

PRELIMINARY JURISDICTIONAL DETERMINATION

1. **APPLICANT:** Alaska Gold Company
2. **WATERWAY:** Various Wetlands adjacent to Rock Creek.
3. **LOCATION:**

A. Narrative: The Alaska Gold Company is proposing a new open pit mine with a tailings pond, plant site, access roads, and a waste rock storage area approximately 7 miles outside of Nome. The proposed development and structures are all within the proposed project boundary shown on Figure 1. The project boundary is bordered by Glacier Creek Bypass Road to the west, Lindblum Creek to the north and Glacier Creek to the south. The project boundary along the eastern border runs along two ridges on either side of Rock Creek drainage. Rock Creek, which feeds into the Snake River, flows northeast to southwest across the middle of the project area.

- B. Legal Description:
Section: 14, 15, 22, and 23 Township: 10S Range: 34W
Meridian: Kateel River

4. **SOURCE(S):**

USGS Maps: Nome C-1

NWI Maps: Nome C-1

Soil Maps: None Exist

Corps Wetland Maps: None Exist

Aerial Photographs: Aerial photography produced by Aeromap and provided by Bristol Environmental and Engineering Services.

Other: Routine Wetland Determination Data Forms and corresponding photos from HDR Alaska, Inc. dated September 30 through October 2, 2003. Delineations followed the methods defined in the Corps of Engineers' 1987 Wetland Delineation Manual.

5. **DETERMINATION:**

Vegetation:

Dominant plant communities found in the project area include open sedge/shrub tundra wetland (PEM1/SS1B), open shrub/sedge tundra wetland (PSS1/EM1B), closed willow thicket wetland (PSS1B), closed flooded willow thicket wetland (PSS1A), shrub tundra communities (upland), and closed willow/grass communities (upland). In addition, Rock Creek (R3UBH) splits the project area in two. Descriptions of each community type are as follows:

Open sedge/shrub tundra wetlands are the dominant plant community located throughout the western half of the project area. Common plant species in this community include sedges (*Carex*

rostrata-OBL and *C. lugens*-OBL), and cottongrass (*Eriophorum vaginatum*-OBL). Dominant low shrubs include bog blueberry (*Vaccinium uliginosum*-FAC), mountain cranberry (*Vaccinium vitis-idaea*-FAC), dwarf birch (*Betula nana*-FAC), and Labrador tea (*Ledum groenlandicum*-FACW). This plant community is hydrophytic, and was found at sites RC02, RC07, RC10, and RC13. Routine Wetland Determination Data Forms for these sites are included. Typical habitat photographs from RC07, RC10, and RC13 are also included.

Open shrub/sedge tundra wetlands are a plant community also located throughout the project area. This community is usually found at slightly higher elevations than the sedge/shrub tundra wetlands. Common low shrub plant species include diamond-leaf willow (*Salix pulchra*-FACW), bog blueberry, dwarf birch, Labrador tea, crowberry (*Empetrum nigrum*-FAC) and sedges (*Carex bigelowii*-FAC and *C. saxatilis*-FACW). This plant community is hydrophytic, and was found at sites RC15, RC16, RC17, RC19, and RC21. Routine Wetland Determination Data Forms for these sites are included. Typical habitat photographs from RC16 and RC19 are also included.

Closed willow thicket wetlands are found along the northwestern edge of the project area. The U.S. Fish and Wildlife's National Wetland Inventory (NWI) delineates these areas as upland, however on-site delineation indicates these areas to be willow thicket wetlands. Common plant species in these areas include diamond-leaf willow (mostly ranging from 4 to 6 feet with one site ranging from 8 to 10 feet), bluejoint reedgrass (*Calamagrostis canadensis*-FAC), and sedges (*Carex aquatilis*-OBL, *C. rostrata*-OBL, *C. saxatilis*-FACW, and *C. stylosa*-FACW). Generally, small, intermittent flowing water was found in some form within these willow thickets. This plant community is hydrophytic, and was found at sites RC03, RC04, RC12, RC18, and RC20. Routine Wetland Determination Data Forms for these sites are included. Typical habitat photographs from RC18 and RC20 are also included.

Seasonally-flooded closed willow thicket wetlands are found adjacent to Rock Creek. Similar to the closed willow thicket the common plant species in these areas include diamond-leaf willow, and bluejoint reedgrass. This plant community is hydrophytic, and was found at site RC14. Routine Wetland Determination Data Forms and a typical habitat photograph from this site are included.

Shrub tundra upland communities are found along a ridge in the eastern half and a ridge near the middle of the project area. Common plants include bog blueberry, mountain cranberry, Labrador tea, arctic willow (*Salix arctica*-FAC), diamond-leaf willow, and dwarf birch. Technically, this plant community is hydrophytic, however, no hydrologic or hydric soil indicators were present at these sites. This community type was found at sites RC05, RC06, RC09, RC11, RC23, and RC24. Routine Wetland Determination Data Forms for these sites are included. Typical habitat photographs from RC05, RC06, and RC24 are also included.

