Appendix C

Wetlands Reports

WETLANDS DETERMINATION, FUNCTIONAL ASSESSMENT AND HABITAT ASSESSMENT FOR PROPOSED KIANA AIRSTRIP IMPROVEMENTS, ALASKA

Prepared for

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INTRODUCTION

The Northern Region Alaska Department of Transportation & Public Facilities is proposing improvements to the Kiana Airstrip, including lengthening the runway and upgrading or relocating the apron. A material site located approximately 2.5 miles northwest of the airport may be used as a gravel source for these efforts. To satisfy permitting requirements associated with the project, ABR, Inc.—Environmental Research & Services (ABR) performed a wetlands assessment, wetland functional assessment, and wildlife habitat assessment in support of the U.S. Army Corps of Engineers (USACE) Section 404 wetland permit application process.

The study area for the project is nearly 320 acres in size, comprising a 100-ft buffer around the proposed material site (T19N, R8W, Section 31, and T18N, R8W Section 6, Kateel River Meridian, -160.504° 67.000° WGS 1984) and airstrip improvements (T18N, R8W, Sections 8 and 9, Kateel River Meridian, -160.443° 66.976° WGS 1984, Figure 1). Kiana is located in the Northwest Arctic Borough, approximately 57 miles east of Kotzebue. Kiana is located on a bluff overlooking the confluence of the Kobuk and Squirrel rivers, within the Interior Forested Lowlands and Uplands ecoregion (Gallant et al. 1995). This ecoregion has a continental climate, with undifferentiated alluvium and slope deposits over primarily sedimentary rocks (Gallant et al. 1995). Kiana is located in the western portion of the ecoregion, which is underlain by thin to thick permafrost, and dominated by spruce and hardwood forests.

METHODS

FIELD SURVEY

Routine wetland determinations were performed following the USACE three-parameter approach (Environmental Laboratory 1987, USACE 2007) at each wetland determination plot. To be classified as a wetland, a site must be dominated by hydrophytic plants, have hydric soils, and show evidence of a wetland hydrologic regime. A mobile $Trimble^{\textcircled{B}}$ NomadTM series GIS unit recorded the wetlands data (using the *WetForm* database) and GPS location, and provided field access to aerial imagery. *WetForm* is a proprietary relational database used to enter wetlands site data in the field, and facilitates the preparation of electronic copies of the USACE (2007) Regional Supplement dataform for each wetland determination plot (Appendix A).

Wetland determination plots consisted of a 10-m radius of homogenous vegetation, as specified by the 1987 Manual, although size and dimensions were modified as necessary to accurately characterize the plant community (e.g. a narrow plot to capture a riparian system). The absolute cover of each vascular plant species within the plot was visually estimated and the presence of hydrophytic vegetation was determined using the Dominance Test (ratio of wetland versus upland dominant plants) and/or the Prevalence Index (weighted average of all species present), using the wetland indicator status per the *2012 National Wetland Plant List: Alaska* (Lichvar and Karsetz 2012).

Hydric soils form under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper 12 inches of the soil. Hydric soils often have thick organic deposits (histosols, histels, or histic epipedons) or have a low-chroma mineral soil matrix color with redoximorphic features, indicating a reducing environment. Soil pits were excavated to approximately 18 inches or to the depth of the active layer, if shallower, and the soil profile was described. Key characteristics, including color (*Munsell Soil Color Charts* 2009) and abundance of redoximorphic features were recorded. Soil profile descriptions also were compared with hydric soil criteria in the most current version of the *Field Indicators of Hydric Soils in the United States* (USDA NRCS 2010).

Wetland hydrology is defined as the presence of flooded or ponded surface water or saturation within the upper 12-inches of the soil profile, for at least 14 consecutive days during the growing season at a minimum frequency of 5 years out of 10. Surface and subsurface direct and indirect indicators of wetland hydrology were recorded at each site, including surface water, saturated soils, presence of and depth to water table, drift or sediment deposits, drainage patterns, and geomorphic position, as summarized in the standard USACE wetland determination dataform (USACE 2007).

Photos of soils and vegetation were taken at each plot (Appendix B). Additional information collected at each wetland determination plot included physiography, surface form, Viereck Level IV (Viereck et al. 1992) vegetation class, and observations of wildlife use (e.g. dens, browse, scat) or human activity (e.g. fish racks, ATV trails).

In some cases, rapid verification plots also were sampled to help map wetlands, vegetation, and wildlife habitats. On field verification plots the dominant plant species, Cowardin et al. (1979) code, and Viereck et al. (1992) Level IV vegetation class were recorded, in addition to site photographs and GPS location. Verification plots were typically sampled in areas where the wetland or upland status was well documented in the data from formal wetland determination plots. The data from verification plots were used to improve map accuracy by increasing the number of documented wetland ecotypes tagged to particular aerial photosignatures (Appendix A).

WETLANDS MAPPING AND CLASSIFICATION

Wetland boundaries were mapped on-screen using heads-up digitizing in ArcGIS software, the predominant approach employed by the U.S. Fish and Wildlife Service's National Wetlands Inventory program (NWI) (Dahl et al. 2009). Wetlands and waters were mapped at a scale of 1:2,000. Wetlands and waters were categorized per Cowardin et al. (1979) using NWI annotation, which describes the dominant vegetation and water regime.

In addition to assigning Cowardin codes, each wetland polygon was assigned a physiography and Level IV (Viereck et al. 1992) vegetation code. Physiography codes are generalized geomorphologic features used to describe landscape position. Viereck Level IV vegetation classification uses plant species composition and community structure to classify common plant communities in Alaska. We combined the three mapped categories (Physiography, Cowardin code and Viereck code) to produce a set of unique land-cover types and then aggregated these distinct landcover types into broader ecologically related categories. For the purposes of this study, we aggregated the Cowardin Classes into Wetland Functional Classes for descriptive and functional assessment purposes (as described in the Functional Assessment methodology below).

No NWI maps, digital or non-digital, were available for the study area in Kiana (USFWS 2012). Thus, the mapping inputs were limited to aerial imagery, topographic contours, and field data.

Wetlands and waters within the study area were assessed to determine if they met the definition of a water of the U.S., subject to jurisdiction under Section 404 of the Clean Water

Act, and a navigable water of the U.S., which is also subject to jurisdiction under Section 10 of the Rivers and Harbors Act. Navigable waters of the U.S. are defined as "those waters subject to the ebb and flow of the tide shoreward to the mean high water mark and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity" (33 CFR 329). Waters of the U.S. are defined as navigable waters of the U.S.; tributaries to navigable waters of the U.S.; wetlands, lakes, and ponds adjacent to navigable waters or their tributaries; and other waters of the U.S. whose degradation or destruction could affect interstate or foreign commerce (40 CFR 230.3[s])

FUNCTIONAL ASSESSMENT

A functional assessment was performed for each Wetland Functional Class using a rapid assessment procedure based on the *Literature Review and Evaluation Rationale of the Wetland Evaluation Technique* (Adamus et al. 1991), the *Rapid Procedure for Assessing Wetland Functional Capacity* (Magee 1998), and recommendations summarized in a recent *Regulatory Guidance Letter* (RGL 09-01) (USACE 2009). This guidance includes a dataform for objectively evaluating wetland functions and values, using HGM principles. These criteria facilitate rapid assessment of the many landscape functions that are necessary for wetland ecosystem maintenance, including hydrology, water quality, wildlife and fisheries habitat, productivity, and supporting public needs, such as subsistence (Appendix C).

Hydrologic, water quality, ecologic, and sociologic functions performed by wetlands and waters in the project area were assessed through a combination of interpreting satellite imagery, reviewing field data, and examining local topography. These sources were used to inform environmental conditions and characteristics for each Wetland Functional Class, including the size, landscape position, fish and wildlife use, plant community structure, and hydrologic regime, and used to rate each Wetland Functional Class as low, moderate, or high, reflecting both the capability and opportunity for a given function to be performed.

Hydrologic functions assess the ability of a wetland to interact with surface and/or groundwater. Two general processes were evaluated:

- Flood Flow Regulation detention of surface water (and to some degree groundwater) flow and consequential moderation of downstream flooding.
- Erosion Control and Shoreline Stabilization degree to which the wetland can reduce erosion.

Water quality functions include the ability of a wetland to detain sediments, toxicants, and nutrients, and to export organic matter. Two general processes were evaluated:

- Sediment, Nitrogen and Toxicant Removal retention of suspended sediment and associated toxicants, and the detention and transformation of nitrogen and phosphorus, from surface water entering the wetland.
- Organic Matter Production & Export production of organic matter (primarily through plant growth) and contribution of organic matter to the food web.

Ecological functions assess the relative ability of a wetland to support fish and wildlife populations and provide species and habitat diversity. Three general characteristics of each Wetland Functional Class were assessed:

- General Habitat Suitability direct support of mammals and birds.
- Fish Habitat direct support of fish.
- Native Plant Richness direct support of vascular plant species diversity.

Sociological functions assessed ecological services under two broad categories:

- Subsistence/Recreational/Educational/Scientific use direct support of hunting and gathering activities, travel, and/or education including scientific research.
- Uniqueness and Special Status support of state or federally listed species, high quality habitat, presence of rare features, and/or support of functions not commonly provided within the watershed.

Based on the functional assessment outputs, wetlands and waters within the project area were categorized following the guidelines outlined in Appendix A of RGL 09-01:

Category I – High functioning wetlands – Uncommon wetlands that: 1) provide a documented life support function for threatened or endangered species; 2) represent a high

quality example of a rare wetland; 3) are rare within a given region; or, 4) are undisturbed and contain ecological attributes that are impossible or difficult to replace within a generation, if at all.

Category II – High to moderate functioning wetlands – Wetlands that: 1) provide habitat for very sensitive or important wildlife or plants; 2) are difficult to replace (such as bogs); or 3) provide very high functions, particularly for wildlife habitat.

Category III – Moderate to low functioning wetlands —Wetlands that are important for a variety of wildlife species and can provide watershed protection functions depending on where they are located. Generally these wetlands will be smaller and/or less diverse in the landscape than Category II wetlands. These wetlands may have experienced some form of degradation, but to a lesser degree than Category IV wetlands.

Category IV – Degraded or low functioning wetlands — The smallest, most isolated and least diverse wetlands that have likely been degraded by human activities.

HABITAT ASSESSMENT

Wildlife habitats were derived by integrating information from Cowardin et al. (1979) codes, Viereck (et al. 1992) Level IV vegetation classifications, and landscape characteristics (physiography). This process is similar to that used for classifying Wetland Functional Classes, except that upland vegetation types are included and the wildlife habitat classification aggregates vegetation and landscape data by characteristics considered important to wildlife, such as food availability, security (or escape), and shelter. These factors may be directly related to vegetation structure, forage quality or quantity, soils, hydrology, microtopography, and/or microclimate.

Incidental observations of wildlife were recorded during the wetland field survey in August. We conducted a literature review to identify the wildlife species likely to occur in the area, to summarize available information about wildlife-habitat relationships in the region, and to identify the wildlife habitats that may be important for each species. The importance of a habitat to a species may be a function of the seasonal availability of food or cover, the physical structure of vegetation, landscape physiography, or the spatial and temporal arrangement of habitat (Adamus et al. 1991). Habitats may be seasonally important for foraging; nesting, denning, or calving; predator protection or escape terrain; or for other important behavioral or life-history functions. The habitat assessment identified the wildlife habitats important for each species present.

RESULTS

FIELD SURVEY

One team of two scientists (Susan Ives and Erin Johnson [ABR]) collected wetlands, vegetation, and wildlife habitat field data from 20 to 23 August 2012. Survey dates were selected to be well within the median dates of the onset of vegetation green-up in spring and vegetation senescence in fall, as specified in the 2007 Regional Supplement. Standard USACE field determinations were completed at 48 sites and verifications (rapid assessment technique to confirm previously documented conditions) were completed at 21 sites (Appendices A and B).

The Bureau of Land Management maintains a Remote Automated Weather Station (RAWS) in Kiana (WRCC 2012), with limited data available from April 1988 to October 2012. August air temperature in 2012 (56.2 °F) was slightly above the 10-year mean (54.6 \pm 3.1 °F, $\bar{X} \pm$ 1SD) for August, while total precipitation for August (5.35 inches) was 2.36 inches greater than the monthly 10-year mean (2.99 \pm 1.55). The bulk of this precipitation, 3.68 inches, fell on or before August 23. Many waters were at flood stage during the field effort, and understory vegetation in riparian communities is likely underestimated due to the volume of water. All wetland sites showed direct indicators of wetland hydrology (A1: Surface Water, A2: High Water Table, and/or A3: Saturation), giving confident determinations of this ephemeral parameter.

WETLANDS MAPPING AND CLASSIFICATION

We identified 15 Cowardin classes in the study area, 2 of which were considered Waters of the U.S. (non-navigable), 11 vegetated wetland types, and 2 non-wetland types (uplands). All wetlands and waters within the study area are likely jurisdictional due to their direct downstream connection to the Kobuk River.

CONNECTION TO NAVIGABLE WATERS

The Kobuk River is a navigable water in the vicinity of Kiana (ADNR 2012), subject to Section 10 of the Rivers and Harbors Act. ADNR (2012) lists the navigability of the Squirrel River, a tributary to the Kobuk River, as unknown, although it is large enough that it is likely navigable in-fact and thus also under the aegis of Section 10 of the Rivers and Harbors Act. The average annual flow for the Kobuk River near Kiana ranged from 10,020 to 24,960 cubic feet per second from 1977–1999 (Brabets 2001). Late October to late May are low flow periods, with flow rapidly increasing in late June due to snowmelt. Flow for the remainder of the summer on the Kobuk River varies with precipitation, but generally decreases in October with the onset of winter (Brabets 2001). The Kobuk and Squirrel rivers are outside of the Kiana airport study area but mapped wetlands are all directly connected to smaller connected tributaries.

WATERS

Waters within the study area comprised Upper Perennial Streams (R3UBH) and Permanently Flooded Ponds (PUBH). An Upper Perennial Stream that runs along the eastern boundary of the Material Site flows north through a series of ponds, then connects to the Squirrel River, a tributary to the Kobuk River (Figure 1). Of the two Upper Perennial Streams mapped in the vicinity of the Kiana Airstrip, one is a located west of the existing Kiana Airstrip, and flows south into the Kobuk River. The second stream flows east into a pond that is directly connected to Squirrel River through a series of saturated wetlands. The USGS topographic map (1:63,360) shows two additional streams west of the Kiana Airstrip, however no channel morphology (bed and banks) was observed in the field and thus, these features were mapped as vegetated seasonally flooded Cowardin classes.

