WETLAND DELINEATION REPORT

POINT HOPE AIRPORT RUNWAY REALIGNMENT

PROJECT NO. 63842

ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

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Prepared for:
Alaska Department of Transportation & Public Facilities
2301 Peger Road
Fairbanks, Alaska 99709

Prepared by:

USKH is now part of the Stantec Family.
544 4th Ave., Ste. 102
Fairbanks, Alaska 99701-4714
Phone (907) 452-2128
Fax (907) 452-4225

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SUMMARY

In July 2014, USKH Inc. delineated wetlands within the proposed Point Hope Airport Runway Realignment for the Alaska Department of Transportation and Public Facilities. The proposed project would extend the life of the airport in Point Hope, Alaska. This survey delineates and classifies wetland and non-wetland habitats within the approximate 172-acre study area to assess wetlands and wetland habitats potentially impacted by the proposed project. The wetland delineation was completed in accordance with the *Corps of Engineers Wetlands Delineation Manual* (USACE, 1987) as well as the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0)* (USACE, 2007). USKH Inc. investigated vegetation, soils, hydrology, and habitat characteristics at all test plot and photo point locations.

The proposed project study area contains two different habitat types (e.g., emergent wetlands and non-wetlands) surrounding the Point Hope Airport. Of the approximate 172-acre study area, USKH Inc. has determined that 2.4 acres are wetlands. All wetlands documented during the field investigation were determined to be hydrologically connected to the Chukchi Sea, a traditional navigable water of the U.S., and therefore presumed under the jurisdiction of United States Army Corps of Engineers per Section 404 of the Clean Water Act.

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ACRONYMS

CWA .....Clean Water Act
CAVM Team .....Circumpolar Vegetation Map Team
DCCED .....Department of Commerce, Community, and Economic Development
DOT&PF .....Department of Transportation and Public Facilities
FAA.....Federal Aviation Administration
GPS.....global positioning system
HTL.....High Tide Line
NWI.....National Wetlands Inventory
OHA.....Alaska Office of History and Archaeology
U.S.....United States
USACE .....United States Army Corps of Engineers

1 INTRODUCTION

1.1 Site Location

The proposed Point Hope Airport Runway Realignment project (No. 63842) is located at approximately 68.3488˚ North Latitude, -166.7993˚ West Longitude in Township 34 North, Range 35 West, Sections 10, 15, and 16; Kateel River Meridian. Point Hope is at the eastern tip of a gravel spit that juts 15 miles into the Chukchi Sea, located 120 miles north of the Arctic Circle, along Alaska's northwest coast. See Figure 1 in Appendix A for a location and vicinity map.

1.2 Project Description

The Alaska Department of Transportation and Public Facilities (DOT&PF), on behalf of the Federal Aviation Administration (FAA), proposes a project to improve the Point Hope Airport. The project will address the continual coastal erosion threatening the northern runway end, which has reduced the size of the runway safety area (RSA). The coastal erosion is predicted to surpass the threshold lights by 2018. The FAA requires that runways servicing B-II design aircraft traffic incorporate a RSA extending 300 feet beyond each end of the runway and 150 feet in width. The proposed project will address the coastal erosion threat by completing the following activities:

- realign the runway
- enlarge and protect the RSA
- repave the runway and taxiway/apron surfaces
- upgrade the existing runway lighting, replace the segmented circle, replace the wind cone, and adjust airport navigation aids, as funding allows.

1.3 Regulatory Setting and Purpose

Jurisdictional wetlands and waters of the United States (U.S.) are protected under the Clean Water Act and associated policy. Wetlands are defined by the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers (USACE) as, ". . . those areas that are inundated or saturated by surface or ground water 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" (33 Code of Federal Regulations 328.3 [b]). Wetlands, by this definition, are vegetated. Waters of the U.S. include open water bodies (e.g., streams, lakes, and tidal waters). Federal law requires that discharge of fill to jurisdictional wetlands and/or waters of the U.S. be avoided to the maximum extent practicable, or unavoidable impacts minimized and impacts compensated, if unavoidable.

Wetlands were delineated within the approximate 172-acre proposed project study area (Figure 2) to assess potential wetland impacts. The purposes of this report are to identify, describe, and quantify the size of the wetlands found within the study area and provide a professional opinion on whether these wetlands are jurisdictional by the USACE.

1.4 Limitations

Tidal areas are waters of the U.S. and are defined as areas "subject to the ebb and flow of tides" whose limits are determined by the high tide line (HTL). Tidal areas are not delineated in this report for two reasons: 1) no airport development is proposed in tidal areas, and 2) tidal areas of Point Hope are in flux due to the relatively fast erosion on the north shore and relatively fast accretion on the south shore.