The closed willow/grass communities are located in the northeast corner of the project area on both sides of Rock Creek and along a ridge in the center of the project area. Common plant species in this community include diamond-leaf willow and bluejoint reedgrass. Additionally, fireweed (*Epilobium angustifolium*-FACU) was found as a dominant at one of the sites. Technically, this plant community is hydrophytic, however no wetland hydrology or hydric soil

indicators were present at these sites. This community type was found at sites RC01, RC08, RC22, and RC25. Routine Wetland Determination Data Forms for these sites are included. Typical habitat photographs from RC01 and RC08 are included.

Soils:

The soils in the open sedge/shrub tundra wetland exhibited hydric soil conditions. The soils observed in the field had 8 to 13 inches of fibrous peat (Oi). In these areas, the soil was characterized as a histic epipedon; and sulfidic odor was encountered in three of the four soil pits. The histic epipedon and sulfidic odor were used as hydric soil indicators. At these sites, water was observed in the soil pits (from 1 to 13 inches). A typical soil profile of this community consists of 8 to 13 inches of fibrous peat over a massive clay loam (C horizon). A typical photograph of the soil pit profile from RC10 is included.

Even at slightly higher elevations the open shrub/sedge tundra wetland also exhibited hydric soil conditions. A typical soil profile of this community consists of a 1 to 8½ inches of a fibrous peat overlying an A horizon (1 to 4 inches). The A horizon had a very dark grayish brown to black matrix color (10YR3/2 or 10YR2/1). Below the A horizon was a thick B horizon comprised of a generally dark grayish brown to olive gravelly clay loam (2.5Y4/2, 2.5Y4/3, 5Y4/1, or 5Y4/3) that had many distinct redoximorphic concentrations (ranging from 7.5YR3/3 to 10YR4/6). The distinct redox concentrations were used as the primary hydric soil indicator, although a histic epipedon and sulfidic odor were also found at two of the five sites. Although water was not observed at any of these sites, saturation was observed above at least 6 inches. A typical soil pit profile photograph from RC02 is included.

Soils in the closed willow thicket wetlands exhibited hydric soil conditions. The soils observed in the field had 1 to 13 inches of organics. In two of these areas, the soil had a histic epipedon. Sulfidic odor was encountered in three of the five soil pits. The histic epipedon and sulfidic odor were used as hydric soil indicators. Saturation was observed at all the sites (except RC12) above 5 inches; and at two of the sites, water was observed in the soil pits (from 1 to 6½ inches). A typical soil profile of this community type consists of 1 to 10 inches of organics overlying an A horizon (1 to 4½ inches). The A horizon had a very dark brown to black matrix color (10YR2/2 or 10YR2/1). Below the A horizon was a thick B horizon comprised of a generally very dark gray to dark grayish brown gravelly clay loam (2.5Y3/1, 2.5Y3/2, or 2.5Y4/2) that had common distinct redoximorphic concentrations (ranging from 7.5YR3/3 to 10YR3/4). Photographs showing soil conditions at sites RC12 and RC18 are included.

Soils in the seasonally-flooded closed willow thicket also exhibited hydric soil conditions. The soil profile showed 2 inches of fibrous peat overlying 2 inches of a dark brown (10YR2/1) A horizon. Below the A horizon was a thick B horizon (15 inches). The B horizon had an olive gray matrix color (5Y 4/2) with many distinct redoximorphic concentrations (10YR3/4 and 10YR4/4). A strong sulfidic odor was encountered at this site. No water was observed in the pit and very moist soil was observed at 4½ inches.

Soils in the shrub tundra upland communities did not exhibit hydric soil conditions. Some of these soils had ½ to 3 inches of a fibrous peat overlying a thin A horizon (1 to 3½ inches) and some did

not have the fibrous peat horizon. Below the very dark brown (10YR2/2) A horizon was a thick (10 to 15½ inches) B horizon. The matrix color of the B horizon varied slightly within this community type from a very dark grayish brown to olive brown (2.5Y3/2, 2.5Y3/3, 2.5Y4/2 or 5Y4/3). Although redoximorphic concentrations were found in several of these sites, the relatively high-chroma matrix color, the small size of the mottles, and the general lack of wetland hydrology indicated non-hydric conditions. The soil profiles were generally well drained and dry throughout, however a few sites had saturation in the thick clay (B horizon). A photograph showing soil conditions at site RC24 is included.

The soil in the closed willow/grass upland communities also did not exhibit hydric soil conditions. These soils had ½ to 4 inches of a fibrous peat overlying 2 to 4 inches of a very dark brown (10YR2/2) A horizon. Below the A horizon was a thick B horizon comprised of a very dark grayish brown to black silty loam (2.5Y3/2 or 5Y2.5/1). At two of the sites an olive brown to dark gray (2.5Y4/3 or 5Y4/1) C horizon was found below the B horizon. Although redoximorphic concentrations were found in several of these sites, the small size of the mottles, and the lack of hydrology did not indicate hydric conditions. The soil profiles were generally well drained and dry throughout. A photograph showing soil conditions at site RC22 is included.

Hydrology:

Rock Creek, which flows from the northeast corner of the project area to southwest corner, splits the project area in two. The ridge south of Rock Creek appears to drain westward into Rock Creek. The flat area below this ridge (southern part of project area) appears to drain south into Glacier Creek. No wetland hydrology indicators were found at the sites along the ridge (RC01, RC09, and RC22-25). However, wetland hydrology was present in the flat area at the base of this ridge (RC10 and RC21) where soil saturation was found at the surface and water was present in the soil pit within 4 inches. Another site at the base of the ridge (RC12) did not present wetland hydrology, however other indicators indicate that wetland hydrology may present at this location during the growing season. A slightly elevated area was also found at the base of the ridge (RC11), which was lacking wetland hydrology.