Two Permanently Flooded Ponds were mapped: one small portion of a pond in the Material Site study area, and one moderately sized pond west of the Airstrip. The pond in the Material Site study area is associated with the Upper Perennial Stream flowing into the Squirrel River.

The two larger perennial streams within the overall study area effectively connect all adjacent wetlands to the nearest Traditional Navigable Water [(TNW) Kobuk River]. While the small pond to the west of the runway is not connected to the Upper Perennial River via a visible surface connection it is completely surrounded by vegetated wetlands that are directly adjacent. We consider all of the mapped Upper Perennial Streams to be Relatively Permanent Waters (RPW), with constant flow throughout the growing season.

WETLANDS

Emergent and shrub-dominated wetlands are the most common types found in the Airport and Material site study areas, although the emergent classes are confined to the Airport study area. Emergent wetlands range in hydrologic regime from saturated to permanently flooded (PEM1H, PEM1F, PEM1E, and PEM1B), with Saturated Emergent Meadow (PEM1B) being the most prevalent (3.19 acres, 1.51%). This wetland type was primarily associated with disturbed surfaces alongside the existing airport runway and consisted primarily of *Calamagrostis canadensis* (bluejoint grass) (Table 1, Figure 2.1 and 2.2). The permanently flooded, semipermanently flooded and seasonally flooded saturated emergent types reflect a lacustrine fringe gradient associated with the larger pond west of the airport. Combined, they account for 4.34 acres (2.05%) (Table 1). Common species include *Eriophorum angustifolium* (tall cottongrass), *Carex utriculata* (Northwest Territory sedge), *Arctophila fulva* (pendantgrass), *Equisetum fluviatile* (water horsetail), and *Comarum palustre* (purple marshlocks). Surface water (A1 hydrology indicator) is present throughout. Additional PEM1H and PEM1F wetlands occur as small depressions north of the runway and within a drainage feature connected to the stream running west of the airport (Figure 2.1 and 2.2).

Deciduous shrub-dominated Cowardin Classes were the most commonly occurring wetland types throughout both the airstrip and the material site. Five Cowardin deciduous shrub dominated classes (PSS1C, PSS1B, PSS3/1B, PSS1/3B and PSS1/4B) were identified in the field survey. The combined map percentages for the shrub classes are 61.43 % (129.90 acres) of the airport area and 69.31 % (74.47 acres) of the material site area. The PSS1C class describes the riparian area bordering the two Upper Perennial Streams detailed above. The dominant willow species in these areas was *Salix richardsonii*, with an understory often supporting a thick emergent layer of *Calamagrostis canadensis* and *Carex aquatilis*. During the field visit these areas were inundated due to recent rain events, but the soils were presumed to be hydric. The remaining 4 Cowardin shrub classes describe the range of species variability seen in the needleleaf woodland wetlands that dominate the area surrounding Kiana. These wetland communities generally occur in a water-shedding, convex, sloping landscape positions, and comprise open canopy and woodland white spruce forests and dwarf white spruce woodlands. *Picea glauca* (white spruce) tall and dwarf trees are a defining component of these communities

(PSS4), often with co-dominant *Salix* spp. (willows), *Betula glandulosa* (resin birch), and *Vaccinium uliginosum* (bog blueberry) shrubs. The herb layer was typically species-poor, but generally included *Carex bigelowii* (Bigelow's sedge). All soils were saturated within the upper 12 inches (A3: Saturation), and ranged from Histosols (A1: Histosol or Histel) to silty clay loam meeting the hydric soil requirement A14:Alaska Redox.

One forested wetland (PFO4B) was identified at two field sites (K_01 and K_V01). This wetland was between the airport runway and the town site, and includes a mixed stand of black spruce and white spruce with a similar understory to the needleleaf woodland classes described above. Forested wetlands were uncommon in the Airport study area, although several forested upland habitats are present.

UPLANDS

Both naturally occurring uplands (U, 36.44 acres, 17.23 % of the study area) and fill or urbanized uplands (Us, 32.89 acres, 15.55 % of the study area) were mapped within the airport study area. The material site includes only undisturbed uplands (32.61 acres, 30.25 % of the study area)(Table 1). Fill or urbanized areas (Us) comprise the existing Airstrip, apron, roads, cemetery, and residential areas within the study area. Naturally occurring uplands (U) were predominantly non-wetland needleleaf forest and woodland or low and tall willow scrub communities located on steep slopes and bluffs, as well as smaller rounded knobs. Uplands disturbed by Airstrip construction, but that appeared fully revegetated, were also mapped as naturally occurring uplands (U).

FUNCTIONAL ASSESSMENT

The 15 Cowardin Classes were aggregated into 9 Wetland Functional Classes. The Wetland Functional Classes are intended to represent groups of functionally similar wetlands suitable for individual evaluation using the USACE recommended RGL 09 data sheet. Aggregations were made based on similarities in landscape position or physiography, hydrology and plant species composition (Table 2).

The wetland functional assessment evaluated the hydrologic, water quality, ecologic, and sociologic functions of each Wetland Functional Class and is ultimately used to classify Wetland Functional Classes into Categories II–III (Table 3) for use in permitting and compensatory

mitigation negotiations. No federally listed endangered species have been documented within the study area, and no designated critical habitat is present within the study area. No wetlands within the study area have been granted a special managerial or conservation status, or have rare or scarce biologic, geologic, or functional features been documented within the study area. Thus, no wetlands were included in Category I. No wetlands were severely degraded, so no wetlands were included in Category IV.

Most Wetland Functional Classes within the study area ranked high for Educational, Scientific, Recreational, or Subsistence Use due to public ownership and evidence of ATV access. While it is possible that some study area wetlands are used for subsistence activities, there was no direct observation of consumptive use during the field visit.

With the exception of the Upper Perennial Stream, the seasonally flooded to permanently flooded Wetland Functional Classes scored highest (Table 3). These classes were generally higher functioning for hydrologic (Flood Flow Regulation; Erosion Control and Shoreline Stabilization) and water quality (Sediment, Nutrient, and Toxicant Removal, and Organic Matter Production and Export) functions. Palustrine Flooded Wet Emergent Meadow and Lacustrine Flooded Sedge-Grass Marsh occupy depressional features, whose greater retention times indicate a high level of functioning for water quality features. Riverine Seasonally Flooded Wet Sedge Meadow indicated a greater likelihood of providing fish habitat, and the dense herbaceous and woody vegetation characteristic of this wetland class, indicated a high level of functioning for Erosion Control and Shoreline Stabilization.

Saturated palustrine systems were ranked lower functioning for hydrologic and water quality functions due to their typical landscape positions (slopes and swales) and lack of direct connections to surface water features. Flood Flow Regulation was considered negligible in these communities due to a shallow active layer. The most common Wetland Functional Type, Palustrine Saturated Needleleaf-Shrub Birch Woodland, was ranked high for General Habitat Suitability as it was relatively undisturbed by development, included moderate vegetation interspersion and a relatively high evenness of cover, and moose and caribou sign were observed at multiple locations within this wetland type. The Upper Perennial Stream, by definition, cannot perform Flood Flow Regulation, Erosion Control and Shoreline Stabilization, or contribute to Native Plant Richness. The lack of numerous velocity breaks (e.g. beaded streams) indicated that sediment, nutrient, and toxicant removal would only be performed at a low level. While we did not see any fish in the streams during our survey and the streams are not part of the Alaska Department of Fish & Game anadromous fish catalog, they likely support populations of resident fish. These streams connect to either the Squirrel or Kobuk Rivers, which are known to support populations of chum, Chinook, and pink salmon as well as Dolly Varden, sheefish, and whitefish (ADF&G 2012).

HABITAT ASSESSMENT

Eleven wildlife habitats were identified in the study area. At least 28 bird and 11 mammal species commonly occur in the study area (Table 4). No federally protected threatened or endangered species are likely to occur in the study area or in the Kiana region. The study area is outside the known nesting range for Bald Eagles, which also are federally protected, and no Bald Eagle nesting habitat is present. Most of the wildlife habitat in the study area is immediately adjacent to an existing airstrip and near the village of Kiana, and wildlife species with a low tolerance for human disturbance (e.g., wolves, wolverines) are likely to avoid the site.

Needleleaf Forest and Woodland is the dominant wildlife habitat at both the airport and material sites (192.12 acres). At the material site, only small areas of other wildlife habitats occur. Large tracts of forest are generally highly productive habitats because they provide forage and cover for a variety of wildlife species. Needleleaf Forest and Woodland supports numerous landbird species and almost all of the mammal species listed in Table 4. Signs of moose and caribou were observed within Needleleaf Forest and Woodland during the field investigation. Upland Broadleaf Forest is equally valuable to a high number of wildlife species, but is less common in the study area (2.71 acres), occurring only at the airport site.

Low Birch-Ericaceous Scrub and Low and Tall Willow Scrub are the second and third most common wildlife habitats in the study area (41.14 and 38.09 acres, respectively). These habitats support similar assemblages and a relatively high diversity of wildlife species. Numerous passerine bird species are associated with Low and Tall Willow Scrub and this habitat provides valuable cover for a variety of small mammals. Tall Alder Scrub is similarly productive for wildlife, but is uncommon in the study area (0.99 acres).

A small amount of Bluejoint Meadow (2.98 acres) occurs in the study area, primarily in proximity to the existing airstrip infrastructure. Bluejoint Meadow supports a few of the common avian species and most of the mammals listed in Table 4. Due to the association of this habitat with human disturbance, however, the number of wildlife species using it is expected to be low. Similarly, Human Disturbed Barrens (0.96 acres) provide low quality habitat for only a few wildlife species that are tolerant of human disturbance.

Wet and aquatic habitats occur primarily in the western portion of the airport site and along a small stream bordering the mine site. The wildlife habitats in wetlands areas, Wet Sedge Meadow, Fresh Herb Marsh, Fresh Water Pond, and Upper Perennial Stream, are similarly attractive to wildlife because of the presence of riparian and aquatic vegetation. The importance of these habitats to wildlife in the study area is disproportional to the relatively small land area they occupy (7.02 acres combined). Fresh Water Pond may support up to four species of waterfowl and adjacent Fresh Herb Marsh and Wet Sedge Meadow may serve as nesting habitats for waterfowl and other species not common to more abundant, drier sites. Although these habitat types are less important for most mammals, moose are highly dependent on these areas in the summer for browse, temperature regulation, and mosquito avoidance.

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Cowardin Class	NWI ^a Code	Airport Area (Acres)	% of Airport Study Area	Material Site Area (Acres)	% of Materia Site Study Area
NON-NAVIGABLE WATERS OF THE U.S.					
Upper Perennial Stream	R3UBH	0.39	0.18	0.35	0.33
Permanently Flooded Pond	PUBH	1.72	0.81	0.01	0.01
	Total	2.11	0.99	0.36	0.34
WETLANDS					
Permanently Flooded Emergent Marsh	PEM1H	1.76	0.83		
Semi-permanently Flooded Emergent Meadow	PEM1F	0.18	0.09		
Seasonally Flooded Saturated Emergent Meadow	PEM1E	2.40	1.14		
Saturated Emergent Meadow	PEM1B	3.19	1.51		
Seasonally Flooded Deciduous Shrub Scrub	PSS1C	3.91	1.85	3.07	2.86
Saturated Deciduous Shrub Scrub	PSS1B	81.55	38.56	28.32	26.35
Saturated Broadleaf Evergreen/Deciduous Shrub Scrub	PSS3/1B	11.30	5.34		
Saturated Deciduous Shrub/Broadleaf Evergreen Scrub Saturated Deciduous Shrub/Needleleaf Evergreen	PSS1/3B			25.67	23.90
Scrub	PSS1/4B	33.15	15.68	17.41	16.20
Saturated Needleleaf Evergreen Forest	PFO4B	2.59	1.22		
	Total	140.03	66.22	74.47	69.31
NON-WETLANDS					
Upland	U	36.44	17.24	32.61	30.35
Upland Fill	Us	32.89	15.55		
	Total	69.33	32.79	32.61	30.35
	Grand Total	211.47	100.00	107.44	100.00

Table 1. Area of Waters of the U.S., wetlands, and uplands within the study area, Kiana, Alaska, 2012.

^a National Wetland Inventory (NWI) annotation based on the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979).

Table 2. Wetland Functional Class Descriptions for the Kiana airport improvements project area and proposed material site area, Kiana Alaska.

Wetland Functional Class	Description
Upper Perennial Stream	Two unnamed streams flow through the study area. One flows north through the proposed material site connecting directly to Squirrel River and the other one flows south through the airport area to the Kobuk River. Upper Perennial Streams were mapped as Cowardin Class, R3UBH. They are narrow channels with small riparian areas composed of wet shrub scrub wetland types.
Permanently Flooded Pond	There are two Permanently Flooded Ponds in the study area. The larger pond is located west of the airport runway and the smaller one is an impoundment in the stream flowing through the proposed material site. Ponds were mapped as Cowardin Class, PUBH. They consist of shallow open waterand in the case of the margins of the larger pond a littoral fringe has developed.
Palustrine Flooded Wet Emergent Meadow	Occur in small depressional features surrounded by saturated tundra types north of the airport runway. Mapped as Cowardin Classes PEM1H and PEM1F. Permanently flooded with a variety of obligate wetland emergent plants including <i>Eriophorum angustifolium</i> , <i>Comarum palustre</i> , <i>Equisetum fluviatile</i> and <i>Carex utriculata</i> .
Lacustrine Flooded Sedge-Grass Marsh	Describes a series of lacustrine fringe wetland types at the edge of the larger Permanently Flooded Pond west of the runway. Mapped as Cowardin Classes PEM1E and PEM1H. Communities are dominated by obligate wetland emergent plants such as <i>Arctophila fulva</i> , <i>Equisetum fluviatile</i> , <i>Carex utriculata</i> and <i>Eleocharis palustris</i> . Surface water is present throughout.

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Table 2. Continued.

