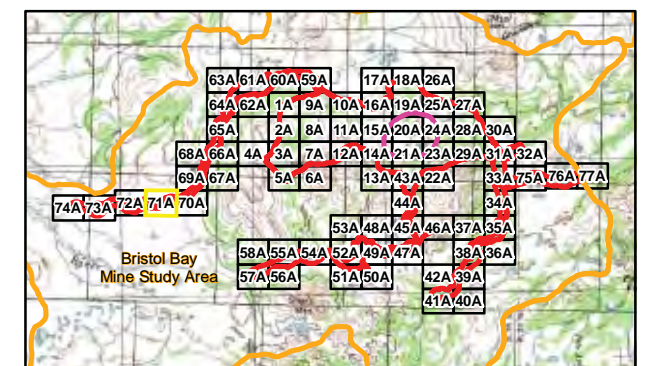




**Figure 14.1-5**  
**Tile 71A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe

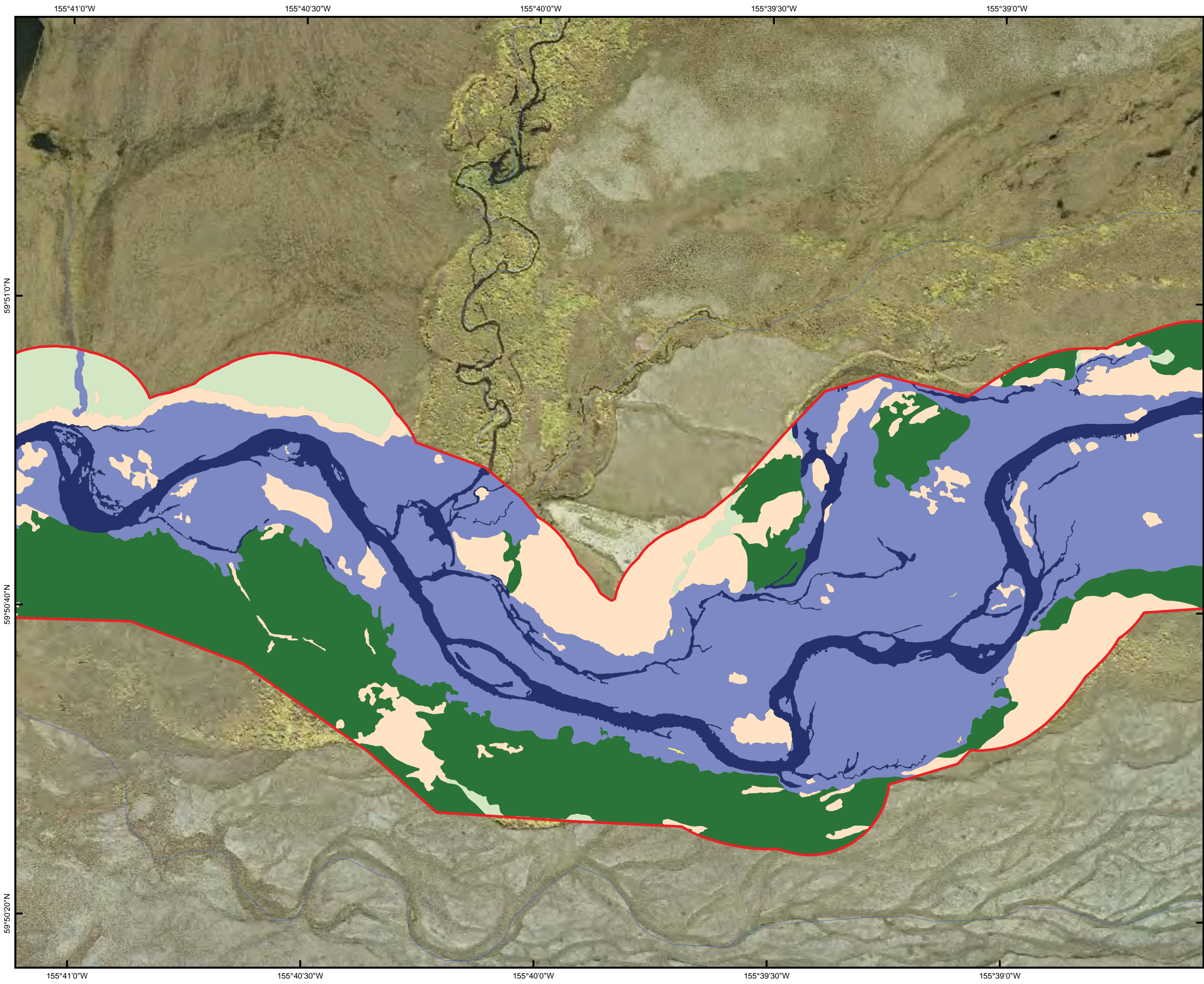


Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**











File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

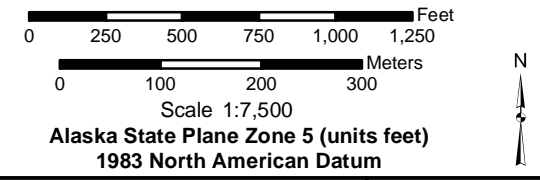
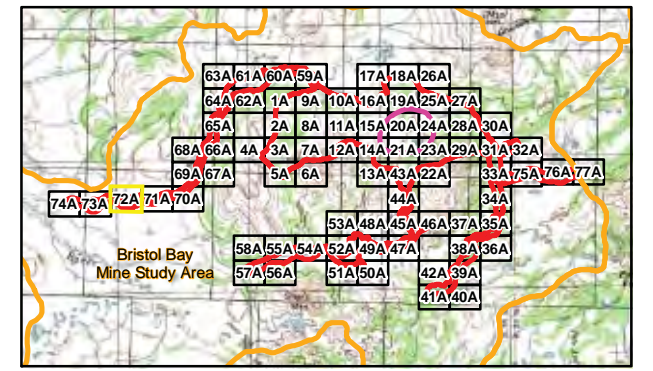




**Figure 14.1-5**  
**Tile 72A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

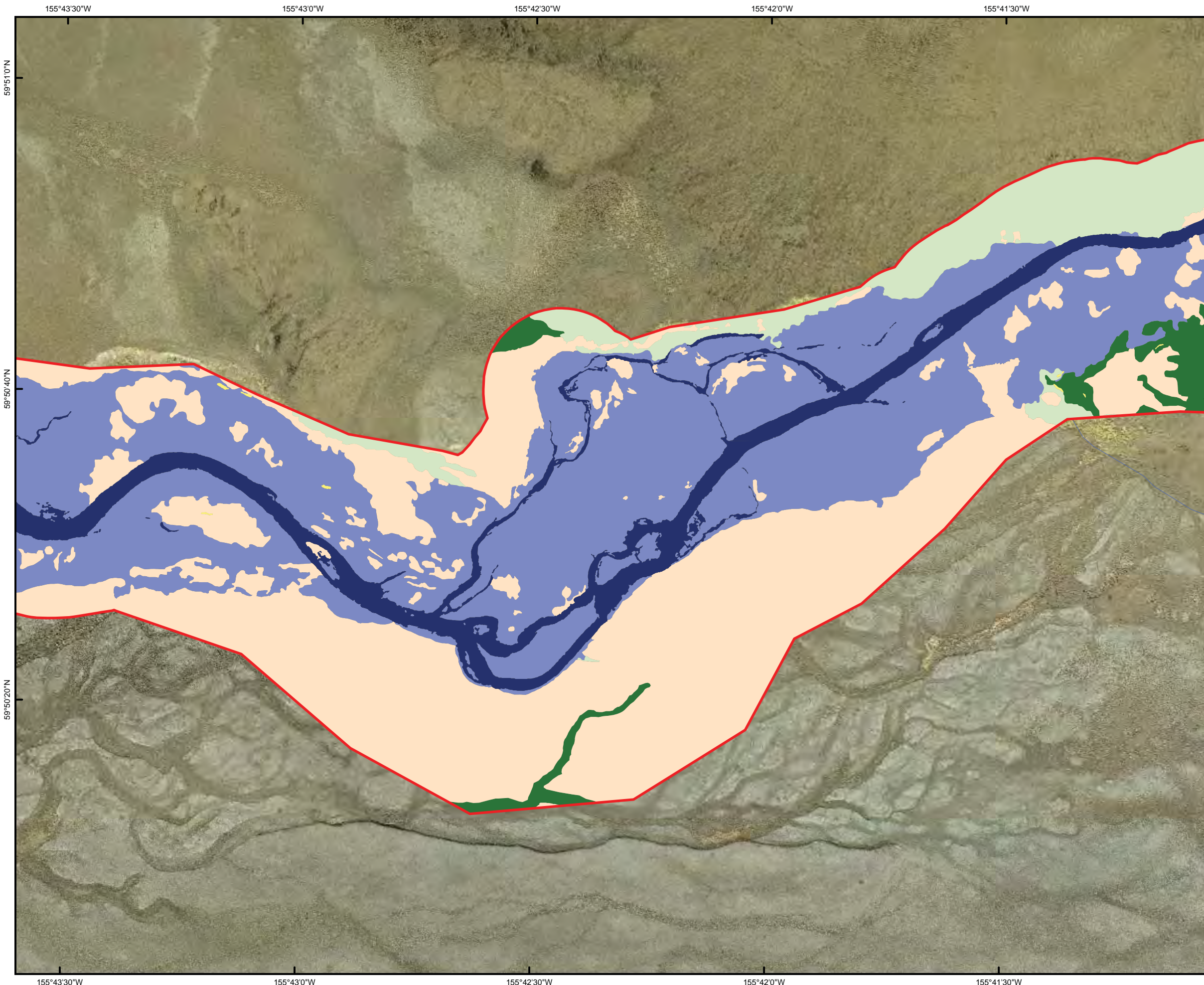
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

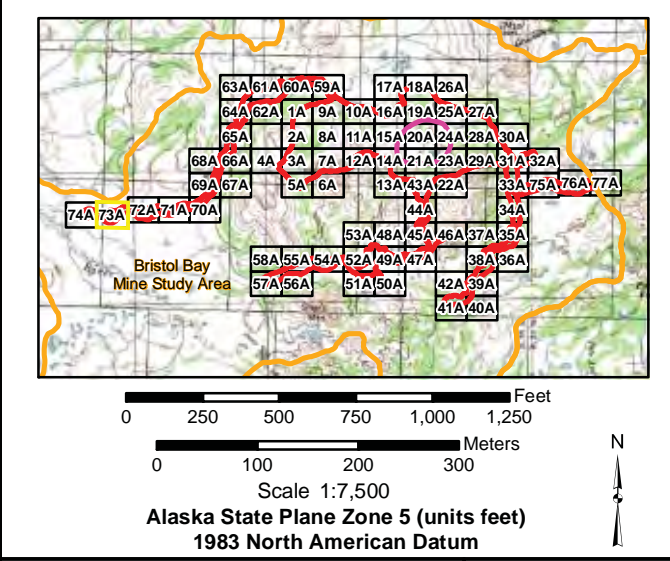




**Figure 14.1-5**  
**Tile 73A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

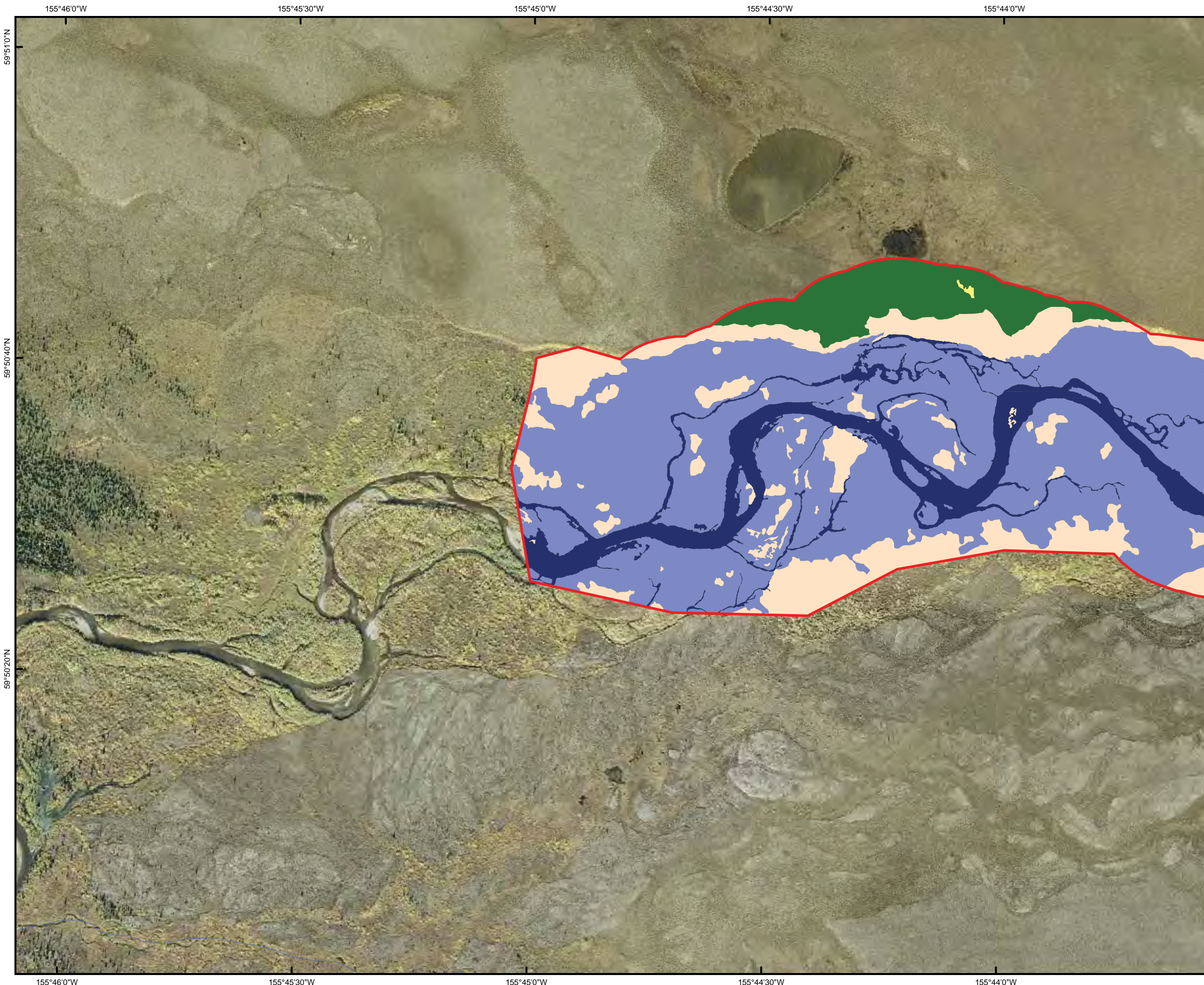
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

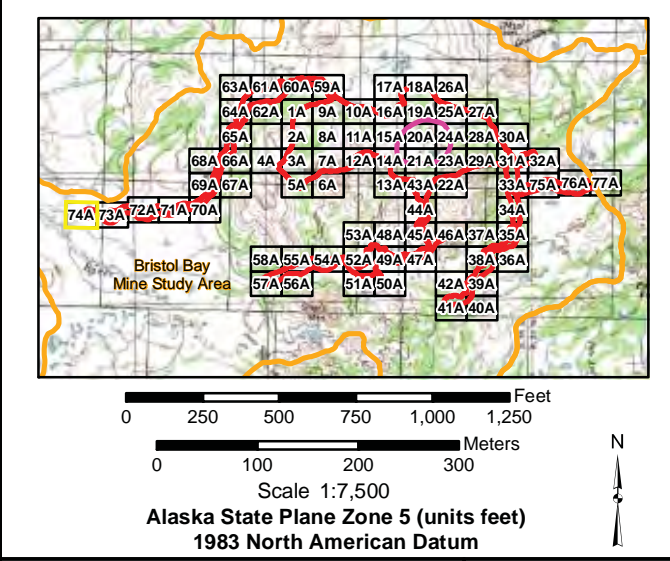




**Figure 14.1-5**  
**Tile 74A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

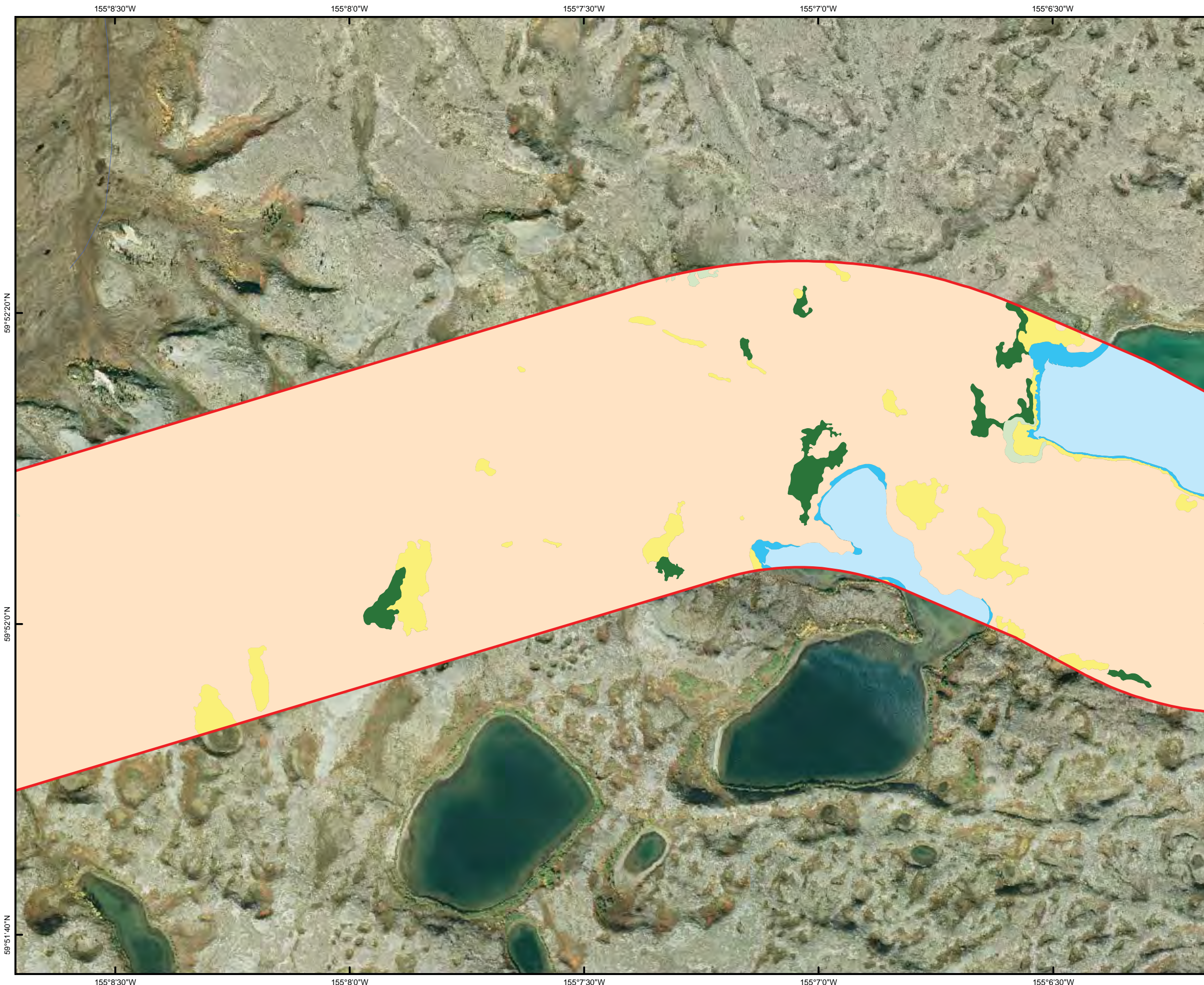
**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

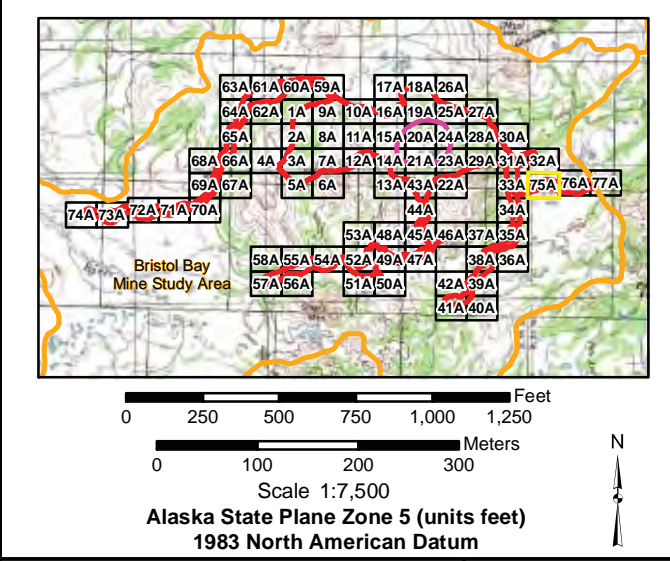




**Figure 14.1-5**  
**Tile 75A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification**
-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe






File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





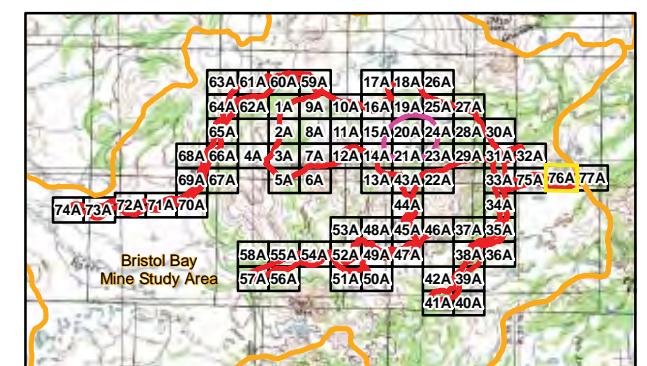
**Figure 14.1-5**  
**Tile 76A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location

**Hydrogeomorphic (HGM) Classification**

-  N/A - Non-wetlands
-  Slope
-  Flat
-  Depressional
-  Riverine
-  Riverine Channel
-  Lacustrine
-  Lacustrine Fringe



0 250 500 750 1,000 1,250 Feet

0 100 200 300 Meters

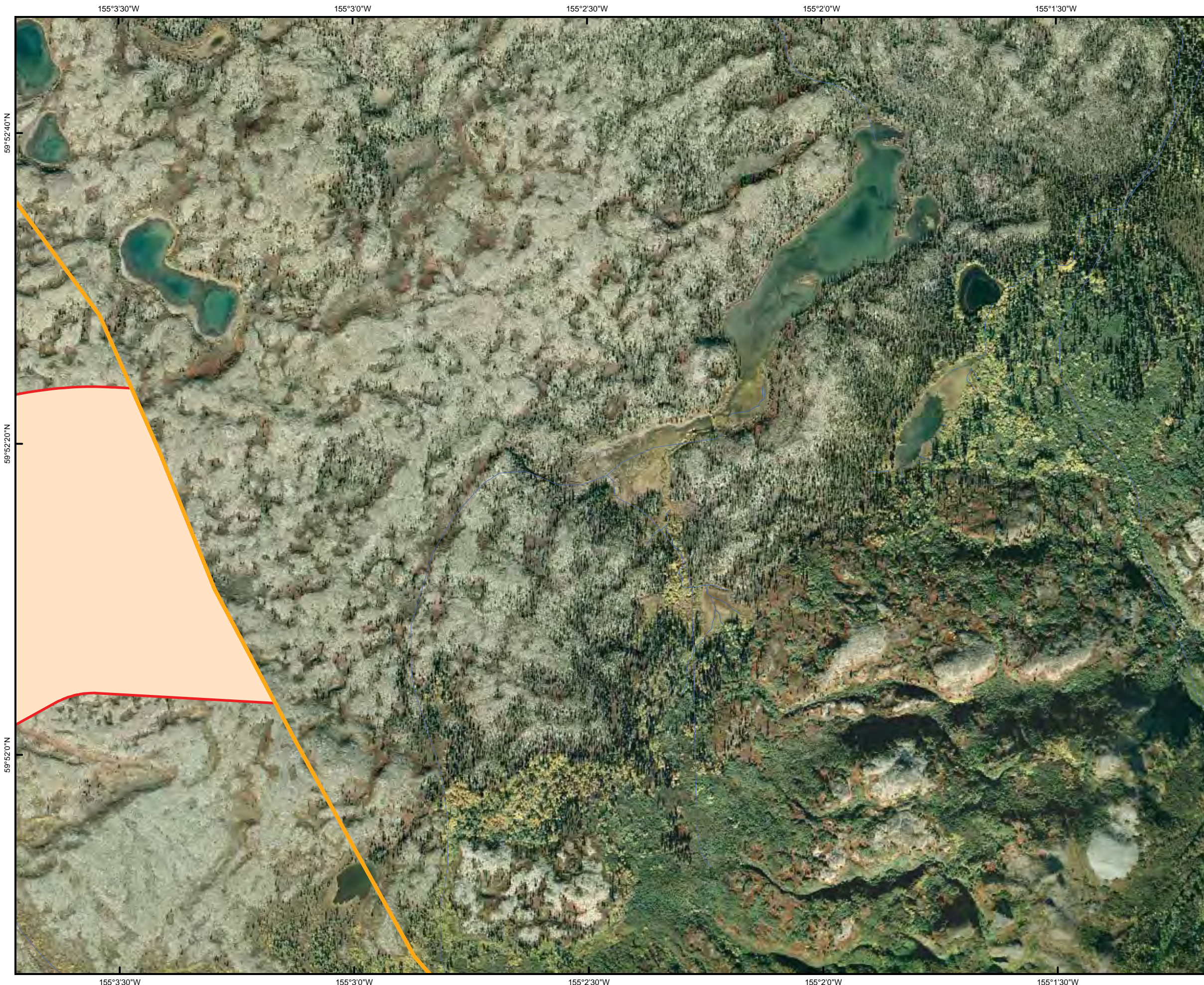
Scale 1:7,500

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**














File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS

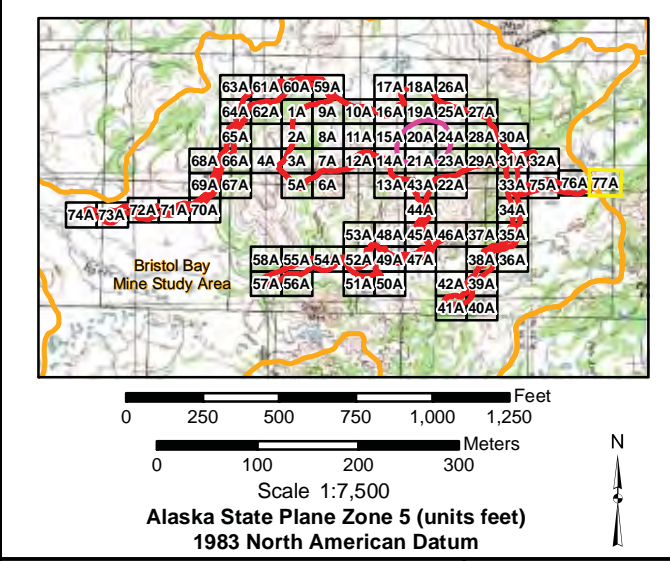




**Figure 14.1-5**  
**Tile 77A**  
**Hydrogeomorphic Classification**  
**Mapping, Mine Study Area**  
**2004-2008**

**Legend**

-  Mine Mapping Area
-  Mine Study Area
-  General Deposit Location
- Hydrogeomorphic (HGM) Classification
  -  N/A - Non-wetlands
  -  Slope
  -  Flat
  -  Depressional
  -  Riverine
  -  Riverine Channel
  -  Lacustrine
  -  Lacustrine Fringe



File: RDI_3PP_EBD_HGM_Tiled_Fig14.1-5_11X17L_1of77_D03.mxd	Date: May 5, 2011
Version: 3	Author: RDI-LS





**Figure 14.2-1**  
**Overview**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Grid for Detailed Mapping Tiles
- Bristol Bay/Cook Inlet Drainages Boundary

- Communities

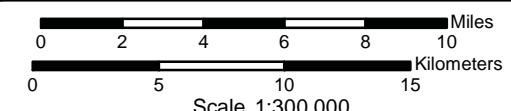
**Wetland Determination Plot Type (Count)**

- Wetland (200)
- Transitional Wetland (20)
- Non-wetland (270)
- Transitional Non-wetland (37)

**Other Plot/Photo Point Type (Count)**

- Functional Assessment (71)
- Stream Crossing (101)
- Waterbody (37)
- Representative Upland (197)
- Representative Wetland (192)

Note: For detailed mapping see the individual tiles in this figure series.  
Tiles 11C-13C are presented in the mapping for the Cook Inlet Study Area (EBD Chapter 39).



