

5. SOILS

5.1 Introduction

The overall Pebble Project study area within the Bristol Bay region comprises both a mine study area and a transportation corridor study area (EBD Figure 5-1). The soils study for this area had one main component: to gain an understanding of the general types of soils that occur within the area.

The objectives of the Bristol Bay Region soils study included:

- Review historical soils data from the region to determine the typical and common soil types occurring in the overall study area.
- Summarize the soil map unit descriptions provided by the *Exploratory Soil Survey of Alaska* (ESS) (Rieger et al., 1979) for the overall study area.

5.2 Results and Discussion

The study area was glaciated during the Pleistocene and is in relatively close proximity to several active volcanoes in the Alaska Range. The soil parent materials are influenced by volcanic ash and the nearest source is Augustine Volcano, about 70 miles southeast of the study area.

A comprehensive literature review provided information on existing soil survey coverage for the study area. It also provided information relative to properties of volcanic-ash derived soils in Alaska.

The study area is covered by the broad-scale *Exploratory Soil Survey of Alaska* (ESS) (Rieger et al., 1979). Soil investigations are also available for the village of Nondalton (Hinton and Neubauer, 1965) and for Chisik Island (Clark and Ping, 1995). Both of these areas are near or within the Pebble Project study area.

The three existing publications describe the prevalent soil types in or near the study area and indicate that many of the soils in the study area are influenced to some degree by volcanic ash within the parent materials. The ESS classifies the dominant soils of the area as typic cryandepts and describes their ash-influenced, or andic, properties. The Nondalton and Chisik Island soil investigations also describe similar ash-influenced soils. Each of these publications provides soil classification terminology based on the version of *Soil Taxonomy* (USDA, 1999) current at the time of publication. The soil descriptions and data presented were used to determine how the earlier soil classifications would translate to the 2006 classification system (Soil Survey Staff, 2006).

5.3 References

- Clark, M. H., and C. L. Ping. 1995. Soil Survey Investigation. Chisik Island Tuxedni Wilderness Area Alaska.
- Hinton, R.B., and L.A. Neubauer. Undated [1965]. Soils of the Nondalton Area, Alaska. Unpublished report by Soil Conservation Service, U.S. Department of Agriculture, Palmer, Alaska.
- Rieger, S., D.B. Schoephorster, and C. E. Furbush. 1979. Exploratory Soil Survey of Alaska. USDA-SCS. Washington, D.C.: U.S. Government Printing Office.
- Soil Survey Staff. 2006. Keys to Soil Taxonomy, 10th Edition. USDA-NRCS. Washington, D.C.: U.S. Government Printing Office.
- USDA-Natural Resources Conservation Service. 1999. Soil Taxonomy. A Basic System of Soil Classification for Making and Interpreting Soil Surveys. 2nd ed. AH 436, Washington, D.C.