Wetland Functional Class	Description
Riverine Seasonally Flooded Wet Sedge Meadow	Occur along one drainage feature connected to the stream in the airport site. Mapped as Cowardin Class PEM1E. The predominant sedge type is <i>Carex aquatilis</i> ; deciduous shrubs including <i>Salix richardsonii</i> and <i>Salix reticulata</i> are present in small amounts. Running surface water was present at the time of sampling and the presence of hydric soils was assumed.
Palustrine Saturated Graminoid Meadow	Primarily a disturbed type found along the north edge of the airport runway.Mapped as Cowardin Class PEM1B. The dominant graminoid species is <i>Calamagrostis canadensis</i> Histic epipedon (A2) and Alaska Redox (A14) hydric soil conditions were met with saturated soils and patches of surface water.
Riverine Seasonally Flooded Low and Tall Willow Scrub	Found bordering the stream west of the runway and the material site stream. Mapped as Cowardin Class PSS1C. Mixture of low and tall willow communities dominated by <i>Salix richardsonii</i> . The understory is often high cover of emergent graminoids including <i>Calamagrostis canadensis</i> and <i>Carex aquatilis</i> . At the time of the field survey all sites had surface water and hydric soils were assumed.
Palustrine Saturated Deciduous Shrub Scrub	Disturbance type found along the airport runway and surrounding the pond. Mapped as Cowardin Class PSS1B. Sites are dominated by a variety of willow species including <i>Salix richardsonii, Salix alaxensis, and Salix arbusculoides</i> with co-dominant shrubs including <i>Betula glandulosa</i> and <i>Alnus viridis</i> ssp. <i>crispa</i> . At the time of the site visit these willow communities had surface water, soils were histic epipedons.
Palustrine Needleleaf-Shrub Birch Woodland	Widespread woodland forest and low birch ericaceous slope wetlands characteristic of the majority of the local Kiana area. Mapped as a variety of Cowardin Classes including PSS1B, PSS3/1B and PSS1/4B. Needleleaf components are a mixture <i>Picea glauca</i> and <i>Picea mariana</i> ranging from stunted shrubby growth forms to upright trees. The understory is typically composed of <i>Betula glandulosa</i> , <i>Vaccinium uliginosum</i> and <i>Ledum groenlandicum</i> .

-										
Wetland Functional Class	Category	Flood Flow Regulation	Sediment, Nutrient, & Toxicant Removal	Erosion Control and Shoreline Stabilization	Organic Matter Production & Export	General Habitat Suitability	Fish Habitat	Native Plant Richness	Educational, Scientific, Recreational, or Subsistence Use	Uniqueness & Special Status
Upper Perennial Stream (R3UBH)	III	N/A	Low	N/A	Medium	Medium	High	N/A	Medium	Low
Permanently Flooded Pond (PUBH)	III	High	Medium	N/A	Low	Medium	High	Low	Medium	Low
Palustrine Flooded Wet Emergent Meadow (PEM1H, PEM1F)	III	Medium	Medium	High	Low	Low	N/A	Low	High	Low
Lacustrine Flooded Sedge-Grass Marsh (PEM1E, PEM1H)	II	High	High	High	High	High	High	Medium	Medium	Low
Riverine Seasonally Flooded Wet Sedge Meadow (PEM1E)	III	Medium	Medium	Low	High	Medium	Low	Low	High	Low
Palustrine Saturated Graminoid Meadow (PEM1B)	III	Low	Medium	N/A	N/A	Low	N/A	Low	High	Low

 Table 3.
 Functional performance rankings and categories for Wetland Functional Classes within the proposed airstrip improvements, Kiana, Alaska, 2012.

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Table 3. Continued.

Wetland Functional Class	Category	Flood Flow Regulation	Sediment, Nutrient, & Toxicant Removal	Erosion Control and Shoreline Stabilization	Organic Matter Production & Export	General Habitat Suitability	Fish Habitat	Native Plant Richness	Educational, Scientific, Recreational, or Subsistence Use	Uniqueness & Special Status
Riverine Seasonally Flooded Low and Tall Willow Scrub (PSS1C)	П	High	Medium	High	High	Medium	Medium	Low	High	Low
Palustrine Saturated Low and Tall Willow Scrub (PSS1B, PSS1E)	III	N/A	Medium	N/A	High	Medium	N/A	Medium	High	Low
Palustrine Saturated Needleleaf-Shrub Birch Woodland (PFO4B, PSS1/3B, PSS1/4B, PSS1B)	Ш	N/A	Medium	N/A	N/A	Medium	N/A	Medium	High	Low

,	`			1		1							
		Wildlife Habitat (acres)											
		Upper Perennial Stream (0.74)	Fresh Water Pond (1.73)	Fresh Herb Marsh (1.76)	Wet Sedge Meadow (2.79)	Bluejoint Meadow (2.98)	Low Birch-Ericaceous Scrub (41.14)	Low and Tall Willow Scrub (38.90)	Tall Alder Scrub (0.99)	Needleleaf Forest and Woodland (192.12)	Upland Broadleaf Forest (2.71)	Human Disturbed Barrens (0.96)	Fill (not assessed) (32.88)
BIRDS													
Canada Goose	Branta canadensis		х	Х	Х							Х	
Green-winged Teal	Anas crecca	Х	х	Х	Х								
Northern Pintail	Anas acuta	Х	х	Х	Х								
Long-tailed Duck	Clangula hyemalis		х	Х	Х								
American Wigeon	Anas americana		х										
Northern Harrier	Circus cyaneus			Х	Х	Х	Х			Х		Х	
Willow Ptarmigan	Lagopus lagopus						Х	Х	Х	Х	Х		
Alder Flycatcher	Empidonax alnorum							х	Х		Х		
Gray Jay	Perisoreus canadensis						Х			Х	Х		
Common Raven	Corvus corax					Х	Х			Х	Х	Х	
Boreal Chickadee	Parus hudsonicus									Х	Х		
Gray-cheeked Thrush	Catharus minimus						х	х	Х	Х	Х		
American Robin	Turdus migratorius					Х	х	х	Х	Х	Х	Х	

Table 4.Habitat assessment for common birds and mammals likely to occur in the Kiana proposed airstrip improvement study area,
Alaska, 2012 (x indicates a wildlife habitat considered important for a species).

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Table 4. Continued.

		Wildlife Habitat (acres)											
		Upper Perennial Stream (0.74)	Fresh Water Pond (1.73)	Fresh Herb Marsh (1.76)	Wet Sedge Meadow (2.79)	Bluejoint Meadow (2.98)	Low Birch-Ericaceous Scrub (41.14)	Low and Tall Willow Scrub (38.90)	Tall Alder Scrub (0.99)	Needleleaf Forest and Woodland (192.12)	Upland Broadleaf Forest (2.71)	Human Disturbed Barrens (0.96)	Fill (not assessed) (32.88)
Yellow Warbler	Dendroica petechia							х	х		х		
Yellow-rumped Warbler	Dendroica coronata						Х	х	х	х	х		
Blackpoll Warbler	Dendroica striata						х	х	х	х	х		
Northern Waterthrush	Seiurus noveboracensis	х	х	х	х		Х	х	х	х	х		
American Tree Sparrow	Spizella arborea				х	х	х	х	х	х			
Savannah Sparrow	Passerculus sandwichensis				х	Х	Х					Х	
Fox Sparrow	Passerella iliaca						х	х	х	х	х		
White-crowned Sparrow	Zonotrichia leucophrys				Х	Х	Х	Х	х	Х	х		
Common Redpoll	Carduelis flammea					х	х	х	х	х	х		
Hoary Redpoll	Carduelis hornemanni					Х	х	х	х	х	х		
MAMMALS													
American Martin	Martes americana									х	х		
American Mink	Neovison vison	х		х	х	х	х	х	х	х	х		
North American Porcupine	Erethizon dorsatum	х					х	х	х	х	х		

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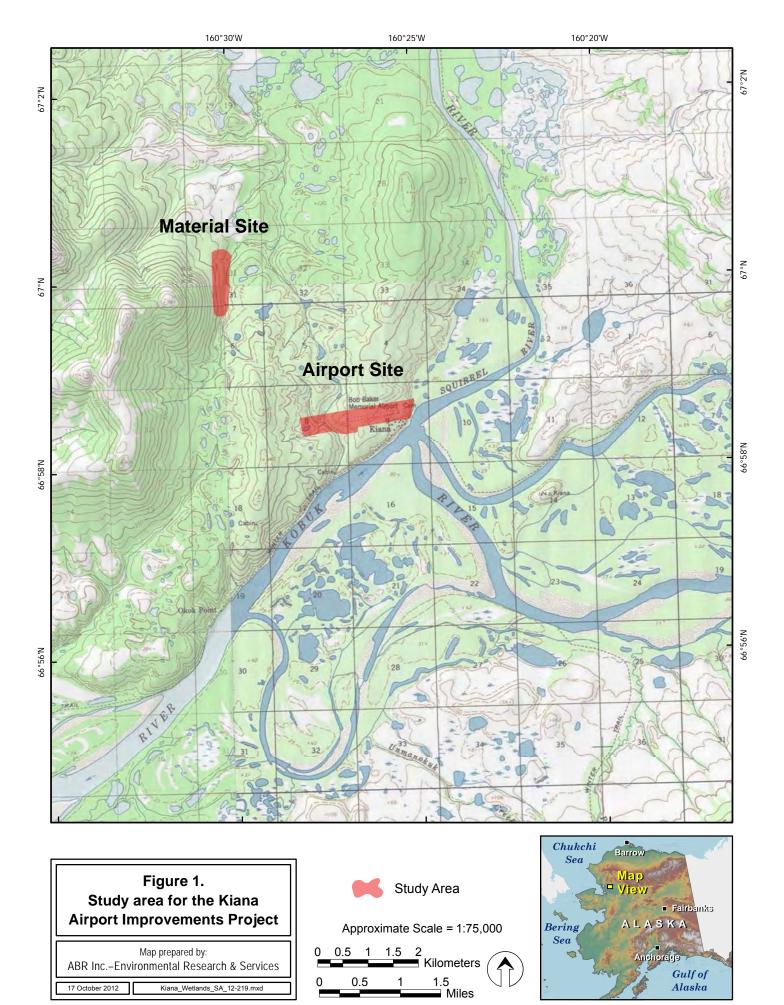
		Upper Perennial Stream (0.74)	Fresh Water Pond (1.73)	Fresh Herb Marsh (1.76)	Wet Sedge Meadow (2.79)	Bluejoint Meadow (2.98)	Low Birch-Ericaceous Scrub (41.14)	Low and Tall Willow Scrub (38.90)	Tall Alder Scrub (0.99)	Needleleaf Forest and Woodland (192.12)	Upland Broadleaf Forest (2.71)	Human Disturbed Barrens (0.96)
Arctic Ground Squirrel	Spermophilus parryii					Х	Х	Х	Х	Х	Х	Х
Barren-ground Caribou	Rangifer tarandus					Х	Х					
American Black Bear	Ursus americana	Х				Х	Х	Х	Х	Х	х	Х
Brown (Grizzly) Bear	Ursus arctos	Х				Х	Х	Х	Х	Х	х	Х
Moose	Alces alces	х	х	Х	Х	Х	Х	Х	Х	Х	Х	
Red Fox	Vulpes vulpes	х				Х	Х	Х	Х	Х	Х	Х
Red Squirrel	Tamiasciurus hudsonicus							Х	Х	Х	х	
Tundra Vole												
I ullulu Volc	Microtus oeconomus					х		Х	Х	Х	х	
Gray Wolf	Microtus oeconomus Canis lupus	х				X X	х	Х	Х	x x	x x	

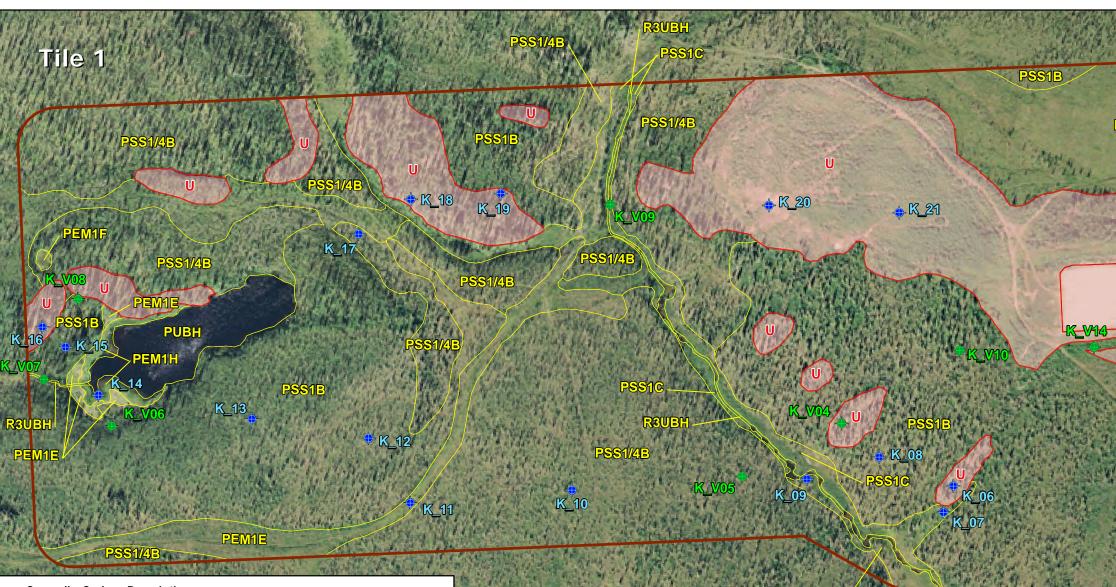
^a Listed are those species likely to occur commonly during some portion of their life history (e.g., breeding/mating, migration, staging, etc.), but is not intended as an exhaustive list. Uncommon or rare species that could occur sporadically are not listed. Habitat use for birds and mammals was determined from field observations in the study area in June 2012 and from available literature (AKNHP 2012, Armstrong 1995, Cook and MacDonald 2006, Schroeder 1996).

Wildlife Habitat (acres)

Table 4. Continued.

Fill (not assessed) (32.88)





Cowardin Code Descri		Description				
	Non-Navigable Waters of the U.S.					
	R3UBH	R3UBH Upper Perennial River				
	PUBH	H Permanently Flooded Pond				
	Wetlands					
	PEM1H	Permanently Flooded Emergent Marsh				
	PEM1F	Semi-permanently Flooded Emergent Meadow				
	PEM1E	Seasonally Flooded Saturated Emergent Meadow				
	PEM1C	Seasonally Flooded Emergent Meadow				
	PEM1B	Saturated Emergent Meadow				
	PSS1C	Seasonally Flooded Deciduous Shrub Scrub				
	PSS1B	Saturated Deciduous Shrub Scrub				
	PSS3/1B	Saturated Broadleaf Evergreen/Deciduous Shrub Scrub				
	PSS1/3B	Saturated Deciduous Shrub/Broadleaf Evergreen Scrub				
	PSS1/4B	Saturated Deciduous Shrub/Needleleaf Evergreen Scrub				
	PFO4B	Saturated Needleleaf Evergreen Forest				
	Non-Wetlands					
	U	Upland				
	Us	Upland Fill				

Material Site Tile 3 Airport Site

¹ Follows National Wetlands Inventory (NWI) map conventions and Cowardin et al. (1979) classification system.

