APPENDIX I

Wetland Delineation and Site Characterization

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 6898
ELMENDORF AFB, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

JUL 26 2006

Date: 7,27,06
Proj. #: 51795

Preliminary Design & Environmental	PAPER	PDF
Section Chief Amundsen		X
Env. Coordinator	①	
Env. Team Leader		X
Env. Analyst		
Project File	②	
Central File	X	

Regulatory Branch
POA-2005-1585-9

Mr. Dan Golden
Alaska Department of Transportation
and Public Facilities
Post Office Box 196900
Anchorage, Alaska 99519-6900

Dear Mr. Golden:

This is in response to your June 27, 2006, request for a jurisdictional determination concerning your proposed project, to relocate the Tuluksak Airport. The site is located within sections 26, 34, 35, and 36, T. 12 N., R. 66 W., Seward Meridian; Latitude 61.0903° N., Longitude 160.9273° W.; in Tuluksak, Alaska.

Based on our review of the information you furnished and available to us, we have preliminarily determined that the above property may contain wetlands under Corps regulatory jurisdiction. We concur with your June 2006 Tuluksak Airport relocation wetland delineation.

Therefore, DA authorization may be required if you propose to place dredged and/or fill material into waters of the U.S., including wetlands.

Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including wetlands (33 U.S.C. 1344). The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403). Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or other waters identified by the Alaska District.

Please be advised that land clearing operations involving vegetation removal in wetlands with mechanized equipment and other soil disturbances are considered placement of fill material under our jurisdiction.

Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

You may contact me at (907) 753-2712, by email at marcia.l.heer@poa02.usace.army.mil, or by mail at the letterhead address,

ATTN: CEPOA-CO-R-N, if you have questions. For additional information about our Regulatory Program, visit our web site at www.poa.usace.army.mil/reg.

Sincerely,

Marcia L. Heer

Marcia L. Heer
Regulatory Specialist

WETLAND DELINEATION

TULUKSAK AIRPORT RELOCATION

Tuluksak, Alaska

BEESC Project No. 26036

June 2006

Prepared for:

Alaska Department of Transportation and Public Facilities
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Appendix B Data Forms Routine Wetland Delineation Determination (1987 ACOE Wetland Delineation Manual).

Appendix C Common and Scientific Plant Names and Indicator Status

ACRONYMS AND ABBREVIATIONS

DOT&PF	Alaska Department of Transportation and Public Facilities
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
OBL	obligate wetland
RPZ	Runway Protection Zone
R4US2	Riverine Intermittent Unconsolidated Shore with Sand
UPL	upland
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

The Alaska Department of Transportation and Public Facilities (DOT&PF) proposes to construct a new airport near the Village of Tuluksak, Alaska (Figure 1). Improvements would include a full-length and -width Community-class runway, aprons, runway protection zones (RPZs), lease tie-down areas, snow removal equipment building, and airport lighting system.

The airport would be constructed on a wide ridge between two wetlands in undeveloped forested lands (Figure 1) consisting of black spruce (*Picea marina*), and paper birch (*Betula papyrifera*), with an under story of alder (*Alnus sp*.), prickly rose (*Rosa acicularis*) and common horsetail (*Equisetum arvense*).

A runway measuring 3,200 feet in length by 60 feet in width, two safety aprons, lease tie-down areas, snow removal equipment building, and north RPZ, would be constructed entirely in uplands. The south RPZ would involve some wetlands intrusion with the mechanized clearing of vegetation.

Four access road options to the airport (River Route, Inland River Route, Landfill Route, and Village Selection Route) are being considered. Of these, only the Landfill and Village Selection routes would involve the discharge of fill in wetlands.

A new, 52-acre borrow site (Material Site Alternative 5) will be developed. This site is located on a sparsely vegetated sandbar at the confluence of the Tuluksak and Kuskokwim Rivers.

1.1 PROJECT LOCATION

Tuluksak, Alaska is located at the confluence of the Kuskokwim and Tuluksak rivers, 350 miles west of Anchorage and 50 miles northeast of Bethel, Alaska, in the lower Kuskokwim region. The new airport is located approximately one mile east of the Village of Tuluksak, Alaska, in Township 12 North, Range 66 West in Sections 26, 34, 35, and 36.