2 BACKGROUND INFORMATION

Minimal information is available specific to wetlands, vegetation, soils, and hydrology at the Point Hope Airport. DOT&PF and USACE confirmed that they are not aware of any previous wetland delineations conducted or reported for the airport. DOT&PF provided geotechnical and archaeological reports, erosion studies, maps, photos, and an Environmental Assessment. Orthoimagery was provided by the Department of Commerce, Community, and Economic Development (North Slope Borough, 2013). Online sources were also reviewed. The following sections summarize the existing information available.

2.1 General Background Information

According to a 1992 geotechnical report, the Point Hope peninsula was likely formed during the Pleistocene epoch or prior (about 10,000 to 1,000,000 years ago) and the gravel spit likely appeared about 5,000 years ago from the last drop in sea level. The gravel spit was likely formed by longshore currents and storm waves that move sand and gravel from the Cape Thompson area and deposited them on the south side of the spit. Deposition resulted in a series of at least 28 parallel ridges and associated troughs that run east to west and are spaced 100 to 200 feet apart and are up to 8 feet high. In 1992, the south side of the spit was reported to be accreting at 2.9 feet/year (DOT&PF, 1992). More recently, the northern beach is estimated to be eroding at 10 feet/year (Smith, 2011) and the front of the erosion line is predicted to surpass the runway threshold lights in 2018 (Karczmarczyk, 2014). These beach ridges, many of which are now much lower in height, served as the material source for construction of the original airport. Ridges were bulldozed on both sides of the runway up to 500 feet from the runway in many locations.

Besides threatening the airport facilities, coastal erosion has damaged existing subterranean meat caches ("ice cellars") and associated archaeological sites on and adjacent to the northern part of the airport property. The peninsula is rich in archaeological history, having been continuously occupied by the Inupiat people for the last 2,500 years and, prior to that, by the Ipiutak people (DCCED, 2014). The entire peninsula is part of the Ipiutak Archaeological District that is listed in the National Register of Historic Places. The northern most portion of the airport property is a part of the Ipiutak National Historic Landmark. To the west of the runway are the remains of the old Point Hope town site, which was moved 2 miles east to its present location. Because of the cultural sensitivity of the area, special permission was sought from the USACE to deviate slightly from the standard wetland delineation protocol (see Section 3).

The Point Hope climate is arctic with marine influence and temperatures range from -49 to 78˚ F. Averaging about 10 inches of rainfall a year and 36 inches in snow fall (DCCED, 2014), precipitation is considered to be light.

2.2 Existing Wetland Information

No previous field investigations and mapping for wetlands on airport property were found. The U.S. Fish and Wildlife Service (USFWS) *National Wetlands Inventory* (NWI) Wetlands Mapper was reviewed (2014) and identified wetlands mapped on the shoreline of the Point Hope peninsula just outside or bordering the project study area. The USFWS designates these intertidal areas as marine habitat. See Appendix B for the NWI map.

2.3 Existing Vegetation information

The USACE classifies the Point Hope area as part of the ecoregion of the Arctic Foothills, which has a growing season from June 7th to September 21st (USACE, 2007). Orthoimagery shows the landscape as treeless with herbaceous vegetation or low shrubs. The Circumpolar Vegetation Map Team (CAVM Team), classifies the entire Point Hope peninsula broadly as W3—Sedge, Moss, Low-Shrub Wetlands (CAVM Team, 2003).

2.4 Existing Soils Information

The U.S. Department of Agriculture Natural Resources Conservation Service Soil Survey does not have any soil maps available for the study area. According to a 1992 DOT&PF geotechnical report, the entire spit is composed of well-sorted beach gravel and coarse sand and permafrost should be anticipated at various depths in any excavation at Point Hope (DOT&PF, 1992).

2.5 Existing Hydrology Information

U.S. Geological Survey topographic map (Point Hope B-3) shows the spit in the study area has little relief with a few long and narrow bodies of water that may be in the study area. Orthoimagery shows that the study area appears to have a number of parallel troughs that run east to west and contain surface water. An area to the west and within the airport property experienced significant flooding in the 1960's, in 1972, and in 1991 (HDL, 2008). As a result the old Point Hope town site was moved in the 1970s. Flooding was associated with storm surges, much of which was a result of hydrostatic pressure causing groundwater to rise in depressions and low places near the airport (HDL, 2008). According to Steve Oomittuk, former mayor of Point Hope, 50 years ago many of the troughs on the spit were filled with water, so much so he used to swim in the troughs near the airport often as a child. However, most of these troughs have dried up since the 1990s (personal communication, July 15, 2014).