Wetland 🔹 🔶 Wetland Determination Plot

Verification Plot

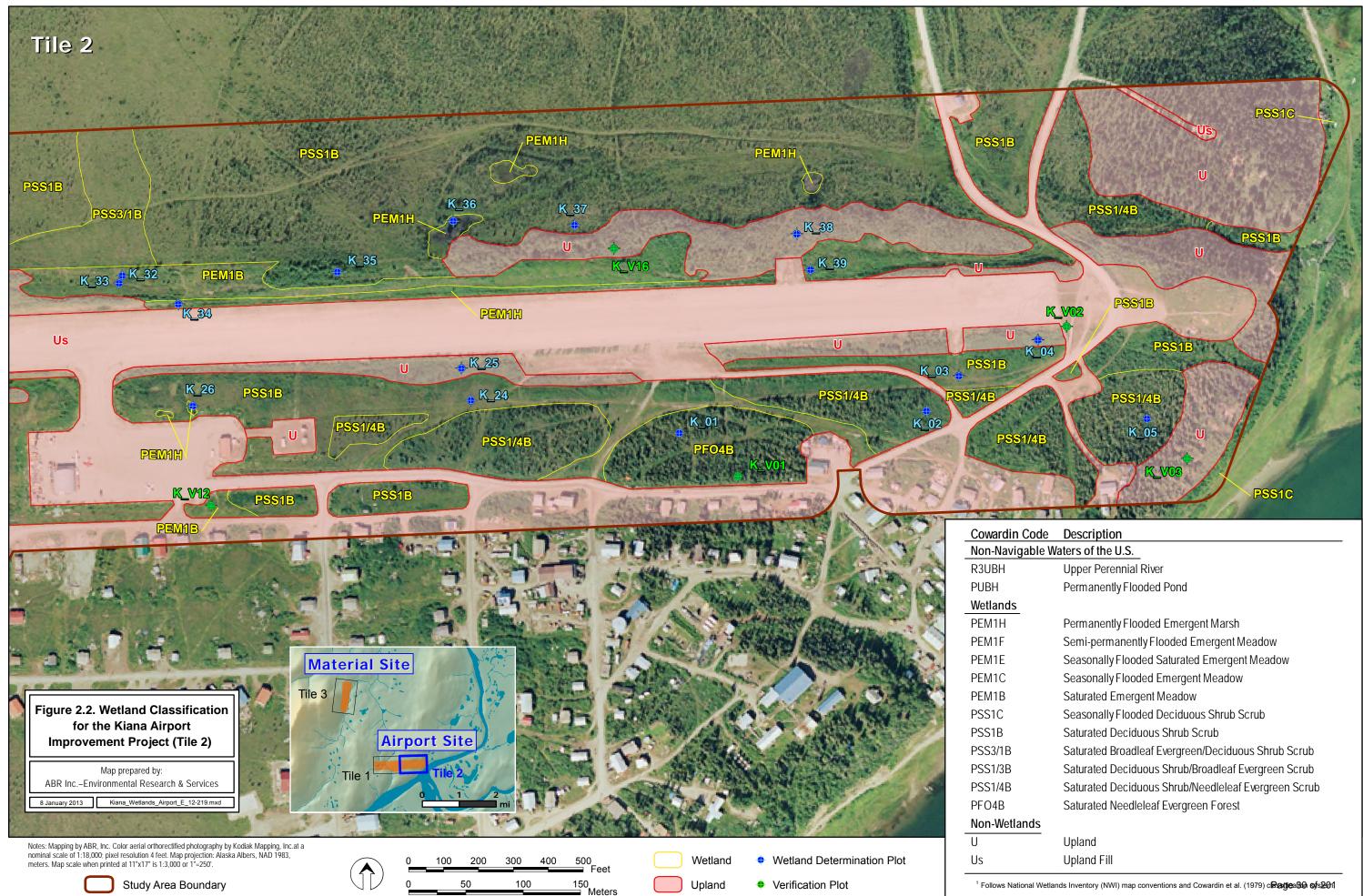
Upland

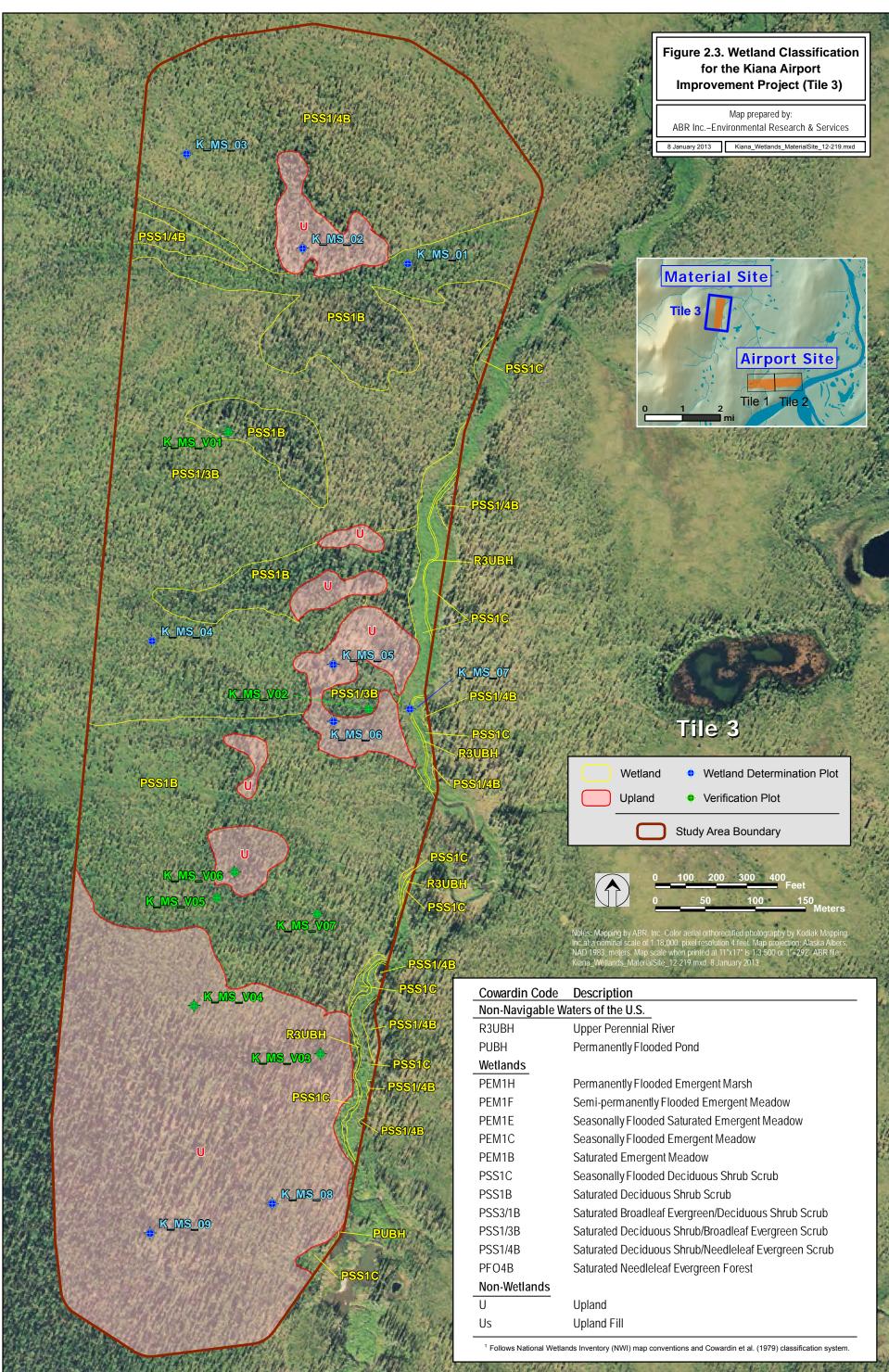
100	200	300	400	500 Feet
				Feel
	50	100		150
				Meters



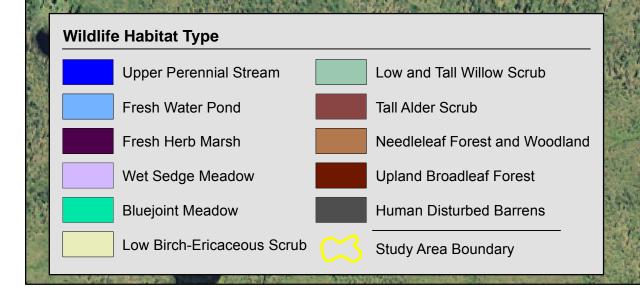
Notes: Mapping by ABR, Inc. Color aerial orthorectified photography by Kodiak Mapping, Inc. at a nominal scale of 1:18,000: pixel resolution 4 feet. Map projection: Alaska Albers, NAD 1983, meters. Map scale when printed at 11"x17" is 1:3,000 or 1"=250'.

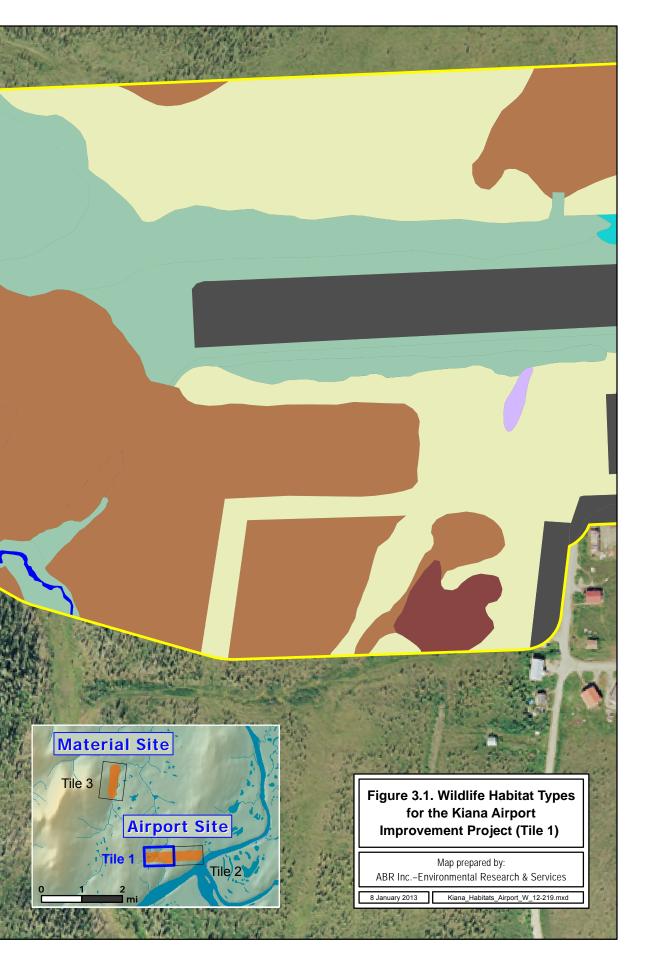


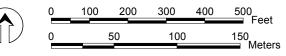




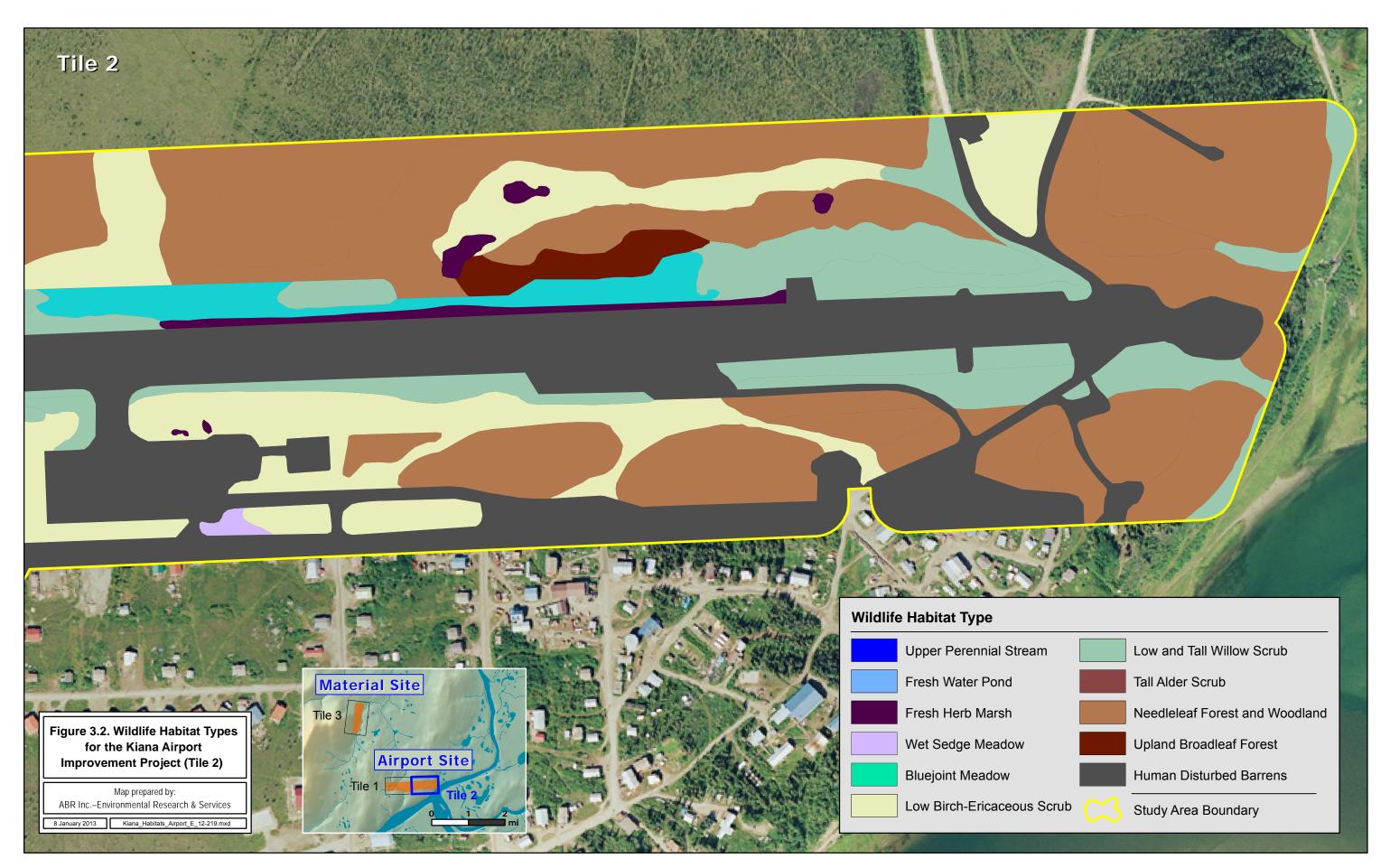
venunus	
PEM1H	Permanently Flooded Emergent Marsh
PEM1F	Semi-permanently Flooded Emergent Meadow
PEM1E	Seasonally Flooded Saturated Emergent Meadow
PEM1C	Seasonally Flooded Emergent Meadow
PEM1B	Saturated Emergent Meadow
PSS1C	Seasonally Flooded Deciduous Shrub Scrub
PSS1B	Saturated Deciduous Shrub Scrub
PSS3/1B	Saturated Broadleaf Evergreen/Deciduous Shrub Scrub
PSS1/3B	Saturated Deciduous Shrub/Broadleaf Evergreen Scrub
PSS1/4B	Saturated Deciduous Shrub/Needleleaf Evergreen Scrub
PFO4B	Saturated Needleleaf Evergreen Forest
Non-Wetlands	
J	Upland
Js	Upland Fill
	nde Investory (NIMI) man convertions and Coverdin et al. (1070) elegational state