The topography north of Rock Creek is generally flatter than the south side. Although this side of the creek is flatter, there is still a general westward slope with several small benches and rolling topography. Wetland hydrology indicators were found at the sites along the northern section of the project area (RC02-04). At these sites, the soil was saturated within the upper 3 inches, and water was present in the soil pit within 12 inches. However, wetland hydrology was absent along several small rolling and bench areas (RC05-06, and RC08). Wetland hydrology indicators were present in all the sites in the northwest corner (RC07, RC13-20). This area slopes westward toward Glacier Creek Bypass Road. Several culverts with flowing water were found along this stretch of road. Saturated soils were found at all of these sites within the upper 12 inches. Additionally, water was present in the pit within the upper 13 inches at three sites (RC07, RC13, and RC18).

In addition to Rock Creek (R3UBH), several small areas of flowing water run throughout the project area, usually in or near willow thicket wetlands. Many are small and intermittent and appear to be part of the wetland complex. A typical photograph of a small intermittent creek near RC04 is included. Additionally, a braided stream complex is located near RC01. These rock-bottom

streams (R3RBH) appear to flow directly into Rock Creek. These rocky streams may be located in historic drainage ditches. Several other historic drainage ditches were encountered within the project area, however, no wetland hydrology was present in these areas.

Wetland Determination Data Form Summary:

The following table provides a summary of the wetland delineation data forms and observational notes completed within the project area. Figure 2 depicts the wetland data form collection locations listed in the table below.

Table 1. Wetland Determination Data Form Summary

Site	Wetland Vegetation	Hydric Soils	Wetland Hydrology	NWI code	Community
RC01	Yes	No	No	Upland	Closed willow/grass thicket
RC02	Yes	Yes	Yes	PEM1/SS1B	Sedge/shrub tundra
RC03	Yes	Yes	Yes	PSS1B	Closed willow thicket
RC04	Yes	Yes	Yes	PSS1B	Closed willow thicket
RC05	Yes	No	No	Upland	Open low shrub tundra
RC06	Yes	No	No	Upland	Open low shrub tundra
RC07	Yes	Yes	Yes	PEM1/SS1B	Sedge/shrub tundra
RC08	Yes	No	No	Upland	Closed willow/grass thicket
RC09	Yes	No	No	Upland	Open low shrub tundra
RC10	Yes	Yes	Yes	PEM1/SS1B	Sedge/shrub tundra
RC11	Yes	No	No	Upland	Open low shrub tundra
RC12	Yes	Yes	No*	PSS1B	Closed willow thicket
RC13	Yes	Yes	Yes	PEM1/SS1B	Sedge/shrub tundra
RC14	Yes	Yes	Yes	PSS1A	Seasonally-flooded willow thicket
RC15	Yes	Yes	Yes	PSS1/EM1B	Shrub/sedge tundra
RC16	Yes	Yes	Yes	PSS1/EM1B	Shrub/sedge tundra
RC17	Yes	Yes	Yes	PSS1/EM1B	Shrub/sedge tundra
RC18	Yes	Yes	Yes	PSS1B	Closed willow thicket
RC19	Yes	Yes	Yes	PSS1/EM1B	Shrub/sedge tundra
RC20	Yes	Yes	Yes	PSS1B	Closed willow thicket
RC21	Yes	Yes	Yes	PSS1/EM1B	Shrub/sedge tundra
RC22	Yes	No	No	Upland	Closed willow/grass thicket
RC23	Yes	No	No	Upland	Open low shrub tundra
RC24	Yes	No	No	Upland	Open low shrub tundra
RC25	Yes	No	No	Upland	Closed willow/grass thicket

* Although wetland hydrology was not present at this time (late in the growing season) sufficient evidence exists to determine this site to be a wetland. Hydric soil indicators, wetland vegetation, NWI mapping, and the late time of year were taken into consideration and it was determined that this area is a wetland.

6. CONCLUSION:

Based on the findings above, it has been determined that areas displayed as wetlands on Figure 3 meet the criteria established by the Corps of Engineers' 1987 Wetland Delineation Manual for being classified as wetland. Wetlands were mostly found in the northwest half of the project area with few wetlands found south of Rock Creek. As shown in Figure 3, the wetland types can be described as open sedge/shrub tundra wetland (PEM1/SS1B), open shrub/sedge tundra wetland (PSS1/EM1B), closed willow thicket communities (PSS1B), closed flooded willow thicket (PSS1A), and Rock Creek (R2UBH). Additionally, the shrub tundra communities, and closed willow/grass communities are upland (U).

Wetland locations are based upon the dominance of hydrophytic vegetation; hydrologic indicators such as saturated soil; and hydric soil indicators such as sulfidic odor, histic epipedon, and redoximorphic concentrations. The presence or absence of wetland indicators was generally visible and straightforward at many of the sites visited. No problem areas were encountered. Only one site (RC12) had a marginal indicator, however upon field observations sufficient wetland evidence existed to conclude wetland conditions exist. Hydric soil indicators, wetland vegetation, NWI mapping, and the time of year were taken into consideration to determine this area a wetland. Additionally, any previously disturbed areas (as shown in Photo 18) were judged to be uplands.