155°0'0"W

154°0'0"W

153°0'0"W

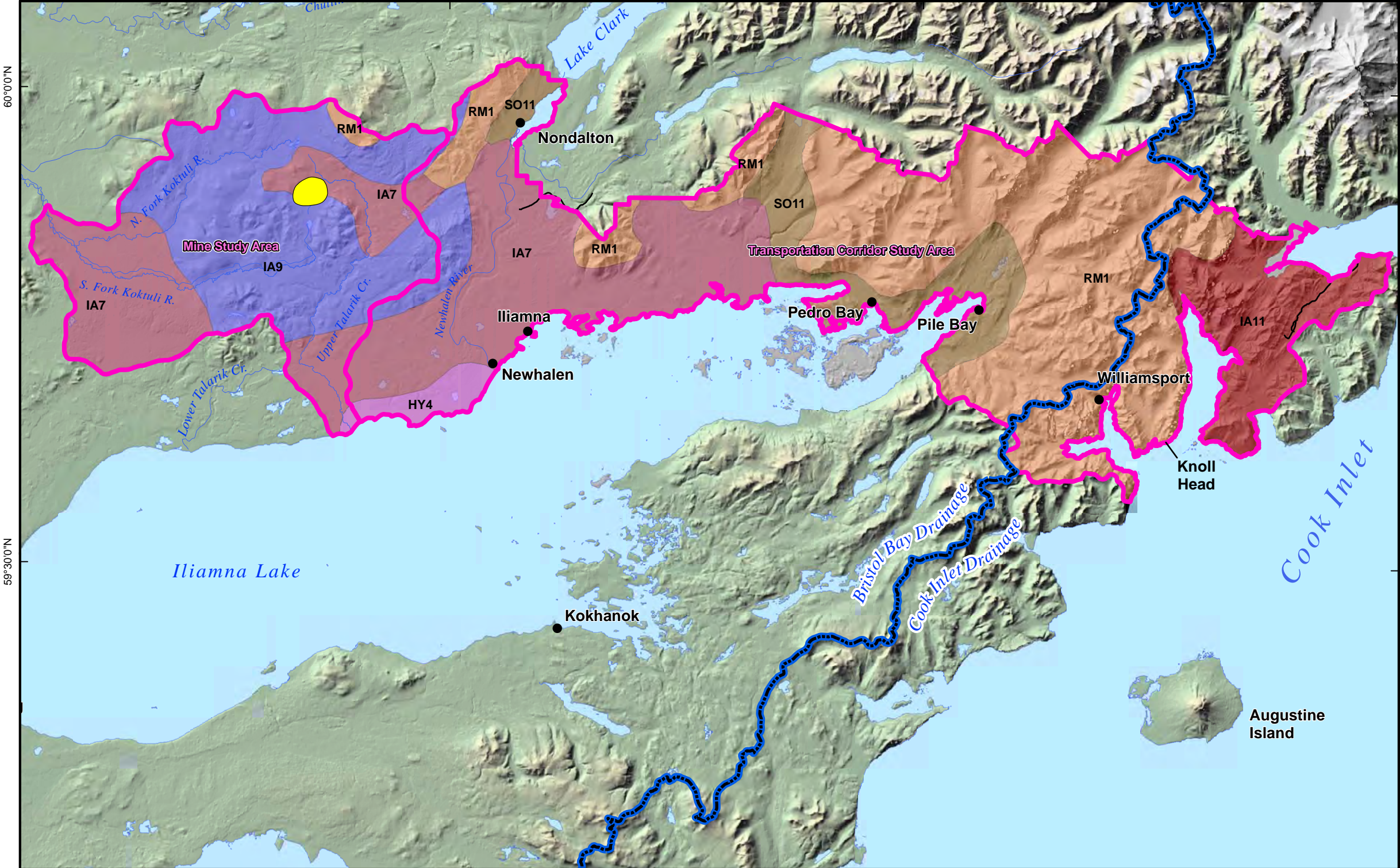


Figure 5-1
Bristol Bay and Cook Inlet Drainages
Exploratory Soil Survey

Legend

General Deposit Location

Bristol Bay/Cook Inlet Drainage Divide

Study Areas

Soil Types

HY4 - Pergelic Cryofibrists, nearly level

IA11 - Typic Cryandepts, very gravelly, hilly to steep-rough mountainous land association.

IA7 - Cryandepts, very gravelly, nearly level to rolling-Pergelic Cryofibrists, nearly level.

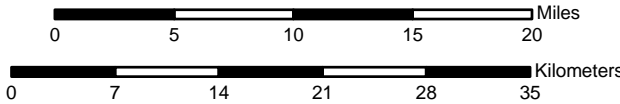
IA9 - Typic Cryandepts, very gravelly, hilly to steep association

RM1 - Rough mountainous land

SO11 - Humic Cryorthods, very gravelly, hilly to steep-Pergelic Cryofibrists, nearly level association.

NOTES:
Based on *Exploratory Soil Survey of Alaska*, Sheet Number 19 (USDA SCS, 1979). The map is a broad-based inventory of soils and nonsoil areas that occur in a repeatable pattern on the landscape and that can be cartographically shown at the 1:1,000,000 scale.

These data compiled in 1971 by the U.S Department of Agriculture, Soil Conservation Service, and cooperating agencies.



Scale 1:510,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

File: RDI_ND_NRCS_BB-Fig5-1_11X17L_1of1_D03.mxd	Date: December 27, 2010
Version: 3	Author: RDI-DWR, LS

STUDY AREA	CODE	DESCRIPTION	LAND FORM	Acres by Drainage		Total Acres
				Bristol Bay	Cook Inlet	
Mine Study Area	HY4	Pergelic Cryofibrists, nearly level association.	Broad, nearly level, wet lowland neat large lakes and coastal areas.	1,251		1,251
	IA7	Typic Cryandepts, very gravelly, nearly level to rolling-Pergelic Cryofibrists, nearly level association.	Rolling plains bordering Iliamna Lake. Inactive and active stream channels, uplifted beaches, hilly terminal moraines, and glacial outwash plains.	105,227		105,227
	IA9	Typic Cryandepts, very gravelly, hilly to steep association	Low rounded mountains, moraine-covered mountain foot slopes and foothills.	154,723		154,723
	RM1	Rough mountainous land	Steep rocky slopes, ice fields, and glaciers.	3,463		3,463
Transportation Corridor Study Area	HY4	Pergelic Cryofibrists, nearly level association.	Broad, nearly level, wet lowland neat large lakes and coastal areas.	14,384		14,384
	IA11	Typic Cryandepts, very gravelly, hilly to steep-Rough mountainous land association.	Steep mountainous areas, dissected by streams and braided rivers, glacier fed.		73,944	73,944
	IA7	Typic Cryandepts, very gravelly, nearly level to rolling-Pergelic Cryofibrists, nearly level association.	Rolling plains bordering Iliamna Lake. Inactive and active stream channels, uplifted beaches, hilly terminal moraines, and glacial outwash plains.	155,145		155,145
	IA9	Typic Cryandepts, very gravelly, hilly to steep association	Low rounded mountains, moraine-covered mountain foot slopes and foothills.	17,981		17,981
	RM1	Rough mountainous land	Steep rocky slopes, ice fields, and glaciers.	248,146	71,380	319,526
	SO11	Humic Cryorthods, very gravelly, hilly to steep-Pergelic Cryofibrists, nearly level association.	Mountain foot slopes and moraine hills, small streams, sloping valleys, and nearly level muskegs.	72,458		72,458
Grand Total				772,777	145,324	918,101

155°0'0"W

154°0'0"W