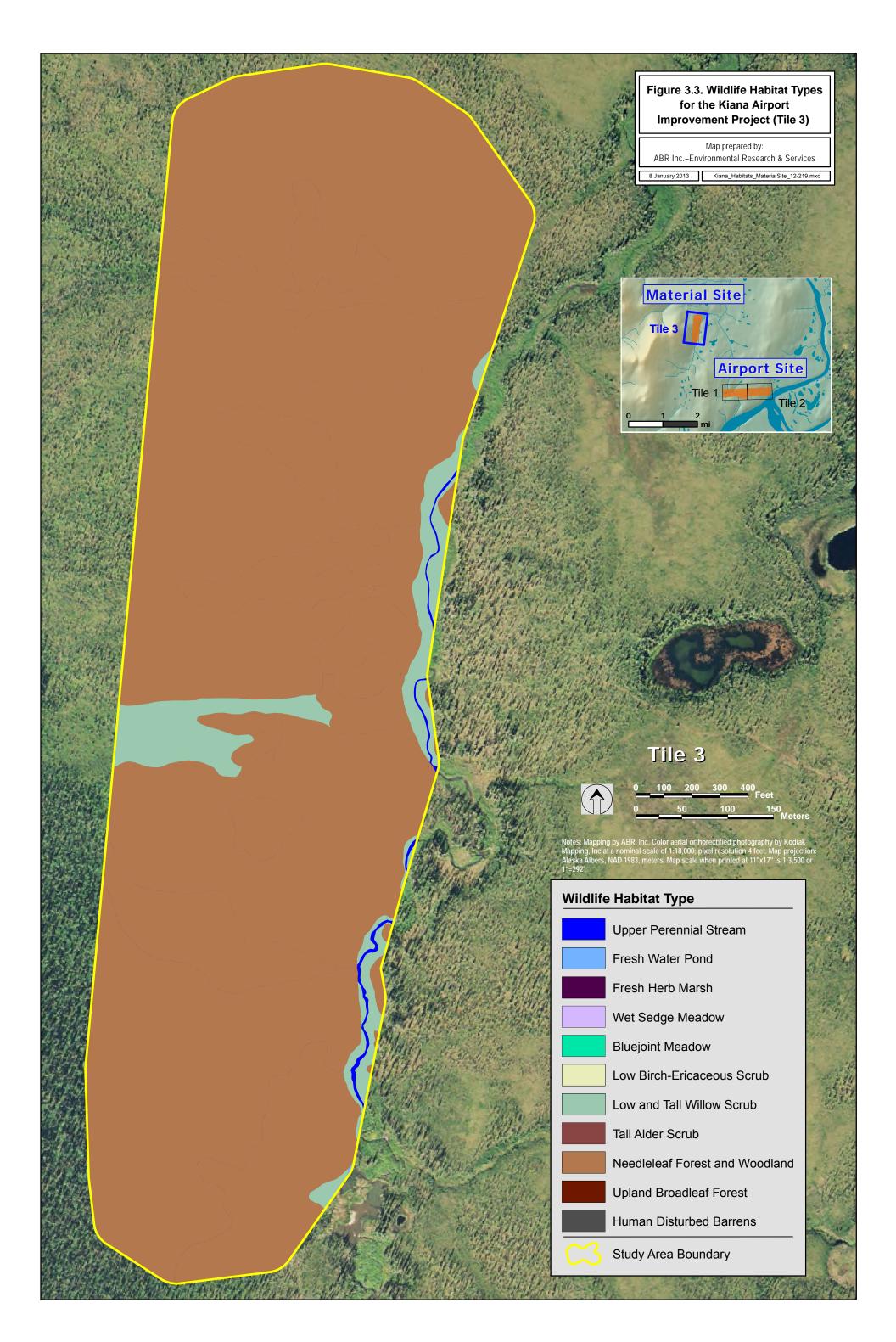
Notes: Mapping by ABR, Inc. Color aerial orthorectified photography by Kodiak Mapping, Inc. at a nominal scale of 1:18,000; pixel resolution 4 feet. Map projection: Alaska Albers, NAD 1983, meters. Map scale when printed at 11*x17* is 1:3,000 or 1*=250°. Page 32 of 201



Notes: Mapping by ABR, Inc. Color aerial orthorectified photography by Kodiak Mapping, Inc.at a nominal scale of 1:18,000; pixel resolution 4 feet. Map projection: Alaska Albers, NAD 1983, meters. Map scale when printed at 11"x17" is 1:3,000 or 1"=250'.







Appendix A. Wetland Determination Data Forms and Verification Sites

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 20-Aug-12	
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_01	
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Terrace	
Local relief (concave, convex, none): <u>flat</u>	_ Slope: <u>8.7</u> % / <u>5.0</u> ° Elevation: <u>140</u>		
Subregion : Northern Alaska Lat.:	<u>66.9753983333333</u> Long.: <u>-160.429963</u>	333333 Datum: WGS84	
Soil Map Unit Name:	NWI class	ification: PFO4B	
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes $ullet$ No $igodot$	

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present?	Yes 🔍 No	o O	Is the Sampled Area	Yes \bullet No \bigcirc		
Hydric Soil Present?	Yes 🖲 No	o O	• • • • • •			
Wetland Hydrology Present?	Yes 🔍 No	o O	within a Wetland?			
Demarks: ENOWS interload w ATV trails Magas and Dhusis unland, generarch for new netterned						

Remarks: FNOWS interlaced w ATV trails. Moose scat. Physio upland, geomorph fto, non-patterned.

	Absolute	Dominant	Indicator	Dominance Test worksheet:					
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species					
1. Picea glauca	10		FACU	That are OBL, FACW, or FAC:5_(A)					
2. <u>Picea mariana</u> 3			FACW	Total Number of Dominant Species Across All Strata:7(B)					
4				Percent of dominant Species That Are OBL, FACW, or FAC:71.4% (A/B)					
5Total Cover:	15			Prevalence Index worksheet:					
		f Total Cover:	3	Total % Cover of: Multiply by:					
Sapling/Shrub Stratum 50% of Total Cover: 7				0BL species 6 x 1 = 6					
1. Picea glauca	25		FACU	FACW speci es 6.5 x 2 = 13					
2. Betula glandulosa	20		FAC	FAC species $89 \times 3 = 267$					
3. Vaccinium uliginosum	20		FAC						
4. Salix reticulata	7		FAC						
5. Dasiphora fruticosa	5		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$					
6. Andromeda polifolia			FACW	Column Totals: <u>139.5</u> (A) <u>438</u> (B)					
7. Salix bebbiana	7		FAC	Prevalence Index = $B/A =3.140_$					
8. Dryas integrifolia	3		FACU						
9. Empetrum nigrum	2		FAC	Hydrophytic Vegetation Indicators:					
10. Arctostaphylos rubra	7		FAC	✓ Dominance Test is > 50%					
Total Cover:	97			Prevalence Index is ≤3.0					
_Herb Stratum50% of Total Cover:48	8.5 20% c	of Total Cover:	19.4	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)					
1. Ranunculus lapponicus	1		OBL	Problematic Hydrophytic Vegetation ¹ (Explain)					
2. Equisetum arvense	7	\checkmark	FAC	¹ Indicators of hydric soil and wetland hydrology must					
3. Carex bigelowii	10	\checkmark	FAC	be present, unless disturbed or problematic.					
4. Festuca rubra	1		FAC						
5. Deschampsia caespitosa	3		FAC	Plot size (radius, or length x width) 10m					
6. Parnassia palustris	0.5		FACW	% Cover of Wetland Bryophytes					
7 Carex vaginata	5		OBL	(Where applicable)					
8				% Bare Ground 5					
9				Total Cover of Bryophytes 90					
10				Hydrophytic					
Total Cover:	27.5			Vegetation					
50% of Total Cover:13	.75 20% o	f Total Cover:	5.5	Present? Yes No					
Remarks: picgla stunted, look almost like picmar. sedges and grasses collected for id. bare ground includes ATV trail.									

Profile Desc	-		depth need	ded to do	-	-		sence of ir	ndicators
Depth (inches)	N Color (m	Matrix	%	Color	Redox (moist)	x Featu %	ures Type ¹	Loc ²	- Texture Remarks
0-6		noisty	70	000		70	Type	LUL-	Fibric Organics
6-10									Hemic Organics
10-22		3+/1	85	5Y	4/3	15	C	PL	Silty Clay Loam
10-22									
	. <u> </u>								
1- 0.0									
)=Depletio	n RM=Red				-		Channel M=Matrix
Hydric Soil					<mark>cators for Pr</mark> Maska Color Cl		4	ic Soils:	
	or Histel (A1) ipedon (A2)				Maska Color Ci Maska Alpine s	-			Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
	n Sulfide (A4)	1			Naska Redox N				Other (Explain in Remarks)
	rk Surface (A1			2 -					
🗌 Alaska Gl	leyed (A13)				ne indicator of an appropriat				e primary indicator of wetland hydrology, be present
	edox (A14)				ve details of c				
Alaska Gl	leyed Pores (A	A15)					anye in Ke		
Restrictive L		sent):							
	t clay loam								Hydric Soil Present? Yes $ullet$ No $igodoldsymbol{ imes}$
Depth (inc	thes): 10								
Remarks:	t dele Base con d	· hotta	-fait D	" ool e	116 oo o m	-taleth	lever 1(0.00 raday	for the second design of site
water and an	i qu piiliaaua	πομ ποιιο	тогри. Бе	lieve sci qu	ualimes as a re	Strictiv	/e layer. Tu)-22: Tedux	x features increase towards bottom of pit.
HYDROLO Wetland Hyd		icatore							Cooperatory Indicators (two or more are required)
-	arology Indi		ient)						Secondary Indicators (two or more are required)
·	Water (A1)	10 10 001112			Inundation V	/isible c	on Aerial Ir	magery (B7	
	iter Table (A2)	2)			Sparsely Veg				, , , , , , , , , , , , , , , , , , , ,
Saturatio					Marl Deposits	-			Presence of Reduced Iron (C4)
Water M	arks (B1)				Hydrogen Su	ulfide O	dor (C1)		Salt Deposits (C5)
Sedimen	nt Deposits (B2	2)			Dry-Season \	Water T	Table (C2)		Stunted or Stressed Plants (D1)
🗌 Drift Dep	oosits (B3)				Other (Expla	in in Re	emarks)		Geomorphic Position (D2)
Algal Ma	t or Crust (B4	4)							Shallow Aquitard (D3)
Iron Dep	oosits (B5)								Microtopographic Relief (D4)
Surface S	Soil Cracks (B	36)							FAC-neutral Test (D5)
Field Observ			\frown	<u> </u>					
Surface Wate			O No (Depth (inche	୬s): 0			
Water Table		Yes			Depth (inche	≥s): 16	ć	w	Vetland Hydrology Present? Yes 💿 No 🔾
Saturation Pr		Yes	• No (С	Depth (inche	es): 0			

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

(includes capillary fringe)

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 20-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_02
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Terrace
Local relief (concave, convex, none):	_ Slope: <u>8.7</u> % / <u>5.0</u> ° Elevation: <u>110</u>	
Subregion : Northern Alaska Lat.:	66.97576166666667 Long.: -160.425191	666667 Datum: WGS84
Soil Map Unit Name:	NWI class	ification: PSS1/4B
	ear? Yes No (If no, explain ir tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes $ullet$ No $igodot$

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present?	Yes 🖲	No O	Is the Sampled Area			
Hydric Soil Present?	Yes 🖲	No O		Yes 🖲 No 🔿		
Wetland Hydrology Present?	Yes 🖲	No 🔿	within a Wetland?			
Demarks: SCIMMC Devise unlead, accompany eld terrage, perpetterned. Deput healthy right						

Remarks: SFWWS. Physio upland, geomorph old terrace, nonpatterned. Robust healthy picgla.

VEGETATION Use scientific names of plants. List all species in the plot.

	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum	% Cover		Status	Number of Dominant Species
1. Picea glauca	7		FACU	That are OBL, FACW, or FAC: <u>6</u> (A)
2				Total Number of Dominant Species Across All Strata: 8 (B)
3				
4				Percent of dominant Species That Are OBL, FACW, or FAC:75.0% (A/B)
5				
Total Cover:				Prevalence Index worksheet: Total % Cover of: Multiply by:
Sapling/Shrub Stratum 50% of Total Cover: 3	.5 20%	of Total Cover:		
1. Betula glandulosa	15	\checkmark	FAC	$\begin{array}{c} \text{OBL species} \underline{0} \text{x 1} = \underline{0} \\ \hline \end{array}$
2. Picea glauca	15	\checkmark	FACU	FACW species $35 \times 2 = 70$
3. Salix pulchra	20	\checkmark	FACW	FAC species $59 \times 3 = 177$
4. Salix richardsonii	10		FACW	FACU species $23 \times 4 = 92$
5. Vaccinium uliginosum	10		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$
6. Dasiphora fruticosa	5		FAC	Column Totals: <u>117</u> (A) <u>339</u> (B)
7. Arctostaphylos rubra	3		FAC	Prevalence Index = $B/A = 2.897$
8. Salix bebbiana	15	\checkmark	FAC	
9. Vaccinium vitis-idaea	5		FAC	Hydrophytic Vegetation Indicators:
10				✓ Dominance Test is > 50%
Total Cover:	98			✓ Prevalence Index is ≤3.0
Herb Stratum 50% of Total Cover:	49 20%	of Total Cover:	19.6	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1 Equisetum arvense	3	\checkmark	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Solidago multiradiata	0.5		FACU	¹ Indicators of hydric soil and wetland hydrology must
3. Arctagrostis latifolia	5	\checkmark	FACW	be present, unless disturbed or problematic.
4. Mertensia paniculata	0.5		FACU	
5. Carex bigelowii	3	\checkmark	FAC	Plot size (radius, or length x width) 10m
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8				% Bare Ground 3
9				Total Cover of Bryophytes 95
10				Hydrophytic
Total Cover:	12			Vegetation
50% of Total Cover:	6 20%	of Total Cover:	2.4	Present? Yes No
Pomarks : evolutid becaden wide he and large nodes no i	- 61			

Remarks: arclat id basedon wide lvs and large nodes, no infloresence. solmul is unidentified solidago.