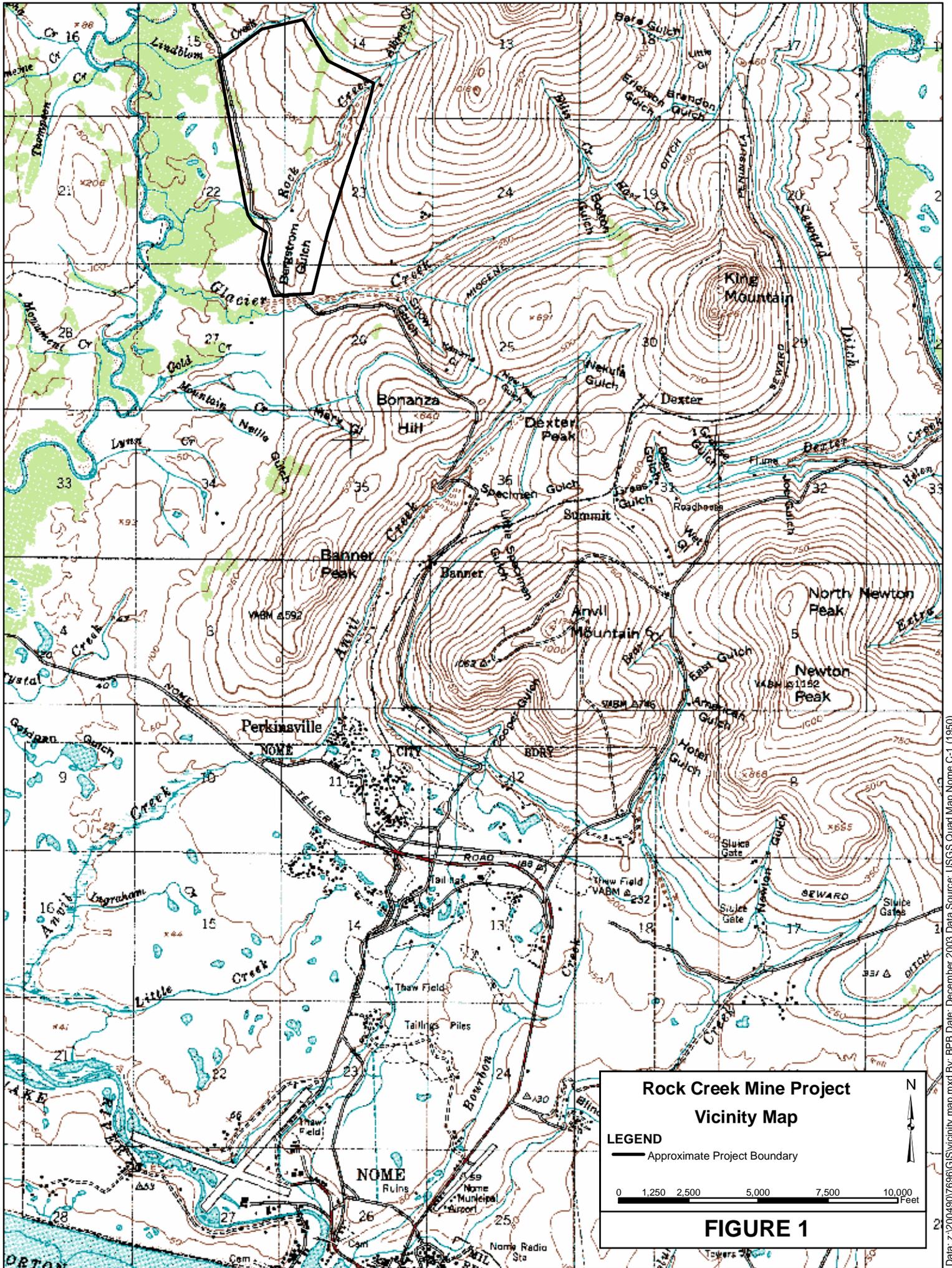
This determination generally supports the findings presented in the NWI mapping, however, because of improved aerial photographs and on-site investigation of the area, specific boundaries of wetlands are identified in greater detail. See Figure 2 for location of NWI mapped wetlands within the project area. This delineation expanded the NWI wetland boundaries slightly. The main variance was the willow thickets adjacent to the Glacier Creek Bypass Road in the northwest portion of the project area. Five wetland delineation forms were conducted in this area to validate the wetland findings.