1.2 PERSONNEL, SAMPLE DATES, AND WEATHER

Lawrence Dugan and Larry Pederson from Bristol Environmental & Engineering Services Corporation conducted a wetland delineation of the project site on July 28 and 29, 2005. Over the course of the two-day investigation, weather conditions remained sunny and dry, with temperatures around 75 ° Fahrenheit.

2.0 METHODS

2.1 CLASSIFICATION AND MAPPING

Wetlands and vegetation types were classified based on site observations made during the July field investigation. Wetland boundaries were established on the results of the field investigation and high resolution true color aerial photography at one foot pixels. Mapping codes used for each wetland type followed Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979). National Wetland Inventory Maps (2005) from the U.S. Fish and Wildlife Service and Soil Survey Maps from the U.S. Department of Agriculture Soil

Conservation Service have not been established for this area. The material site was not delineated.

2.2 FIELD SURVEY AND DATA ANALYSIS

We used the Routine Wetland Determination Method as outlined in the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (1987). Eighty-one sites were evaluated and wetland determinations were completed at nine sites. Upland vegetation and absence of surface hydrology were verified at 72 sites (Figure 1). The entire length of each of the four possible access roads and runway were surveyed for wetland and upland habitat. The north RPZ and the south apron were also surveyed. Because of the consistency of the upland vegetation and lack of surface hydrology throughout the runway area, we did not survey the entire length south RPZ or the north apron. The classification of these areas as uplands are based on the direct observations made from Waypoints APR01 and RUN05. From these two Waypoints, we clearly observed that the canopy and understory vegetation was dominated by plant species associated with upland environments.

Wetlands were classified based on the methods defined in the USACE Wetlands Delineation Manual, and no deviations were made from the procedures outlined. To be classified as a wetland, a site must be dominated by wetland plants (hydrophytes), have wet (hydric) soils, and show evidence of wetland hydrology (saturation or inundation of sufficient duration). In general, hydrophytic vegetation is present when more than 50 percent of the dominate Obligate Wetland (OBL), Facultative Wetland (FACW), or Facultative (FAC) plant species on list occur in wetlands.

Digital photographs of the vegetation, surface hydrology and soil conditions were taken at each wetlands site (Appendix A). A USACE Routine Wetland Determination data sheet was completed at each wetland delineation site to document vegetation, soil characteristics, and hydrology (Appendix B).

At each wetland delineation site, the dominate plant species for each vegetation layer (tree, shrub, or herbaceous) was visually estimated percent live cover for each dominate species within a 30 foot radius of the soil pit. Wetland indicator status of the plants was determined by referring to the National List of Plant Species that Occur in Wetlands: Alaska Region (Reed, 1988).

Prevalence indices were also calculated for the wetland delineation sites. The prevalence index is a weighted-average wetland indicator status of all plant species in the sampling plot, where each indicator status category is given a numerical code (OBL=1, FACW=2, FAC=3, Facultative Upland [FACU]=4 and Upland [UPL]=5) and weighted by percent cover. It is a more comprehensive analysis of the hydrophytic status of the community, rather than one based on just a few dominate species. The index is used to determine whether hydrophytic vegetation is present on sites where the indicators of hydric soil and wetland hydrology are present, but the vegetation initially fails the dominance test.

A soil pit between 12 and 24 inches was dug to examine soils for hydric soil indicators. Hydric soils typically have low matrix chroma (gleyed features), mottles (redoximorphic features), or

thick organic deposits (histosols). The soil profile was described and key characteristics, including color and presence of mottles or oxidized root channels were recorded. Soil colors were determined using Munsell Soil Color Charts (1990).

Following standard guidelines of the Wetlands Delineation Manual, soil pits were not dug at sites where the vegetation and hydrology requirements for wetland classification were met (i.e., obligate hydrophytic vegetation was dominate and standing water or soils saturated to the surface were present). Soil pits were dug adjacent to the wetlands to confirm the boundary between wetlands and uplands. In addition, several soil pits were dug in upland locations along the Runway and Landfill Route to verify the absence of hydric soils.

Wetland hydrological indicators were also assessed at all of the sites, including the presence of standing water, or evidence suggesting episodes of past inundations such as water marks, drift lines, or surficial water-borne sediment deposits on vegetation. Soil saturation within 12 inches of the surface was recorded at soil pits at four sites.