SOL	L
	-

Depth		Matrix			Red	ox Featu	ires			
(inches)	Color (I	moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-3						-			Fibric Organics	
3-4									Hemic Organics	
4-7									Hemic Organics	w pockets of 5YR2.5/2 sandy loam
7-10	10YR	3/2	70	5YR	3/4	30	С	PL	Silt Loam	3% oxidized rhizospheres around living roots
10-19	5Y	4/1	85	7.5YR	4/6	15	С	PL	Silty Clay Loam	
Type: C=Cor)=Depletic	on RM=Re			n. PI =P	ore Lining	RC=Root	Channel M=Matrix	
51		-Depiction					atic Hydr			
_	pr Histel (A1)				aska Color aska Alpin	Change	(TA4)	. 50113.	Underlying Layer	
Hydroge	n Sulfide (A4))			aska Redo	x With 2.	5Y Hue		Other (Explain in	Remarks)
🗌 Alaska G	rk Surface (A leyed (A13) edox (A14)	12)					ohytic vege scape posit		e primary indicator of w e present	etland hydrology,
🗌 Alaska G	leyed Pores (A15)		⁴ Giv	e details of	f color ch	ange in Re	marks		
Restrictive I Type: silf Depth (ind	y clay loam	esent):							Hydric Soil Pres	sent? Yes No
Remarks:										
0-19: C inclu		ized rhizos	spheres arc	ound living ro	ots.					
Netland Hy		icators:							Second	ary Indicators (two or more are required)
Primary India	•••		cient)							ater Stained Leaves (B9)
Surface	Water (A1)				Inundatior	n Visible d	on Aerial Im	nagery (B7)) Dra	ainage Patterns (B10)
🗌 High Wa	ter Table (A2	2)			Sparsely V	egetated	Concave S	urface (B8) 🔽 Ox	idized Rhizospheres along Living Roots (C3)
✓ Saturatio	on (A3)				Marl Depo	sits (B15)	1		Pre	esence of Reduced Iron (C4)
Water Marks (B1) Hydrogen Sulfide Odor (C1)								Sal	It Deposits (C5)	
Sedimer	it Deposits (E	32)			Dry-Seaso	n Water 1	Table (C2)		🗌 Stu	unted or Stressed Plants (D1)
🗌 Drift De	oosits (B3)				Other (Exp	olain in Re	emarks)		Ge	omorphic Position (D2)
Algal Ma	t or Crust (B	4)							🖌 Sha	allow Aquitard (D3)
Iron Dep	oosits (B5)								Mic	crotopographic Relief (D4)
Surface	Soil Cracks (E	B6)							FAC	C-neutral Test (D5)
Field Observ	vations:									
Surface Wat	er Present?	Yes	s 🔿 No	(\bullet)	Depth (inc	hes):				

Wetland Hydrology Present? Depth (inches): Saturation Present? Yes 💿 No 🔾 Depth (inches): 10 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes 🔘 No 🖲

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

Water Table Present?

water in pit appears to be coming in from above, related to recent precipitation rather than water table. Assume silty clay loam is sufficiently fine to qualify as a restrictive layer.

No \bigcirc

Yes 🖲

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date:	20-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_03
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Terrace	
Local relief (concave, convex, none): <u>rolling</u>	_ Slope:% /° Elevation:	I	
Subregion : Northern Alaska Lat.:	<u>66.97608</u> Long.: <u>-160.424551</u>	666667 Datu	im: WGS84
Soil Map Unit Name:	NWI class	sification: PSS1B	
	ear? Yes O No O (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes •	No O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes 🖲 Yes 🖲	No 〇 No 〇	Is the Sampled Area	Yes No O 			
Wetland Hydrology Present?	Yes 🖲	No 🔿	within a Wetland?				
Remarks: SLOBW, physio upland, geomorph fto, nonpatterned. Scattered erivag tussocks, but not a tussock communuty. Disturbed, between atv trails							

and runway, soils appear almost compressed organics.

VEGETATION Use scientific names of plants. List all species in the plot.

			Abs	olute	Dominant	Indicator	Dominance Test worksheet:
Tr	ee Stratum		%	Cover	Species?	Status	Number of Dominant Species
1.							That are OBL, FACW, or FAC: <u>6</u> (A)
2							Total Number of Dominant
3.			_				Species Across All Strata: (B)
			_				Percent of dominant Species That Are OBL_EACW_or_EAC: 85.7% (A/B)
							That Are OBL, FACW, or FAC:(A/B)
5.	-	Total Cover:		0			Prevalence Index worksheet:
Sap	ling/Shrub Stratum	50% of Total Cover:	0	20% c	of Total Cover:	0	Total % Cover of: Multiply by:
	Betula glandulosa			10	\checkmark	FAC	OBL species <u>0</u> x 1 = <u>0</u>
1.	Vaccinium uliginosum		_	7		FAC	FACW species <u>14.5</u> x 2 = <u>29</u>
2.	Arctostaphylos rubra		-	2		FAC	FAC species x 3 =160.5
3.				5		FAC	FACU species $10 \times 4 = 40$
4.	Dasiphora fruticosa		-	7		FAC	UPL species $\frac{0}{x 5} = \frac{0}{2}$
5.	Salix bebbiana						
6.			-	7		FACU	Column Totals: <u>78</u> (A) <u>229.5</u> (B)
7.	Rosa acicularis		_	0.5		FACU	Prevalence Index = B/A = 2.942
8.	Salix reticulata		_	3		FAC	
9.	Salix richardsonii		_	3		FACW	Hydrophytic Vegetation Indicators:
10.	Dryas integrifolia		_	1		FACU	✓ Dominance Test is > 50%
		Total Cover:	_ 4	5.5			✓ Prevalence Index is ≤3.0
_H	erb Stratum	50% of Total Cover: 2	2.75	20% c	of Total Cover:	9.1	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1	Chamerion angustifolium		_	1		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Festuca rubra		_	5		FAC	¹ Indicators of hydric soil and wetland hydrology must
3.	Carox bigolowii		_	7	\checkmark	FAC	be present, unless disturbed or problematic.
4.	Mertensia paniculata		_	0.5		FACU	
 5.	Rubus chamaemorus		_	0.5		FACW	Plot size (radius, or length x width) 10m
6.	Eriophorum vaginatum		_	3		FACW	% Cover of Wetland Bryophytes
7.	Bistorta vivipara			0.5		FAC	(Where applicable)
7. 8.	Saxifraga hirculus			1		FACW	% Bare Ground 10
•••	Deschampsia caespitosa		_	7	\checkmark	FAC	Total Cover of Bryophytes 85
9. 10	Arctagrostis latifolia		_	7	\checkmark	FACW	
10.		Total Cover:		2.5	_		Hydrophytic Vegetation
					of Total Cover:	6.5	Vegetation Present? Yes • No O
				0			

Remarks: all shrubs, even salbeb, are <1m tall. bare ground includes ATV trails. graminoid veg in ATVtrail appears to be a mix of descae and arclat based on lvs, no infloresences. trace horjub, pedic

	ription: Des	Matrix	eptimee			c Featur		ence of in		
Depth (inches)	Color (n		%	Color	(moist)	%	Type ¹	Loc ²	Texture	Remarks
0-1									Fibric Organics	
1-7				-					Hemic Organics	
7-8	5YR	3/3	50						Sandy Loam	
8-9	7.5YR	4/3	100						Loam	-
9-14	p								Hemic Organics	
14-16									Sapric Organics	w 5% 2.5Y4/1 and 5% 7.5Y/R sandy loam in
16-20	2.5Y	4/1	90	7.5YR	3/4	5	C	PL	Silty Clay Loam	
¹ Type: C=Cor	ncentration D	=Depletior	n RM=Re	duced Matri	x ² Location	: PL=Pc	ore Lining	RC=Root (Channel M=Matrix	
Hydric Soil	Indicators:			Indi	cators for Pr					
_	or Histel (A1)				laska Color C		Λ		Alaska Gleved With	out Hue 5Y or Redder
_	ipedon (A2)				laska Alpine s				Underlying Layer	
	n Sulfide (A4)				laska Redox \				Other (Explain in Re	emarks)
	rk Surface (A									
	leyed (A13)	12)							e primary indicator of wetla	and hydrology,
	edox (A14)			and	an appropria	te lands	cape posit	ion must b	e present	
_	leyed Pores (A	A15)		⁴ Giv	ve details of c	olor cha	nge in Rei	marks		
	Layer (if pre	-								
	tive layer (fro	-							Hydric Soil Preser	nt? Yes 🖲 No 🔿
Depth (in	5.	Zenj								
Remarks:	•									
Kernarks.										
HYDROL										
-	drology Indi									Indicators (two or more are required)
	cators (any on	ne is sufficie	ent)							Stained Leaves (B9)
	Water (A1)				Inundation V			0 5		age Patterns (B10)
	ater Table (A2)			Sparsely Veg		Concave S	urface (B8)	·	red Rhizospheres along Living Roots (C3)
Saturatio	on (A3)				Marl Deposit	• •			Prese	nce of Reduced Iron (C4)
Water M					Hydrogen Su					peposits (C5)
	nt Deposits (B	2)			Dry-Season				_	ed or Stressed Plants (D1)
_	posits (B3)				Other (Expla	in in Rei	marks)			orphic Position (D2)
	at or Crust (B4	4)							_	w Aquitard (D3)
	posits (B5)									topographic Relief (D4)
Surface	Soil Cracks (B	86)							FAC-n	eutral Test (D5)
Field Observ	vations:		\sim	\sim						
Surface Wat	er Present?		O No	-	Depth (inche	es):				_
Water Table	Present?	Yes	No	\bigcirc	Depth (inche	es): 17		w	etland Hydrology Prese	ent? Yes $ullet$ No $igodom$
Saturation P	resent? pillary fringe)	Yes	No	\bigcirc	Depth (inche	es): 3				

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

(includes capillary fringe)

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date: 20-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_04
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Terrace
Local relief (concave, convex, none): <u>flat</u>	Slope: <u>12.2</u> % / <u>7.0</u> ° Elevation: <u>125</u>	
Subregion : Northern Alaska Lat.	: <u>66.97639666666667</u> Long.: <u>-160.423071</u>	666667 Datum: WGS84
Soil Map Unit Name:	NWI class	ification: Upland
	year? Yes No (If no, explain in ntly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🔍 No 🔾

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No ● Yes No ● Yes No ●	Is the Sampled Area within a Wetland? Yes \bigcirc No \textcircled{ullet}			
Remarks: tall willow community on steep slope, adjacent to runway, STCW, physic upland (disturbed-fill), geomorph fto, non-patterned					

ent to runway. STCW, physio upland (disturbed-fill), geomorph fto, non-patterned.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A)
2				Total Number of Dominant Species Across All Strata:3(B)
3 4				Percent of dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)
5Total Cover:	0			Prevalence Index worksheet:
	0 20% c	of Total Cover:	0	Total % Cover of: Multiply by:
1 Salix alaxensis	80		FAC	OBL species x 1 =
	3		FACU	FACW species X 2 =30
			1400	FAC species x 3 =240
3				FACU species 11 x 4 = 44
4				UPL species $0 \times 5 = 0$
5 6				Column Totals: 106 (A) 314 (B)
7				Prevalence Index = B/A = 2.962
8				Prevalence Index = $B/A = 2.962$
9				Hydrophytic Vegetation Indicators:
10.				✓ Dominance Test is > 50%
Total Cover:	83			✓ Prevalence Index is ≤3.0
Herb Stratum 50% of Total Cover: 42	1.5 20% o	of Total Cover:	16.6	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1. Chamerion angustifolium	7	\checkmark	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Equisetum pratense	15	\checkmark	FACW	¹ Indicators of hydric soil and wetland hydrology must
3. Artemisia tilesii	1		FACU	be present, unless disturbed or problematic.
4				
5				Plot size (radius, or length x width) 5m
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8				% Bare Ground 95
9				Total Cover of Bryophytes _0
10				Hydrophytic
Total Cover: 50% of Total Cover: 11	23	of Total Cover:	16	Vegetation Present? Yes • No O
	L.5 20% c	or rotal cover:	4.6	
Remarks:				

Depth		Matrix			Red	ox Featu	ires					
(inches)	Color	(moist)	%	Color	moist)	%	Type ¹	Loc ²	Texture	Remarks		
0-1									Fibric Organics			
1-20	2.5Y	3/2	94	7.5YR	4/6	1	С	PL	Loamy Sand	5% rounded-semiang gravel and coarse san		
¹ Type: C=Cor	contration	D-Doploti	on PM-Po	ducod Matrix	21 ocatio	n: DI _ D		PC-Poot	Channel M=Matrix			
Hydric Soil					ators for							
_	or Histel (A				aska Color				Alaska Gleved With	out Hue 5Y or Redder		
_	ipedon (A2)				aska Alpine	-			Underlying Layer			
<u> </u>	n Sulfide (A				aska Redox	With 2.5	5Y Hue		Other (Explain in Re	emarks)		
	rk Surface	•										
	leyed (A13)	. ,							primary indicator of wetl	and hydrology,		
Alaska Redox (A14)				and	and an appropriate landscape position must be present							
	leyed Pores	s (A15)		⁴ Giv	e details of	color cha	ange in Re	marks				
Restrictive I	.ayer (if p	resent):								0 0		
Type:									Hydric Soil Prese	nt? Yes 🔿 No 🖲		
Depth (in	ches):											
Remarks:												
no hydric soil	indicators											
HYDROL	OGY											
Wetland Hy		dicators:							Secondary	y Indicators (two or more are required)		
Primary India	ators (any	one is suffi	cient)						Wate	r Stained Leaves (B9)		
Surface	Water (A1)				Inundation	Visible o	n Aerial Im	nagery (B7)	Drain	age Patterns (B10)		
🗌 High Wa	ter Table (A	A2)			Sparsely V	egetated	Concave S	urface (B8)) 🗌 Oxidi	zed Rhizospheres along Living Roots (C3)		
Saturatio	on (A3)				Marl Depos	0				ence of Reduced Iron (C4)		
Water M	arks (B1)				Hydrogen S				Salt [Deposits (C5)		
Sedimer	t Deposits	(B2)			Dry-Seasor				Stunt	ed or Stressed Plants (D1)		
Drift De	oosits (B3)				Other (Exp				Geon	norphic Position (D2)		
Algal Ma	t or Crust ((B4)					-		Shall	ow Aquitard (D3)		
Iron Dep	oosits (B5)								Micro	topographic Relief (D4)		
Surface	Soil Cracks	(B6)							FAC-r	neutral Test (D5)		

Field Observations:

 Surface Water Present?
 Yes
 No
 Depth (inches):

 Water Table Present?
 Yes
 No
 Depth (inches):

 Saturation Present? (includes capillary fringe)
 Yes
 No
 Depth (inches):

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

no wetland hydrology indicators

No 💿

Yes 🔿

Wetland Hydrology Present?