3 METHODOLOGY

Methodology for the wetland delineation followed guidance outlined in the *Corps of Engineers Wetlands Delineation Manual* (USACE, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0)* (USACE, 2007). The wetland delineation was completed July 14 – 16, 2014 by two USKH Inc. field investigators (Kacy Hillman, Professional Wetland Scientist #2150 and Daniel De Bord, Environmental Analyst). The field investigators were accompanied by Alan Depew, an archaeologist from the Alaska Office of History and Archaeology (OHA), Paul Karczmarczyk, DOT&PF Environmental Impact Analyst, and Steve Oomittuk, local Cultural Resource Observer.

3.1 Field Prep

Prior to the initial field visit, existing background information and mapping described in Section 2 was used to assess the study area and to identify areas requiring field verification. Target sampling locations were identified based on existing background information and mapping.

3.2 Wetland Delineation

This delineation was completed according to wetland sampling methodology for routine determinations combining levels one and two as outlined in the 1987 USACE Wetland Delineation Manual. This methodology combines use of available desktop data and field sampling to make wetland determinations for study areas larger than five acres. The three-tiered survey approach outlined in the 1987 USACE Wetland Delineation Manual was followed for each sampling location and included examination of vegetation, soil, and hydrology at all test plot locations. Standard USACE Wetland Determination Data Forms were completed at all test plot locations and are included in Appendix C. More than one test plot was completed for each community type for verification of findings and evidence of repeatability.

Photo points were completed where habitat was observed similar to that of previously documented test plot locations, which allows best professional judgment to apply test plot findings between similar habitats, or where the local Cultural Resource Observer requested test plots not be excavated. Each test plot and photo point location sampled during the field investigation was collected in a handheld global positioning system (GPS) unit. Test plot and photo point locations are shown on maps included in Figure 2 in Appendix A. Photographs of test plots and photo point habitat, soil pits, and other observations are included in a photo log in Appendix D.

The field investigators walked parallel transects spread out from each other within the study area to ensure accurate field observations of different habitat types. Delineation of wetland and upland boundaries in the field was completed by walking the transition area with a handheld GPS unit. Wetlands were mapped only within the study area.

3.3 Exception and Modification to Methods

As noted in Section 1.4, tidal areas, areas subject to the ebb and flow of tides, were not delineated and not differentiated from non-wetland areas. Under DOT&PF direction, tidal areas are not the subject of this report for the reasons stated in Section 1.4.

Under the advisement of Steve Oomittuk, local Cultural Resource Observer, and Alan Depew, OHA Archaeologist, the northern corner of the study area (shaded in green; Figure 2) was avoided due to the sensitive nature of cultural resources in this area. Instead, researchers collected data on the southern edge of this culturally sensitive area and relied on data from test plots that had a similar vegetation signature. In addition, a cultural resource to the north of the apron was also avoided. No sampling occurred in these areas

and, therefore no impact to cultural resource resulted from the wetlands field work. A certification statement of this is provided in Appendix E. This divergence in method was approved by USACE as evidenced by the correspondence with Jason Berkner, USACE Project Manager, on July 2, 2014. See Appendix E for this correspondence.

3.4 Data Download and Mapping

After the field investigation data sheets, site photographs, observations, and GPS locations were compiled to complete the delineation. Wetlands were assigned classifications using field data collected and classes described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979).

4 RESULTS AND DISCUSSION

4.1 Climatic Conditions

Weather during the field investigations averaged between 40 and 50 degrees Fahrenheit and was overcast with occasional sunbreaks, drizzle, fog, and high winds. Visibility was good during the entire field effort. The month prior to the field investigations, June 2014, precipitation was slightly above average, 0.06 more inches of rain (The Weather Channel, 2014) above average (Western Regional Climate Center, n.d.). Precipitation during the first two weeks of July was slightly below average, 0.07 inches was observed. Precipitation was within the range of normal and therefore climatic conditions were considered normal for this time of year.

4.2 Summary of Wetlands and Non-wetlands

Table 1 summarizes the wetland habitat types found and non-wetlands within the study area. The majority of the study area (169.6 acres) is comprised of non-wetlands. Approximately 2.4 acres of wetlands were identified within the approximate 172-acre study area. Each habitat type is described in further detail in the sections below.

Table 1 – Summary of Wetlands and Non-wetlands

Habitat Type	Acres	Percent of the Study Area
Wetlands (PEM1B)	**2.4**	**1.4**
Non-wetlands*	169.6	98.6
Total Study Area	172	100

*Tidal areas are not differentiated from non-wetland areas in this report.

4.2.1 Wetland

Wetland habitats identified and sampled within the study area (2.4 acres), all Emergent Wetlands, consist of a small percentage of the total study area (1.4 percent) and include three distinct areas:

- the northwest wetland (see wetland boundary points 18a and b on Figure 2, which is 1.6 acres;
- the northeast wetland (see wetland boundary points 6a and b on Figure 2, which is 0.5 acres; and,
- the southwest wetland (see wetland boundary points 15a and b on Figure 2, which is 0.3 acres.