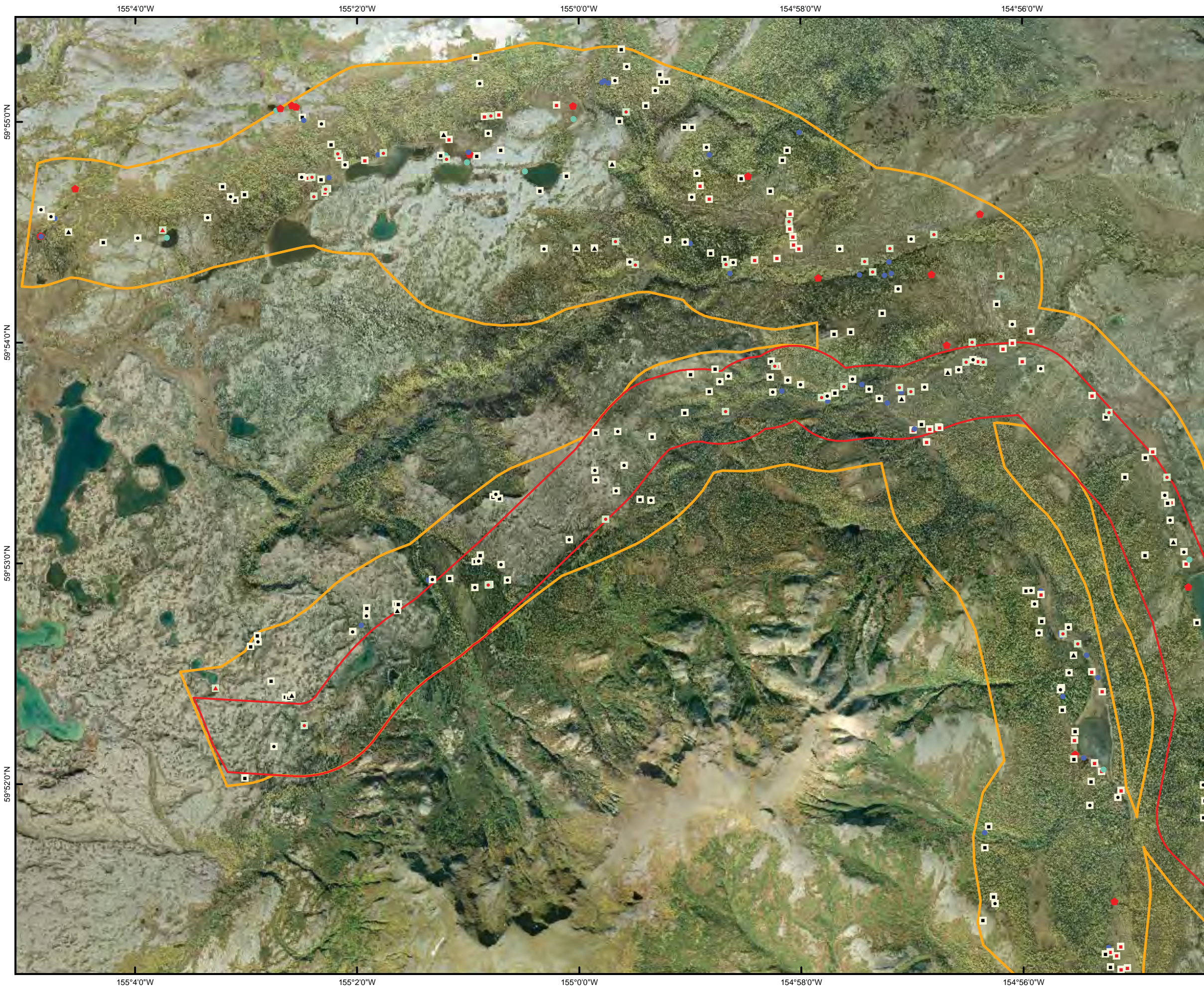
File: RDI\_HDR\_EBD\_Fig14.2-1\_Fldplots\_Overview\_11X17L\_1of1\_D03.mxd

Date: August 9, 2011

Version: 3

Author: RDI-LS

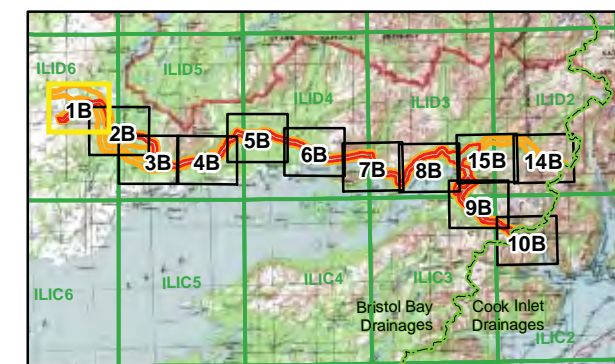




**Figure 14.2-1**  
**Tile 1B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetland Determination Plot Type**
  - Wetland
  - Transitional Wetland
  - Non-wetland
  - Transitional Non-wetland
- Other Plot/Photo Point Type**
  - Functional Assessment
  - Stream Crossing
  - Waterbody
  - Representative Upland
  - Representative Wetland



Scale 1:31,680  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

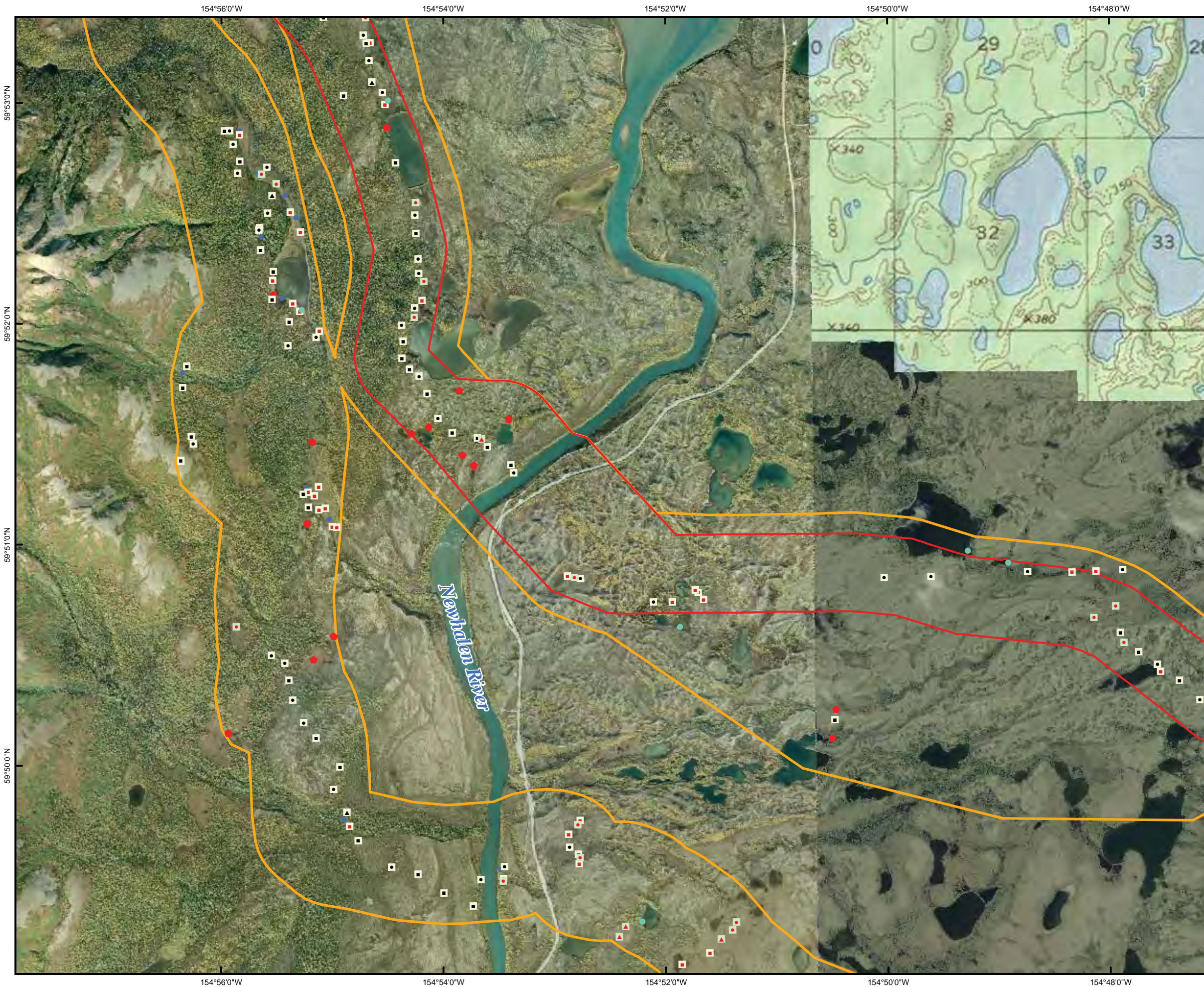
File: RDI\_HDR\_EBD\_Fig14.2-1\_Fldplots\_Tiled\_11X17L\_1of12\_D03.mxd

Date: July 8, 2011

Version: 3

Author: RDI- LS

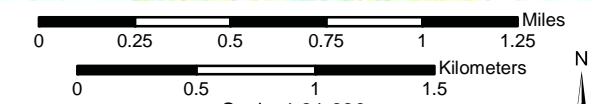
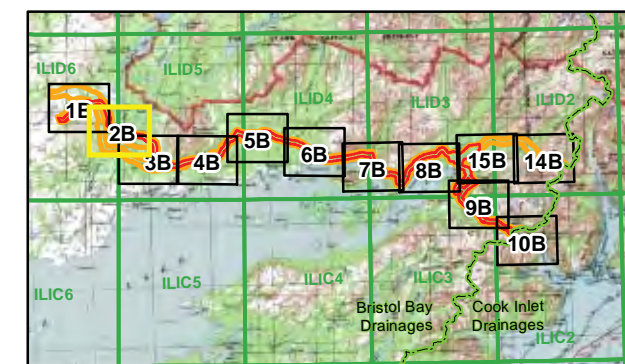




**Figure 14.2-1**  
**Tile 2B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetland Determination Plot Type
  - Wetland
  - Transitional Wetland
  - Non-wetland
  - Transitional Non-wetland
- Other Plot/Photo Point Type
  - Functional Assessment
  - Stream Crossing
  - Waterbody
  - Representative Upland
  - Representative Wetland



Scale 1:31,680  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

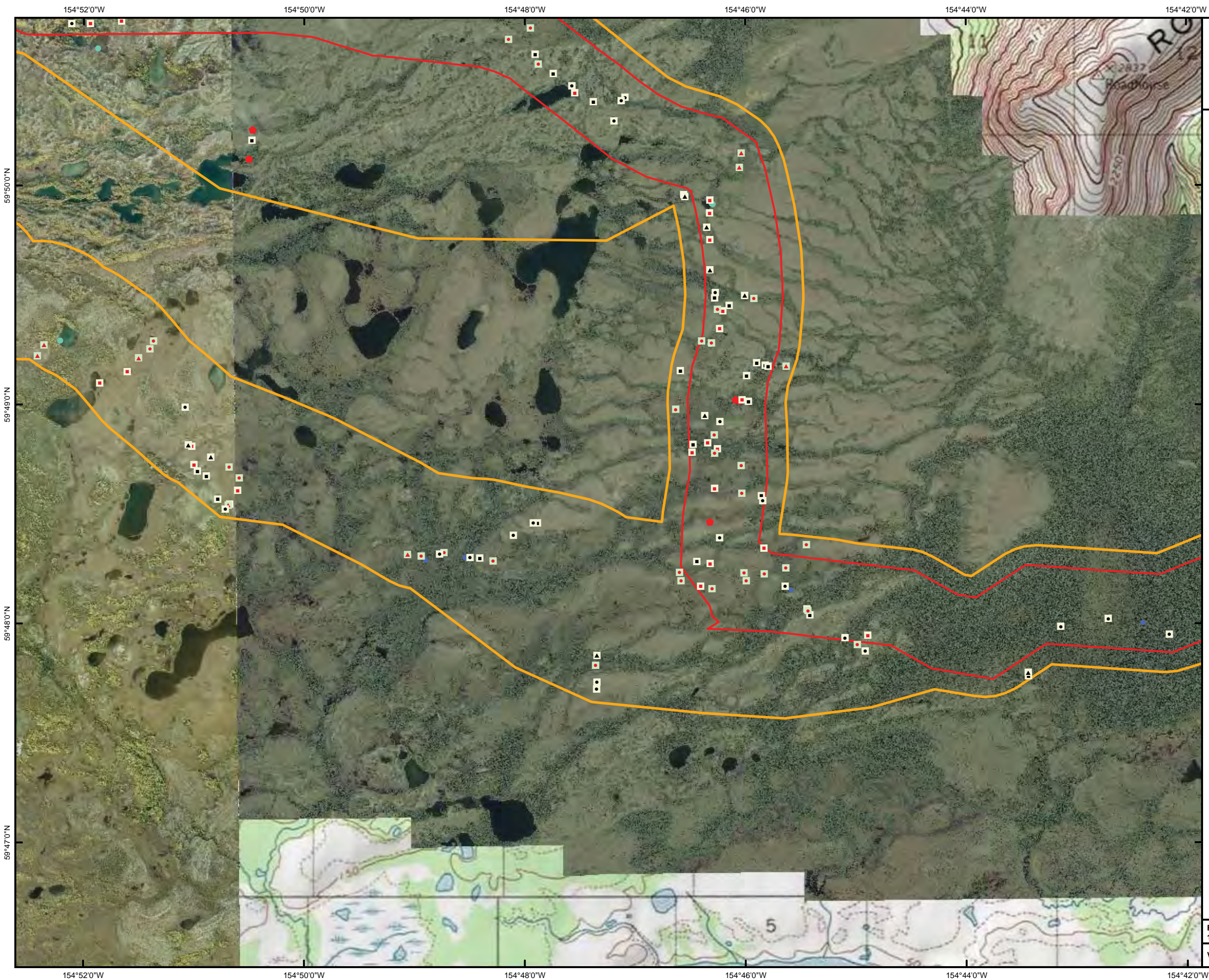
File: RDI\_HDR\_EBD\_Fig14.2-1\_Fldplots\_Tiled\_11X17L\_1of12\_D03.mxd

Date: July 8, 2011

Version: 3

Author: RDI- LS

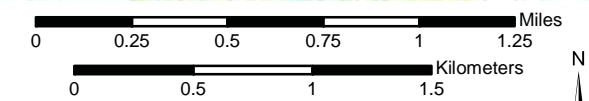
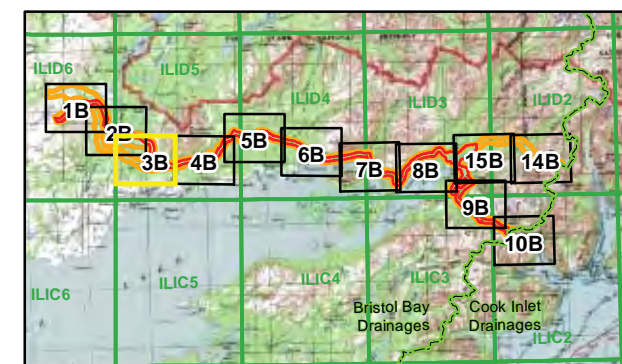




**Figure 14.2-1**  
**Tile 3B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetland Determination Plot Type**
  - Wetland
  - Transitional Wetland
  - Non-wetland
  - Transitional Non-wetland
- Other Plot/Photo Point Type**
  - Functional Assessment
  - Stream Crossing
  - Waterbody
  - Representative Upland
  - Representative Wetland



Scale 1:31,680  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

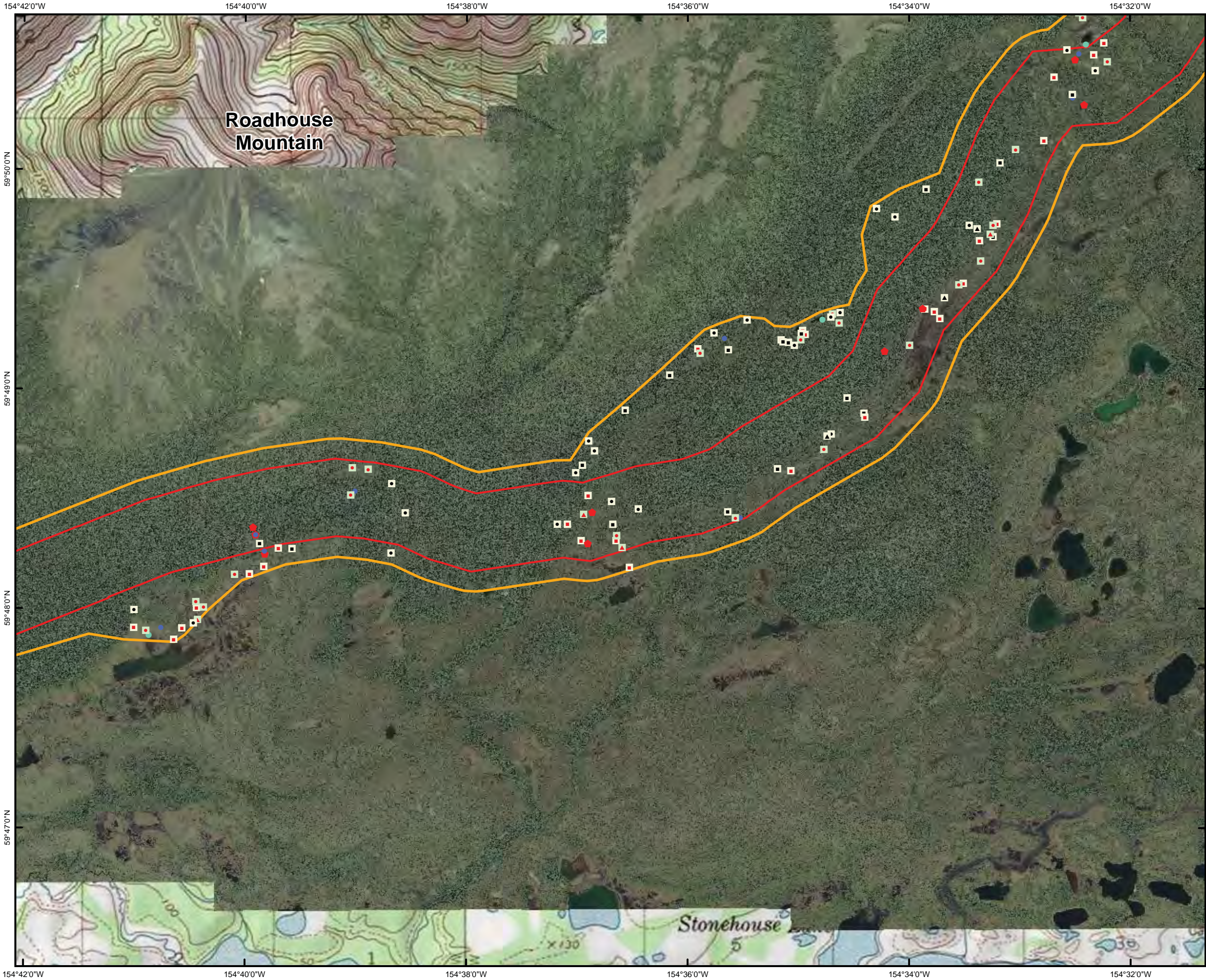
File: RDI\_HDR\_EBD\_Fig14.2-1\_Fldplots\_Tiled\_11X17L\_1of12\_D03.mxd

Date: July 8, 2011

Version: 3

Author: RDI- LS

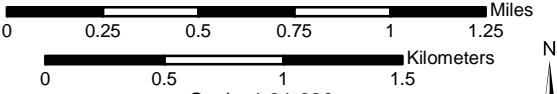
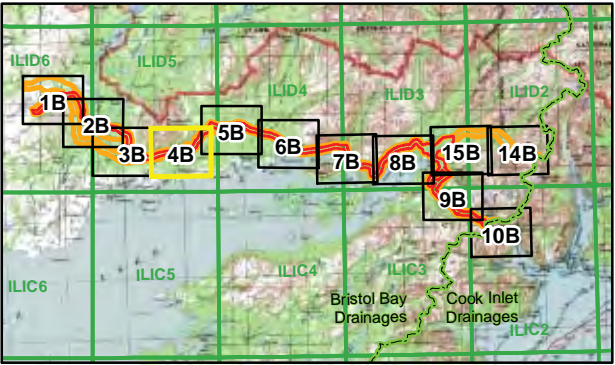




**Figure 14.2-1**  
**Tile 4B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

**Legend**

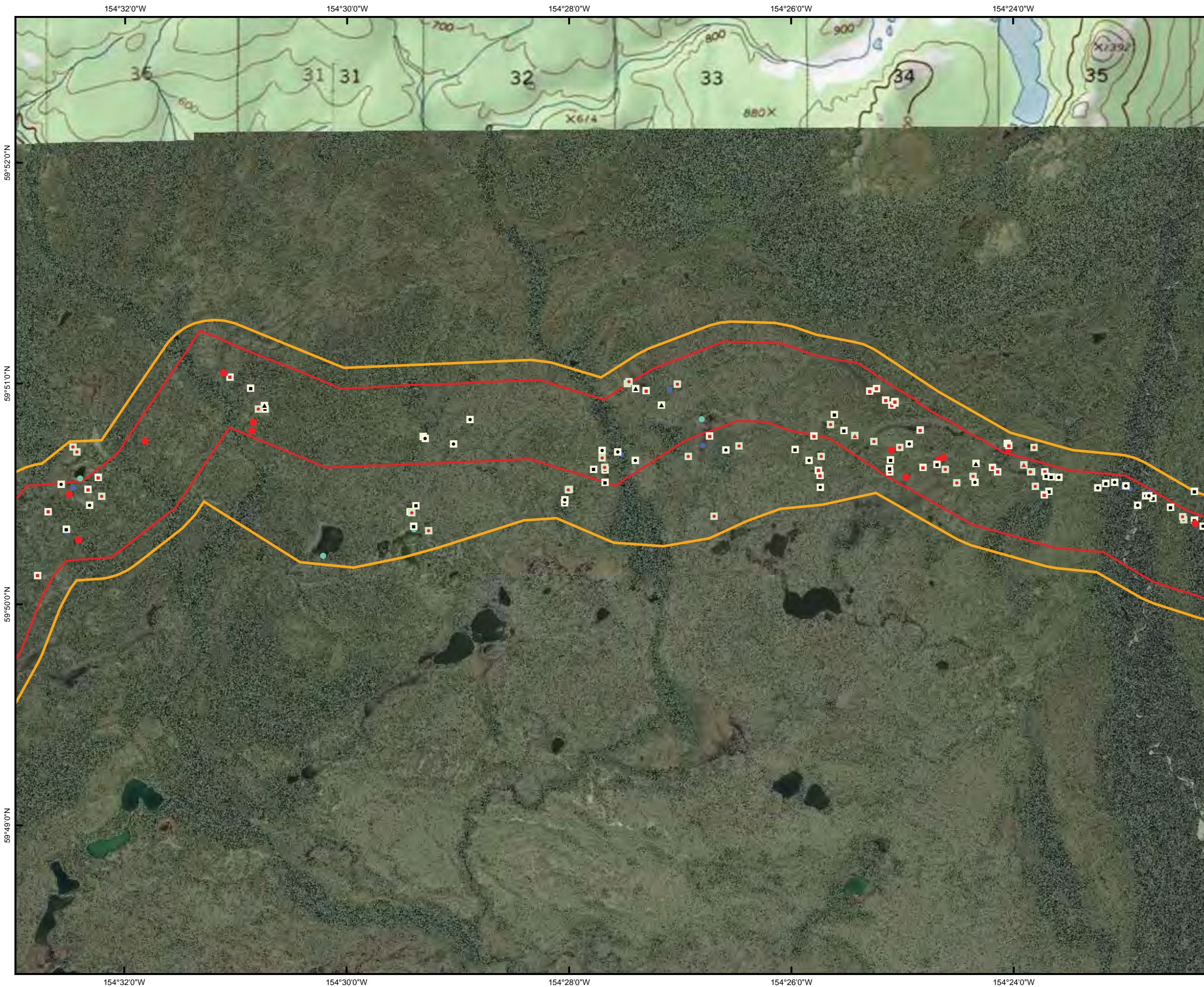
- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetland Determination Plot Type**
  - Wetland
  - Transitional Wetland
  - Non-wetland
  - Transitional Non-wetland
- Other Plot/Photo Point Type**
  - Functional Assessment
  - Stream Crossing
  - Waterbody
  - Representative Upland
  - Representative Wetland



Scale 1:31,680  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_HDR_EBD_Fig14.2-1_Fldplots_Tiled_11X17L_1of12_D03.mxd	Date: July 8, 2011
Version: 3	Author: RDI- LS

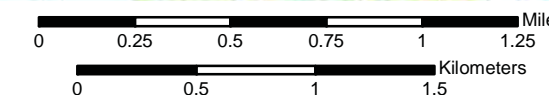
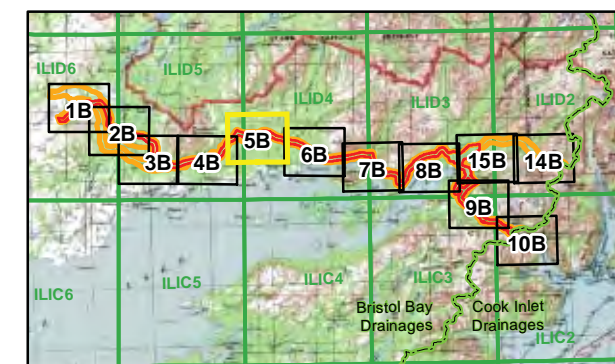




**Figure 14.2-1**  
**Tile 5B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

**Legend**

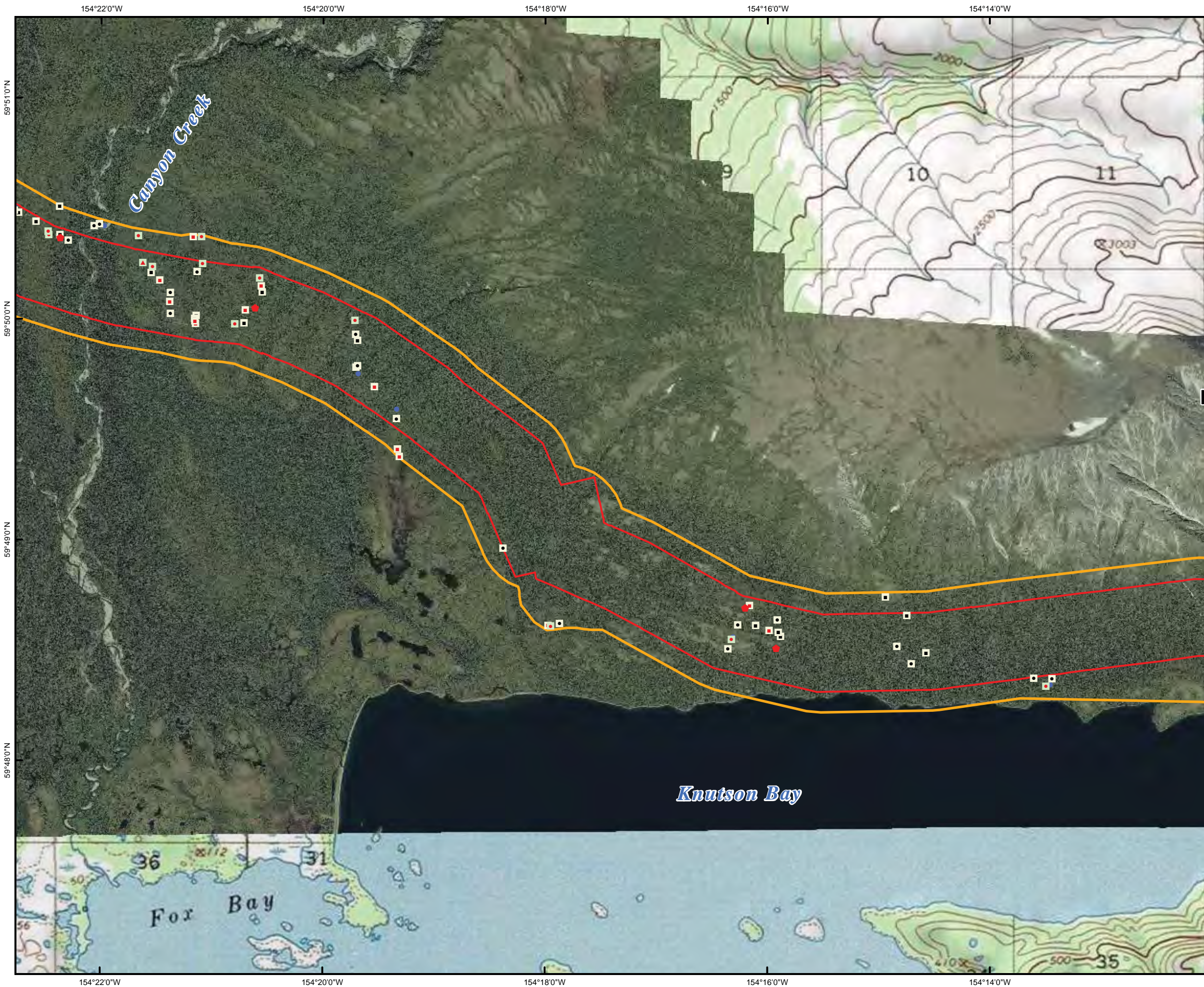
- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetland Determination Plot Type**
  - Wetland
  - Transitional Wetland
  - Non-wetland
  - Transitional Non-wetland
- Other Plot/Photo Point Type**
  - Functional Assessment
  - Stream Crossing
  - Waterbody
  - Representative Upland
  - Representative Wetland



Scale 1:31,680  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_HDR_EBD_Fig14.2-1_Fldplots_Tiled_11X17L_1of12_D03.mxd	Date: July 8, 2011
Version: 3	Author: RDI- LS

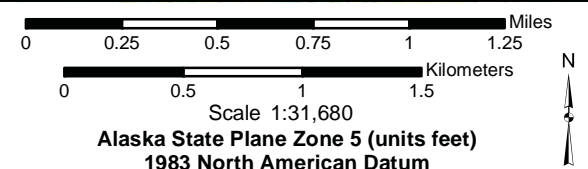
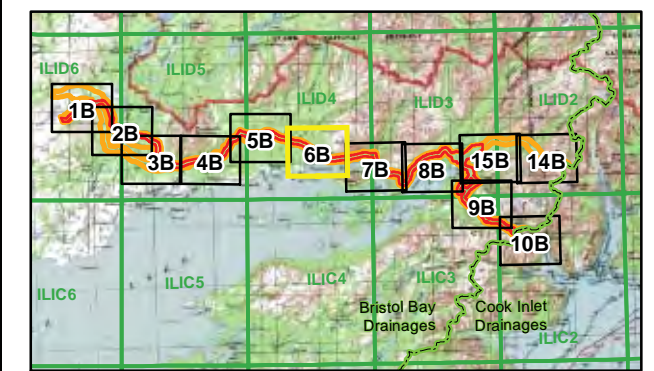




**Figure 14.2-1**  
**Tile 6B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

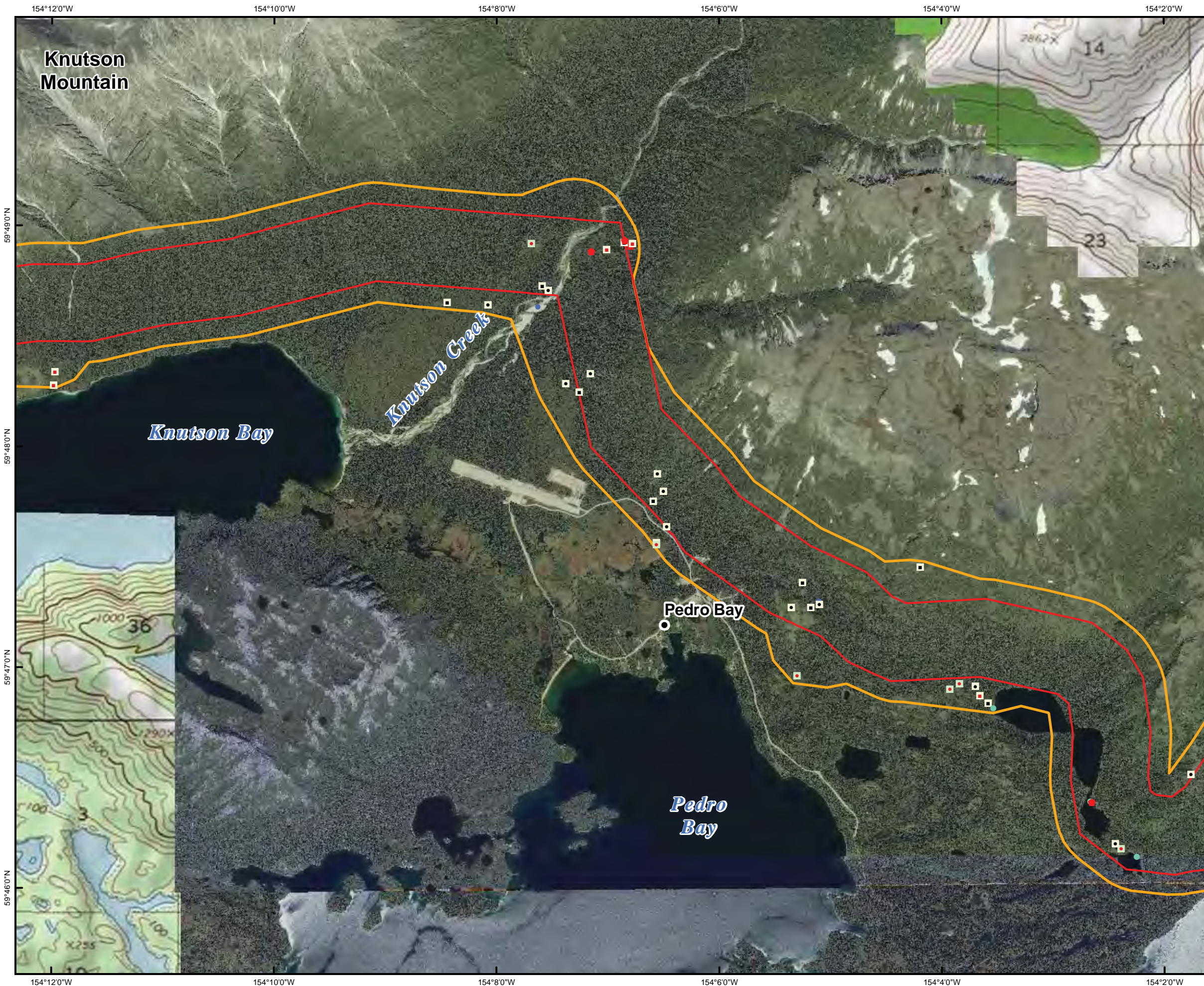
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetland Determination Plot Type**
  - Wetland
  - Transitional Wetland
  - Non-wetland
  - Transitional Non-wetland
- Other Plot/Photo Point Type**
  - Functional Assessment
  - Stream Crossing
  - Waterbody
  - Representative Upland
  - Representative Wetland



File: RDI_HDR_EBD_Fig14.2-1_Fldplots_Tiled_11X17L_1of12_D03.mxd	Date: July 8, 2011
Version: 3	Author: RDI- LS

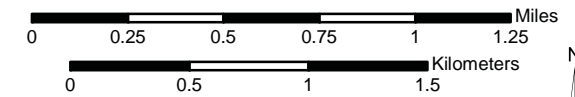
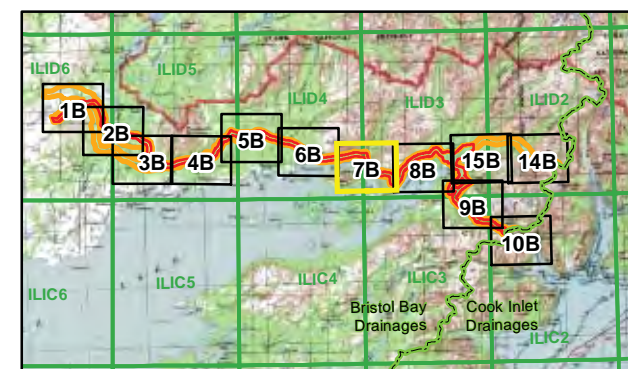