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 20-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_05
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Terrace
Local relief (concave, convex, none): <u>flat</u>	Slope: <u>12.2</u> % / <u>7.0</u> ° Elevation: <u>100</u>	
Subregion : Northern Alaska Lat.:	<u>66.97589</u> Long.: <u>-160.420711</u>	666667 Datum: WGS84
Soil Map Unit Name:	NWI class	ification: PSS1/4B
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes • No O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc		
Remarks: FNWWS, physio upland, geomorph fto, non-patterned flat slope.						

Tee	- Chuchum			osolute		Indicator	Dominance Test worksheet:
-	ee Stratum		_%	10	Species?	Status FACU	Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
1. –	Picea glauca			5	 Image: A start of the start of	FACU	Total Number of Dominant
Z. –	Picea mariana					TACW	Species Across All Strata:6(B)
3							Percent of dominant Species
							That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)
5		Total Cover:		15	_		Prevalence Index worksheet:
Sapli	ing/Shrub Stratum	50% of Total Cover:	7.5	20% 0	of Total Cover:	3	Total % Cover of: Multiply by:
	Picea glauca			 15		FACU	OBL species x 1 =
	Betula glandulosa			7		FAC	FACW species <u>16</u> x 2 = <u>32</u>
2	Alnus viridis ssp. sinuata			10		FAC	FAC species64.5_ x 3 =193.5_
0	Salix richardsonii			7		FACW	FACU speciles 25.5 x 4 = 102
- · -	Salix bebbiana			3	Π	FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
0	Vaccinium uliginosum			15	\checkmark	FAC	Column Totals: 106 (A) 327.5 (B)
0	Vaccinium vitis-idaea			5		FAC	
1	Empetrum nigrum			5		FAC	Prevalence Index = $B/A = 3.090$
0	Salix glauca			2		FAC	Hydrophytic Vegetation Indicators:
J	Arctostaphylos rubra			5		FAC	✓ Dominance Test is > 50%
10		Total Cover:		74			Prevalence Index is ≤3.0
		50% of Total Cover:	37	20% (of Total Cover:	14.8	Morphological Adaptations ¹ (Provide supporting
-	rb Stratum			_			data in Remarks or on a separate sheet)
	Petasites frigidus			2		FACW	Problematic Hydrophytic Vegetation (Explain)
۷	Carex bigelowii			10		FAC FACW	¹ Indicators of hydric soil and wetland hydrology must
J	Arctagrostis latifolia					FACW	be present, unless disturbed or problematic.
4				0.5		FAC	
J	Mertensia paniculata Polemonium acutiflorum			0.5		FAC	Plot size (radius, or length x width) <u>10m</u>
0	Tofioldia pusilla			0.5		FAC	% Cover of Wetland Bryophytes
1	Tofieldia pusilla Juncus castaneus			1		FACW	(Where applicable) % Bare Ground <u>3</u>
0	Bistorta vivipara			0.5		FAC	Total Cover of Bryophytes 90
9							
10. –		Total Cover:		17			Hydrophytic Vegetation
			8.5 		of Total Cover:	3.4	Present? Yes \bullet No \bigcirc
Rema	arks: trace salret, leddec, c	lryint, andpol					

6-14 100% Hem 14-18 95 Sapri Supprised on Concentration D=Depletion RM=Reduced Matrix ² Location: PL=Pore Lining RC=Root Channel Sapri Indicators: Indicators for Problematic Hydric Soils: ³ Indicators for Problematic Hydric Soils: ³ I Histic Epipedon (A2) Alaska Color Change (TA4) Indicators Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue Indicators Thick Dark Surface (A12) Sapri Sapri Sapri </th <th>Alaska Gleyed Without Hue 5Y or Redder Underlying Layer</th>	Alaska Gleyed Without Hue 5Y or Redder Underlying Layer							
6-14 100% Hem 14-18 95 Sapri Supprised on Concentration D=Depletion RM=Reduced Matrix ² Location: PL=Pore Lining RC=Root Channel Sapri Indicators: Indicators for Problematic Hydric Soils: ³ Indicators for Problematic Hydric Soils: ³ I Histic Epipedon (A2) Alaska Color Change (TA4) Indicators Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue Indicators Thick Dark Surface (A12) Sapri Sapri Sapri </th <th>mic Organics 5% 5YR2.5/2 loamy sand inclusions 5% 5YR2.5/2 loamy sand inclusions 6% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%</th>	mic Organics 5% 5YR2.5/2 loamy sand inclusions 5% 5YR2.5/2 loamy sand inclusions 6% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%							
14-18 95 Sapril 'ype: C=Concentration D=Depletion RM=Reduced Matrix ² Location: PL=Pore Lining RC=Root Channel Indicators for Problematic Hydric Soils. ³ Indicators: Indicators for Problematic Hydric Soils. ³ Indicators for Problematic Hydric Soils. ³ I Histic Epipedon (A2) Alaska Color Change (TA4) Indicators Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue Indicators Thick Dark Surface (A12) Indicator Sufficient (A12) Indicator Sufficient (A12)	pric Organics 5% 5YR2.5/2 loamy sand inclusions							
Type: C=Concentration D=Depletion RM=Reduced Matrix ² Location: PL=Pore Lining RC=Root Channel Hydric Soil Indicators: Indicators for Problematic Hydric Soils: ³ Histosol or Histel (A1) Alaska Color Change (TA4) ⁴ Histic Epipedon (A2) Alaska Alpine swales (TA5) Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue	nel M=Matrix Alaska Gleyed Without Hue 5Y or Redder Underlying Layer							
Iydric Soil Indicators: Indicators for Problematic Hydric Soils: ³ Histosol or Histel (A1) Alaska Color Change (TA4) ⁴ Histic Epipedon (A2) Alaska Alpine swales (TA5) Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue Thick Dark Surface (A12)	Alaska Gleyed Without Hue 5Y or Redder Underlying Layer							
Iydric Soil Indicators: Indicators for Problematic Hydric Soils: ³ Histosol or Histel (A1) Alaska Color Change (TA4) ⁴ Histic Epipedon (A2) Alaska Alpine swales (TA5) Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue Thick Dark Surface (A12)	Alaska Gleyed Without Hue 5Y or Redder Underlying Layer							
Histosol or Histel (A1) Alaska Color Change (TA4) , Histic Epipedon (A2) Alaska Alpine swales (TA5) , Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue , Thick Dark Surface (A12) , ,	Underlying Layer							
Histosol or Histel (A1) Alaska Color Change (TA4) , Histic Epipedon (A2) Alaska Alpine swales (TA5) , Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue , Thick Dark Surface (A12) , ,	Underlying Layer							
Thick Dark Surface (A12)	Other (Explain in Remarks)							
	Hydrogen Sulfide (A4)							
Alaska Gleyed (A13) ³ One indicator of hydrophytic vegetation, one prima and an appropriate landscape position must be pres								
Alaska Redox (A14) 4 Give details of color change in Remarks Alaska Gleyed Pores (A15) 4 Give details of color change in Remarks								
estrictive Layer (if present):								
	Hydric Soil Present? Yes $ullet$ No $ightarrow$							
Depth (inches): 17								
YDROLOGY								
etland Hydrology Indicators:	Secondary Indicators (two or more are requir							
rimary Indicators (any one is sufficient)	Water Stained Leaves (B9)							
Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Usible Water Table (A2)	Drainage Patterns (B10)							
 ✓ High Water Table (A2) ✓ Sparsely Vegetated Concave Surface (B8) ✓ Saturation (A3) ✓ Marl Deposits (B15) 	Oxidized Rhizospheres along Living Roots Presence of Reduced Iron (C4)							
Saturation (A3)	Salt Deposits (C5)							
Gradient Deposits (B2) Dry-Season Water Table (C2)	Stunted or Stressed Plants (D1)							
Drift Deposits (B3) Other (Explain in Remarks)	Geomorphic Position (D2)							
Algal Mat or Crust (B4)	Shallow Aquitard (D3)							
Iron Deposits (B5)	Microtopographic Relief (D4)							
Surface Soil Cracks (B6)	FAC-neutral Test (D5)							
ield Observations:								
Surface Water Present? Yes ○ No Depth (inches): Water Table Present? Yes ○ No ○ Depth (inches): 10 Wetland	nd Hydrology Present? Yes $ullet$ No $igodoldsymbol{ imes}$							
Saturation Present? Yes No Dopth (inches): 2	nd Hydrology Present? Yes $ullet$ No $igcup$							
includes capillary fringe) Yes Vo Depth (inches): 2								

Remarks:

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date: 22-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_06
Investigator(s): <u>_SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Hillside
Local relief (concave, convex, none):	Slope: <u>17.6</u> % / <u>10.0</u> ° Elevation: <u>145</u>	
Subregion : Northern Alaska Lat.:	<u>66.97369</u> Long.: <u>160.452115</u>	Datum: WGS84
Soil Map Unit Name:	NWI classi	fication: Upland
	tly disturbed? Are "Normal Circumstances"	present? Yes No
Are Vegetation, Soil, or Hydrology naturally p	problematic? (If needed, explain any answ	ers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ○ Yes ○	No ○ No ④ No ●	Is the Sampled Area within a Wetland?	Yes \bigcirc No \odot		
Remarks: upland ridge adjacent to drainage, distinguishable in aerial by light color tall trees, use lider to call out. SLOW, physic upland, geomorph fto						

Remarks: upland ridge adjacent to drainage. distinguishable in aerial by light color tall trees, use lidar to call out. SLOW, physio upland, geomorph fto.

		Absol	ute Dominant	Indicator	Dominance Test worksheet:
Tree Stratum		% Co		Status	Number of Dominant Species
1. Picea glauca		15		FACU	That are OBL, FACW, or FAC:6(A)
2		-			Total Number of Dominant Species Across All Strata: 10 (B)
3					
4					Percent of dominant Species That Are OBLEACW or EAC: 60.0% (A/B)
5					That Are OBL, FACW, or FAC:(A/B)
0.1	Total Cover:	15			Prevalence Index worksheet:
Sapling/Shrub Stratum	50% of Total Cover: 7	.5 2	0% of Total Cover:	3	Total % Cover of: Multiply by:
1. Salix pulchra		1		FACW	OBL species x 1 =
2. Vaccinium uliginosum		10		FAC	FACW species $1 \times 2 = 2$
3. Vaccinium vitis-idaea		30		FAC	FAC speci es <u>64</u> x 3 = <u>192</u>
 Desa acicularis 		1		FACU	FACU species28 x 4 =112
T. Empetrum pigrum		10		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$
6. Picea glauca		10		FACU	Column Totals: <u>93</u> (A) <u>306</u> (B)
		10	_	FAC	
7 					Prevalence Index = $B/A = 3.290$
8					Hydrophytic Vegetation Indicators:
9					✓ Dominance Test is > 50%
10	Total Cover:	72			Prevalence Index is ≤3.0
					Morphological Adaptations ¹ (Provide supporting
Herb Stratum	50% of Total Cover:	36 2	0% of Total Cover:	14.4	data in Remarks or on a separate sheet)
1. Mertensia paniculata		1		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Deschampsia caespitosa		3		FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Equisetum arvense		1	\checkmark	FAC	be present, unless disturbed or problematic.
4 Chamerion angustifolium		1		FACU	
5					Plot size (radius, or length x width) 10m
6					% Cover of Wetland Bryophytes
7					(Where applicable)
8.					% Bare Ground _10
9.					Total Cover of Bryophytes 30
10					Hudronhutio
10	Total Cover:	6			Hydrophytic Vegetation
	50% of Total Cover:	3 2	 0% of Total Cover:	1.2	Present? Yes No
Remarks: heavy lichen cover, ca	50%				

Depth		Matrix			Red	dox Featu			_	
(inches)	Color	(moist)	%	Color ((moist)	%	Type ¹	Loc ²	Texture Remarks	
0-1			100						Hemic Organics	
1-2	10YR	3/2	100						Loam	
2-4	2.5Y	4/3	100						Sandy Loam	
4-5	5Y	5/1	100						Sandy Loam	
5-9	2.5Y	4/3	100	- 		- 	·		Sandy Loam	
9-10	10YR	4/6	100						Sandy Loam	
10-24	10Y	4/2	85	2.5Y	4/4	15	С	М	Sandy Loam	
¹ Type: C=Cor	ncentration	D=Depleti	ion RM=Re	duced Matrix	< ² Locati	on: PL=P	ore Lining	RC=Root	Channel M=Matrix	
Hydric Soil	Indicators			Indic	ators for	Problem	natic Hydri	ic Soils: ³		
Histosol	or Histel (A1	1)		🗌 AI	laska Color	r Change /	(TA4) ⁴		Alaska Gleyed Without Hue 5Y or Redder	
Histic Ep	oipedon (A2)									
Hydroge	en Sulfide (A	.4)			laska Redo	x With 2.	5Y Hue		Other (Explain in Remarks)	
Thick Da	ark Surface ((A12)		2 -						
🗌 Alaska G	Gleyed (A13)						phytic vege scape posit		ne primary indicator of wetland hydrology, he present	
🗌 Alaska R	Redox (A14)						• •		be present	
Alaska G	Gleyed Pores	(A15)		4 Give	e details o	f color cha	ange in Rer	marks		
Restrictive L	Layer (if pr	resent):								
Type:									Hydric Soil Present? Yes 🔿 No 🖲	
Depth (ind	ches):									
Remarks:										
no hydric soil	indicators									
HYDROLO	OGY									
Wetland Hy		dicators:							_Secondary Indicators (two or more are require	ed)
Primary Indic	cators (any	one is suffi	cient)						Water Stained Leaves (B9)	
Surface	Water (A1)				Inundatio	n Visible c	on Aerial Im	nagery (B7	7) Drainage Patterns (B10)	
🗌 High Wa	ater Table (A	42)			Sparsely \	/egetated	Concave S	Surface (B8	8) Oxidized Rhizospheres along Living Roots	(C3)
Saturatio	on (A3)				Marl Depo	osits (B15))		Presence of Reduced Iron (C4)	
	Marks (B1)									