Connection of surface hydrology between these wetlands was not observed; however, the northwest and northeast wetlands are presumed to be connected by groundwater flowing underneath the runway, which resulted in slumping of the runway in between these wetlands, which required an asphalt patch (see orthoimagery provided on Figure 2) (Karczmarczyk, personal communication, July 15, 2014). Wetlands within the study area are likely connected to extents of contiguous and adjacent wetlands beyond the study area boundary. Connections to adjacent wetlands are presumably by subterranean hydrology (groundwater flow) as surface connections were not visible. The troughs are relatively shallow and narrow and eventually lead to the nearby Chukchi Sea, a known navigable water of the U.S.

The presence of wetlands within the study area appears to be driven by topography. Topographic relief of the study area consists of a series of low beach ridges and associated troughs with a few wetlands located within these troughs. All documented wetland habitats exhibited all three wetland parameters: hydrophytic vegetation, hydric soil, and wetland hydrology (see Wetland Determination Data Forms found in Appendix C and Photo log found in Appendix D).

Within the study area only one wetland habitat type was observed: Emergent Wetlands, specifically PEM1B according to the Cowardin classification system (Cowardin et al., 1979). PEM1B wetlands are characterized as

palustrine (P), emergent (EM), persistent (1), and saturated (B). These wetlands are dominated by a treeless mix of emergent herbaceous vegetation in the lower depression of the wetland, and arctic willow (Salix arctica) growing on the ridges. Plant species dominating this habitat type include Bigelow's sedge (*Carex bigelowii*), northern clustered sedge (*Carex arcta*), and arctic bluegrass (*Poa arctica*). Soils were organic mixed with sand. Hydrogen sulfide odor was apparent at each wetland sampling location indicating hydric soils. Both northern and southern wetlands had a high water table and soils were saturated, and the northeast portion of the northern wetland had surface water present. See wetland data forms in Appendix B for test plots 6 and 15 and associated photos to these plots in the photo log in Appendix C).

These wetlands may have been historically disturbed (DOT&PF, 1992), but have since recovered. However, some old drums, debris, and various small structures are still present (see the fifth photo for test plot 15 on page 33 of the photo log).

4.2.2 Non-wetlands

Non-wetlands (169.6 acres) comprised of beach sands and gravel make up 98.6% of the study area. These Non-wetlands are comprised of three major types:

- developed surfaces including the existing paved runway, compacted gravel apron, and compacted gravel surface in front of the airport maintenance building;
- previously disturbed ground just to the north and the south of the apron; and,
- sparsely vegetated areas including an area of disturbed ground used as a gravel stockpile as evidenced by loose gravel and a large stockpile mound.

The sparsely vegetated non-wetlands are homogenous in nature. Data forms for test plots 1, 2, 5, 7, 9, 11, 13, and 17 (Appendix C) are representative of this habitat type as depicted by their corresponding photos in the photo log (Appendix D). None of these test plots satisfied all three parameters indicating wetland status. Vegetated areas are dominated by arctic willow, an upland plant, and secondarily by facultative plants such as dwarf fireweed (*Chamerion latifolium*) and arctic bluegrass. Soils are primarily gravel and sand with some plots having organics mixed with the upper layer of sand. Only one plot, test plot 17, had a high water table, but didn't satisfy soil and vegetation parameters. Topography within the sparsely vegetated non-wetlands varied from convex, concave, and flat; encompassing ridges, troughs, and level areas. Permafrost was found only in test plot 1 at a depth of 10 inches.

The northern, culturally sensitive portion of the study area was found to be the most similar to test plot 1, dominated by what appeared to be dry gravely soils with pebbles, covering a large portion of the surface area also shared with arctic willow. Topography appeared to be rolling dunes with beach troughs.

4.3 Conclusion

Development activities from construction of the proposed project would likely impact wetlands under the jurisdiction of USACE. Based on the review of orthoimagery, drainage from the delineated wetlands flows to the west from the airport into the Chukchi Sea through an assumed groundwater connection. The Chukchi Sea is a navigable water of the U.S. For this reason wetlands in the study area are presumed jurisdictional by the USACE under Section 404 of the CWA.

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6 LIST OF PREPARERS

Preparers	Title	Role
Sara Lindberg	Environmental Manager	Senior Review
Kacy Hillman, Professional Wetland Scientist #2150	Senior Environmental Analyst	Author, Wetlands Field Survey Lead
Daniel De Bord	Environmental Analyst	Primary author, Wetlands Field Survey Assistant

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