At 72 vegetation verification sites, we visually estimated the percent of live cover of dominate and associated plant species by stratum and assigned a wetland/upland class to each site. The verification plots provided additional information to assist in the habitat classification and overall wetlands and vegetation mapping. The common and scientific names and indicator status for plants in the study area are listed in Appendix C.

During the course of the field investigation signs of wildlife such as scat piles, browsed vegetation, game trails, and dens were also noted. No signs of moose, furbearers, black or brown bear or other predators were observed.

3.0 RESULTS AND DISCUSSION

3.1 RUNWAY, APRONS, AND RPZS

The runway, both aprons, and the north RPZ are located entirely in uplands. The western edge of the south RPZ is located in wetlands. The uplands were dominated by FAC and FACU plant species. No primary indicators of wetland hydrology such as saturated soils, standing water, water marks or sediment deposits were observed. Secondary indicators of wetland hydrology were also not observed for the runway, aprons and the north RPZ. A large wetland with emergent and open water habitat was observed along the western edge of the south RPZ

Soil samples were collected at several points along the runway transect to check for the presence of hydric soils. Hydric soils were not encountered at these sites which is consistent with the upland vegetation types and absence of wetland hydrology through this part of the project area.

3.2 RIVER AND INLAND RIVER ROUTES

The River and Inland River routes are located entirely in upland. No primary or secondary indicators of wetland hydrology were observed for either route. Vegetation for the River Route consists of alder (80 percent), birch 10 percent), black spruce (8 percent), and white spruce (2 percent). Herbaceous layer consists of bluejoint reedgrass, and prickly rose. Vegetation for the Inland River Route consists of seventy percent alder and thirty percent black spruce. Herbaceous

layer consists of cloudberry (80 percent), common horsetail (10%), and bluejoint reedgrass (10 percent).

3.3 LANDFILL ROUTE AND VILLAGE SELECTION ROUTE

The Landfill Route and Village Selection Route are mostly located in uplands, but it involves crossing of four major wetlands (Appendix A, Photograph 4) classified as palustrine emergent persistent (PEM1) and palustrine scrub-shrub needle leave evergreen vegetation (PSS4).

3.4 MATERIAL SITE ALTERNATIVE 5

This 52 acre site is located on a sparsely vegetated sandbar at the confluence of the Tuluksak and Kuskokwim Rivers southwest of the community and approximately 2.0 miles from the airport property (Figure 2-1). Vegetation consists of small willows and unidentified grasses.

Based on its location, soils type, and hydrology; the material site was classified as riverine, intermittent with unconsolidated shore, consisting of sand (R4US2).

3.5 PREVALENCE INDICES FOR WETLAND DELINEATION SITES

Prevalence indices for the nine wetland delineations sites are presented in Table 1. Prevalence index less than 3.0 indicates hydrophytic vegetation is present. Although plot RUN02 had hydrophytic vegetation (PI=2.28), and hydric soils (Appendix B), the site was classified as uplands because it lacked wetland hydrology.

Table 1 Prevalence Indices for Tuluksak Airport Wetland Delineation Plots

Identification Number	Prevalence Index	Hydrophytic Vegetation	Habitat Classification
Plot 29	3.79	No	Upland
Plot 36	3.46	No	Upland
Plot WD39	2.49	Yes	Wetland
Plot WD40	2.60	Yes	Wetland
Plot WD48	2.50	Yes	Wetland
Plot WD52	2.74	Yes	Wetland
Plot WD62	3.20	No	Upland
Plot RUN01	3.50	No	Upland
Plot RUN02	2.28	No	Upland

3.6 DISTURBED AREAS

Several upland areas along the Landfill Route and River Route were disturbed by human activity (Appendix A, Photograph 6). Large areas from Waypoints 28 through 34 were cleared to

construct the new landfill. Most of the River Route from Waypoints 1 through 20 is located on an existing all-terrain vehicle trail with compacted soils in upland habitat.

4.0 CONCLUSIONS

The airport runway, aprons, north RPZ and two of the proposed access roads (River and Inland River routes) are located entirely in upland forested habitat. These areas are dominated by FAC and FACU vegetation. Five large wetlands (remnants of river oxbows or overflow channels) are encountered in the road alignment for the Landfill and Village Selection routes. These wetlands exhibited all three diagnostic characteristics outlined in the USACE Wetland Delineation Manual – hydrophytic vegetation, hydric soils, and wetland hydrology. The material site is probably below the ordinary high water and therefore subject to U.S. Army Corps Engineers jurisdiction and Section 404 of the Clean Water Act.