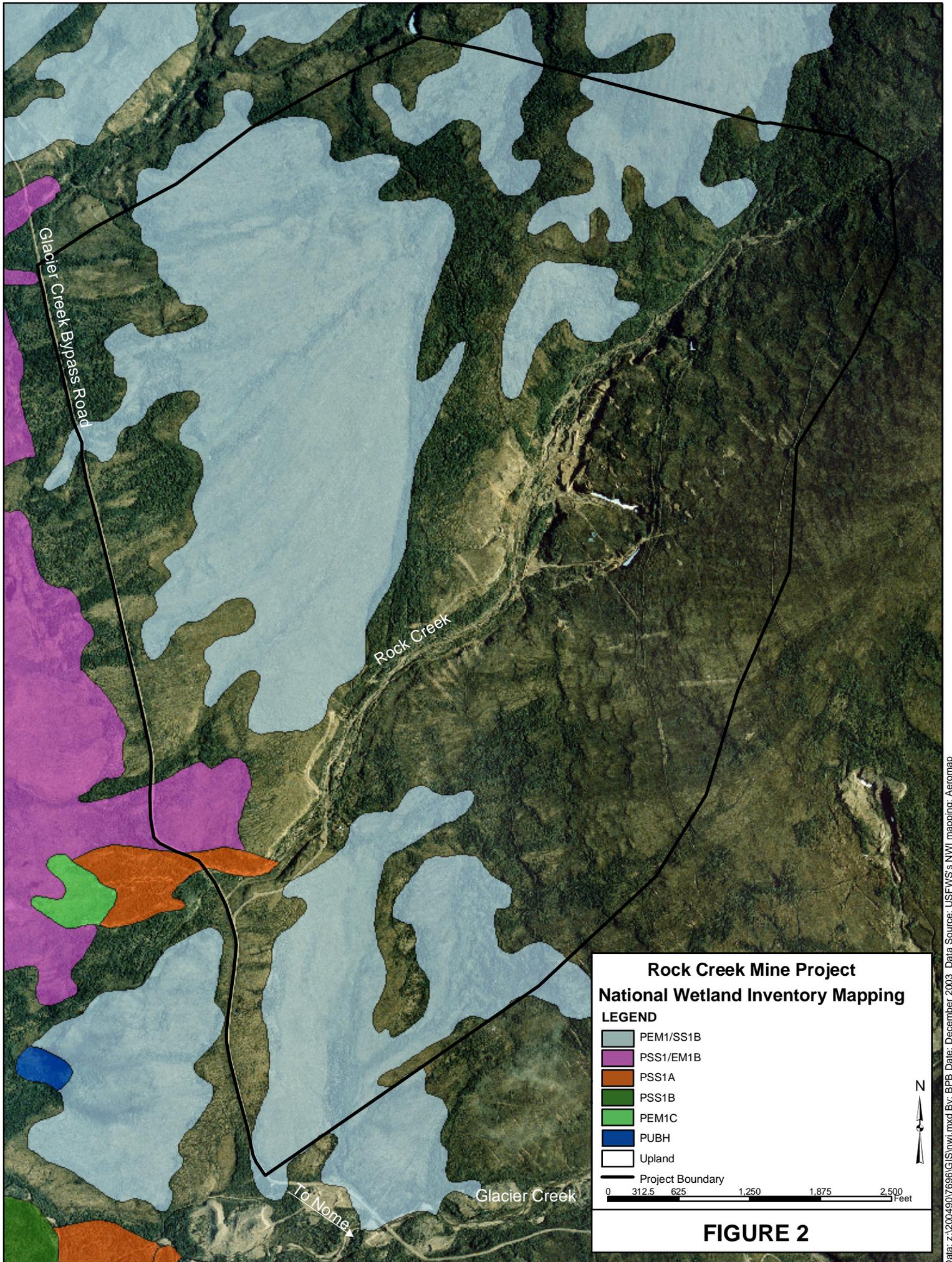
Attached:

- a. Figure 1 – Vicinity Map
- b. Figure 2 – NWI map on aerial photo base
- c. Figure 3 – Wetland/Upland Boundaries on aerial photo base
- d. Routine Wetland Determination Data Forms from September 30 – October 2, 2003
- e. On-site photography from September 30 – October 2, 2003