**Figure 14.2-1**  
**Tile 7B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

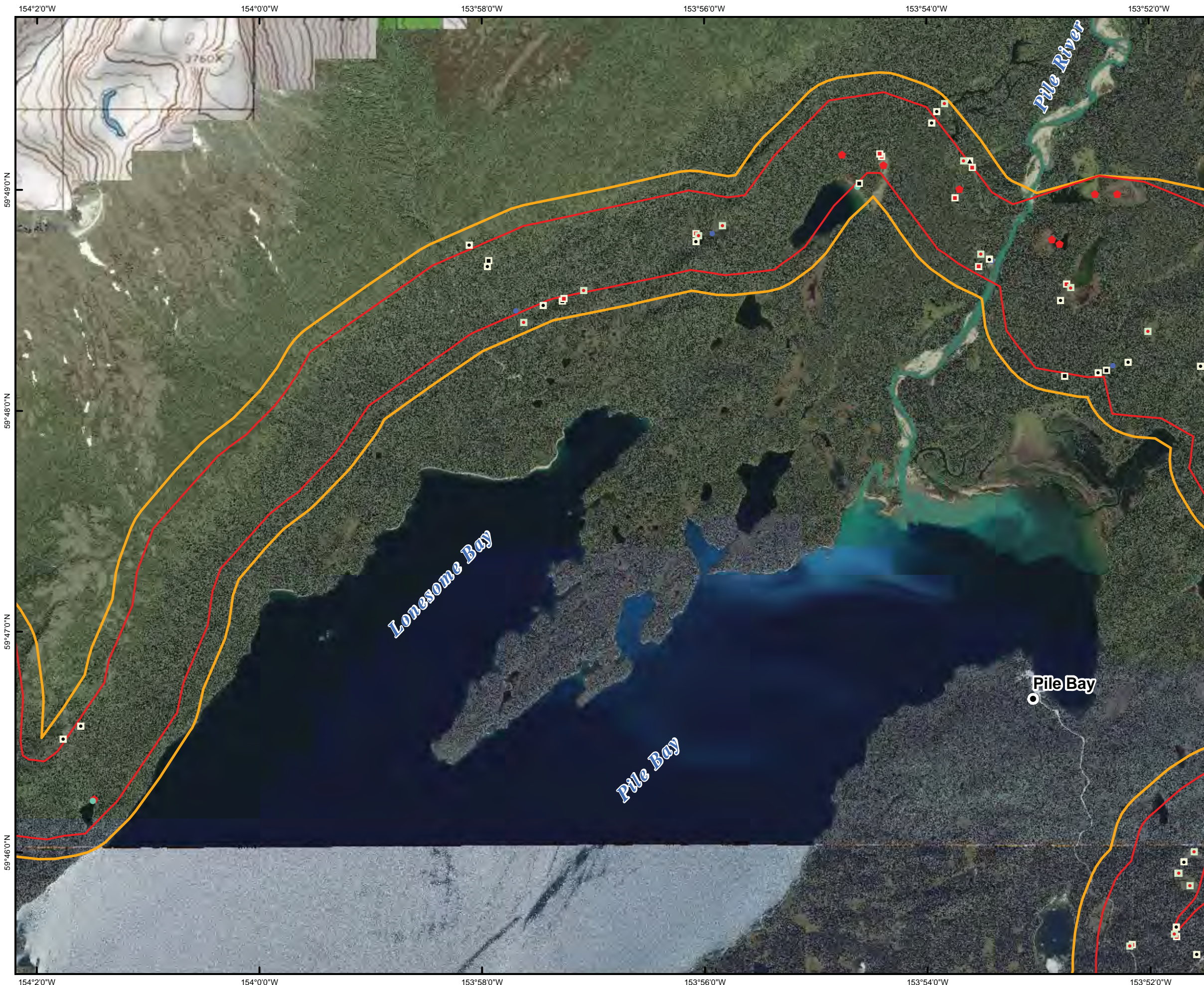
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetland Determination Plot Type**
  - Wetland
  - Transitional Wetland
  - Non-wetland
  - Transitional Non-wetland
- Other Plot/Photo Point Type**
  - Functional Assessment
  - Stream Crossing
  - Waterbody
  - Representative Upland
  - Representative Wetland



File: RDI_HDR_EBD_Fig14.2-1_Fldplots_Tiled_11X17L_1of12_D03.mxd		Date: July 8, 2011
Version: 3		Author: RDI- LS

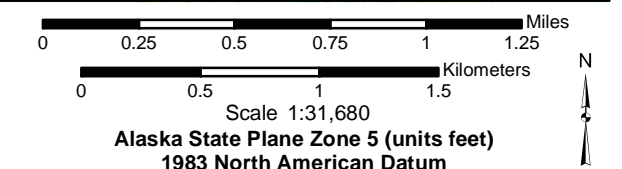
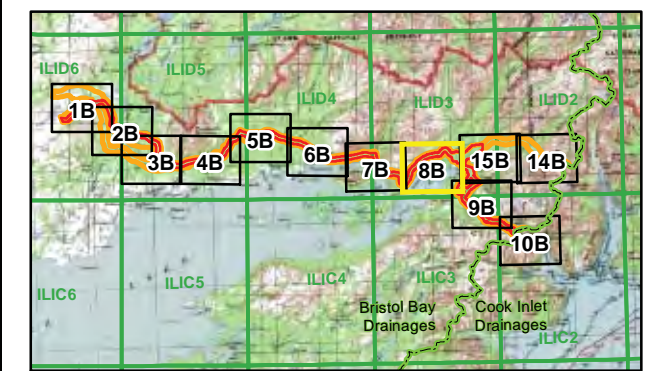




**Figure 14.2-1**  
**Tile 8B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

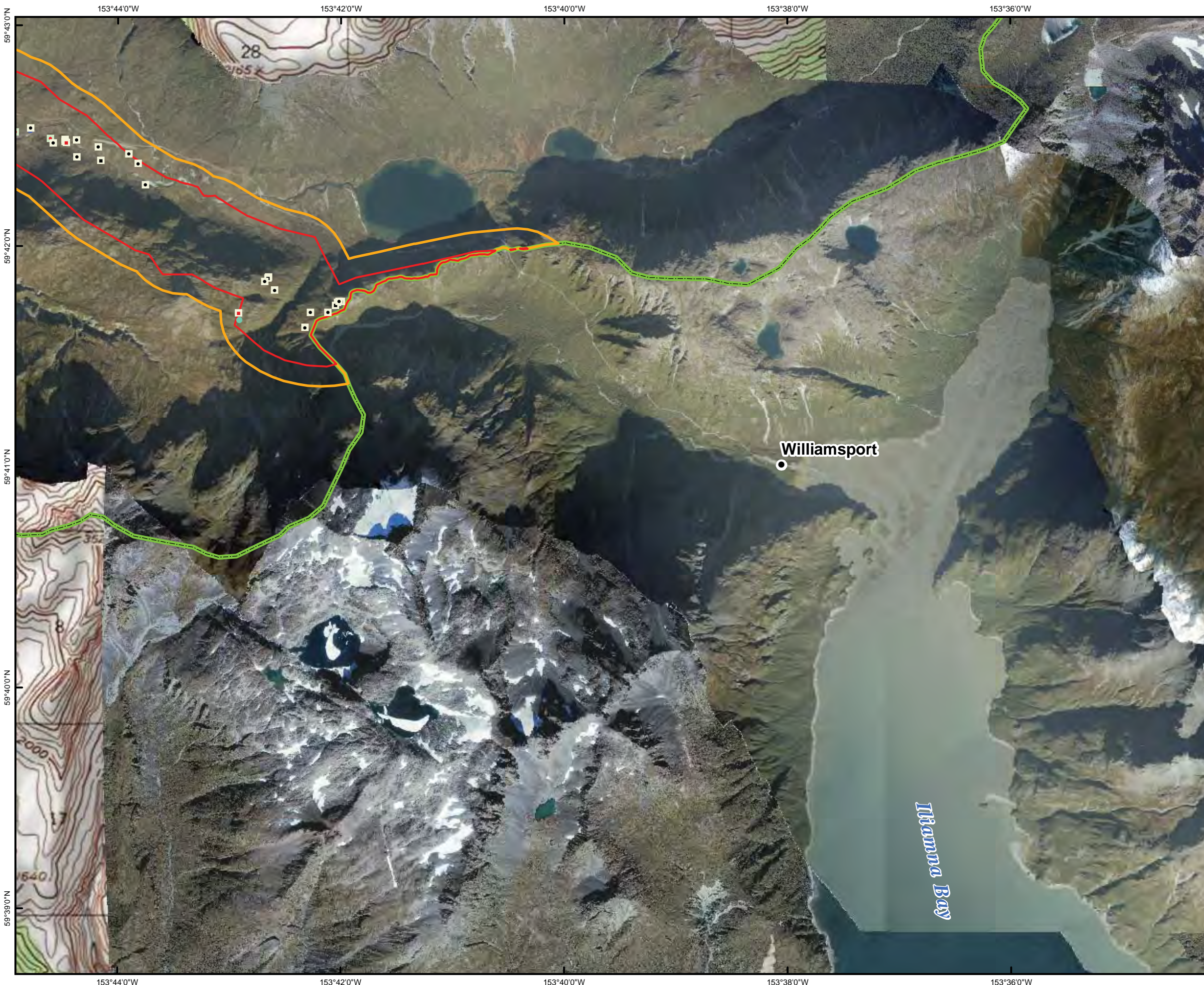
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetland Determination Plot Type**
  - Wetland
  - Transitional Wetland
  - Non-wetland
  - Transitional Non-wetland
- Other Plot/Photo Point Type**
  - ◆ Functional Assessment
  - Stream Crossing
  - Waterbody
  - Representative Upland
  - Representative Wetland



File: RDI_HDR_EBD_Fig14.2-1_Fldplots_Tiled_11X17L_1of12_D03.mxd	Date: July 8, 2011
Version: 3	Author: RDI- LS

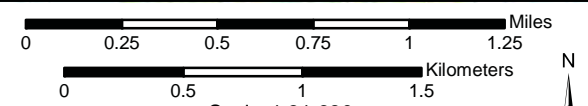
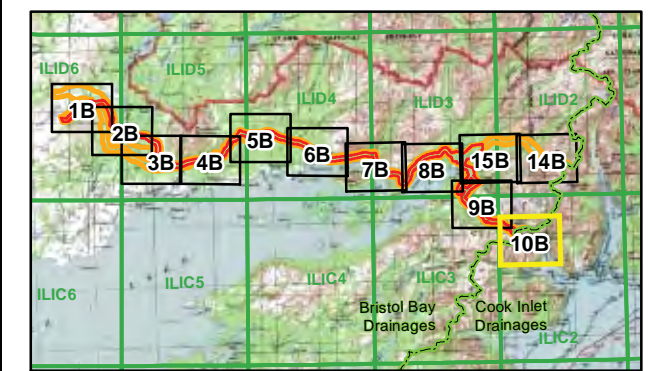




**Figure 14.2-1**  
**Tile 10B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

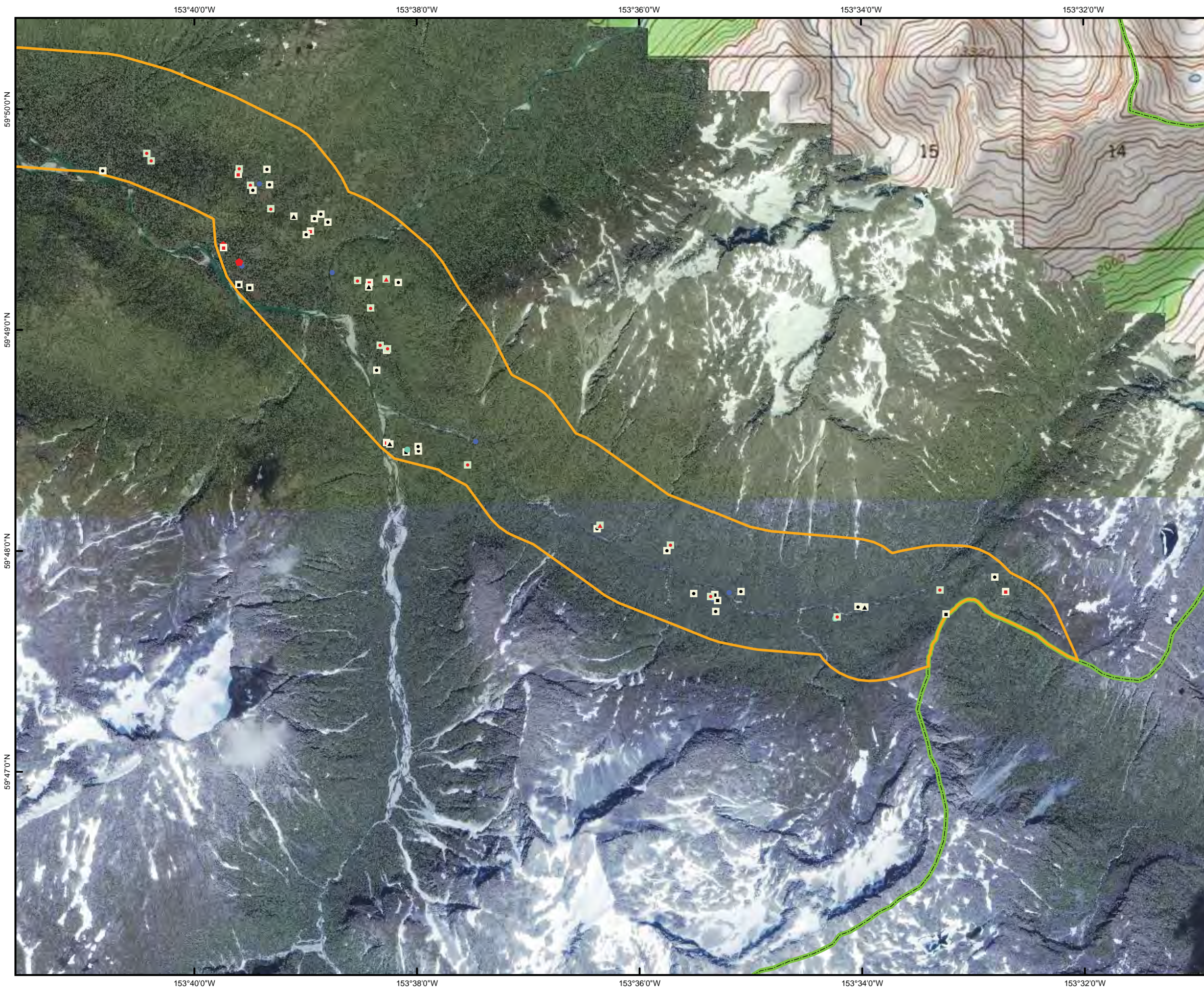
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetland Determination Plot Type**
  - Wetland
  - Transitional Wetland
  - Non-wetland
  - Transitional Non-wetland
- Other Plot/Photo Point Type**
  - Functional Assessment
  - Stream Crossing
  - Waterbody
  - Representative Upland
  - Representative Wetland















File: RDI_HDR_EBD_Fig14.2-1_Fldplots_Tiled_11X17L_1of12_D03.mxd		Date: July 8, 2011
Version: 3		Author: RDI- LS

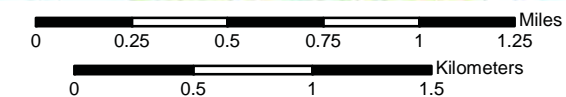
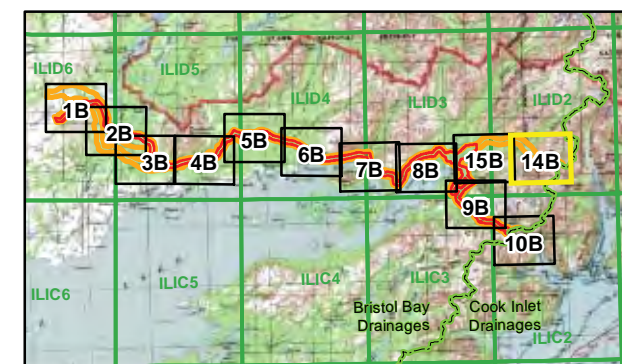




**Figure 14.2-1**  
**Tile 14B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

### Legend

-  Transportation-corridor Study Area
-  Bristol Bay/Cook Inlet Drainages Boundary
-  Communities
- Wetland Determination Plot Type**
  -  Wetland
  -  Transitional Wetland
  -  Non-wetland
  -  Transitional Non-wetland
- Other Plot/Photo Point Type**
  -  Functional Assessment
  -  Stream Crossing
  -  Waterbody
  -  Representative Upland
  -  Representative Wetland



Scale 1:31,680  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

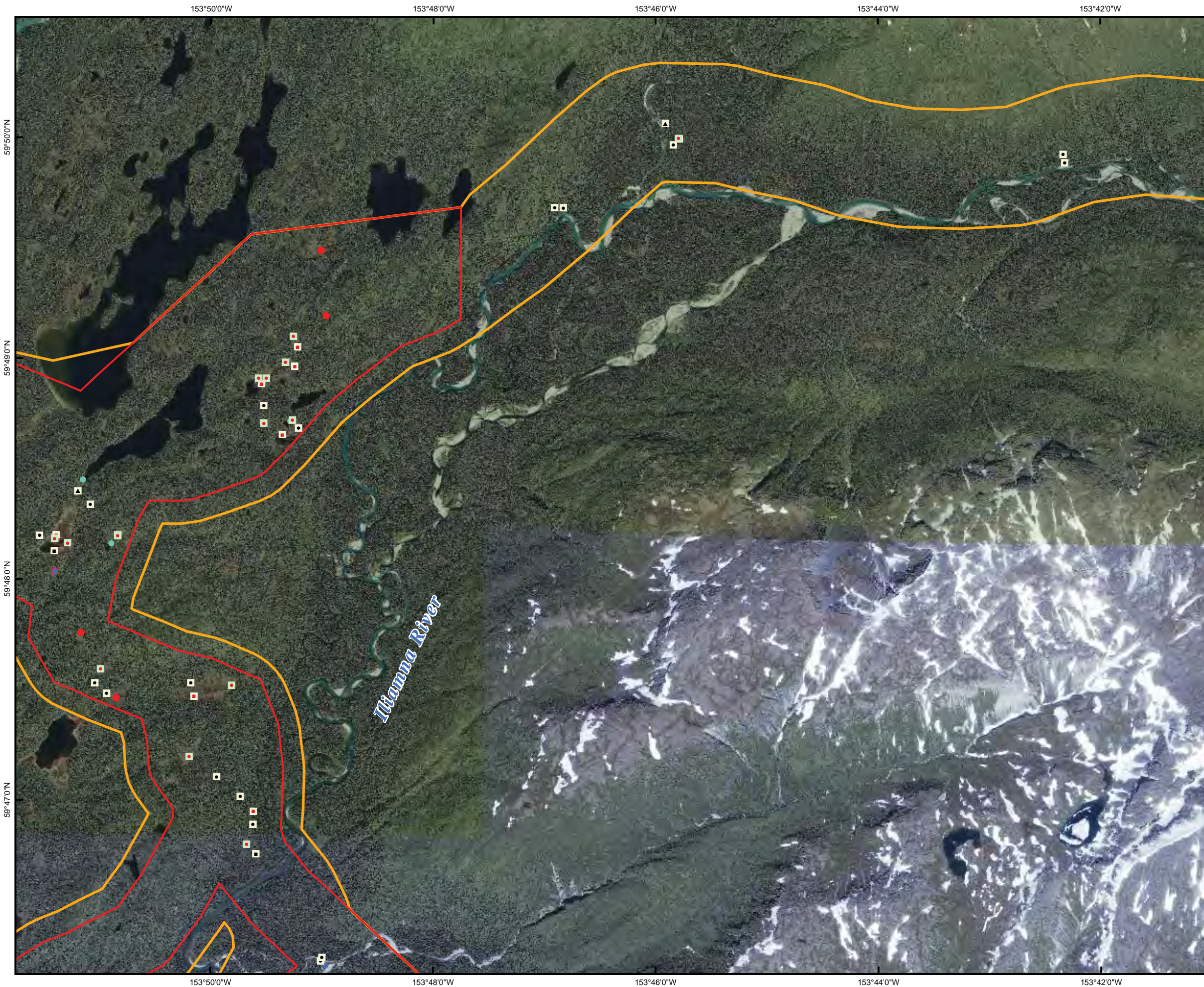
File: RDI\_HDR\_EBD\_Fig14.2-1\_Fldplots\_Tiled\_11X17L\_1of12\_D03.mxd

Date: July 8, 2011

Version: 3














Author: RDI- LS

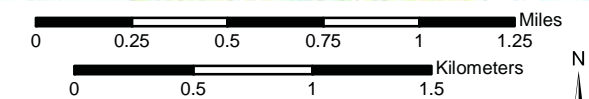
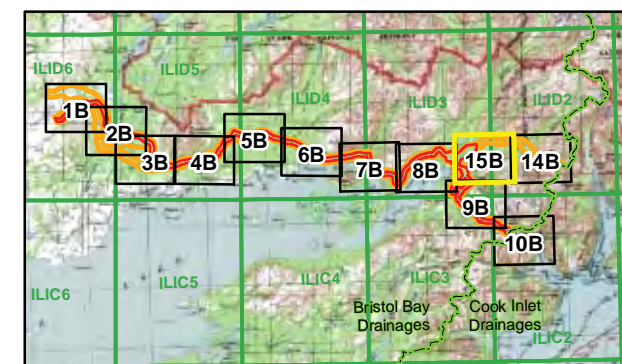




**Figure 14.2-1**  
**Tile 15B**  
**Field Plot Locations,**  
**Transportation-corridor Study Area,**  
**2004-2008**

**Legend**

-  Transportation-corridor Mapping Area
-  Transportation-corridor Study Area
-  Bristol Bay/Cook Inlet Drainages Boundary
-  Communities
- Wetland Determination Plot Type**
  -  Wetland
  -  Transitional Wetland
  -  Non-wetland
  -  Transitional Non-wetland
- Other Plot/Photo Point Type**
  -  Functional Assessment
  -  Stream Crossing
  -  Waterbody
  -  Representative Upland
  -  Representative Wetland



Scale 1:31,680  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_HDR_EBD_Fig14.2-1_Fldplots_Tiled_11X17L_1of12_D03.mxd	Date: July 8, 2011
Version: 3	Author: RDI- LS





**Figure 14.2-2**  
**U. S. Fish and Wildlife Service National**  
**Wetlands Inventory Mapping for the**  
**Transportation-corridor Study Area**

**Legend**

- Pebble Project Transportation-corridor Mapping Area
  - Pebble Project Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- USFWS National Wetlands Inventory Group
- Forested
  - Forested/Scrub Shrub
  - Scrub Shrub/Forested
  - Scrub Shrub Dominated Wetlands
  - Flooded Shrublands
  - Scrub Shrub/Herbaceous Dominated Wetlands
  - Herbaceous/Scrub Shrub Dominated Wetlands
  - Herbaceous Dominated Wetlands
  - Emergent Herbaceous Dominated Wetlands
  - Aquatic Herbaceous Dominated Wetlands
  - Freshwater Ponds
  - Lacustrine (Lakes)
  - Riverine (Rivers/Streams)
  - Non-wetlands

Note: Based on non-digital National Wetlands Inventory maps (USDOI, Various) obtained from the U.S. Fish and Wildlife Service (USFWS) in 2004.



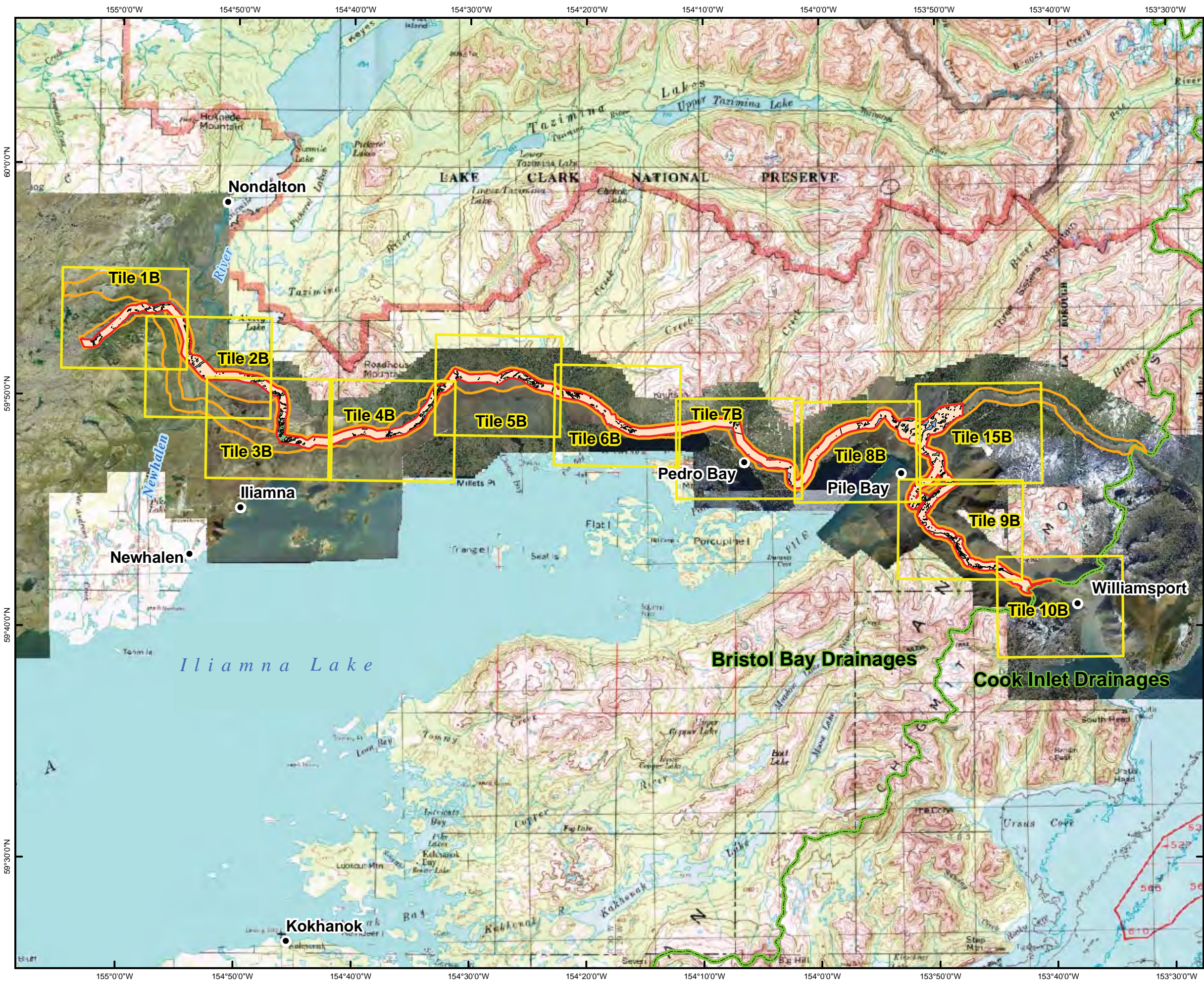
0 2.5 5 7.5 10 12.5 Miles  
0 5 10 15 Kilometers

Scale 1:300,000  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI\_HDR\_EBD\_Fg14.2-2\_NWI\_11X17L\_1of1\_D05.mxd Date: August 15, 2011










Version: 5 Author: RDI-LS



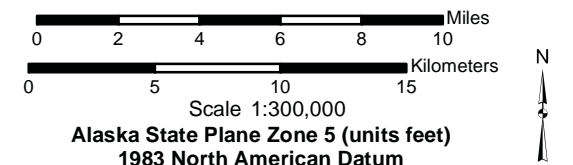


**Figure 14.2-3  
Overview  
Wetlands Mapping,  
Transportation-corridor Mapping Area,  
2004-2008**

**Legend**

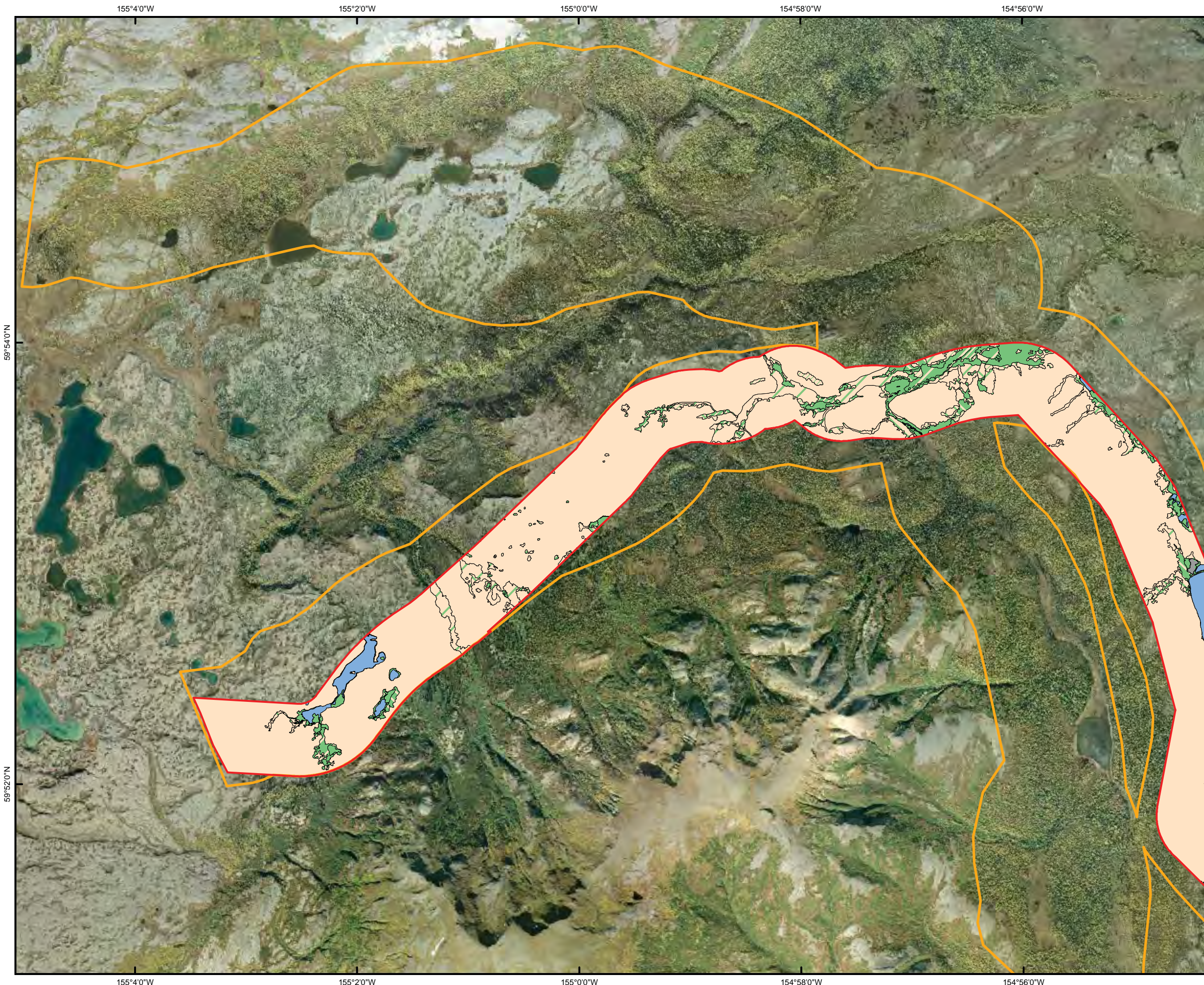
-  Transportation-corridor Mapping Area
-  Transportation-corridor Study Area
-  Grid for Detailed Mapping Tiles
-  Bristol Bay/Cook Inlet Drainages Boundary
-  Communities
- Wetlands Mapping Classification**
  -  Majority Wetlands
  -  Majority Non-wetlands
  -  Waterbodies
  -  Gravel Bars/Seasonal Ponds

Note: For detailed mapping see the individual tiles in this figure series.  
Tile 11C is presented in the mapping for the Cook Inlet Study Area (EBD Chapter 39).  
Tiles 12-14 are not presented because mapping did not extend into those areas.