5.0 PREPARER

Lawrence Dugan, Senior Environmental Analyst, Bristol Environmental & Engineering Services Corporation.

6.0 REFERENCES

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., pp. 103.

Munsell Soil Color Chart, 1990. Kollmogren Instrument Division. Baltimore, Maryland.

Reed, Jr. Porter B. 1988. National List of Plant Species that Occurs in Wetlands: National Summary. U.S. Fish and Wildlife Service. Biological Report 88(24), pp. 244.

U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual, 1988. Department of the Army. U.S. Army Corps of Engineers. Technical Report Y-87-1. Waterways Experiment Station, Vicksburg, Mississippi, pp. 117.

FIGURES

Tuluksak

Tuluksak River

N

R201 R202 R203 R204 R205 R206 R207 R208 R209 R210

WD39 WD40 WD48 WD52 WD62

APR01 RUN01 RUN02 RUN03 RUN04 RUN05 RUN06

Legend

- BEESC Waypoints
- R&M Waypoints

Proposed_Routes by type

- Inland River Route
- Landfill Route
- River Route
- Village Selection Route

Proposed Runway by type

- Proposed Runway
- Proposed Runway Protection Zone
- Proposed Runway Safety Area
- Runway Aprons

Wetlands by Classification

- Palustrine Emergent Persistent
- Palustrine Scrub-Shrub Needle-Leaved Evergreen

0 400 800 1200 1600 2000

Survey Feet

1:9,600

1"=800'

Bristol ENVIRONMENTAL & ENGINEERING SERVICES CORPORATION

Tuluksak Airport Relocation

BEESC Wetland Delineation

Date: August 18, 2005		Figure 1
Drawn by: ME	Checked By: LD	Project No: 26036

APPENDIX A

Photographs

Photograph 1 View of the upland habitat in the north apron from Waypoint RUN06. Alder (FAC), paper birch (FACU), prickly rose (FACU) and horsetail (FACU) are the dominate plant types.

Photograph 2 Gleyed or low chroma soils at Waypoint 40. Test pit located immediately west of the first large wetland along the proposed Landfill Route.

Photograph 3 Low redoximorphic colors with red, brown, and orange colors indicating reduced or hydric soil conditions from test pit WD48, near one of the large wetlands along the Landfill Route.

Photograph 4 One of several large wetlands crossing along the Landfill Route to the airport. Sedge (*Carex sp.*), the dominate wetland plant species with bluejoint reedgrass, willow, and some alder along the margins.

Photograph 5 Soil pit at Waypoint RUN 01, showing 8-inch dry, organic horizon, and sandy loam B horizon. Dominated vegetation includes common horsetail and prickly rose.

Photograph 6 Disturbed area near Waypoints 28, 29, 30, and 31.

APPENDIX B

Data Forms
Routine Wetland Delineation Determination

Data forms are not included in this document but are on file.

APPENDIX C

Common and Scientific Plant Names and Indicator Status

APPENDIX C
Common and Scientific Plant Names and Indicator Status

Common Name	Scientific Name	Indicator Status
Willow	Salix sp.	FAC/FACW/OBL
Barclay Willow	Salix barclayi	FAC/FACW/FAC/
Alder	Alnus sp.	FAC
Black Spruce	Picea marina	FACW
White Spruce	Picea glauca	FACU
Paper Birch	Betula papyrifera	FACU
Dwarf Birch	Betula nana	FAC
Bluejoint Reedgrass	Calamagrostis canadensis	FAC
Cotton Grass	Eriophorum sp.	OBL/FACW
Sedges	Carex sp.	FAC/FACW/OBL
Common Horsetail	Equistem arvense	FACU
Prickly Rose	Rosa acicularis	FACU
Nagoonberry	Rubus arcticus	FAC
Northern Red Currant	Ribes triste	FAC
Labrador Tea	Ledum sp.	FACW
Marsh Five Finger	Potentilla palustris	OBL
Bog Blueberry	Vaccinium uliginosum	FACU/FACW/FAC

Notes:

FAC = Facultative
FACU = Facultative Upland
FACW = Facultative Wetland
OBL = Obligate Wetland