7. DETERMINATION MADE BY:

Brandy Bland
HDR Alaska, Inc.
Date: December 29, 2003





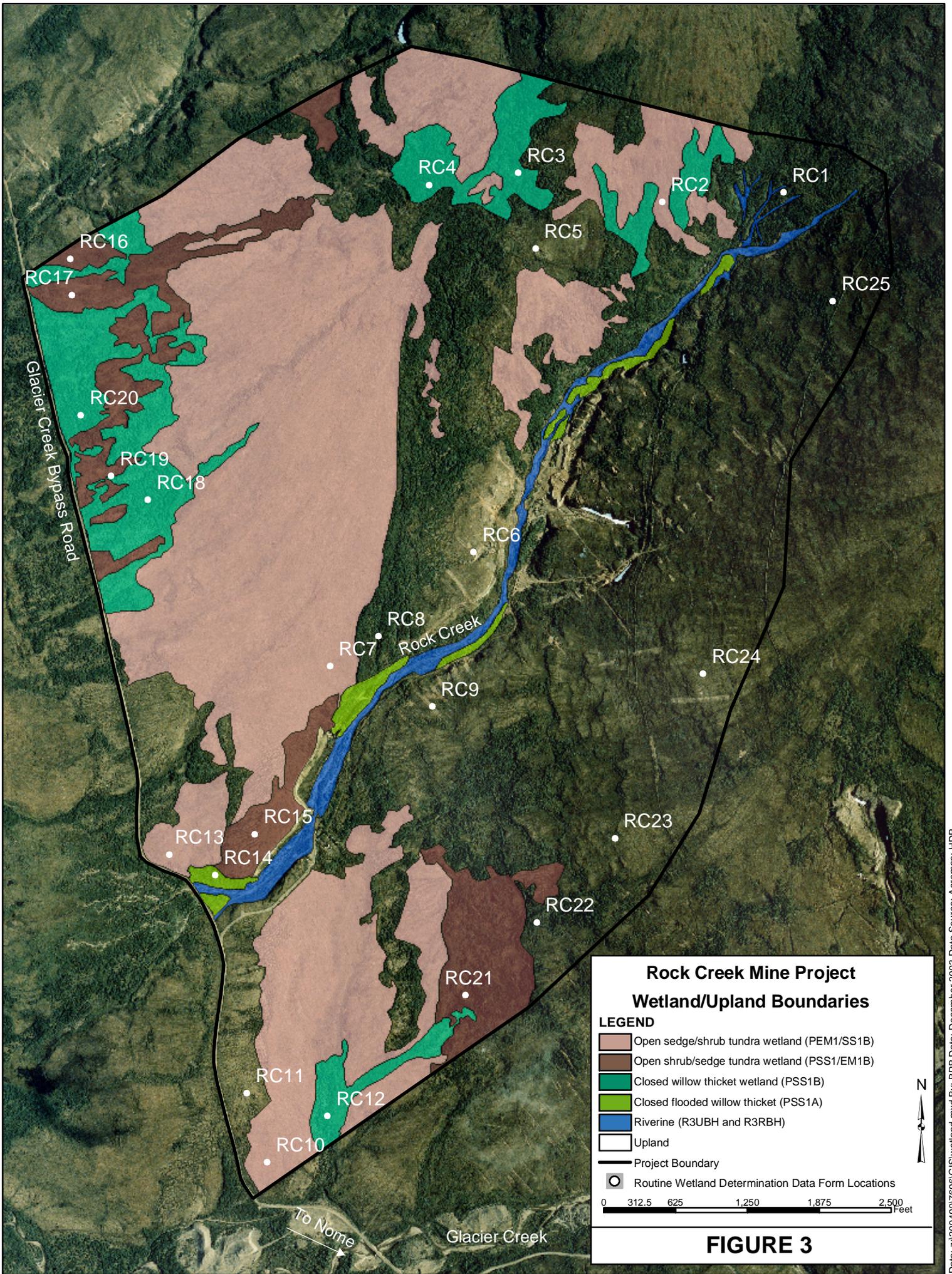




Photo 1. PEM1/SS1B (vegetation photo of sedge/shrub wetland tundra at site RC07)



Photo 2. PEM1/SS1B (vegetation photo of sedge/shrub wetland tundra at site RC10)



Photo 3. PEM1/SS1B (vegetation photo of sedge/shrub wetland tundra at site RC13)



Photo 4. PEM1/SS1B (soil pit photo from sedge/shrub wetland tundra at site RC10)



Photo 5. PSS1/EM1B (vegetation photo of shrub/sedge wetland tundra at site RC16)



Photo 6. PSS1/EM1B (vegetation photo of willow shrub/sedge wetland at site RC19)



Photo 7. PSS1/EM1B (soil pit photo from shrub/sedge wetland at site RC02)



Photo 8. PSS1B (vegetation photo of closed willow thicket wetland at site RC18)



Photo 9. PSS1B (vegetation photo of closed willow thicket wetland at site RC20)



Photo 10. PSS1B (soil pit photo from closed willow thicket wetland at site RC12)



Photo 11. PSS1B (soil pit photo from closed willow thicket wetland at site RC18)



Photo 12. PSS1A (vegetation photo of willow thicket adjacent to Rock Creek at site RC14)



Photo 13. Upland (vegetation photo of closed willow upland at site RC01)



Photo 14. Upland (vegetation photo of open lichen tundra upland at site RC05)