File: RDI_HDR_EBD_Fig14.2-3_Overview_JDWet_11X17L_1of1_D03.mxd	Date: August 9, 2011
Version: 3	Author: RDI- LS

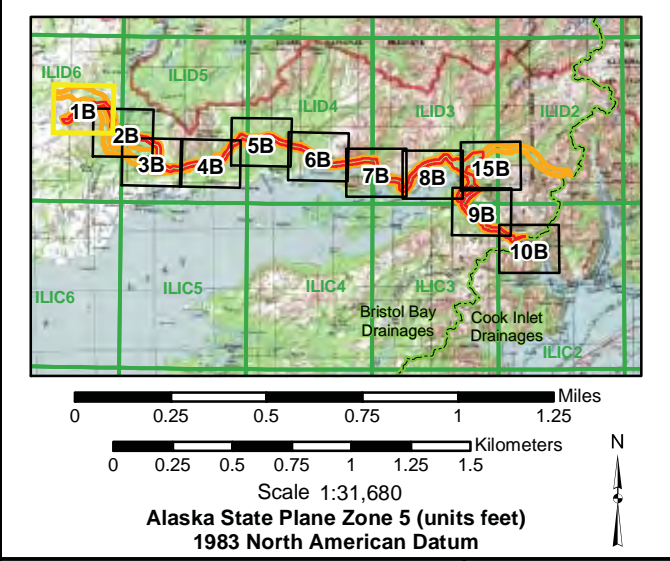




**Figure 14.2-3**  
**Tile 1B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

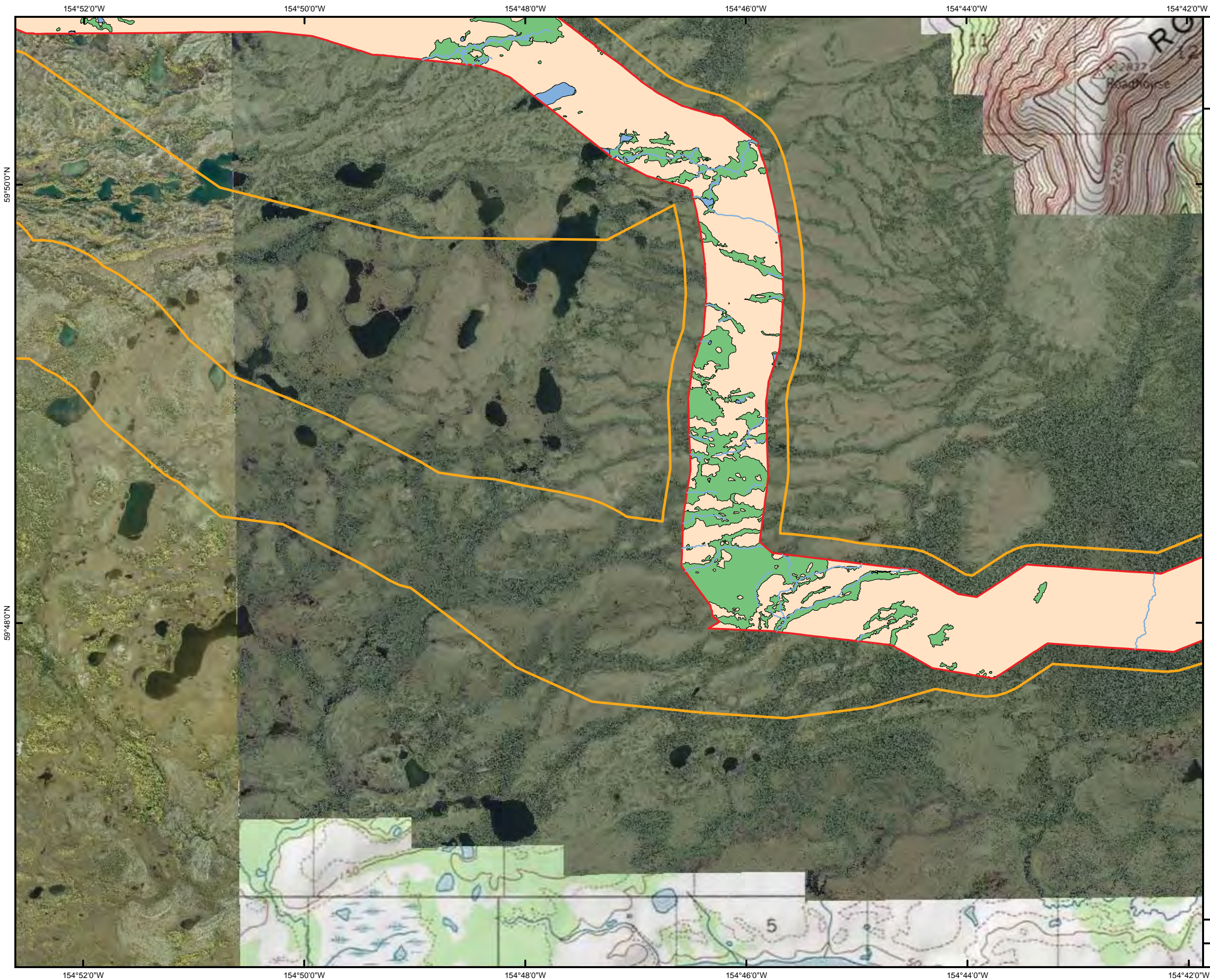
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



File: RDI_HDR_EBD_Fig14.2-3_JDWet_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS

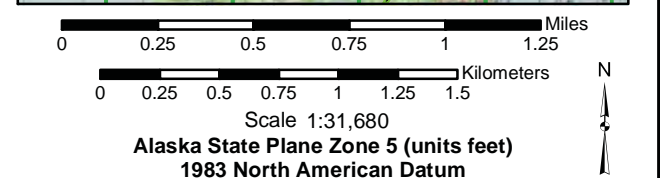
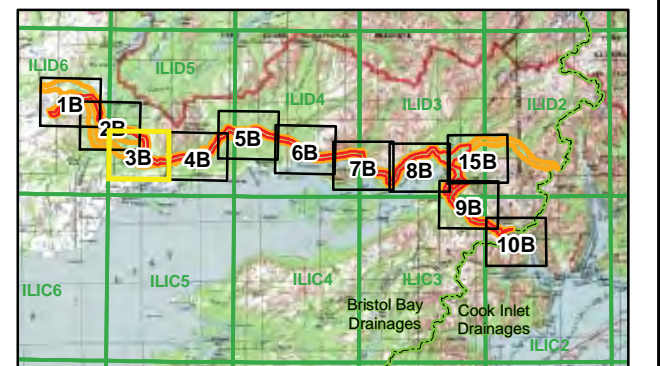




**Figure 14.2-3**  
**Tile 3B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

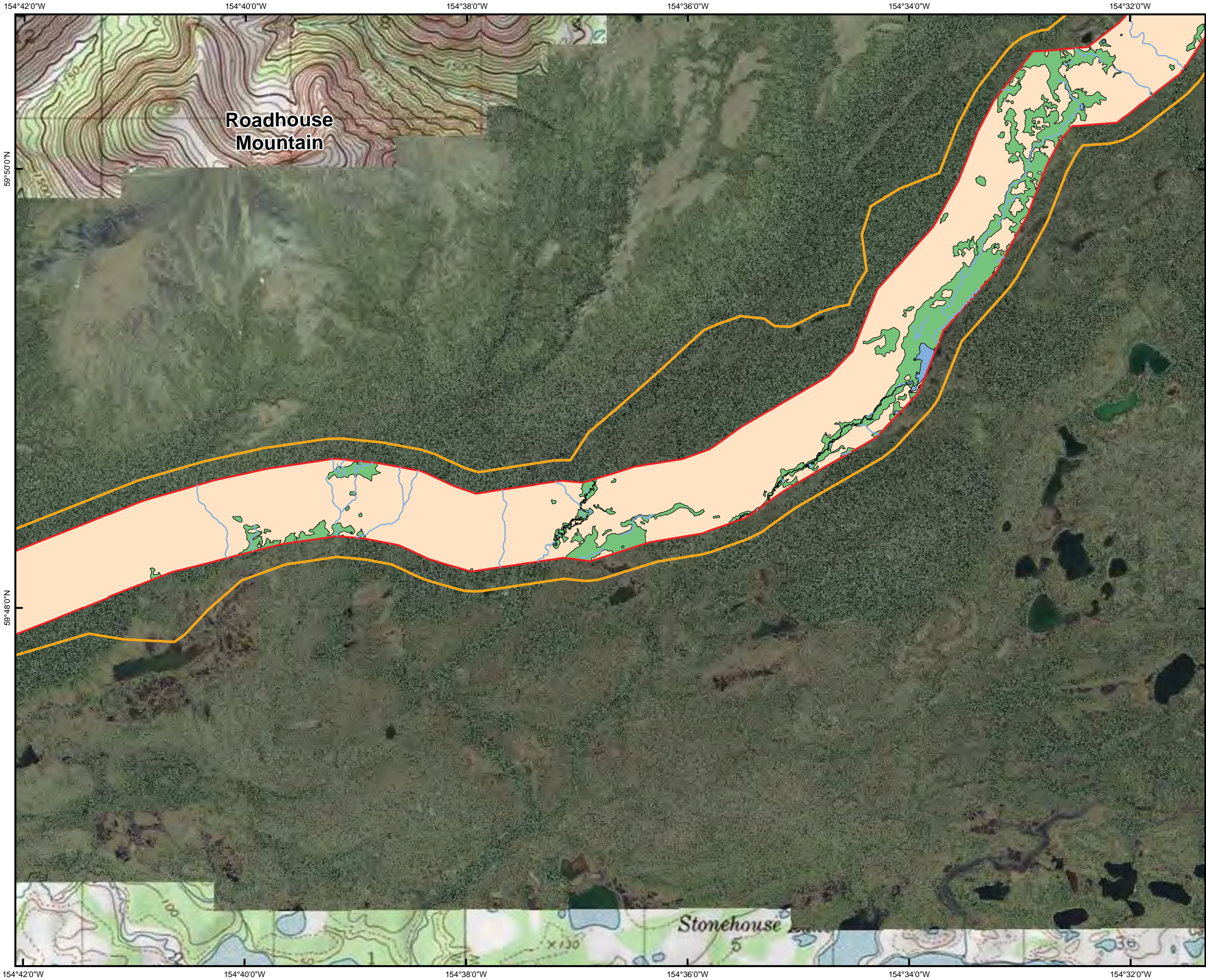
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



File: RDI_HDR_EBD_Fig14.2-3_JDWet_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS

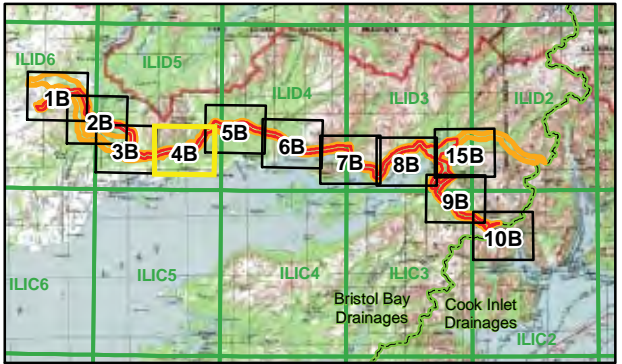




**Figure 14.2-3**  
**Tile 4B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Wetlands Mapping Classification
- Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



0 0.25 0.5 0.75 1 1.25 Miles

0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

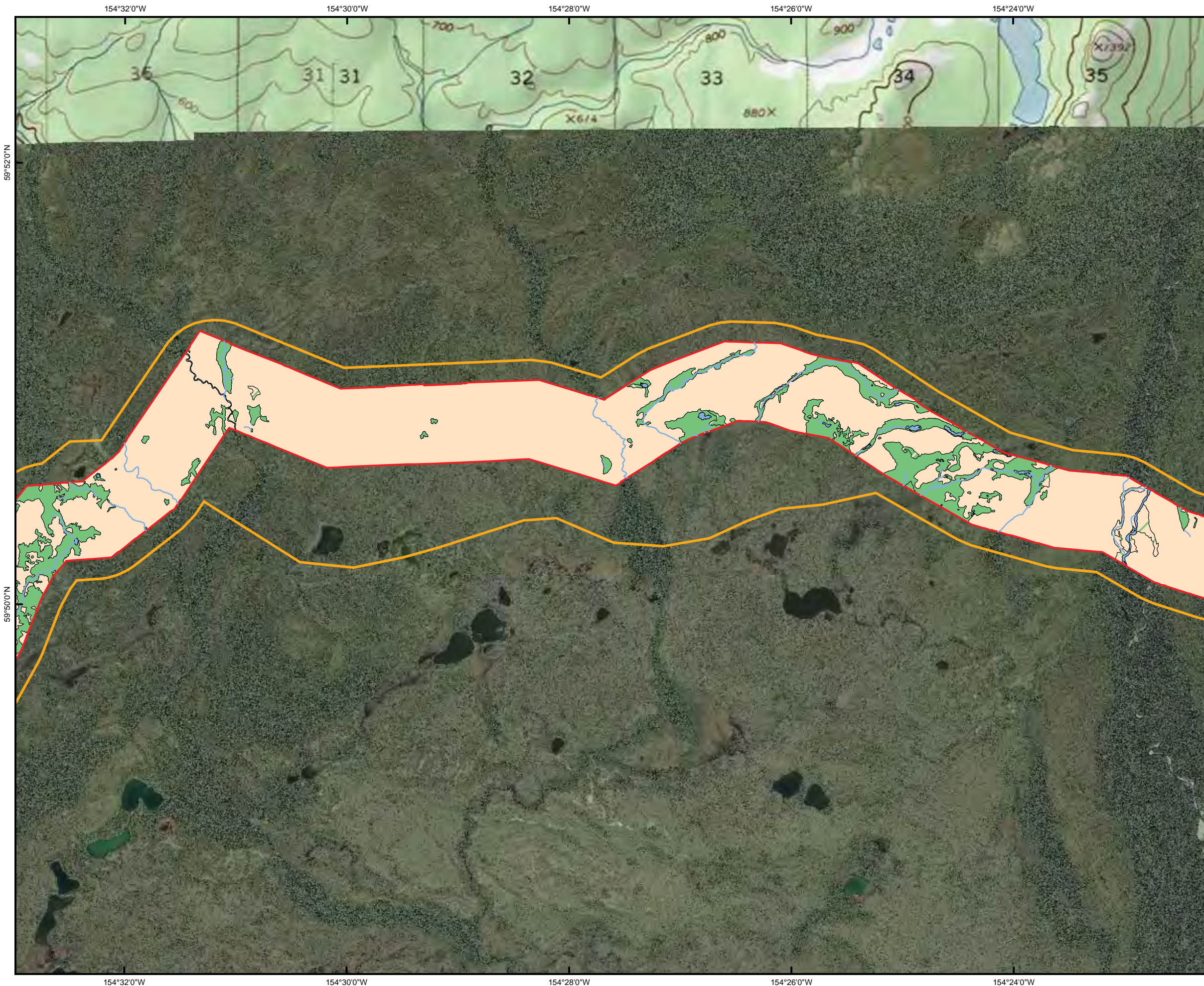
File: RDI\_HDR\_EBD\_Fig14.2-3\_JDWet\_Tiled11X17L  
1of11\_D04.mxd

Date: July 8, 2011

Version: 4

Author: RDI-LS

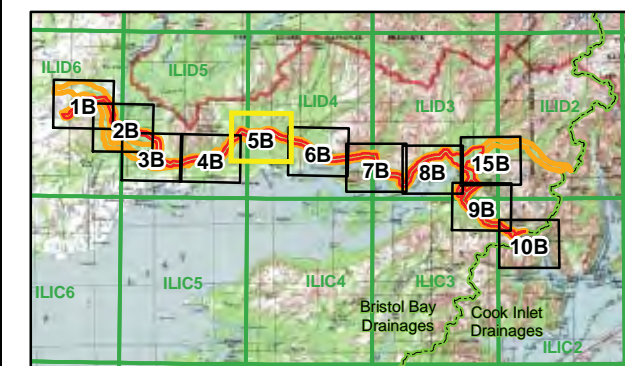




**Figure 14.2-3**  
**Tile 5B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Wetlands Mapping Classification
- Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



0 0.25 0.5 0.75 1 1.25 Miles

0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

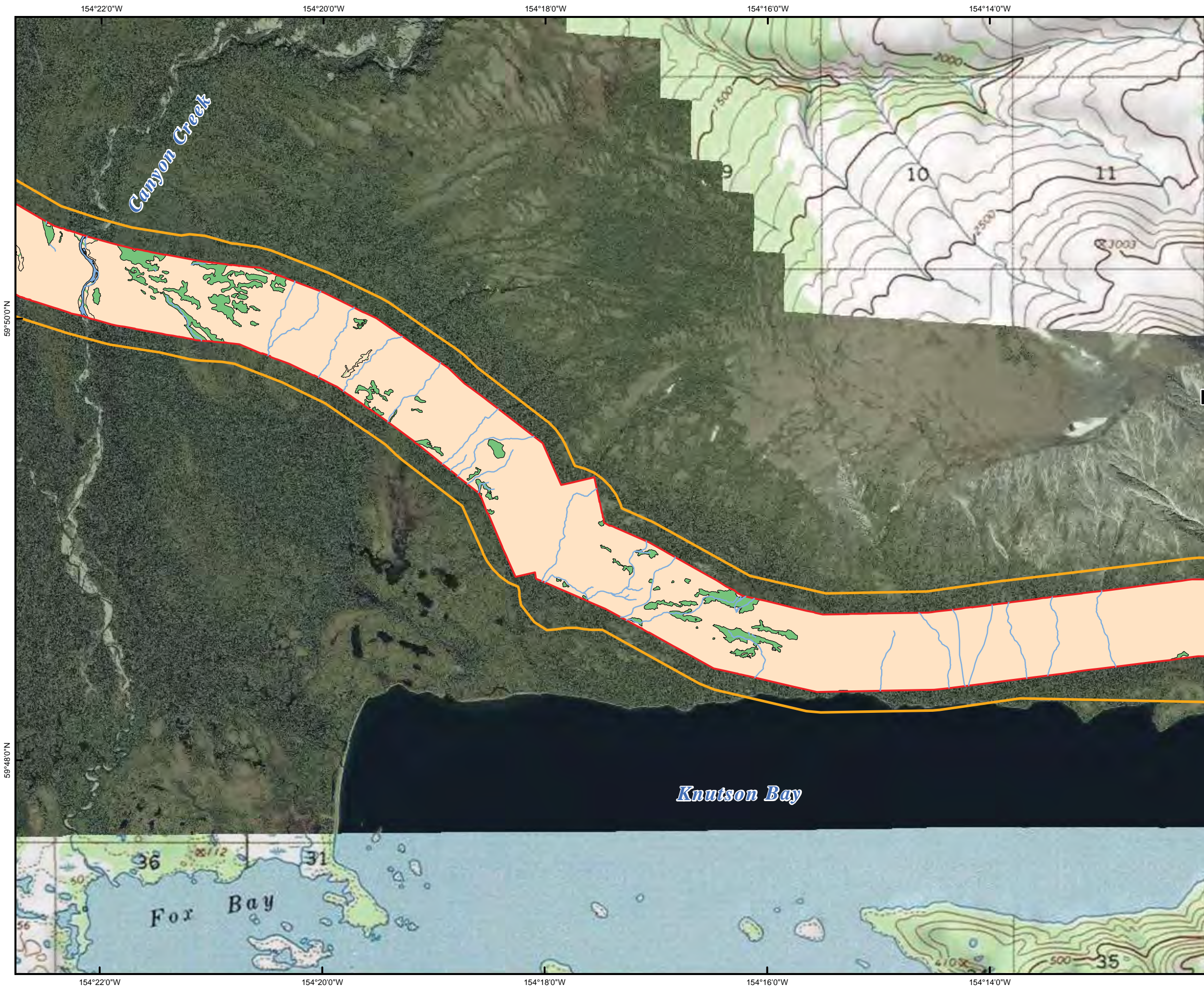
File: RDI\_HDR\_EBD\_Fig14.2-3\_JDWet\_Tiled11X17L\_1of11\_D04.mxd

Date: July 8, 2011

Version: 4















Author: RDI-LS

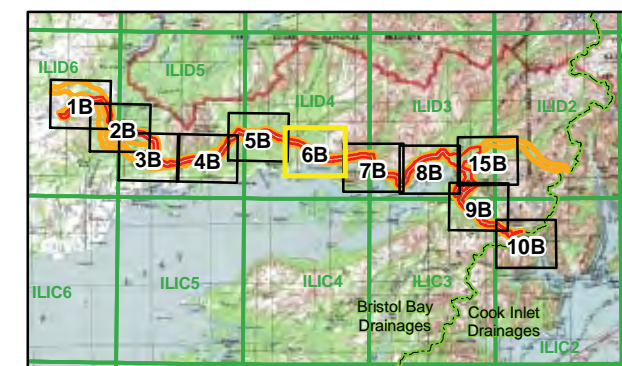




**Figure 14.2-3**  
**Tile 6B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

-  Transportation-corridor Mapping Area
-  Transportation-corridor Study Area
-  Bristol Bay/Cook Inlet Drainages Boundary
-  Communities
- Wetlands Mapping Classification**
  -  Wetland (<1% Non-wetland Inclusions)
  -  Wetland (Up to 10% Non-wetland Inclusions)
  -  Wetland (Up to 20% Non-wetland Inclusions)
  -  Wetland (Up to 40% Non-wetland Inclusions)
  -  Non-wetland (Up to 40% Wetland Inclusions)
  -  Non-wetland (Up to 20% Wetland Inclusions)
  -  Non-wetland (Up to 10% Wetland Inclusions)
  -  Non-wetland (<1% Wetland Inclusions)
  -  Waterbodies
  -  Gravel Bars/Seasonal Ponds



0 0.25 0.5 0.75 1 1.25 Miles

0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

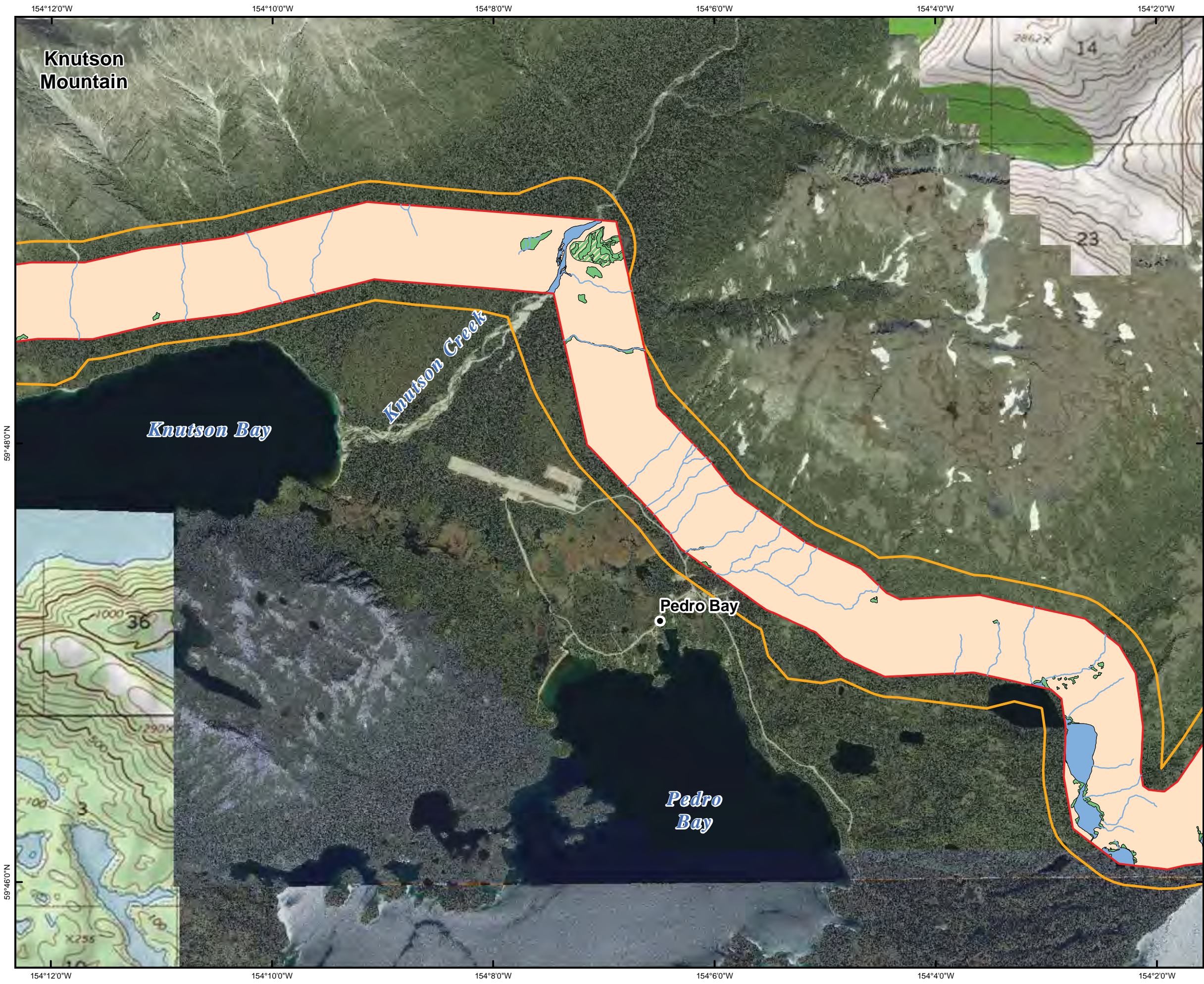
File: RDI\_HDR\_EBD\_Fig14.2-3\_JDWet\_Tiled11X17L  
1of11\_D04.mxd

Date: July 8, 2011

Version: 4

Author: RDI-LS

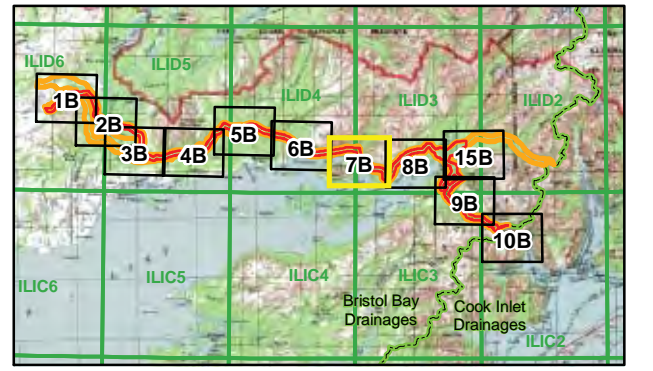




**Figure 14.2-3**  
**Tile 7B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

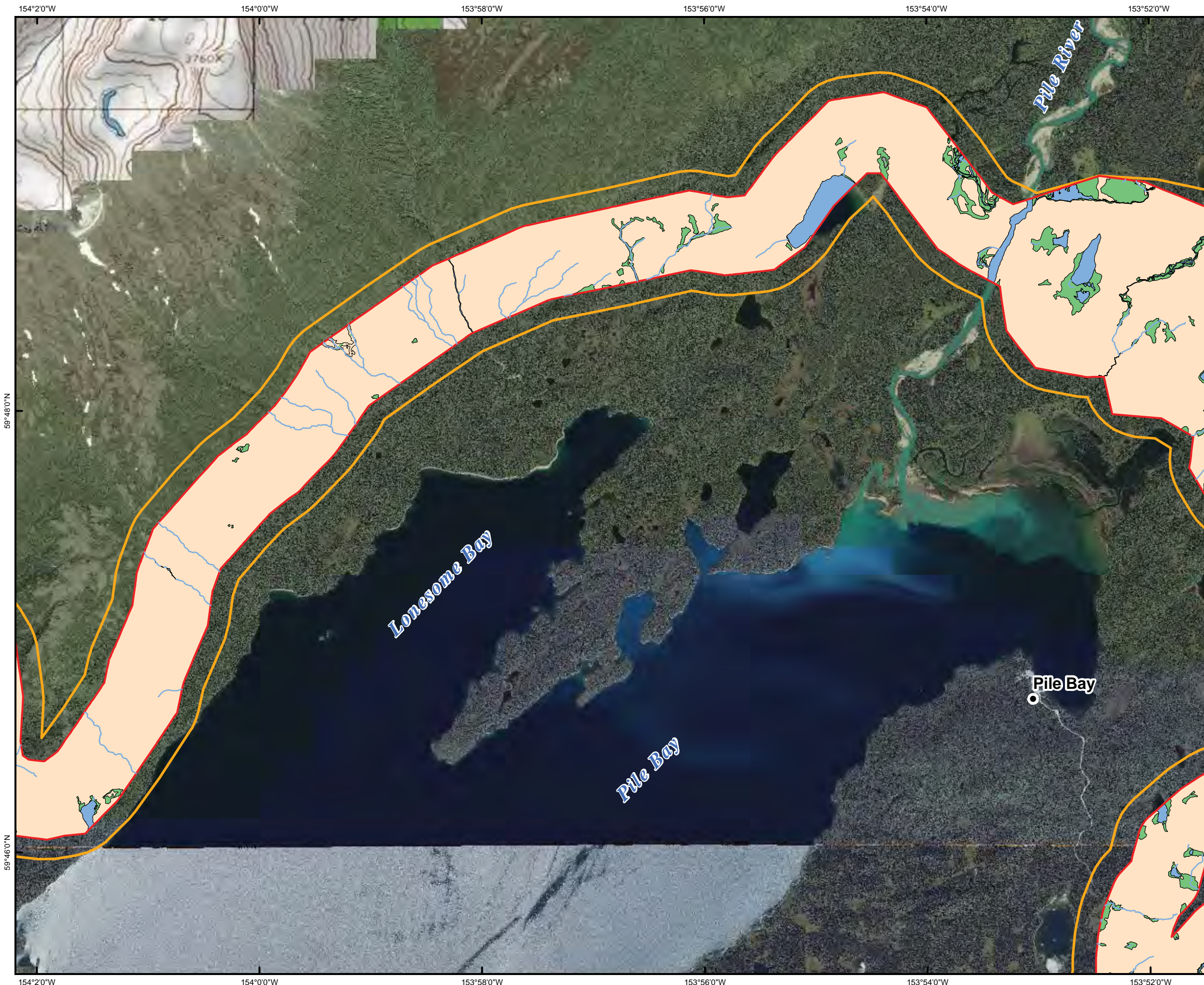
- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetlands Mapping Classification**
- Wetland (<1% Non-wetland Inclusions)
- Wetland (Up to 10% Non-wetland Inclusions)
- Wetland (Up to 20% Non-wetland Inclusions)
- Wetland (Up to 40% Non-wetland Inclusions)
- Non-wetland (Up to 40% Wetland Inclusions)
- Non-wetland (Up to 20% Wetland Inclusions)
- Non-wetland (Up to 10% Wetland Inclusions)
- Non-wetland (<1% Wetland Inclusions)
- Waterbodies
- Gravel Bars/Seasonal Ponds



0 0.25 0.5 0.75 1 1.25 Miles  
0 0.25 0.5 0.75 1 1.25 1.5 Kilometers  
Scale 1:31,680  
Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_HDR_EBD_Fig14.2-3_JDWet_Tiled11X17L 1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS

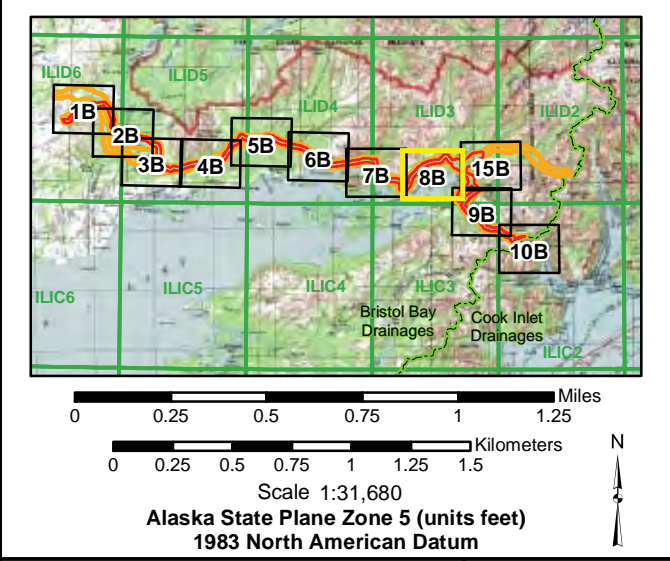




**Figure 14.2-3**  
**Tile 8B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

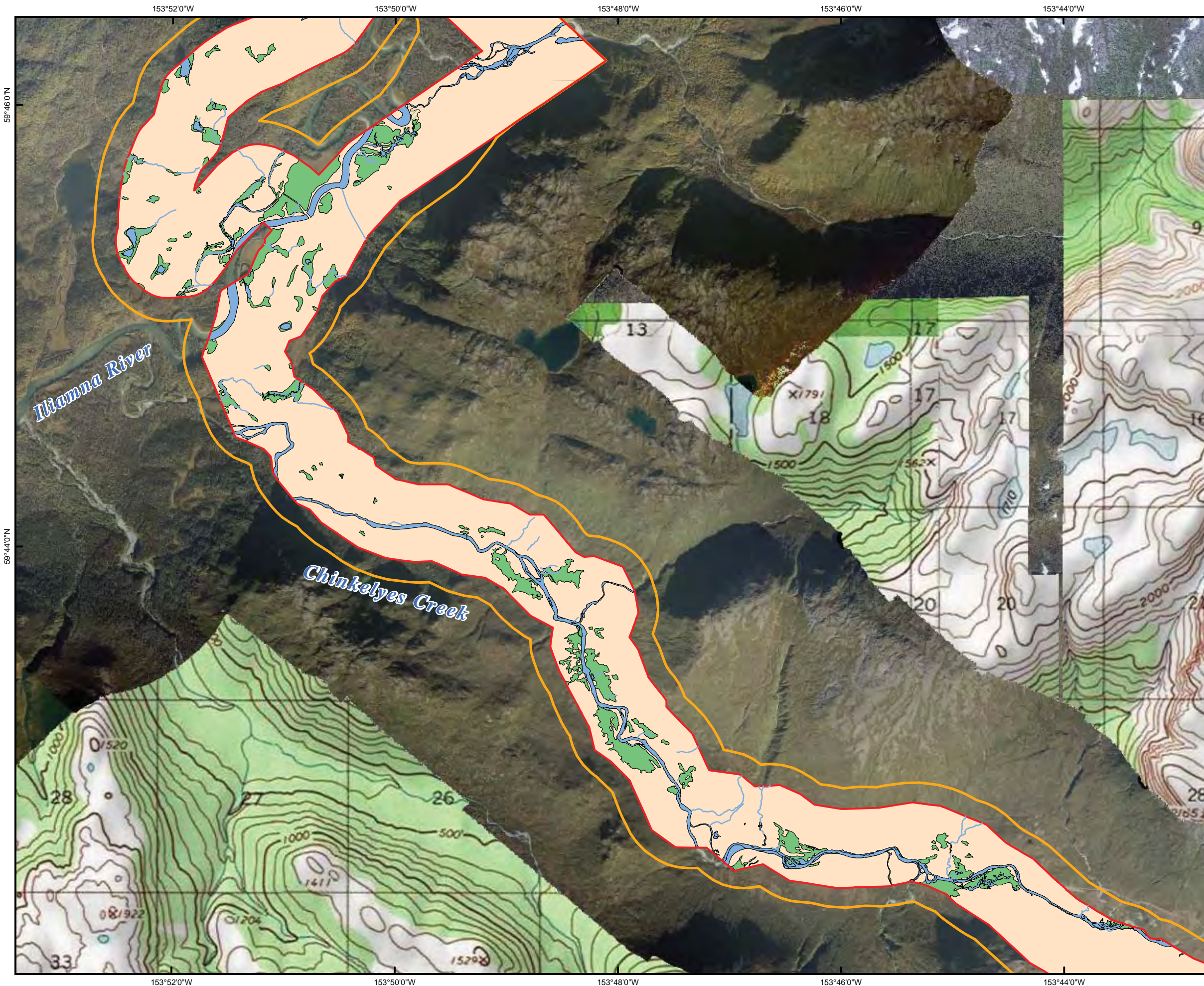
**Legend**

- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Wetlands Mapping Classification
- Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



File: RDI_HDR_EBD_Fig14.2-3_JDWet_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS

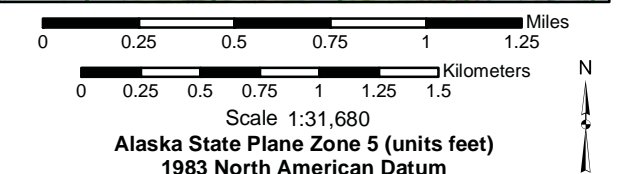
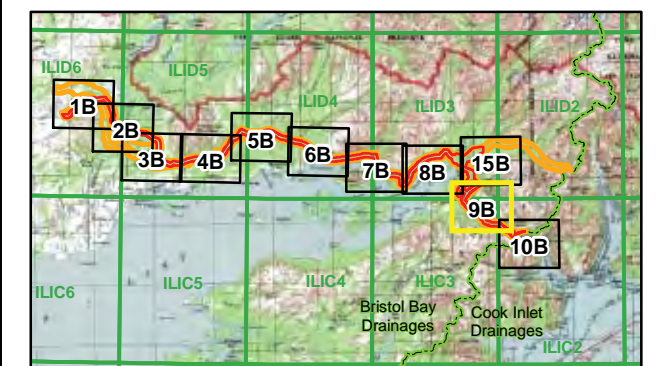




**Figure 14.2-3**  
**Tile 9B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetlands Mapping Classification**
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



File: RDI_HDR_EBD_Fig14.2-3_JDWet_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS

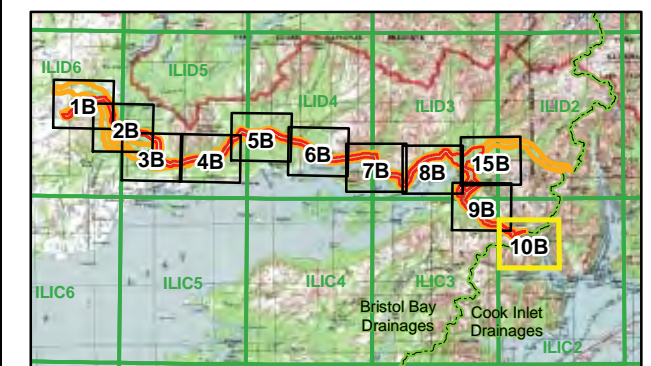




**Figure 14.2-3**  
**Tile 10B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Wetlands Mapping Classification
  - Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



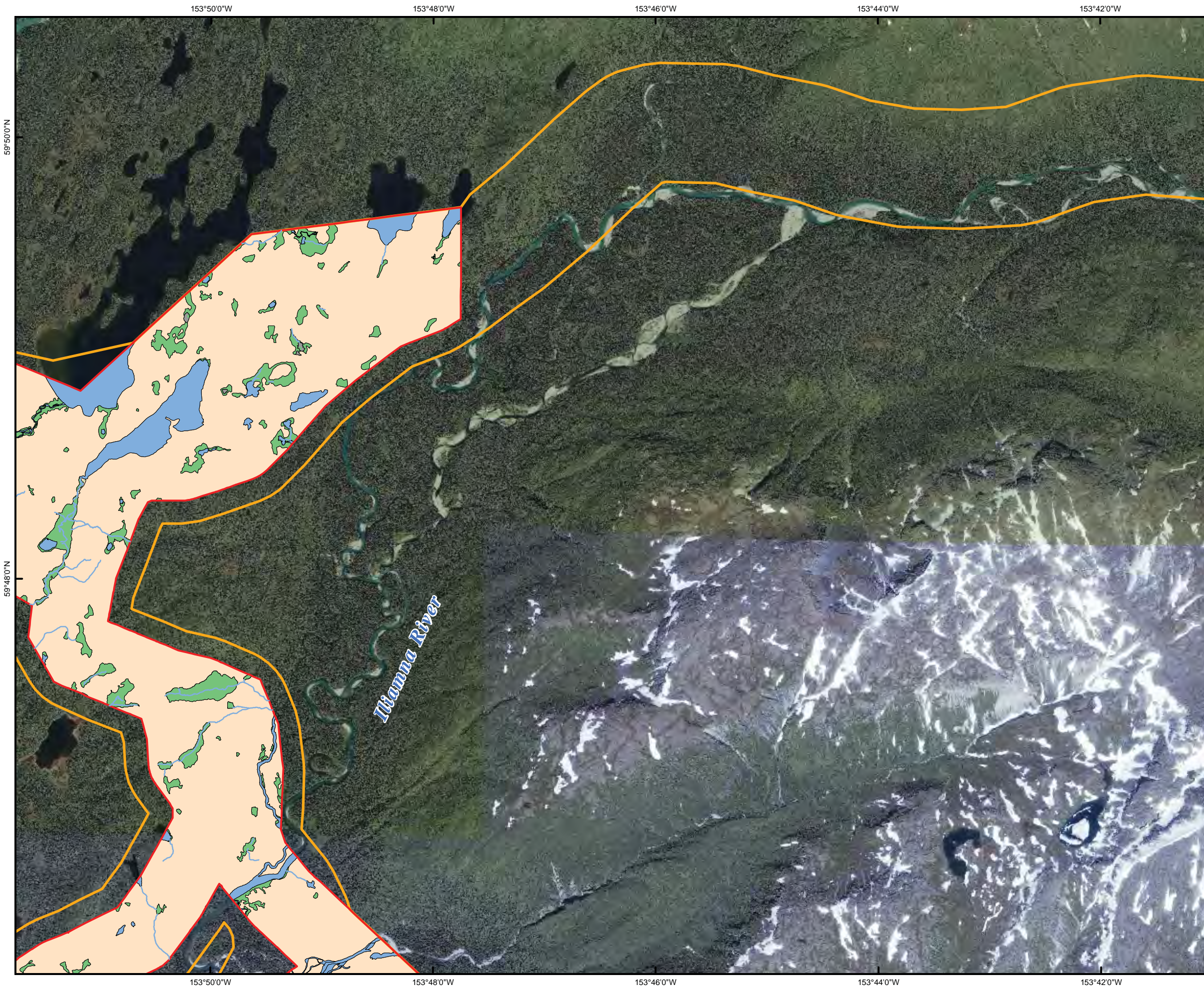
0 0.25 0.5 0.75 1 1.25 Miles  
0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_HDR_EBD_Fig14.2-3_JDWet_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS

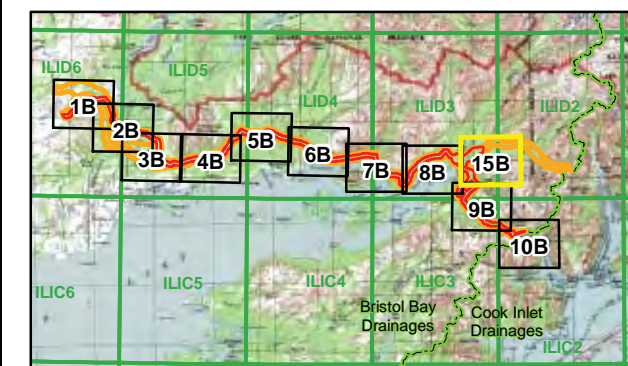




**Figure 14.2-3**  
**Tile 15B**  
**Wetlands Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Wetlands Mapping Classification
- Wetland (<1% Non-wetland Inclusions)
  - Wetland (Up to 10% Non-wetland Inclusions)
  - Wetland (Up to 20% Non-wetland Inclusions)
  - Wetland (Up to 40% Non-wetland Inclusions)
  - Non-wetland (Up to 40% Wetland Inclusions)
  - Non-wetland (Up to 20% Wetland Inclusions)
  - Non-wetland (Up to 10% Wetland Inclusions)
  - Non-wetland (<1% Wetland Inclusions)
  - Waterbodies
  - Gravel Bars/Seasonal Ponds



0 0.25 0.5 0.75 1 1.25 Miles  
0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

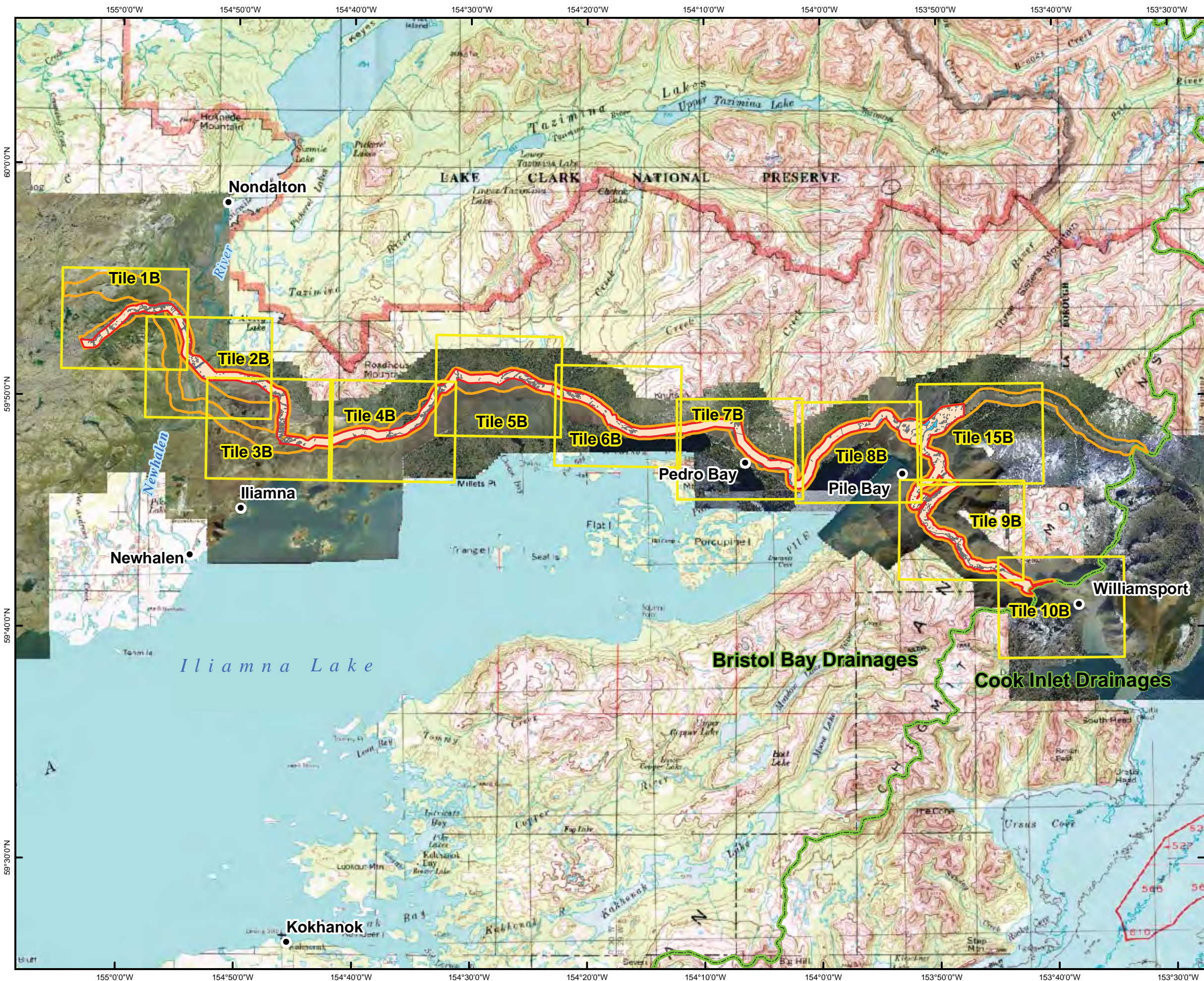
File: RDI\_HDR\_EBD\_Fig14.2-3\_JDWet\_Tiled11X17L\_1of11\_D04.mxd

Date: July 8, 2011

Version: 4

Author: RDI-LS





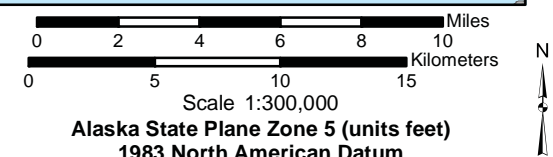
**Figure 14.2-4**  
**Overview**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

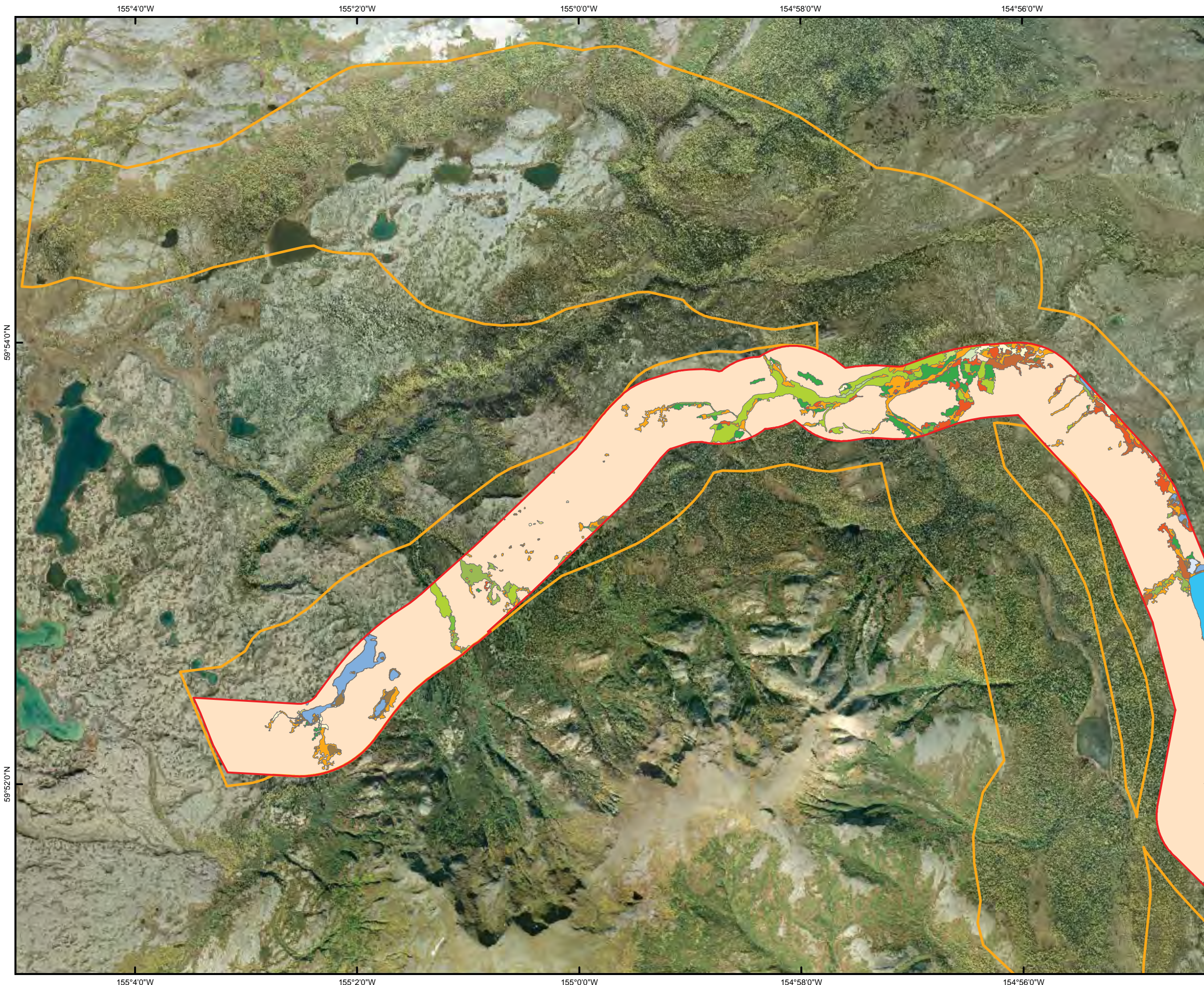
- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Grid for Detailed Mapping Tiles
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities

Enhanced National Wetlands Inventory (ENWI) Classification		
Coniferous Forests	PSS1/ML1	PEM2/1
PFO4	PSS3	PUB/EM
PFO4/SS1	PSS4	PEM2
PSS1/FO4	PSS4/1	PUS/EM1
Mixed Forests	Shrub/Herbaceous	Ponds
PFO1/4	PSS1/EM1	PUB
PFO4/1	Forested Shrub	PUS
Deciduous Forests	PFO1/SS1	Lakes
PFO1	Herbaceous/Shrub	L
PFO1/SS1	Herbaceous	River/Stream
PSS1/FO1	Herbaceous	R3UB
Shrubs	PEM1	R3US
PSS1	PEM1/ML1	Non-wetlands
PSS1/4	Emergent Herbaceous	U
PSS1/EM2	PEM1/2	
PSS1/US	PEM1/US	

Note: For full names of classifications and descriptions of codes, see Table 14.2-5.  
For detailed mapping see the individual tiles in this figure series.  
Tile 11C is presented in the mapping for the Cook Inlet Study Area (EBD Chapter 39).  
Tiles 12C, 13C and 14B are not presented because mapping did not extend into those areas.







**Figure 14.2-4**  
**Tile 1B**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

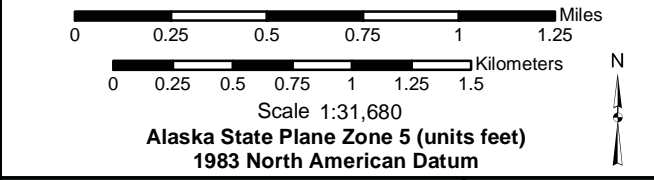
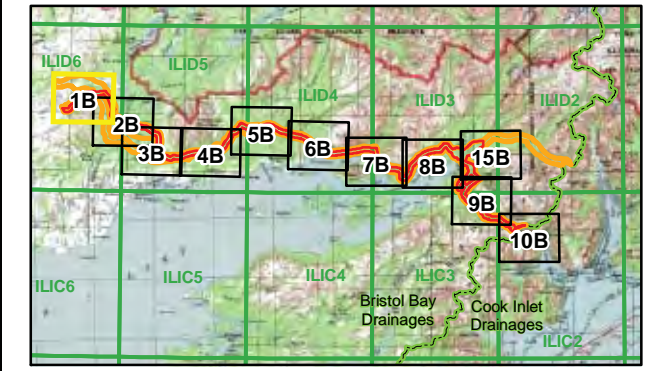
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities

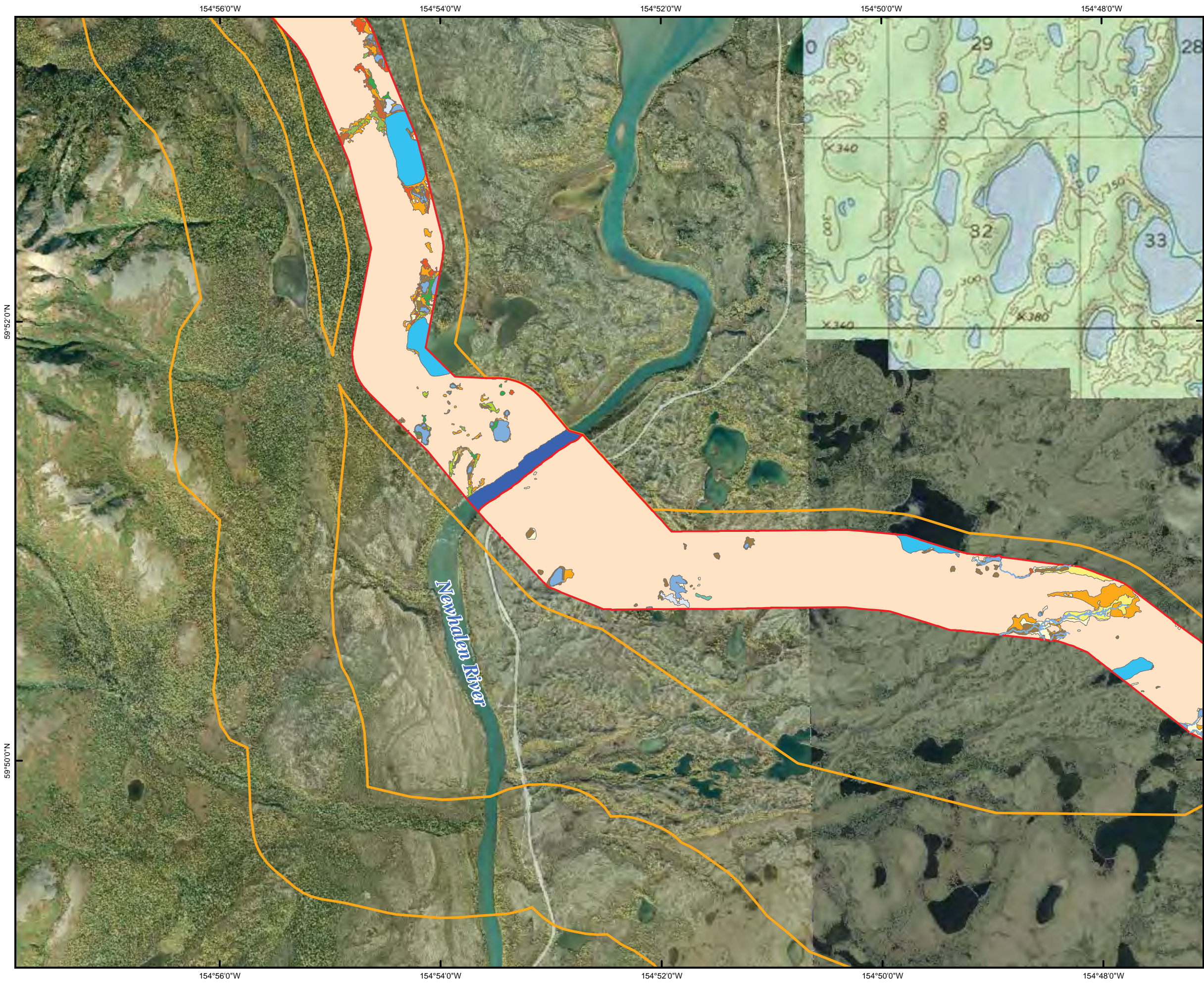
**Enhanced National Wetlands Inventory (ENWI) Classification**

Coniferous Forests	PSS1/ML1	PEM2/1
PFO4	PSS3	PUB/EM
PFO4/SS1	PSS4	PEM2
PSS1/FO4	PSS4/1	PUS/EM1
Mixed Forests	Shrub/Herbaceous	Ponds
PFO1/4	PSS1/EM1	PUB
PFO4/1	Forested Shrub	PUS
Deciduous Forests	PFO1/SS1	Lakes
PFO1	Herbaceous/Shrub	L
PFO1/SS1	Herbaceous	River/Stream
PSS1/FO1	Herbaceous	R3UB
Shrubs	PEM1	R3US
PSS1	PEM1/ML1	Non-wetlands
PSS1/4	Emergent Herbaceous	U
PSS1/EM2	PEM1/2	
PSS1/US	PEM1/US	

Note: For full names of classifications and descriptions of codes, see Table 14.2-5.



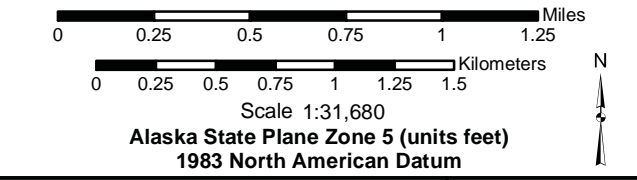
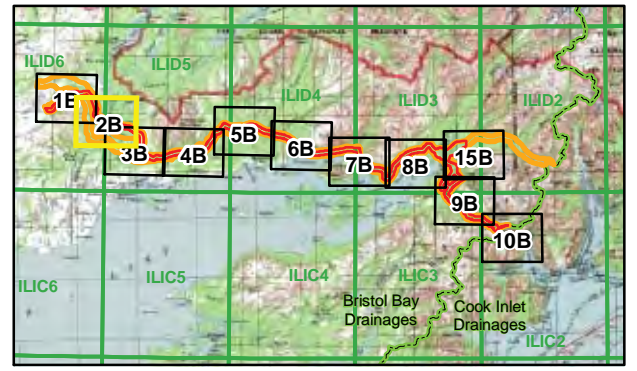




**Figure 14.2-4**  
**Tile 2B**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

- Legend**
- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Enhanced National Wetlands Inventory (ENWI) Classification**
- |                    |                     |              |
|--------------------|---------------------|--------------|
| Coniferous Forests | PSS1/ML1            | PEM2/1       |
| PFO4               | PSS3                | PUB/EM       |
| PFO4/SS1           | PSS4                | PEM2         |
| PSS1/FO4           | PSS4/1              | PUS/EM1      |
| Mixed Forests      | Shrub/Herbaceous    | Ponds        |
| PFO1/4             | PSS1/EM1            | PUB          |
| PFO4/1             | Forested Shrub      | PUS          |
| Deciduous Forests  | PFO1/SS1            | Lakes        |
| PFO1               | Herbaceous/Shrub    | L            |
| PFO1/SS1           | PEM1/SS1            | River/Stream |
| PSS1/FO1           | Herbaceous          | R3UB         |
| Shrubs             | PEM1                | R3US         |
| PSS1               | PEM1/ML1            | Non-wetlands |
| PSS1/4             | Emergent Herbaceous | U            |
| PSS1/EM2           | PEM1/2              |              |
| PSS1/US            | PEM1/US             |              |

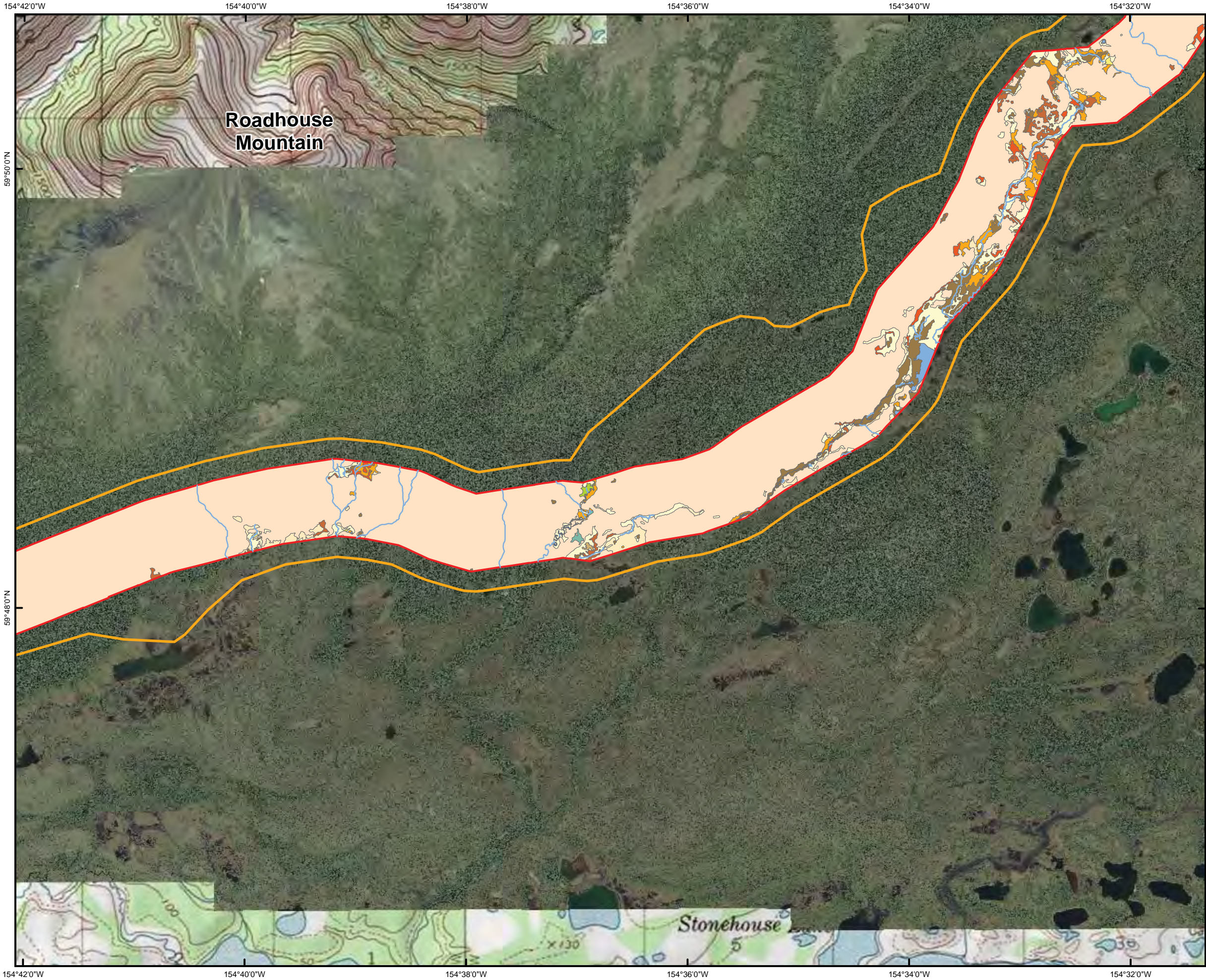
Note: For full names of classifications and descriptions of codes, see Table 14.2-5.











**Figure 14.2-4**  
**Tile 4B**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

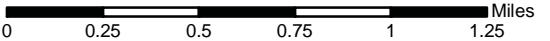
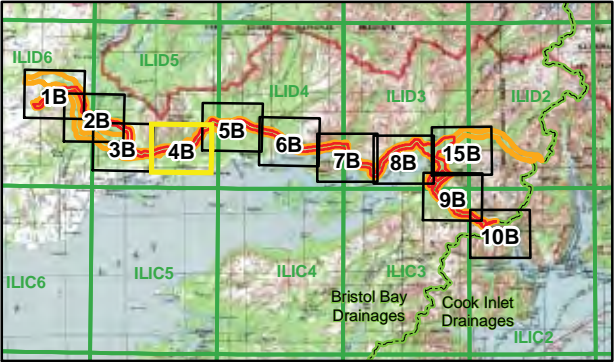
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities

**Enhanced National Wetlands Inventory (ENWI) Classification**

Coniferous Forests	PSS1/ML1	PEM2/1
PFO4	PSS3	PUB/EM
PFO4/SS1	PSS4	PEM2
PSS1/FO4	PSS4/1	PUS/EM1
Mixed Forests	Shrub/Herbaceous	Ponds
PFO1/4	PSS1/EM1	PUB
PFO4/1	Forested Shrub	PUS
Deciduous Forests	PFO1/SS1	Lakes
PFO1	Herbaceous/Shrub	L
PFO1/SS1	PEM1/SS1	River/Stream
PSS1/FO1	Herbaceous	R3UB
Shrubs	PEM1	R3US
PSS1	PEM1/ML1	Non-wetlands
PSS1/4	Emergent Herbaceous	U
PSS1/EM2	PEM1/2	
PSS1/US	PEM1/US	

Note: For full names of classifications and descriptions of codes, see Table 14.2-5.



Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

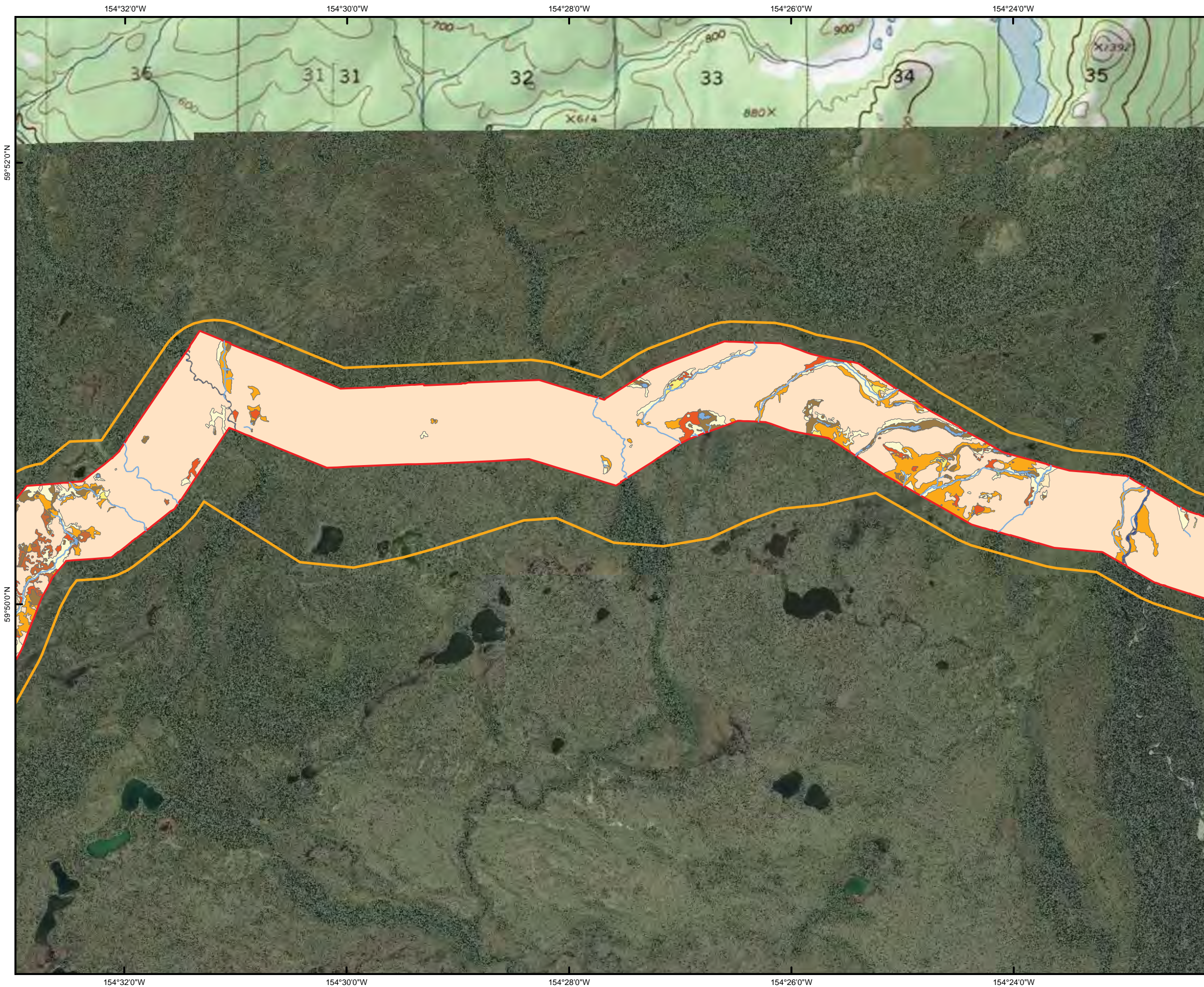
File: RDI\_HDR\_EBD\_Fig14.2-4\_ENWI\_Tiled11X17L\_1of11\_D04.mxd

Date: July 18, 2011

Version: 4

Author: RDI-LS





**Figure 14.2-4**  
**Tile 5B**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

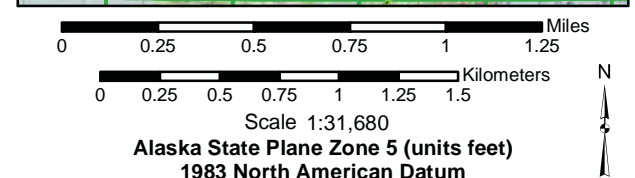
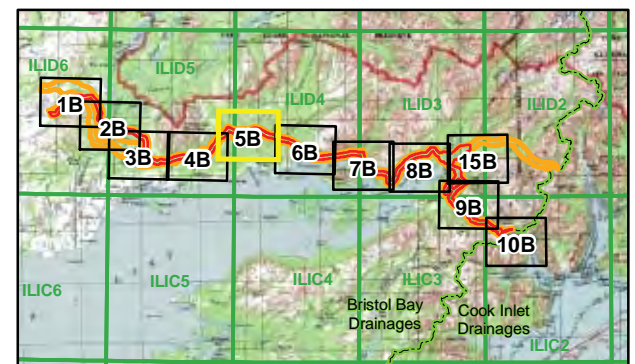
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities

**Enhanced National Wetlands Inventory (ENWI) Classification**

Coniferous Forests	PSS1/ML1	PEM2/1
PFO4	PSS3	PUB/EM
PFO4/SS1	PSS4	PEM2
PSS1/FO4	PSS4/1	PUS/EM1
Mixed Forests	Shrub/Herbaceous	Ponds
PFO1/4	PSS1/EM1	PUB
PFO4/1	Forested Shrub	PUS
Deciduous Forests	PFO1/SS1	Lakes
PFO1	Herbaceous/Shrub	L
PFO1/SS1	Herbaceous	River/Stream
PSS1/FO1	Herbaceous	R3UB
Shrubs	PEM1	R3US
PSS1	PEM1/ML1	Non-wetlands
PSS1/4	Emergent Herbaceous	U
PSS1/EM2	PEM1/2	
PSS1/US	PEM1/US	

Note: For full names of classifications and descriptions of codes, see Table 14.2-5.

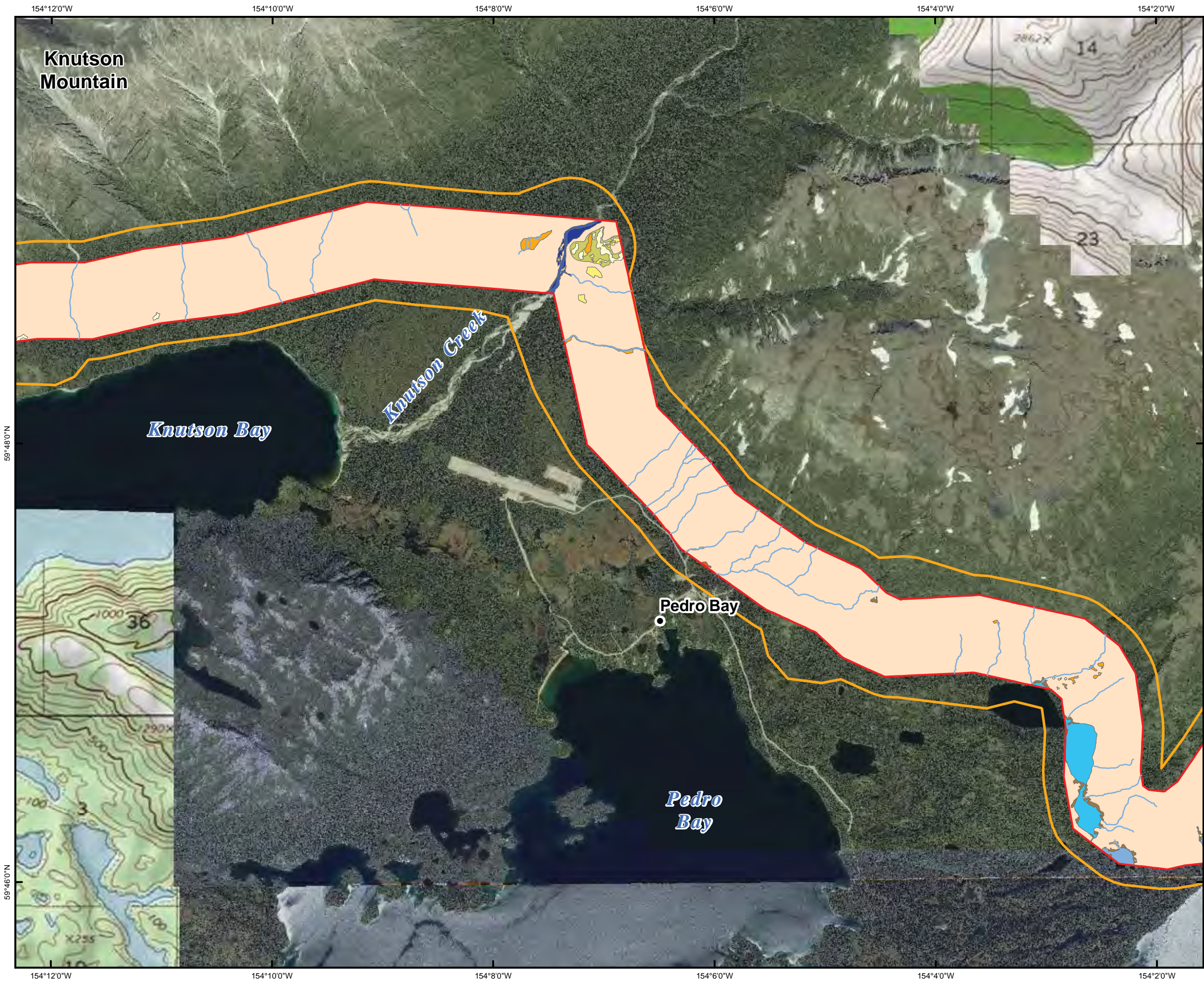


File: RDI_HDR_EBD_Fig14.2-4_ENWI_Tiled11X17L_1of11_D04.mxd	Date: July 18, 2011
Version: 4	Author: RDI-LS









**Figure 14.2-4**  
**Tile 7B**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

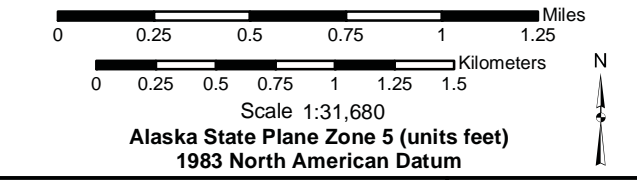
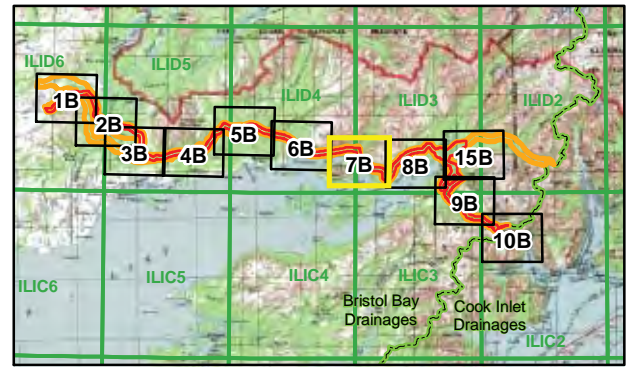
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities

**Enhanced National Wetlands Inventory (ENWI) Classification**

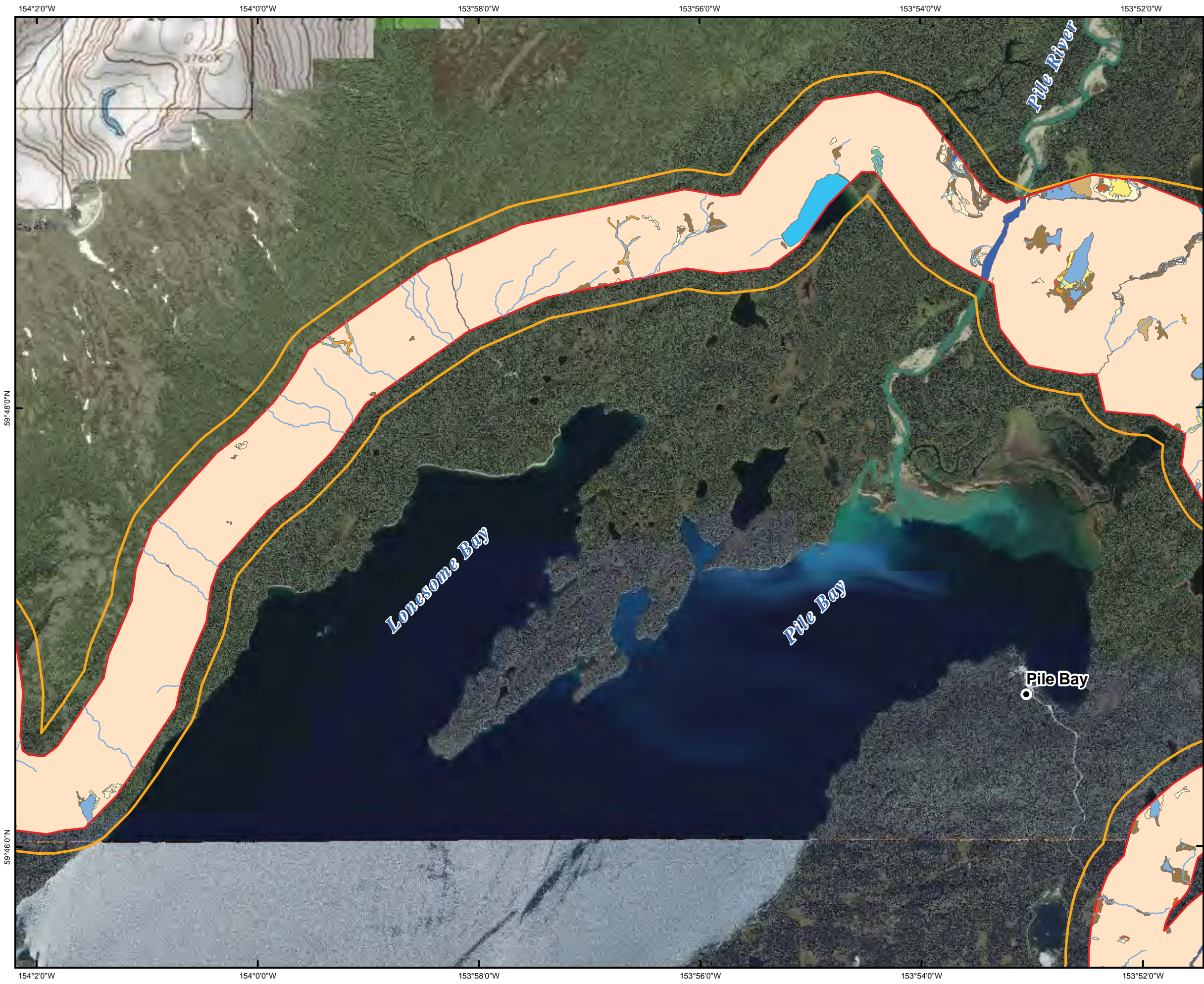
Coniferous Forests	PSS1/ML1	PEM2/1
PFO4	PSS3	PUB/EM
PFO4/SS1	PSS4	PEM2
PSS1/FO4	PSS4/1	PUS/EM1
Mixed Forests	Shrub/Herbaceous	Ponds
PFO1/4	PSS1/EM1	PUB
PFO4/1	Forested Shrub	PUS
Deciduous Forests	PFO1/SS1	Lakes
PFO1	Herbaceous/Shrub	L
PFO1/SS1	PEM1/SS1	River/Stream
PSS1/FO1	Herbaceous	R3UB
Shrubs	PEM1	R3US
PSS1	PEM1/ML1	Non-wetlands
PSS1/4	Emergent Herbaceous	U
PSS1/EM2	PEM1/2	
PSS1/US	PEM1/US	

Note: For full names of classifications and descriptions of codes, see Table 14.2-5.



File: RDI_HDR_EBD_Fig14.2-4_ENWI_Tiled11X17L_1of11_D04.mxd	Date: July 18, 2011
Version: 4	Author: RDI-LS





**Figure 14.2-4**  
**Tile 8B**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

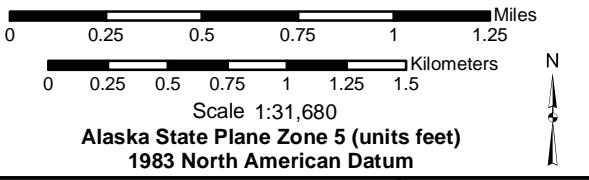
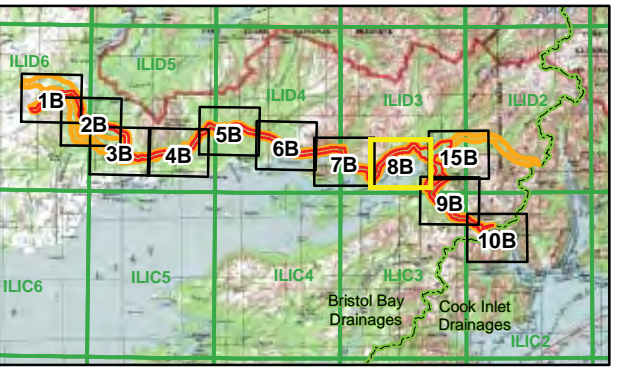
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities

**Enhanced National Wetlands Inventory (ENWI) Classification**

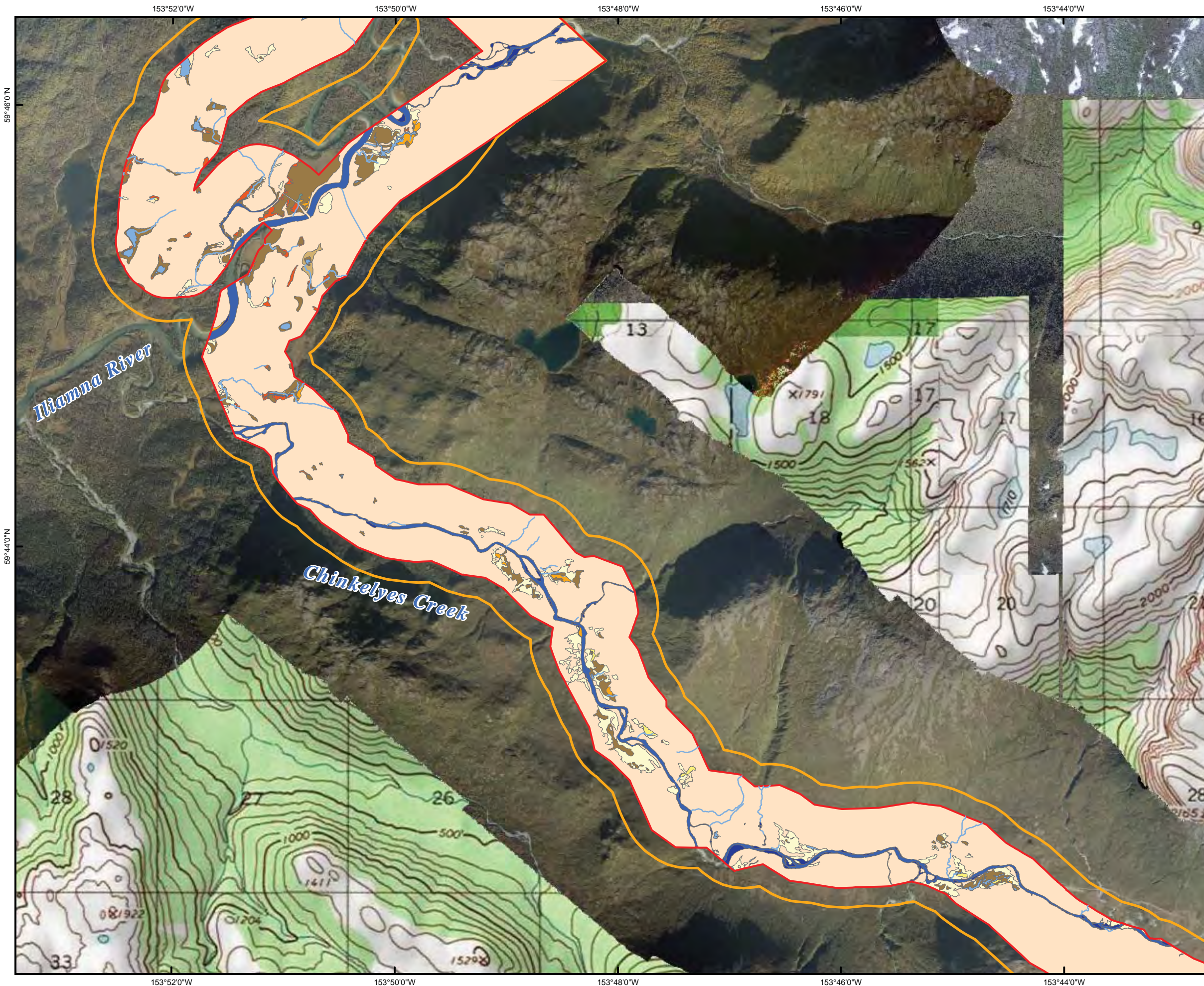
Coniferous Forests	PSS1/ML1	PEM2/1
PFO4	PSS3	PUB/EM
PFO4/SS1	PSS4	PEM2
PSS1/FO4	PSS4/1	PUS/EM1
Mixed Forests	Shrub/Herbaceous	Ponds
PFO1/4	PSS1/EM1	PUB
PFO4/1	Forested Shrub	PUS
Deciduous Forests	PFO1/SS1	Lakes
PFO1	Herbaceous/Shrub	L
PFO1/SS1	Herbaceous	River/Stream
PSS1/FO1	Herbaceous	R3UB
Shrubs	PEM1	R3US
PSS1	PEM1/ML1	Non-wetlands
PSS1/4	Emergent Herbaceous	U
PSS1/EM2	PEM1/2	
PSS1/US	PEM1/US	

Note: For full names of classifications and descriptions of codes, see Table 14.2-5.



File: RDI_HDR_EBD_Fig14.2-4_ENWI_Tiled11X17L_1of11_D04.mxd	Date: July 18, 2011
Version: 4	Author: RDI-LS



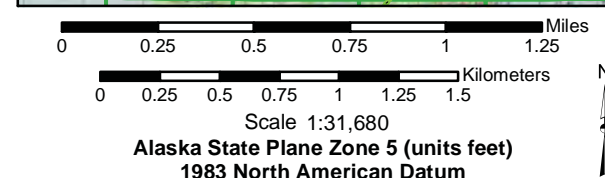
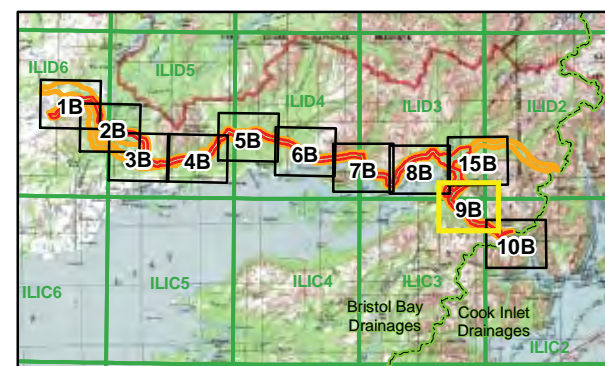


**Figure 14.2-4**  
**Tile 9B**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

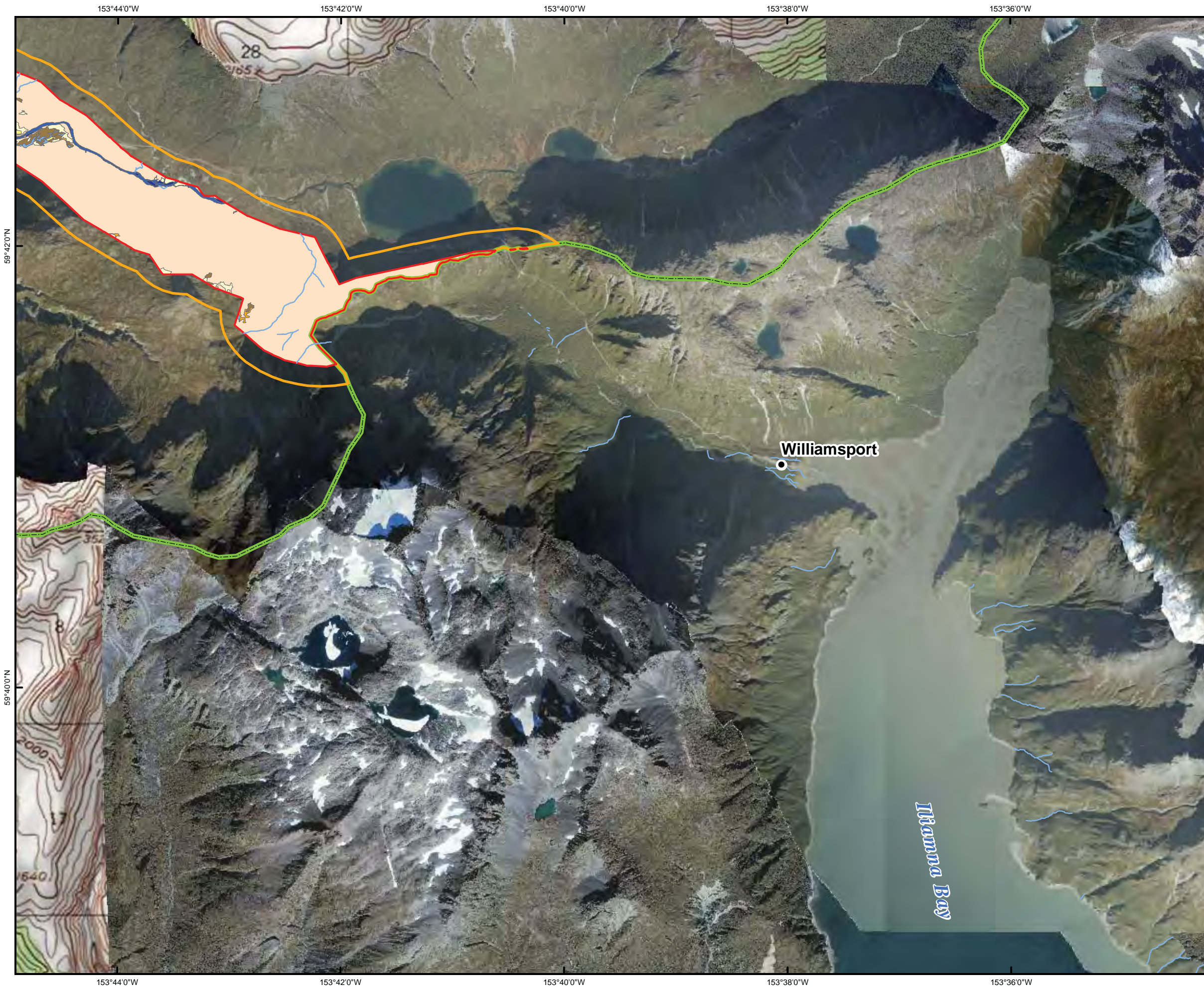
- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Enhanced National Wetlands Inventory (ENWI) Classification
- |   |   |  |
|---|---|--|
| Coniferous Forests  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #f4a460; border: 1px solid black; margin-right: 5px;"></span> PSS1/ML1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #a4d4a4; border: 1px solid black; margin-right: 5px;"></span> PEM2/1  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #c4c464; border: 1px solid black; margin-right: 5px;"></span> PFO4     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #f4c464; border: 1px solid black; margin-right: 5px;"></span> PSS3     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #64a464; border: 1px solid black; margin-right: 5px;"></span> PUB/EM  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #848444; border: 1px solid black; margin-right: 5px;"></span> PFO4/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #c46464; border: 1px solid black; margin-right: 5px;"></span> PSS4     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #448484; border: 1px solid black; margin-right: 5px;"></span> PEM2    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #44c464; border: 1px solid black; margin-right: 5px;"></span> PSS1/FO4 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #c44444; border: 1px solid black; margin-right: 5px;"></span> PSS4/1   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #64c4c4; border: 1px solid black; margin-right: 5px;"></span> PUS/EM1 |
| Mixed Forests   | Shrub/Herbaceous  | Ponds  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #c4c444; border: 1px solid black; margin-right: 5px;"></span> PFO1/4   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #f4f4c4; border: 1px solid black; margin-right: 5px;"></span> PSS1/EM1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #a4c4f4; border: 1px solid black; margin-right: 5px;"></span> PUB     |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #84c464; border: 1px solid black; margin-right: 5px;"></span> PFO4/1   | Forested Shrub  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #c4c4f4; border: 1px solid black; margin-right: 5px;"></span> PUS     |
| Deciduous Forests   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #f4f484; border: 1px solid black; margin-right: 5px;"></span> PFO1/SS1 | Lakes  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #c4c484; border: 1px solid black; margin-right: 5px;"></span> PFO1     | Herbaceous/Shrub  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #44c4c4; border: 1px solid black; margin-right: 5px;"></span> L       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #84c484; border: 1px solid black; margin-right: 5px;"></span> PFO1/SS1 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #f4f444; border: 1px solid black; margin-right: 5px;"></span> PEM1/SS1 | River/Stream   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #c4c4c4; border: 1px solid black; margin-right: 5px;"></span> PSS1/FO1 | Herbaceous  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #0044c4; border: 1px solid black; margin-right: 5px;"></span> R3UB    |
| Shrubs  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #c48444; border: 1px solid black; margin-right: 5px;"></span> PEM1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #0000c4; border: 1px solid black; margin-right: 5px;"></span> R3US    |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #f48444; border: 1px solid black; margin-right: 5px;"></span> PSS1     | <span style="display: inline-block; width: 15px; height: 10px; background-color: #f4c484; border: 1px solid black; margin-right: 5px;"></span> PEM1/ML1 | Non-wetlands   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #f44444; border: 1px solid black; margin-right: 5px;"></span> PSS1/4   | Emergent Herbaceous   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #f4f4f4; border: 1px solid black; margin-right: 5px;"></span> U       |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #f4f484; border: 1px solid black; margin-right: 5px;"></span> PSS1/EM2 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #a4c4f4; border: 1px solid black; margin-right: 5px;"></span> PEM1/2   |  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #f48484; border: 1px solid black; margin-right: 5px;"></span> PSS1/US  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #44c484; border: 1px solid black; margin-right: 5px;"></span> PEM1/US  |  |

Note: For full names of classifications and descriptions of codes, see Table 14.2-5.







File: RDI_HDR_EBD_Fig14.2-4_ENWI_Tiled11X17L_1of11_D04.mxd	Date: July 18, 2011
Version: 4	Author: RDI-LS






































**Figure 14.2-4**  
**Tile 10B**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

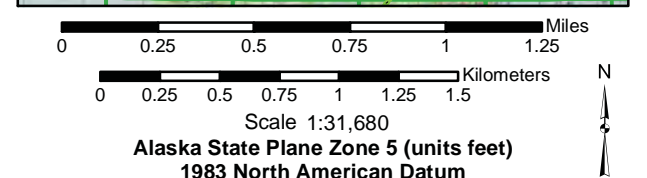
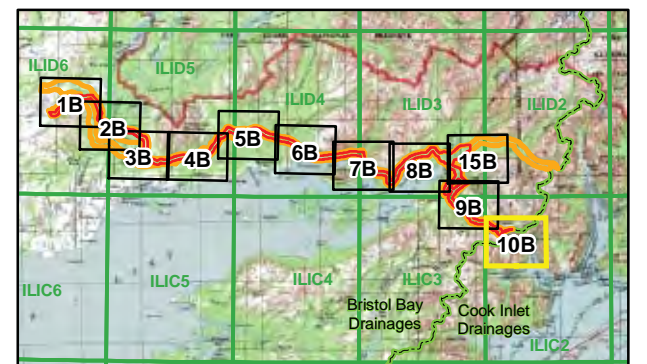
**Legend**

-  Transportation-corridor Mapping Area
-  Transportation-corridor Study Area
-  Bristol Bay/Cook Inlet Drainages Boundary
-  Communities

**Enhanced National Wetlands Inventory (ENWI) Classification**

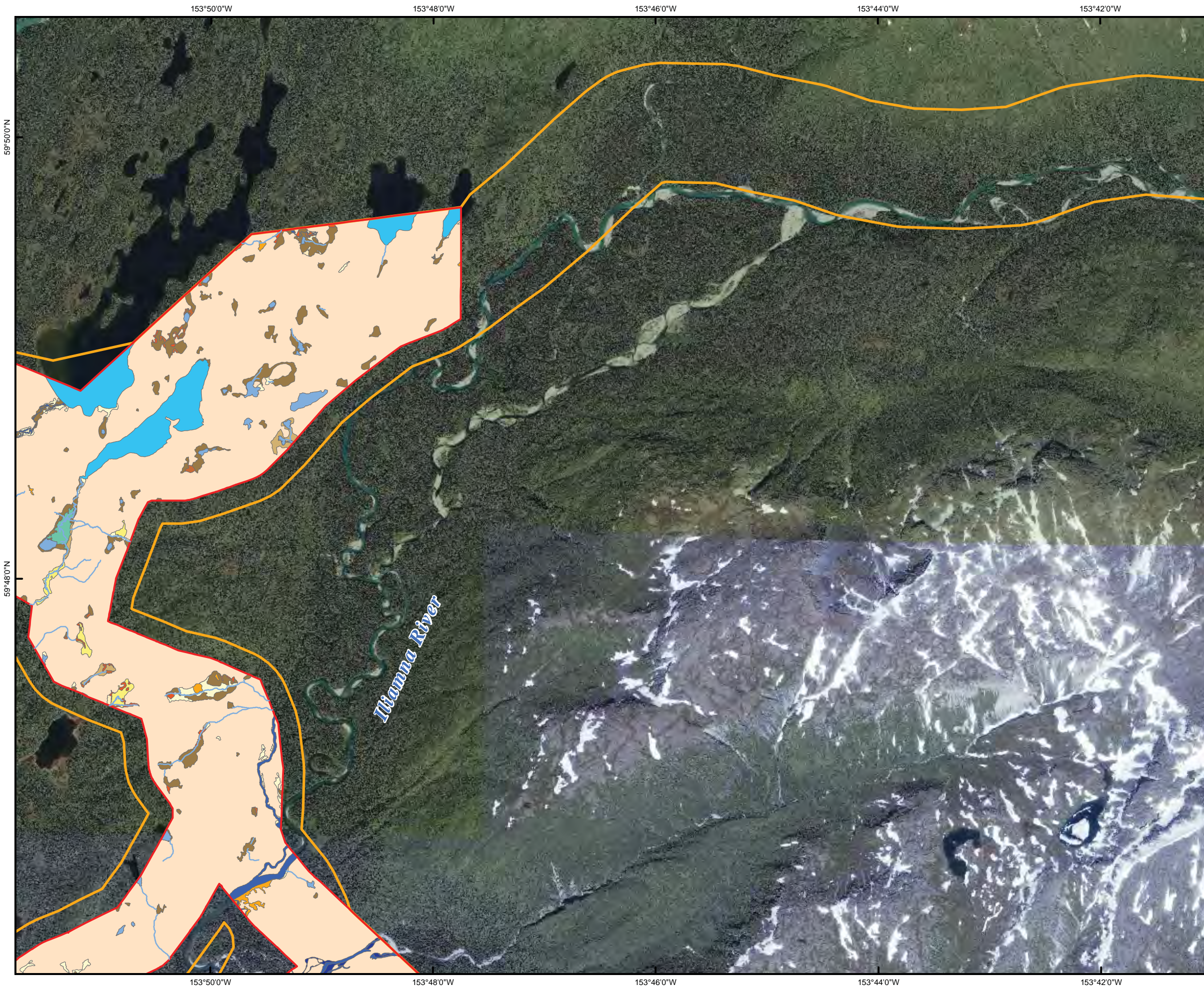
Coniferous Forests		 PSS1/ML1	 PEM2/1
 PFO4	 PSS3	 PUB/EM	
 PFO4/SS1	 PSS4	 PEM2	
 PSS1/FO4	 PSS4/1	 PUS/EM1	
Mixed Forests		Shrub/Herbaceous	Ponds
 PFO1/4	 PSS1/EM1		 PUB
 PFO4/1	Forested Shrub		 PUS
Deciduous Forests		 PFO1/SS1	Lakes
 PFO1	Herbaceous/Shrub		 L
 PFO1/SS1	 PEM1/SS1		River/Stream
 PSS1/FO1	Herbaceous		 R3UB
Shrubs		 PEM1	 R3US
 PSS1	 PEM1/ML1		Non-wetlands
 PSS1/4	Emergent Herbaceous		 U
 PSS1/EM2	 PEM1/2		
 PSS1/US	 PEM1/US		

Note: For full names of classifications and descriptions of codes, see Table 14.2-5.