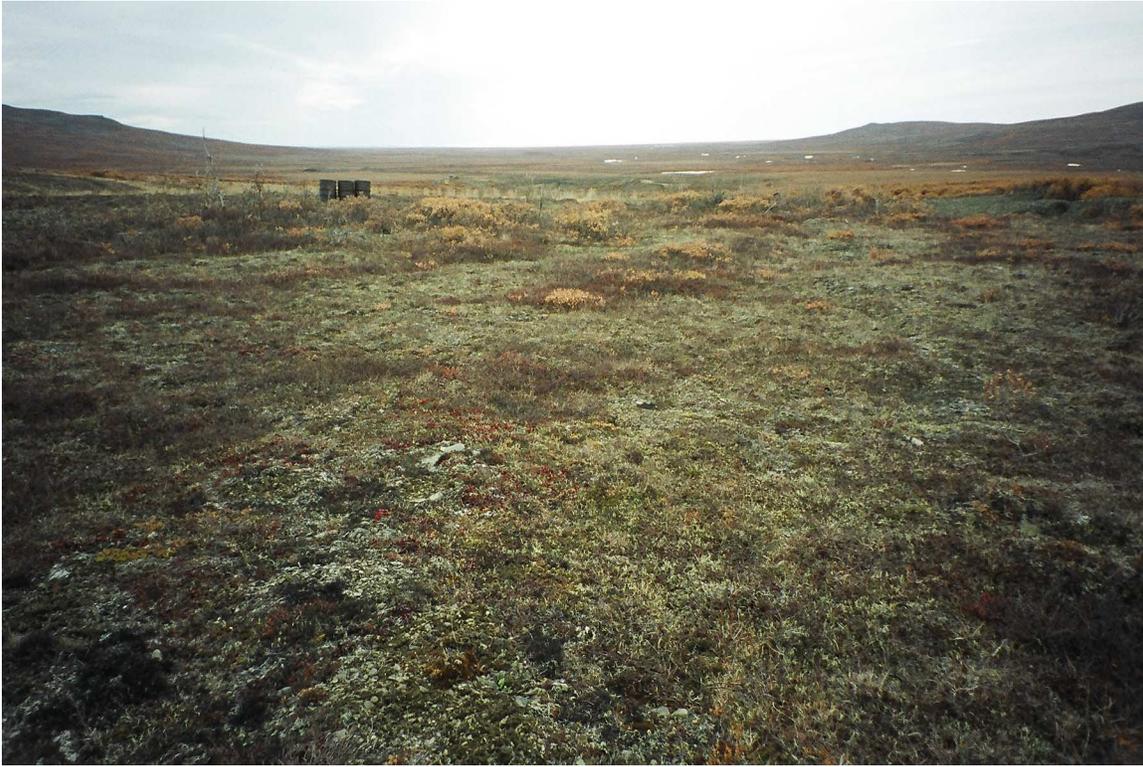


Photo 15. Upland (vegetation photo of open lichen tundra upland at site RC06)



Photo 16. Upland (vegetation photo of willow upland with grass understory at site RC08)



Photo 17. Upland (vegetation photo of open lichen tundra upland at site RC24)



Photo 18. Upland (photo of previously disturbed upland at site RC26)



Photo 19. Upland (soil pit photo from willow upland with grass understory at site RC22)

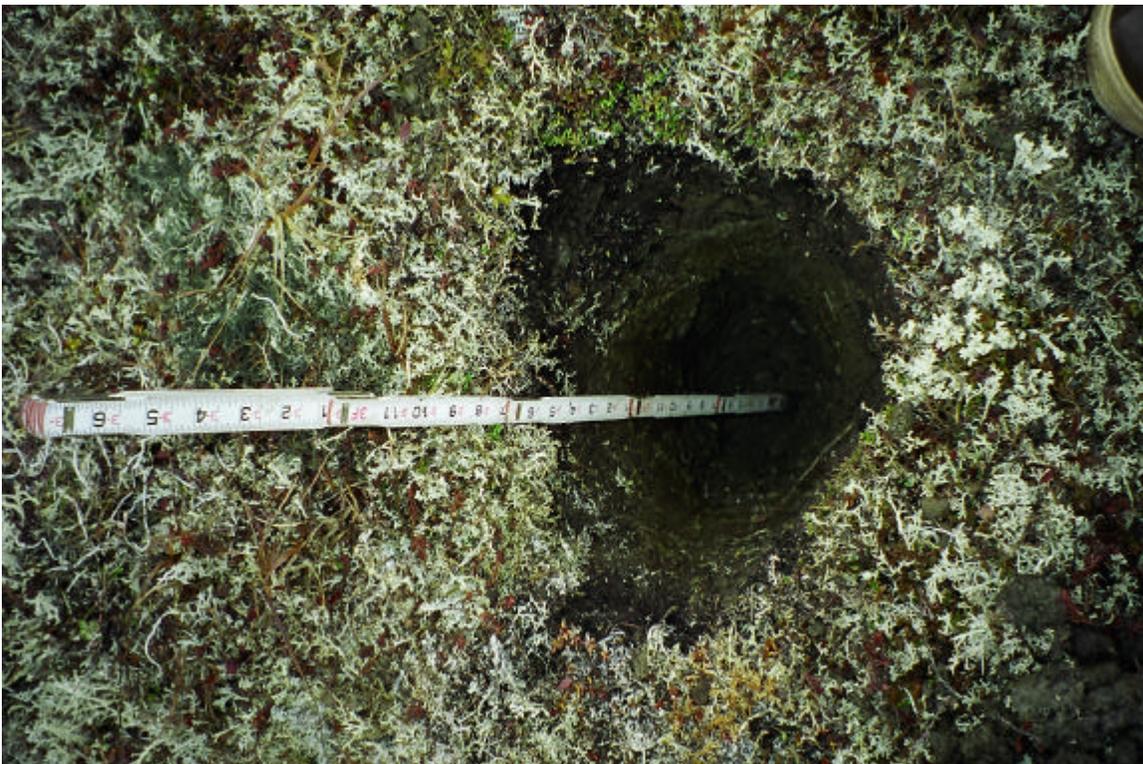


Photo 20. Upland (soil pit photo from open lichen tundra upland at site RC24)