File: RDI_HDR_EBD_Fig14.2-4_ENWI_Tiled11X17L_1of11_D04.mxd	Date: July 18, 2011
Version: 4	Author: RDI-LS





**Figure 14.2-4**  
**Tile 15B**  
**Enhanced National Wetlands**  
**Inventory Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

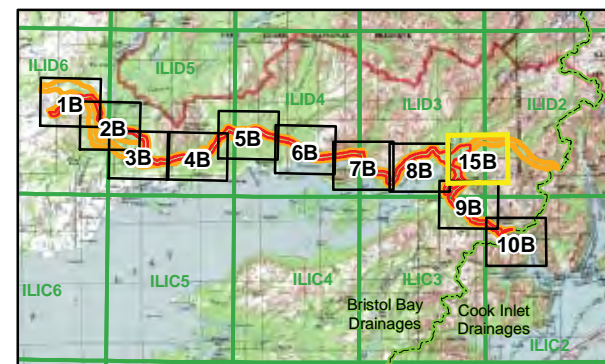
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities

**Enhanced National Wetlands Inventory (ENWI) Classification**

Coniferous Forests	PSS1/ML1	PEM2/1
PFO4	PSS3	PUB/EM
PFO4/SS1	PSS4	PEM2
PSS1/FO4	PSS4/1	PUS/EM1
Mixed Forests	Shrub/Herbaceous	Ponds
PFO1/4	PSS1/EM1	PUB
PFO4/1	Forested Shrub	PUS
Deciduous Forests	PFO1/SS1	Lakes
PFO1	Herbaceous/Shrub	L
PFO1/SS1	PEM1/SS1	River/Stream
PSS1/FO1	Herbaceous	R3UB
Shrubs	PEM1	R3US
PSS1	PEM1/ML1	Non-wetlands
PSS1/4	Emergent Herbaceous	U
PSS1/EM2	PEM1/2	
PSS1/US	PEM1/US	

Note: For full names of classifications and descriptions of codes, see Table 14.2-5.



0 0.25 0.5 0.75 1 1.25 Miles  
0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

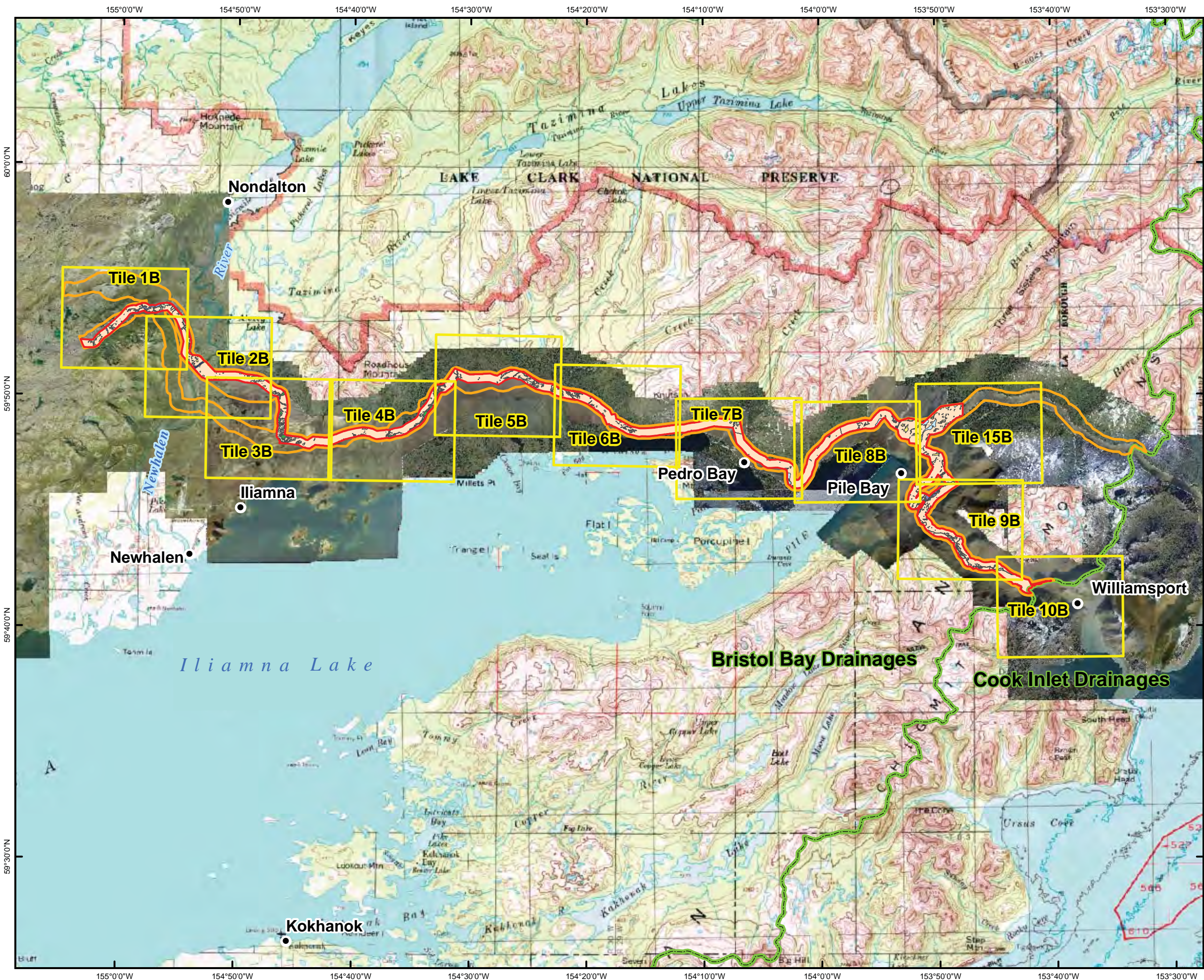
File: RDI\_HDR\_EBD\_Fig14.2-4\_ENWI\_Tiled11X17L\_1of11\_D04.mxd

Date: July 18, 2011

Version: 4

Author: RDI-LS





**Figure 14.2-5**  
**Overview**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

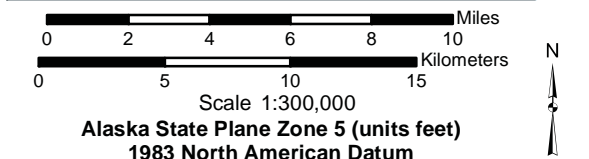
**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Grid for Detailed Mapping Tiles
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities

**Hydrogeomorphic (HGM) Classification**

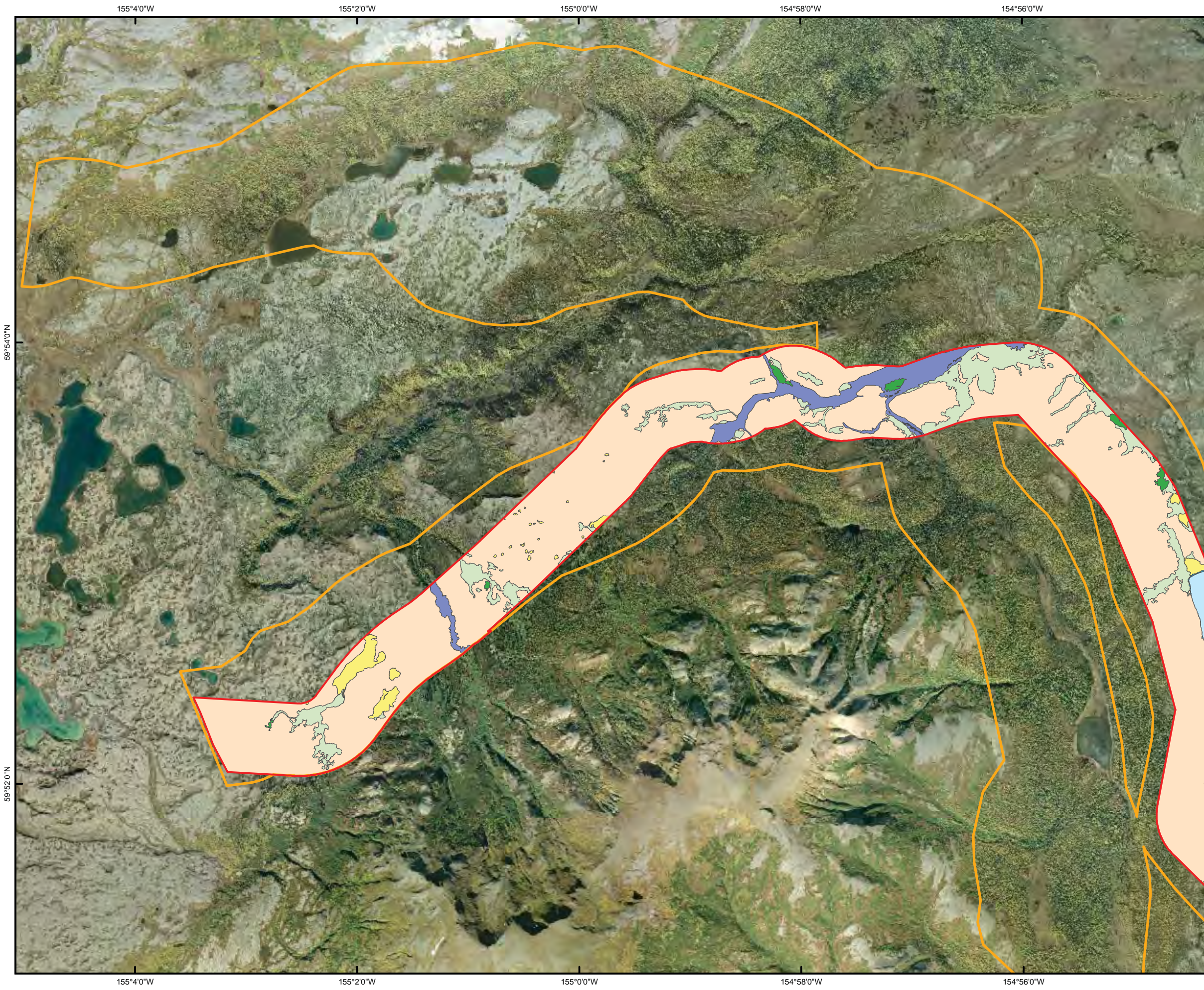
- N/A - Non-wetlands
- Slope (Groundwater Driven) Wetlands
- Flat (Precipitation Driven) Wetlands
- Depressional Wetlands
- Riverine Wetlands
- Riverine Channels
- Lacustrine Systems (Lakes)
- Lacustrine Fringe Wetlands

Note: For detailed mapping see the individual tiles in this figure series.  
Tile 11C is presented in the mapping for the Cook Inlet Study Area (EBD Chapter 39).  
Tiles 12C, 13C and 14B are not presented because mapping did not extend into those areas.



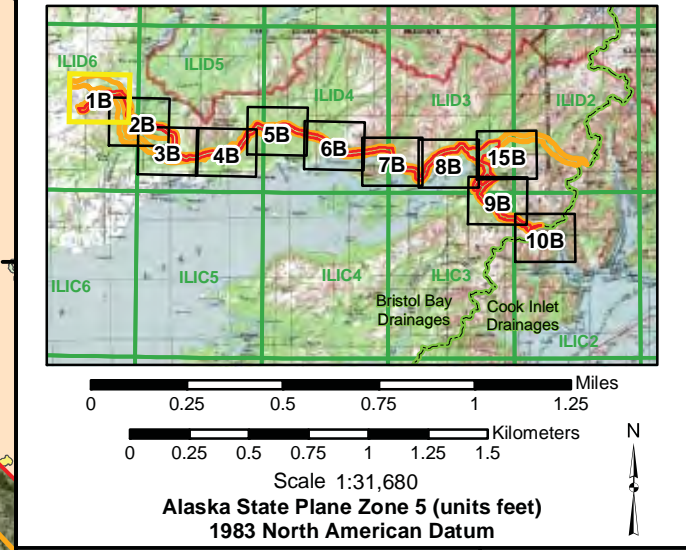
File: RDI_HDR_EBD_Fig14.2-5_Overview_HGM_11X17L_1of1_D03.mxd	Date: August 9, 2011
Version: 3	Author: RDI- LS



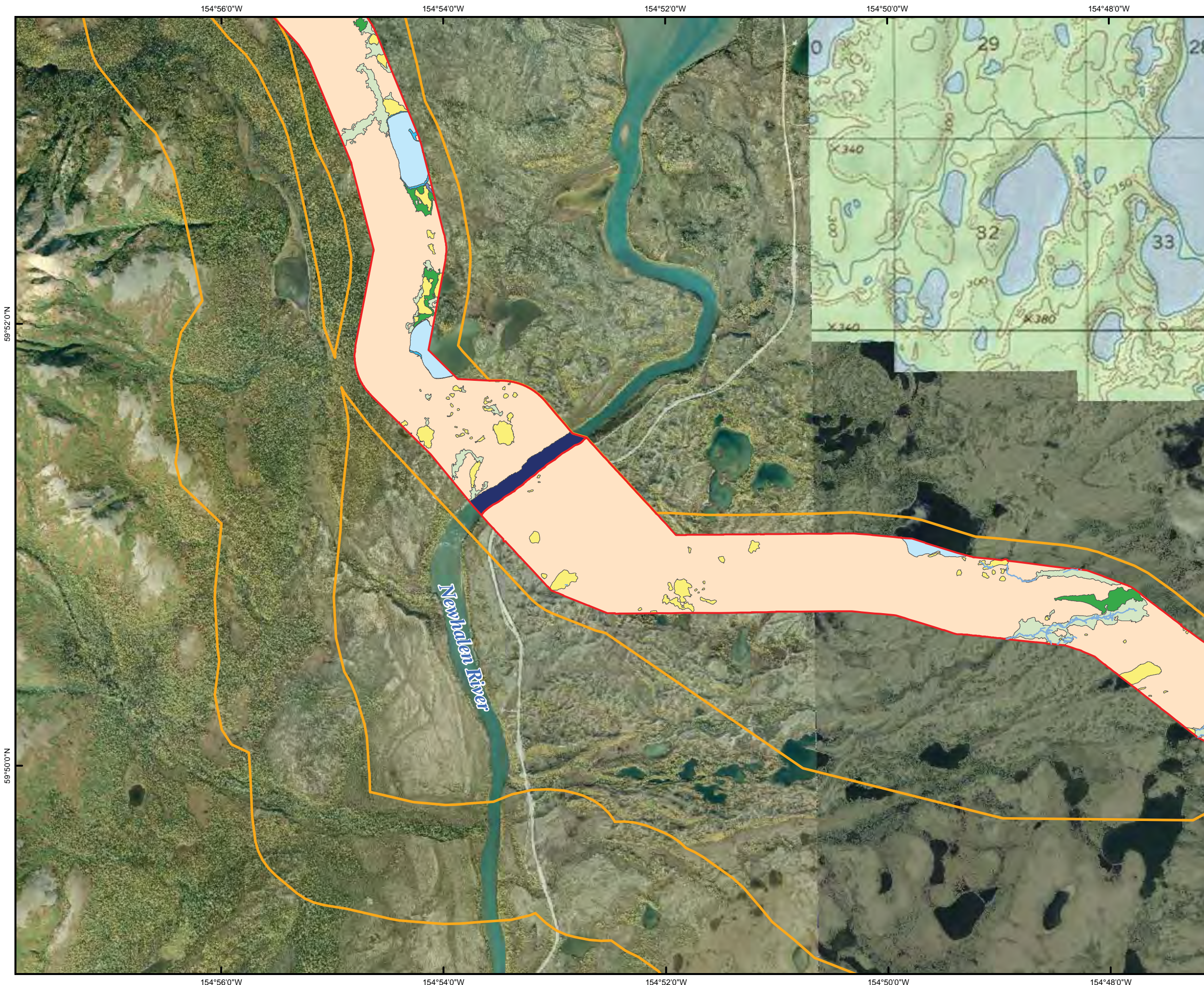


**Figure 14.2-5**  
**Tile 1B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

- Legend**
- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Hydrogeomorphic (HGM) Classification**
- N/A - Non-wetlands
  - Slope (Groundwater Driven) Wetlands
  - Flat (Precipitation Driven) Wetlands
  - Depressional Wetlands
  - Riverine Wetlands
  - Riverine Channels
  - Lacustrine Systems (Lakes)
  - Lacustrine Fringe Wetlands

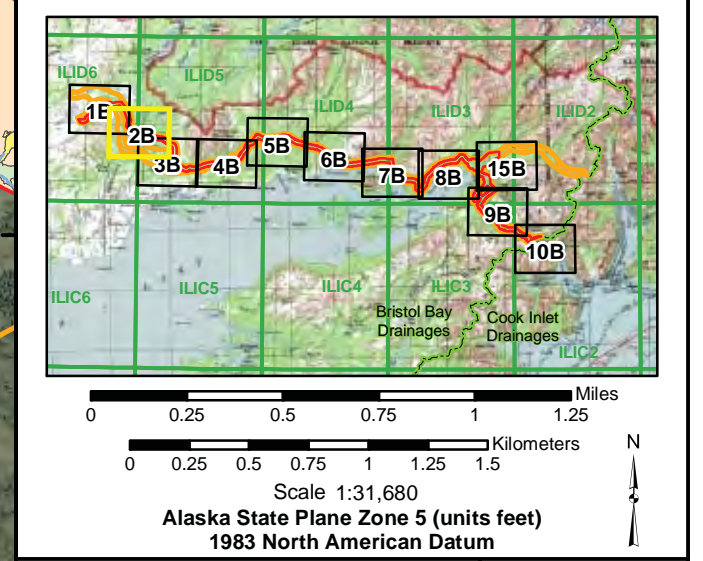




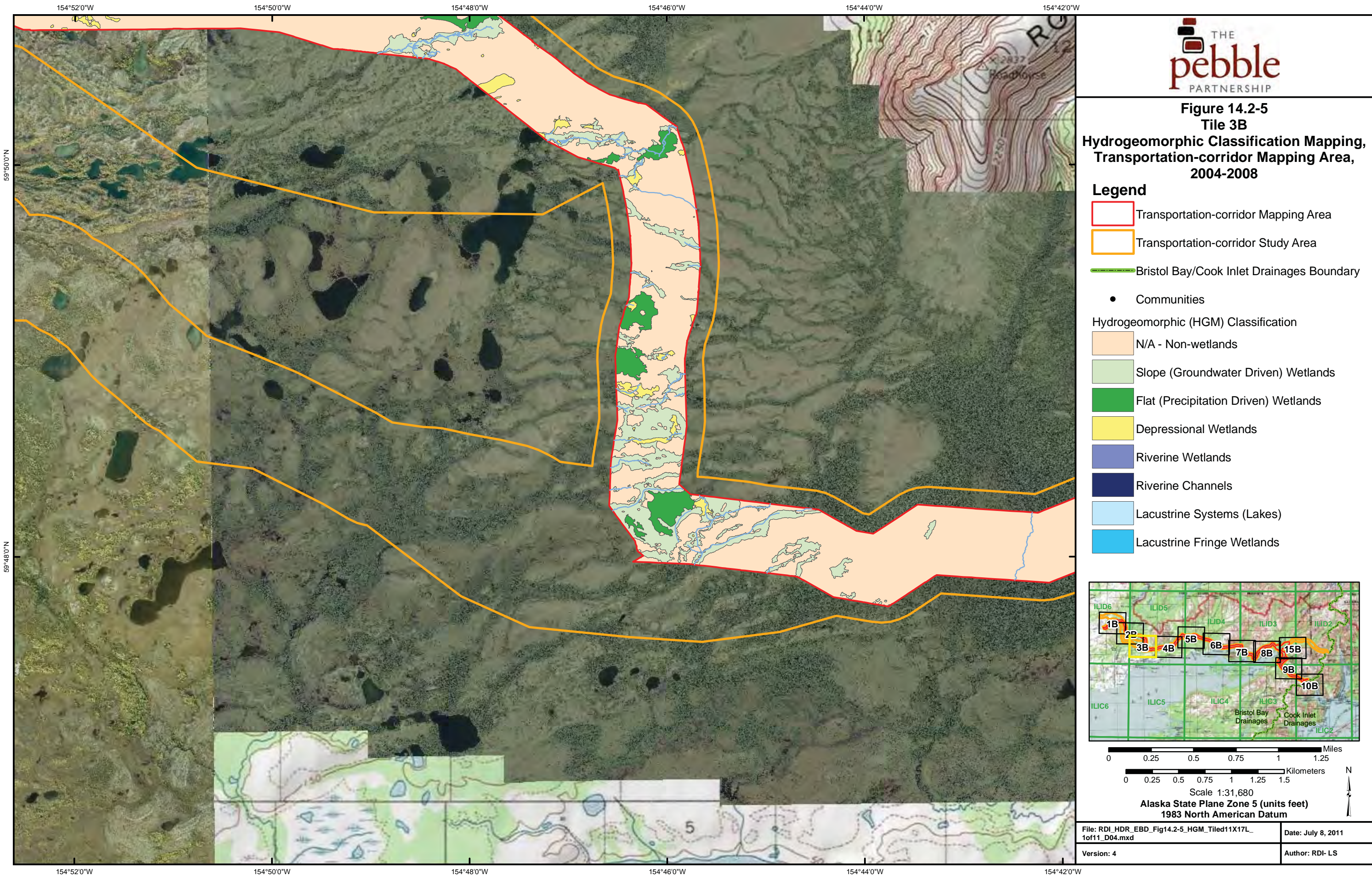


**Figure 14.2-5**  
**Tile 2B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

- Legend**
- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Hydrogeomorphic (HGM) Classification**
- N/A - Non-wetlands
  - Slope (Groundwater Driven) Wetlands
  - Flat (Precipitation Driven) Wetlands
  - Depressional Wetlands
  - Riverine Wetlands
  - Riverine Channels
  - Lacustrine Systems (Lakes)
  - Lacustrine Fringe Wetlands

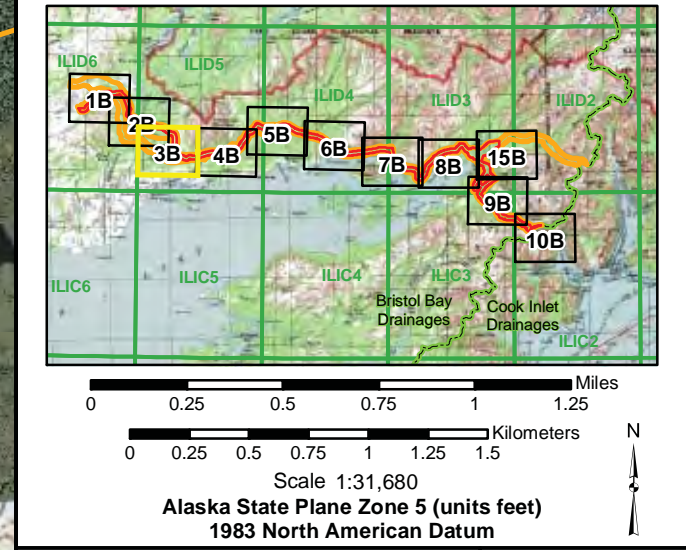






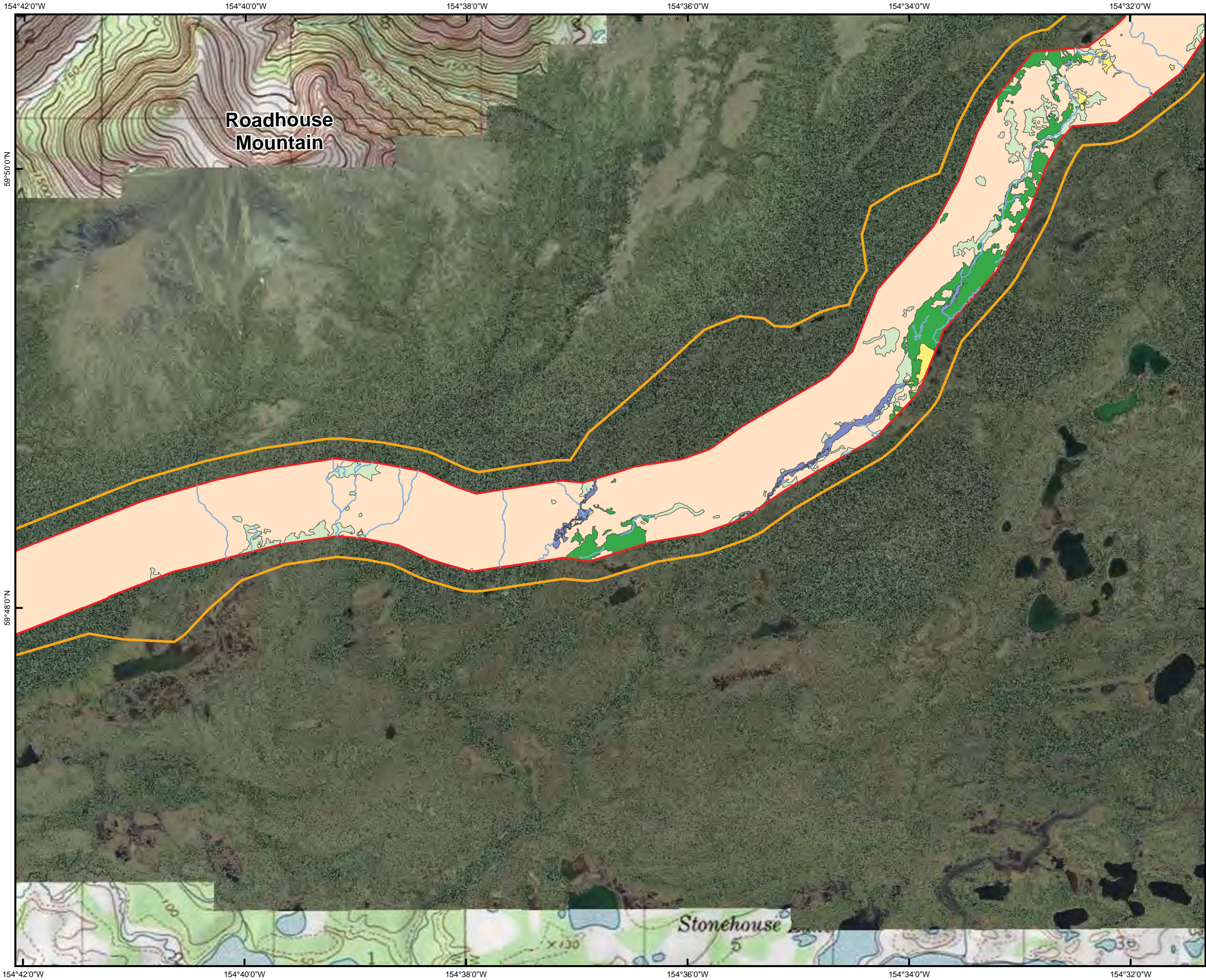
**Figure 14.2-5**  
**Tile 3B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

- Legend**
- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Hydrogeomorphic (HGM) Classification**
- N/A - Non-wetlands
  - Slope (Groundwater Driven) Wetlands
  - Flat (Precipitation Driven) Wetlands
  - Depressional Wetlands
  - Riverine Wetlands
  - Riverine Channels
  - Lacustrine Systems (Lakes)
  - Lacustrine Fringe Wetlands



File: RDI_HDR_EBD_Fig14.2-5_HGM_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS

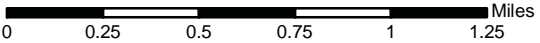
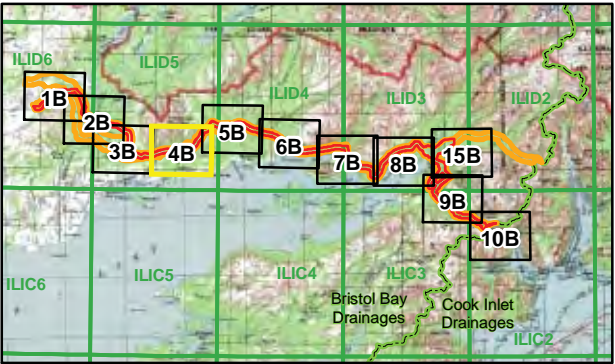




**Figure 14.2-5  
Tile 4B  
Hydrogeomorphic Classification Mapping,  
Transportation-corridor Mapping Area,  
2004-2008**

**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Hydrogeomorphic (HGM) Classification
  - N/A - Non-wetlands
  - Slope (Groundwater Driven) Wetlands
  - Flat (Precipitation Driven) Wetlands
  - Depressional Wetlands
  - Riverine Wetlands
  - Riverine Channels
  - Lacustrine Systems (Lakes)
  - Lacustrine Fringe Wetlands

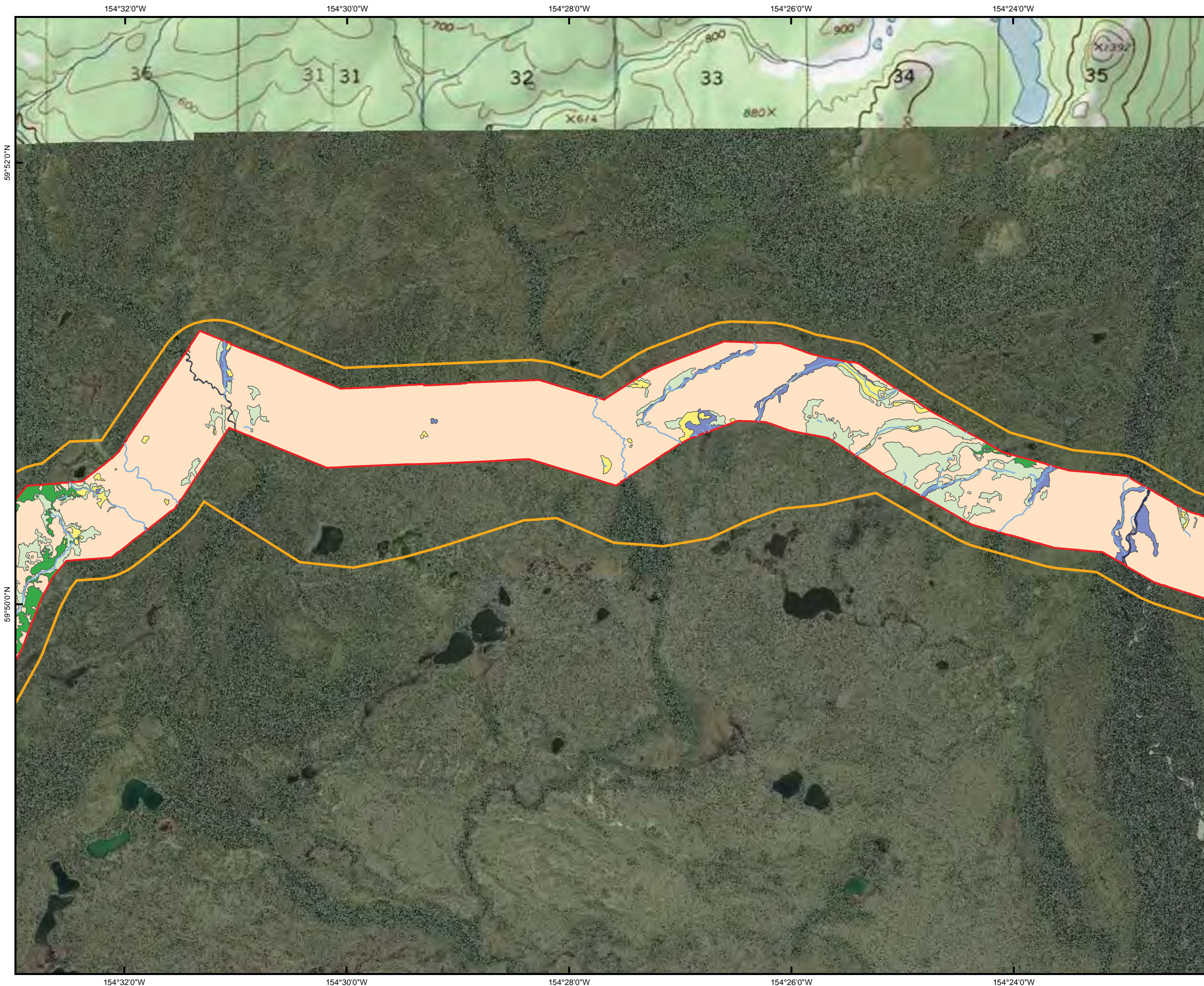


Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_HDR_EBD_Fig14.2-5_HGM_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS

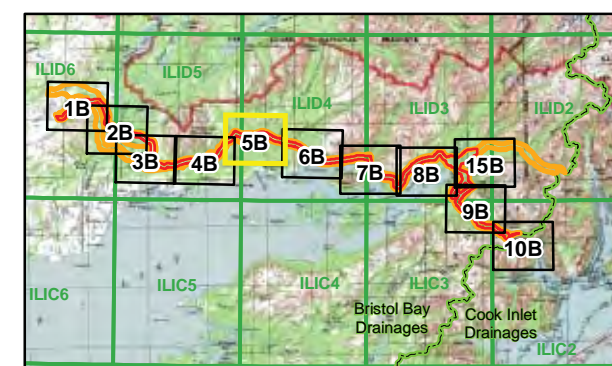




**Figure 14.2-5**  
**Tile 5B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

- Transportation-corridor Mapping Area
- Transportation-corridor Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- Communities
- Hydrogeomorphic (HGM) Classification**
  - N/A - Non-wetlands
  - Slope (Groundwater Driven) Wetlands
  - Flat (Precipitation Driven) Wetlands
  - Depressional Wetlands
  - Riverine Wetlands
  - Riverine Channels
  - Lacustrine Systems (Lakes)
  - Lacustrine Fringe Wetlands



0 0.25 0.5 0.75 1 1.25 Miles  
0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

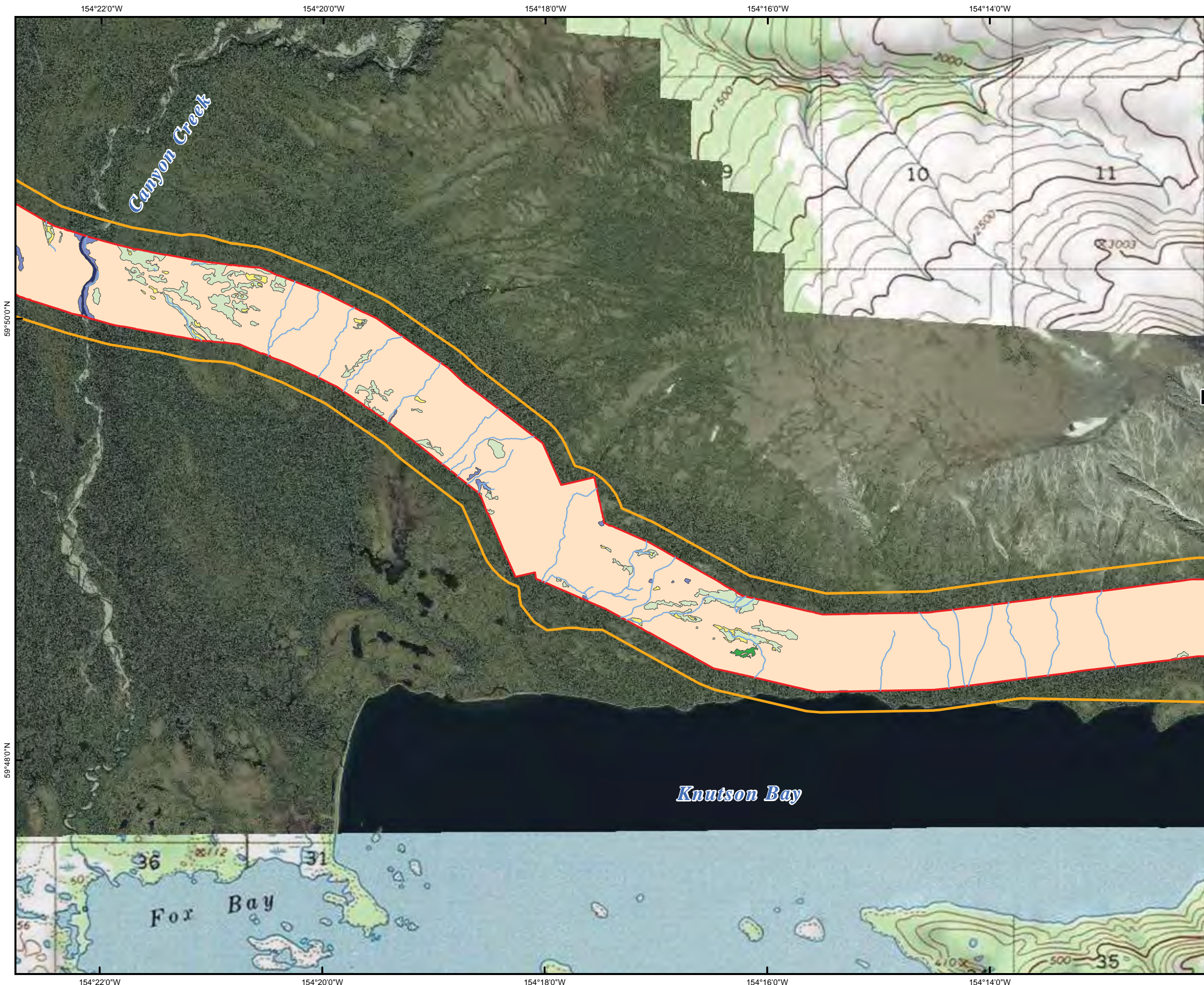
Scale 1:31,680

**Alaska State Plane Zone 5 (units feet)**  
**1983 North American Datum**

File: RDI\_HDR\_EBD\_Fig14.2-5\_HGM\_Tiled11X17L\_1of11\_D04.mxd Date: July 8, 2011

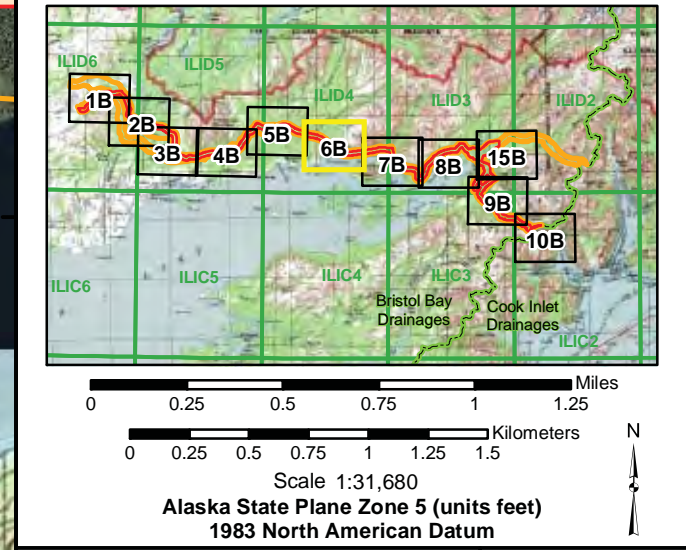
Version: 4 Author: RDI-LS



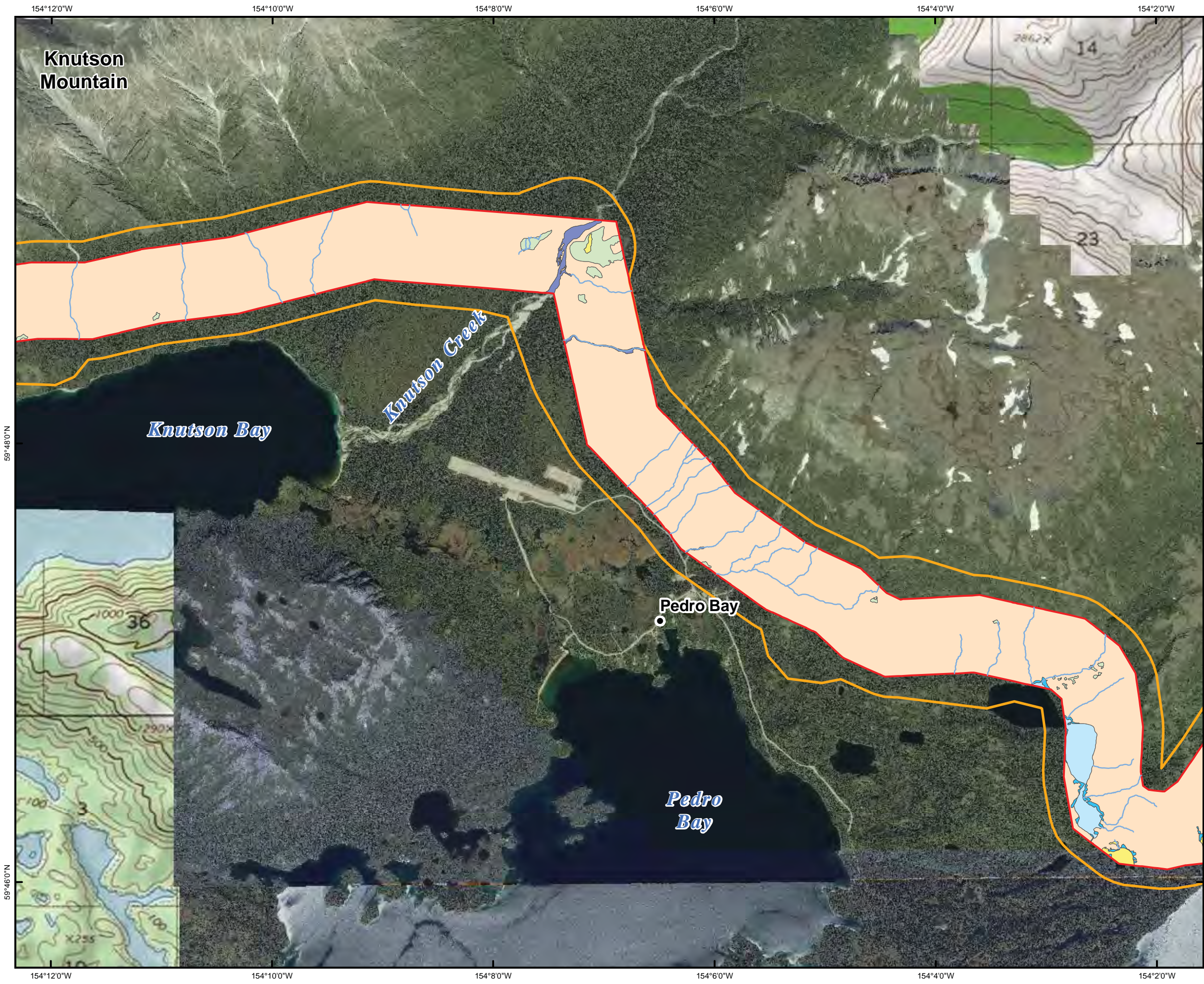


**Figure 14.2-5**  
**Tile 6B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

- Legend**
- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Hydrogeomorphic (HGM) Classification**
- N/A - Non-wetlands
  - Slope (Groundwater Driven) Wetlands
  - Flat (Precipitation Driven) Wetlands
  - Depressional Wetlands
  - Riverine Wetlands
  - Riverine Channels
  - Lacustrine Systems (Lakes)
  - Lacustrine Fringe Wetlands



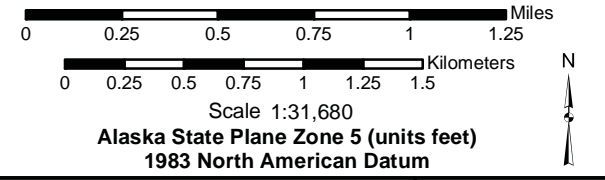
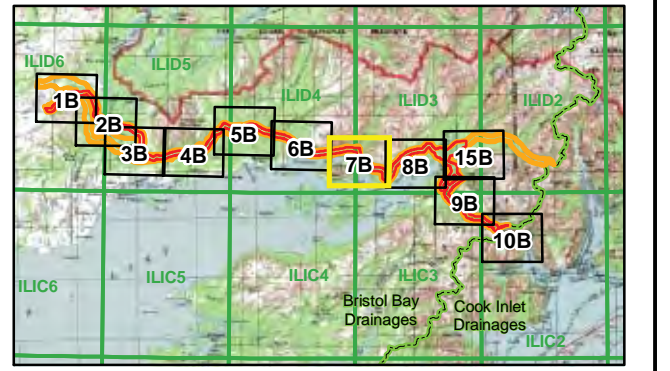




**Figure 14.2-5**  
**Tile 7B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

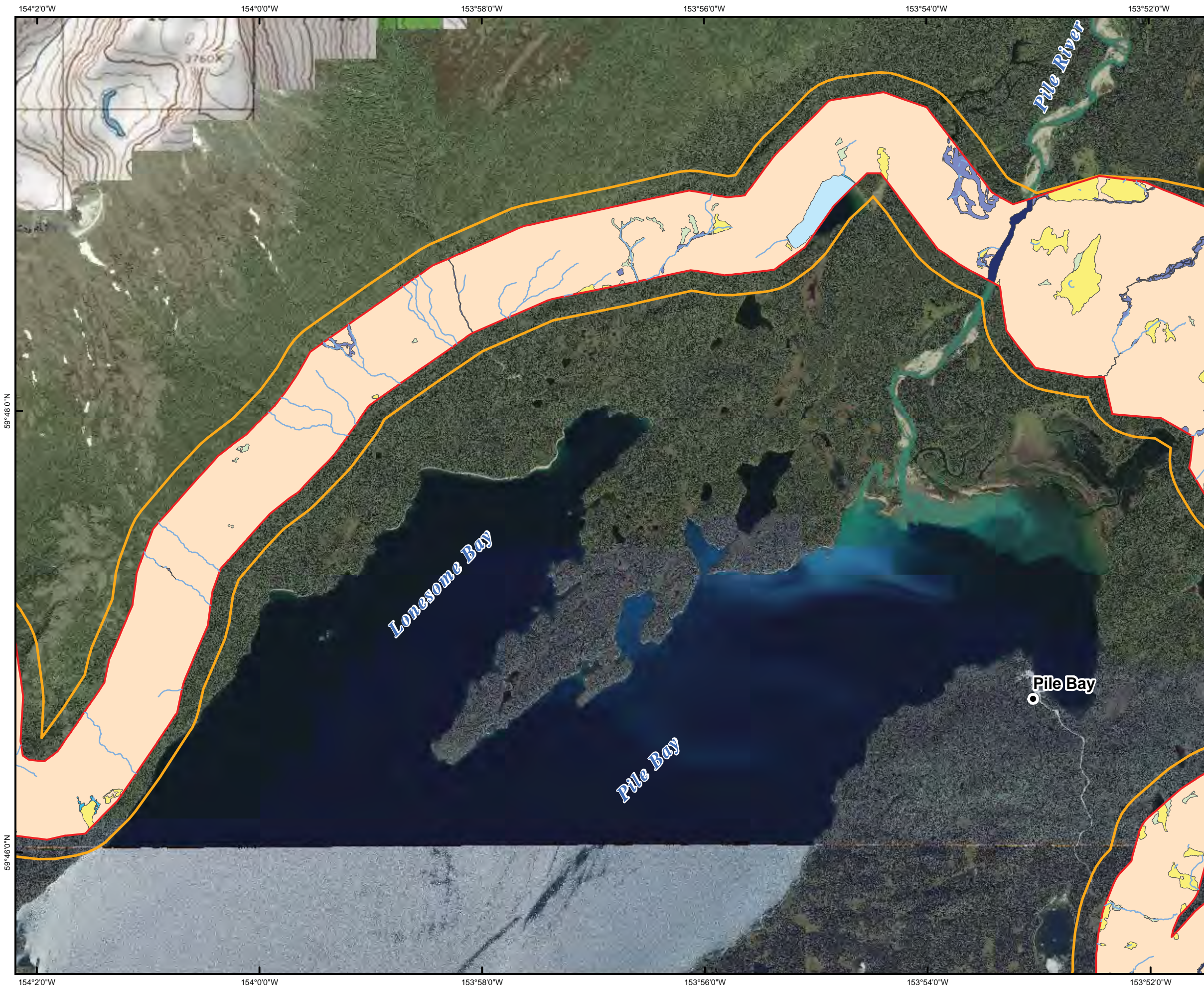
**Legend**

- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Hydrogeomorphic (HGM) Classification
- N/A - Non-wetlands
  - Slope (Groundwater Driven) Wetlands
  - Flat (Precipitation Driven) Wetlands
  - Depressional Wetlands
  - Riverine Wetlands
  - Riverine Channels
  - Lacustrine Systems (Lakes)
  - Lacustrine Fringe Wetlands



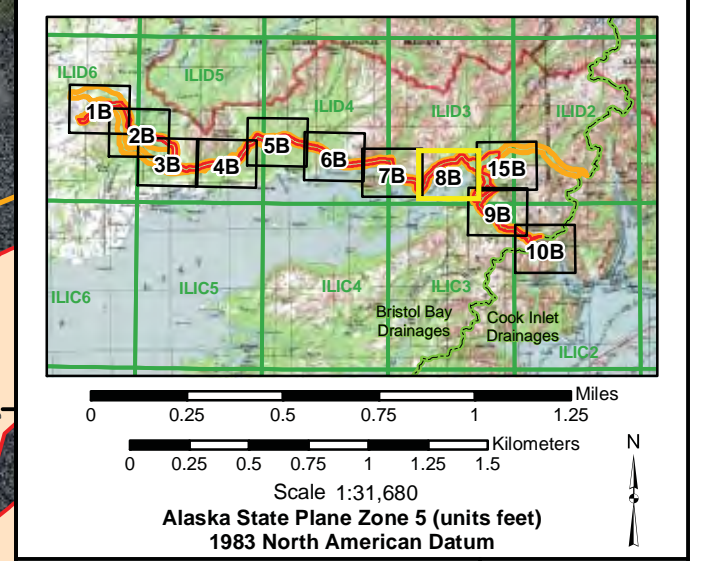
File: RDI_HDR_EBD_Fig14.2-5_HGM_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS



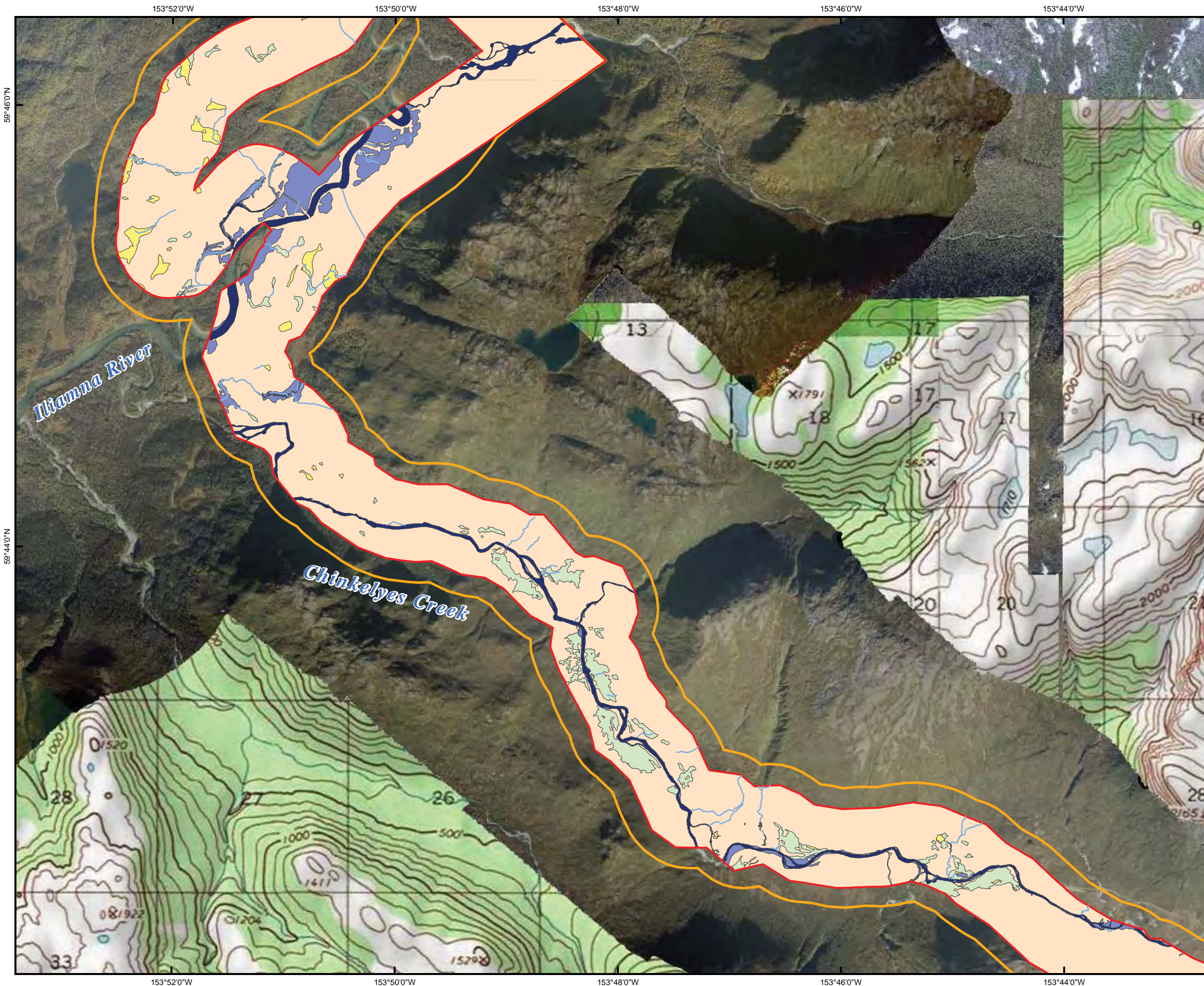


**Figure 14.2-5**  
**Tile 8B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

- Legend**
- Transportation-corridor Mapping Area
  - Transportation-corridor Study Area
  - Bristol Bay/Cook Inlet Drainages Boundary
  - Communities
- Hydrogeomorphic (HGM) Classification**
- N/A - Non-wetlands
  - Slope (Groundwater Driven) Wetlands
  - Flat (Precipitation Driven) Wetlands
  - Depressional Wetlands
  - Riverine Wetlands
  - Riverine Channels
  - Lacustrine Systems (Lakes)
  - Lacustrine Fringe Wetlands















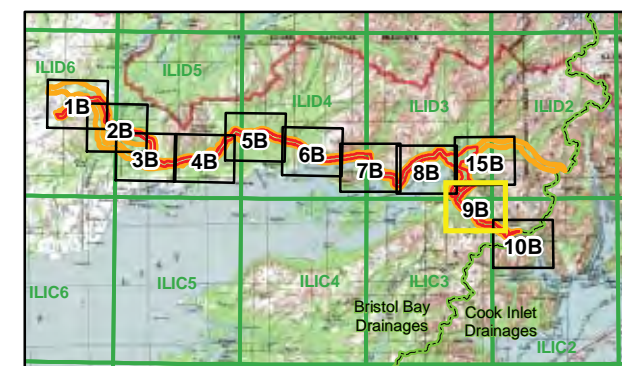




**Figure 14.2-5**  
**Tile 9B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

-  Transportation-corridor Mapping Area
-  Transportation-corridor Study Area
-  Bristol Bay/Cook Inlet Drainages Boundary
-  Communities
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope (Groundwater Driven) Wetlands
  -  Flat (Precipitation Driven) Wetlands
  -  Depressional Wetlands
  -  Riverine Wetlands
  -  Riverine Channels
  -  Lacustrine Systems (Lakes)
  -  Lacustrine Fringe Wetlands



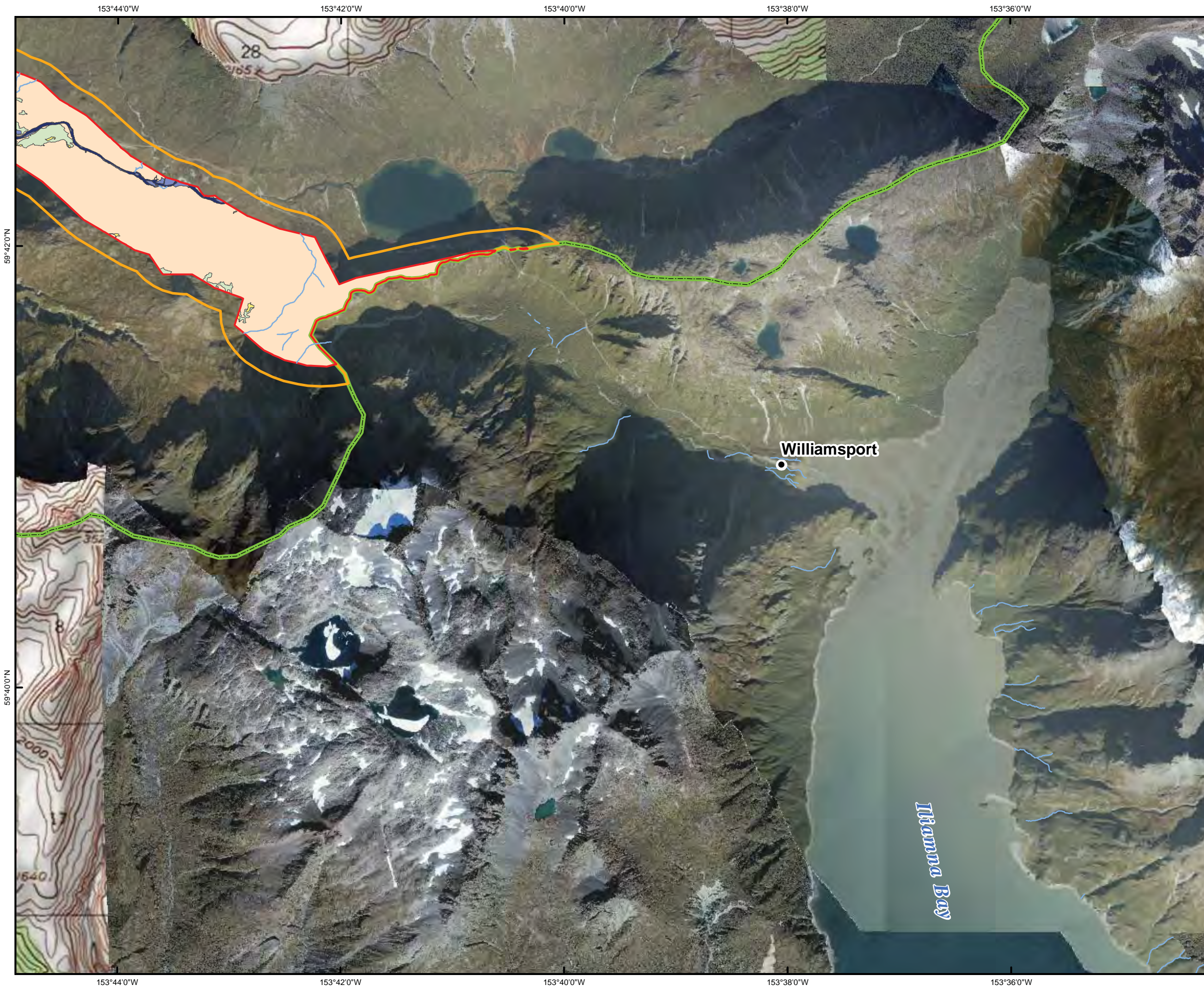
0 0.25 0.5 0.75 1 1.25 Miles  
0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum













File: RDI_HDR_EBD_Fig14.2-5_HGM_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS

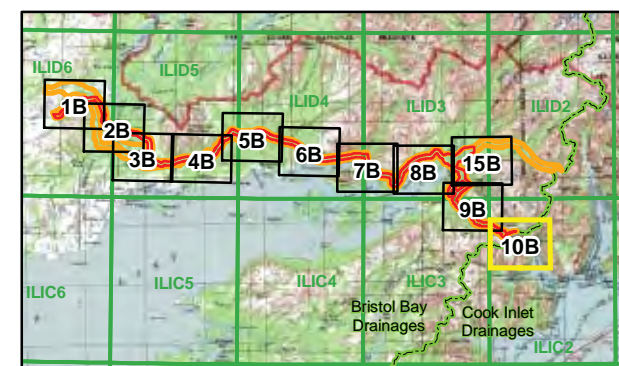




**Figure 14.2-5**  
**Tile 10B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

-  Transportation-corridor Mapping Area
-  Transportation-corridor Study Area
-  Bristol Bay/Cook Inlet Drainages Boundary
-  Communities
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope (Groundwater Driven) Wetlands
  -  Flat (Precipitation Driven) Wetlands
  -  Depressional Wetlands
  -  Riverine Wetlands
  -  Riverine Channels
  -  Lacustrine Systems (Lakes)
  -  Lacustrine Fringe Wetlands



0 0.25 0.5 0.75 1 1.25 Miles  
0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

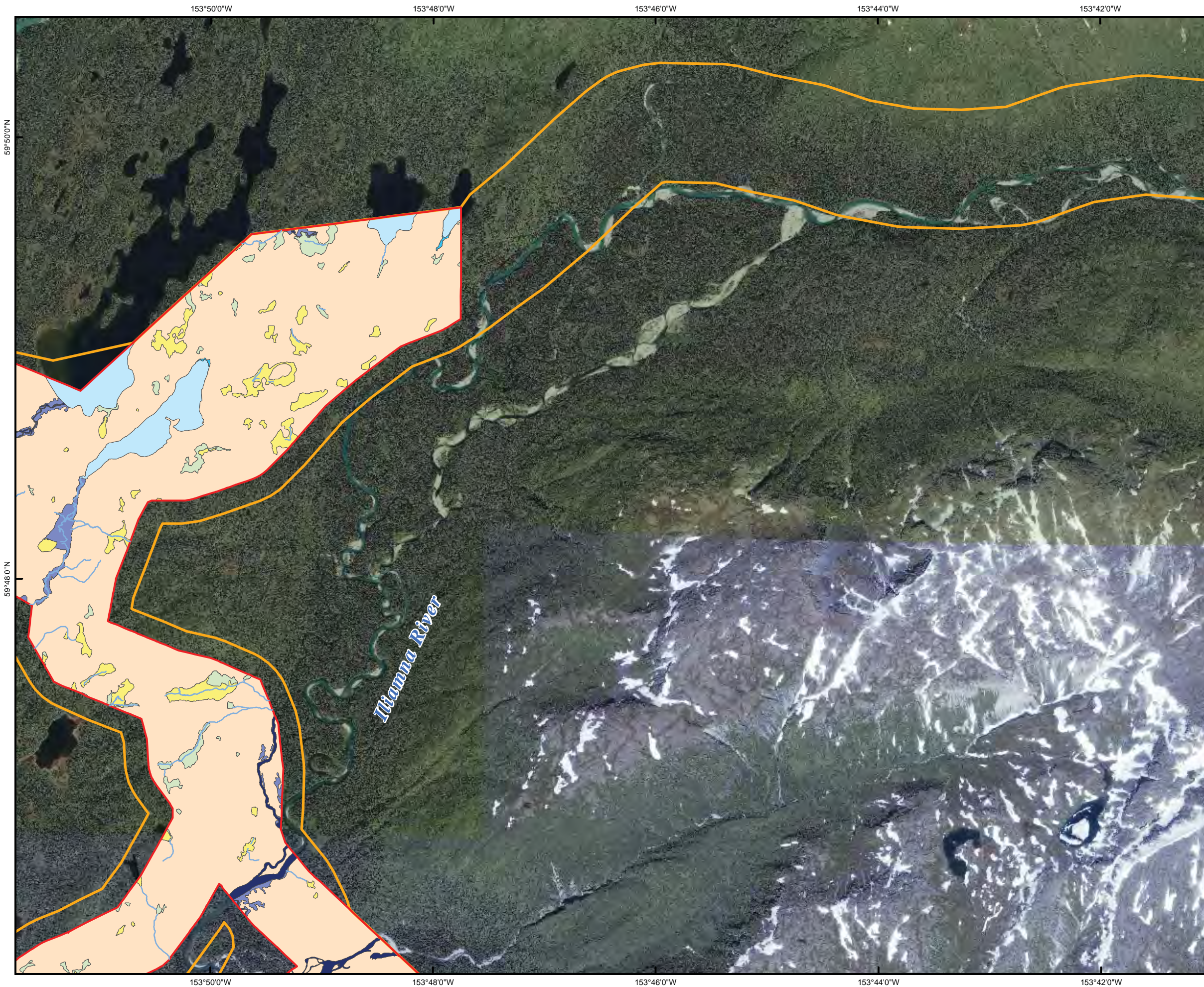
Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI\_HDR\_EBD\_Fig14.2-5\_HGM\_Tiled11X17L\_1of11\_D04.mxd Date: July 8, 2011













Version: 4 Author: RDI-LS

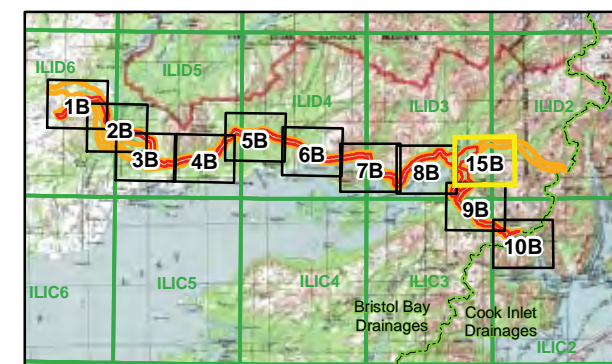




**Figure 14.2-5**  
**Tile 15B**  
**Hydrogeomorphic Classification Mapping,**  
**Transportation-corridor Mapping Area,**  
**2004-2008**

**Legend**

-  Transportation-corridor Mapping Area
-  Transportation-corridor Study Area
-  Bristol Bay/Cook Inlet Drainages Boundary
-  Communities
- Hydrogeomorphic (HGM) Classification**
  -  N/A - Non-wetlands
  -  Slope (Groundwater Driven) Wetlands
  -  Flat (Precipitation Driven) Wetlands
  -  Depressional Wetlands
  -  Riverine Wetlands
  -  Riverine Channels
  -  Lacustrine Systems (Lakes)
  -  Lacustrine Fringe Wetlands



0 0.25 0.5 0.75 1 1.25 Miles  
0 0.25 0.5 0.75 1 1.25 1.5 Kilometers

Scale 1:31,680

Alaska State Plane Zone 5 (units feet)  
1983 North American Datum

File: RDI_HDR_EBD_Fig14.2-5_HGM_Tiled11X17L_1of11_D04.mxd	Date: July 8, 2011
Version: 4	Author: RDI-LS