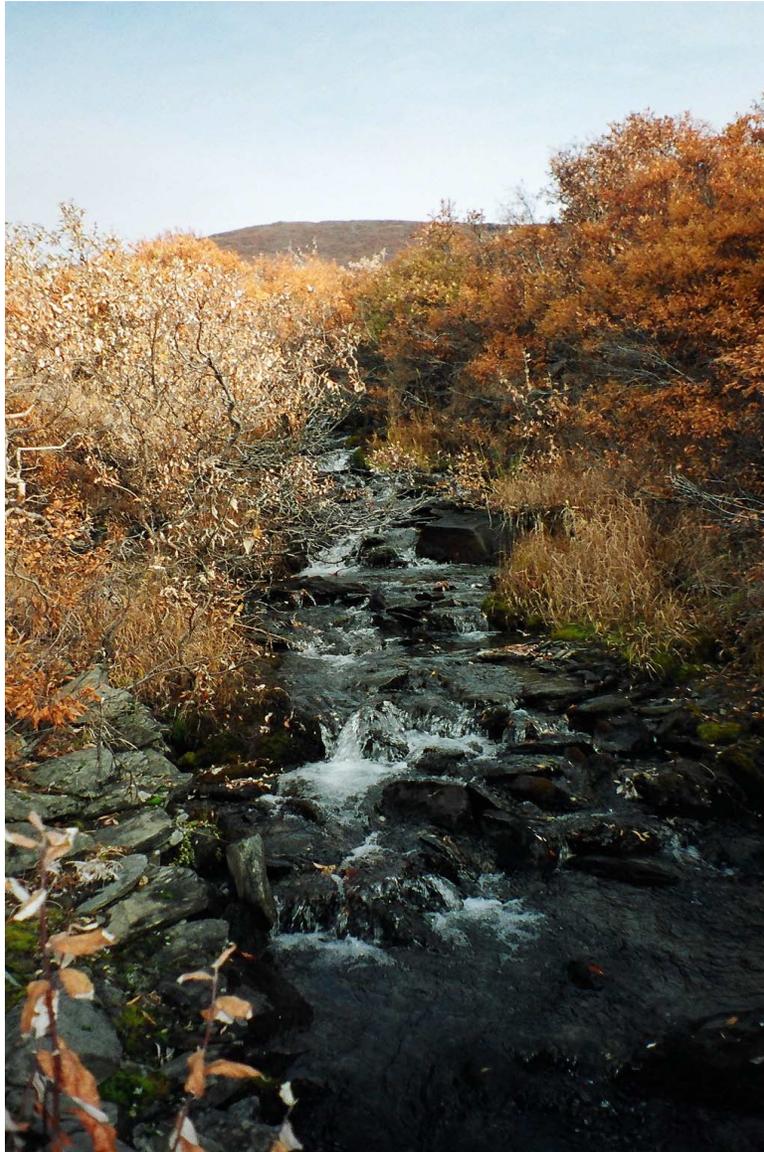


Photo 21. R3RBH (Stream with rock bottom surrounded by willow thicket upland west of site RC01)

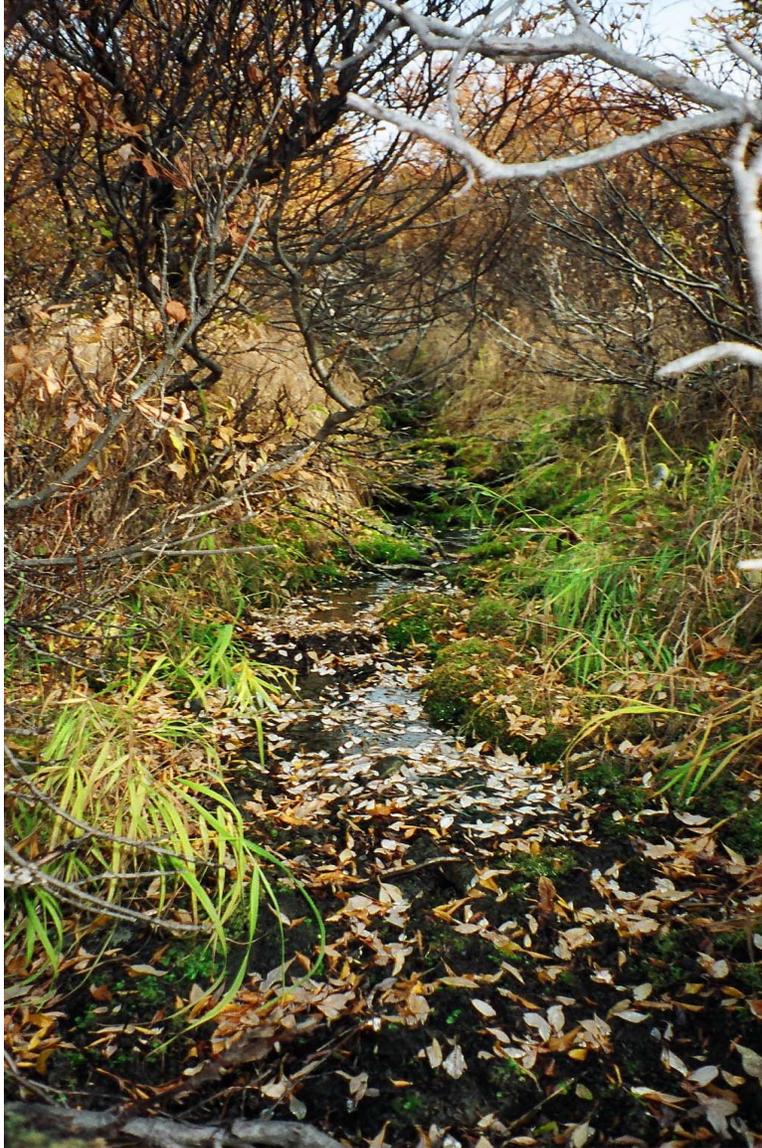


Photo 22. Small, intermittent flowing channel of water found within a willow thicket wetland east of site RC04.