Saturation (A3)			Marl Deposits (B15)	Presence of Reduced Iron (C4)		
Water Marks (B1)			Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)		
Sediment Deposits (B2)			Dry-Season Water Table (C2)	Stunted or Stressed Plants (D1)		
Drift Deposits (B3)			Other (Explain in Remarks)	Geomorphic Position (D2)		
Algal Mat or Crust (B4)				Shallow Aquitard (D3)		
Iron Deposits (B5)				Microtopographic Relief (D4)		
Surface Soil Cracks (B6)				FAC-neutral Test (D5)		
Field Observations:						
Surface Water Present?	Yes \bigcirc	No 🖲	Depth (inches):			
Water Table Present?	$_{\rm Yes} \bigcirc$	No 🖲	Depth (inches):	Wetland Hydrology Present? Yes \bigcirc No $oldsymbol{ightarrow}$		
Saturation Present? (includes capillary fringe)	$_{\rm Yes} \bigcirc$	No 🖲	Depth (inches):			
Describe Recorded Data (strea	im gauge, m	nonitor well	, aerial photos, previous inspection) if ava	ailable:		
BLM RAWS Kiana site recorded	1 5.4in preci	p in Aug 20	012, mean for previous 10 yrs in Aug is 3.	0in (SD 1.5in).		
Remarks:						
no wetland hydrology indicato	rs					

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date: 2	2-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_07
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Swale	
Local relief (concave, convex, none): <u>concave</u>	_ Slope: <u>17.6</u> % / <u>10.0</u> ° Elevation: <u>85</u>		
Subregion : Northern Alaska Lat.:	<u>66.9735983333333</u> Long.: <u>-160.452188</u>	333333 Datur	m: WGS84
Soil Map Unit Name:	NWI class	ification: PSS1C	
	ear? Yes No (If no, explain ir tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No 〇

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc					
Remarks: drainage feature w shallow flowing water. SLOW, physio upland, geomorph fto.									

ng N, physic upland, geomorpl ıg

VEGETATION Use scientific names of plants. List all species in the plot.

	Absolut	e Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cove	r Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of dominant Species
5				That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
D. — Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0 20%	of Total Cover:	0	Total % Cover of: Multiply by:
	20	\checkmark	FACW	OBL species x 1 =1
1. Salix richardsonii	1			FACW species35 x 2 =70
2. Dasiphora fruticosa			FAC	FAC species48 x 3 =144
3. Betula glandulosa	2		FAC	
4. Salix alaxensis	10		FAC	•
5. Salix arbusculoides	5		FACW	UPL species $0 \times 5 = 0$
6. Salix glauca	25	\checkmark	FAC	Column Totals: <u>84</u> (A) <u>215</u> (B)
7				Prevalence Index = $B/A = 2.560$
8				
9				Hydrophytic Vegetation Indicators:
10				✓ Dominance Test is > 50%
Total Cover:	63			✓ Prevalence Index is ≤3.0
		6 of Total Cover:	12.6	Morphological Adaptations ¹ (Provide supporting
Herb Stratum	20/			data in Remarks or on a separate sheet)
1. Calamagrostis canadensis	10	\checkmark	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Carex membranacea	5	\checkmark	FACW	¹ Indicators of hydric soil and wetland hydrology must
3. Equisetum pratense	3		FACW	be present, unless disturbed or problematic.
4 Petasites frigidus	1		FACW	
5. Eriophorum scheuchzeri	1		OBL	Plot size (radius, or length x width) 2m x 5m
6. Juncus castaneus			FACW	
7				% Cover of Wetland Bryophytes (Where applicable)
••				% Bare Ground <u>95</u>
8				Total Cover of Bryophytes _0
9		\square		
10Total Cover:	21			Hydrophytic
		of Total Cover:	4.2	Vegetation Present? Yes • No ·
	20%		4.2	
Remarks: trace gallium sp. poa sp. petfri is pethyp per hu	ilten (not i	n wetform)		

sp, poa sp. petfri is pethyp per hulten (not in wetform).

(inches)	Matrix			ox Features	1			
	Color (moist)	%	Color (moist)	_%	Туре	Loc ²	Texture	Remarks
								p
Type: C=Conc	entration D=Depletion	on RM=Red	uced Matrix ² Location	n: PL=Pore	e Lining	RC=Root C	Channel M=Matrix	
Hydric Soil Ir			Indicators for P		0			
_	Histel (A1)		Alaska Color (Alaska Gleyed Withou	t Hue 5V or Redder
Histosof of Histosof of			Alaska Alpine				Underlying Layer	
	Sulfide (A4)		Alaska Redox	•			✓ Other (Explain in Rem	arks)
_ ` `	Surface (A12)							
Alaska Gley	. ,						primary indicator of wetlan	d hydrology,
Alaska Red			and an appropria	ate landscap	pe positi	on must be	e present	
	yed Pores (A15)		⁴ Give details of	color chang	je in Ren	narks		
estrictive La	yer (if present):							
Type:	Jon (p. 000						Hydric Soil Present	? Yes 🖲 No 🔾
Depth (inch	ies):							
emarks:								
	soils due to hydrophy	utic vegetatio	n and flowing water					
source righters		no vogotatio.	Talla nowing wate.					
	-							
Vetland Hydr	rology Indicators:							ndicators (two or more are required)
Vetland Hydr Primary Indicat	rology Indicators: tors (any one is suffic	cient)		·			Water S	itained Leaves (B9)
Vetland Hydr Primary Indicat	rology Indicators: tors (any one is suffic later (A1)	cient)		Visible on A		0 5	Water S	itained Leaves (B9) e Patterns (B10)
Vetland Hydr Primary Indicat Surface W High Wate	rology Indicators: tors (any one is suffic 'ater (A1) er Table (A2)	<u>cient)</u>	Sparsely Ve	egetated Cor		0 5	Water S	itained Leaves (B9) e Patterns (B10) d Rhizospheres along Living Roots (C
Vetland Hydr Primary Indicat Surface W High Wate Saturation	rology Indicators: tors (any one is suffic fater (A1) er Table (A2) h (A3)	cient)	Sparsely Ve	egetated Cor iits (B15)	oncave Su	0 5	Water S Urainag Orainag Oxidize Presend	itained Leaves (B9) e Patterns (B10) d Rhizospheres along Living Roots (C e of Reduced Iron (C4)
Vetland Hydr Primary Indicat ✓ Surface W □ High Wate □ Saturation □ Water Mar	rology Indicators: tors (any one is suffic /ater (A1) er Table (A2) h (A3) rks (B1)	cient)	Sparsely Ve Marl Deposi	egetated Cor sits (B15) Sulfide Odor	oncave Su r (C1)	0 5	Water S Water S Drainag Oxidize Presend Salt De	itained Leaves (B9) e Patterns (B10) d Rhizospheres along Living Roots (C e of Reduced Iron (C4) posits (C5)
Vetland Hydr Primary Indicat ✓ Surface W High Wate Saturation ✓ Sediment	rology Indicators: tors (any one is suffic dater (A1) er Table (A2) n (A3) rks (B1) Deposits (B2)	cient)	Sparsely Ve Marl Deposi Hydrogen S Dry-Season	egetated Cor sits (B15) Sulfide Odor n Water Tabl	oncave Su r (C1) ble (C2)	0 5	Water S Water S Drainag Oxidize Oxidize Presend Salt De Stunted	itained Leaves (B9) e Patterns (B10) d Rhizospheres along Living Roots (C e of Reduced Iron (C4) posits (C5) or Stressed Plants (D1)
Vetland Hydr Primary Indicat Surface W High Wate Saturation Water Mar Sediment Drift Depo	rology Indicators: tors (any one is suffic dater (A1) er Table (A2) n (A3) rks (B1) Deposits (B2) osits (B3)	cient)	Sparsely Ve Marl Deposi Hydrogen S Dry-Season	egetated Cor its (B15) Sulfide Odor	oncave Su r (C1) ble (C2)	0 5	Water S Water	tained Leaves (B9) e Patterns (B10) d Rhizospheres along Living Roots (C e of Reduced Iron (C4) posits (C5) or Stressed Plants (D1) phic Position (D2)
Primary Indicat Surface W High Wate Saturation Water Mar Sediment Drift Depo	rology Indicators: tors (any one is suffic dater (A1) er Table (A2) n (A3) rks (B1) Deposits (B2) osits (B3) or Crust (B4)	cient)	Sparsely Ve Marl Deposi Hydrogen S Dry-Season	egetated Cor sits (B15) Sulfide Odor n Water Tabl	oncave Su r (C1) ble (C2)	0 5	Water S Drainag Oxidize Presenc Salt De Stunted Geomol Shallow	itained Leaves (B9) e Patterns (B10) d Rhizospheres along Living Roots (C e of Reduced Iron (C4) posits (C5) or Stressed Plants (D1)

Field Observations:

Yes \bullet No \bigcirc Depth (inches): 2 Surface Water Present? Yes 🔘 No 🖲 Yes 💿 No 🔿 Wetland Hydrology Present? Water Table Present? Depth (inches): Saturation Present? Yes 🔘 No 🖲 Depth (inches): (includes capillary fringe)

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

flowing water in drainage, ca 2 in deep. possible only flowing during heavy precip events. sediment deposits (silts-fine sands) throughout. iron floc in other portions of drainage where water pools.

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 22-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_08
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Hillside
Local relief (concave, convex, none): none	Slope: <u>8.7</u> % / <u>5.0</u> ° Elevation: <u>60</u>	
Subregion : Northern Alaska Lat.:	<u>66.973885</u> Long.: <u>-160.453478</u>	333333 Datum: WGS84
Soil Map Unit Name:	NWI class	ification: PSS1B
	ear? Yes O No O (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes \odot No \bigcirc

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \odot No \bigcirc
Remarks: scattered small upl rid patterned	ges as char	acterized by K_06 within this	community, if visible in	aerial/topo pull out seperately. FNWWS, physio U, non-

VEGETATION Use scientific names of plants. List all species in the plot.

т.,			bsolute		Indicator	Dominance Test worksheet:
	ee Stratum	_%	5 Cover	Species?	Status FACU	Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
1.	Picea glauca					
2.	Picea mariana		3		FACW	Total Number of Dominant Species Across All Strata: 6 (B)
3.						
4.						Percent of dominant Species That Are OBL, FACW, or FAC:83.3% (A/B)
5.						
	Total Cover:	_	10			Prevalence Index worksheet: Total % Cover of: Multiply by:
Sap	ing/Shrub Stratum 50% of Total Cover:	5	20% c	of Total Cover:	2	
1	Picea glauca		5		FACU	OBL speciles 0.5 x 1 = 0.5
2.	Dasiphora fruticosa		3		FAC	FACW species <u>7.5</u> x 2 = <u>15</u>
3.	Betula glandulosa			\checkmark	FAC	FAC speciles 46.5 x 3 = 139.5
4.	Salix reticulata		5		FAC	FACU speciles 13 x 4 = 52
5.	Arctostaphylos rubra		3		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$
6.	Vaccinium uliginosum		7	\checkmark	FAC	Column Totals: <u>67.5</u> (A) <u>207</u> (B)
7	Salix bebbiana		10	\checkmark	FAC	Prevalence Index = $B/A = 3.067$
8.						
						Hydrophytic Vegetation Indicators:
						✓ Dominance Test is > 50%
10.	Total Cover:		40			Prevalence Index is ≤3.0
	50% of Total Cover:	20	20%	of Total Cover:	8	Morphological Adaptations ¹ (Provide supporting
_He	erb Stratum	-				data in Remarks or on a separate sheet)
1.	Carex bigelowii		10		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Polemonium acutiflorum		0.5		FAC	¹ Indicators of hydric soil and wetland hydrology must
3.	Equisetum arvense				FAC	be present, unless disturbed or problematic.
4.	Saxifraga hirculus		0.5		OBL	
5.	Petasites frigidus				FACW	Plot size (radius, or length x width) _10m
6.	Mertensia paniculata				FACU	% Cover of Wetland Bryophytes
7.	Ranunculus macounii		0.5		FACW	(Where applicable)
8.	Deschampsia caespitosa		2		FACW	% Bare Ground _0
9.	Equisetum variegatum		1		FACW	Total Cover of Bryophytes 80
10.						Hydrophytic
	Total Cover:	-	17.5			Vegetation
	50% of Total Cover: 8	3.75	_ 20% (of Total Cover:	3.5	Present? Yes No
D						

Remarks: ranmac unid ranunculus (no flowers). Descae as collected at K_06. ca 15% lichen cover.

SOIL	SO	L	1
------	----	---	---

	-		depth	n needed to	document th	-		ence of in	dicators	
Depth (inches)	Color (r	Matrix moist)	%	C	olor (moist)	lox Featu %	Type ¹	Loc ²	Texture	Remarks
0-3									Fibric Organics	
3-6									Hemic Organics	
6-8									Sapric Organics	
			0.5		4/2	10			Silty Clay Loam	50/ 40VD2/4 0 DL and 0 5V2/2 mode and
8-12	5Y	4/1	85	5Y	4/2	10	C	M		5% 10YR3/4 C PL and 2.5Y3/3 root casts
12-22	5Y	4/1	100)					Silty Clay Loam	thin organic layers
	,,	,			,					
¹ Type: C=Co	ncentration [D=Depletic	on RN				0		Channel M=Matrix	
Hydric Soil	Indicators:			I	ndicators for		4	ic Soils: ³		
_	or Histel (A1)			L	Alaska Colo	Ũ			Alaska Gleyed With Underlying Layer	out Hue 5Y or Redder
	ipedon (A2)	、 、		L L	Alaska Alpir				Other (Explain in R	emarks)
	n Sulfide (A4) rk Surface (A			L		JA WIIII 2.	JITILE		(
	leyed (A13)	(12)			³ One indicator	of hydro	phytic vege	tation, one	e primary indicator of wetl	and hydrology,
	edox (A14)				and an approp	riate land	scape posit	tion must b	e present	
	leyed Pores (A15)			⁴ Give details of	of color ch	ange in Re	marks		
Restrictive	Layer (if pre	esent):								
	tive layer (fro	ozen), si cl	lo						Hydric Soil Prese	nt? Yes 🖲 No 🔾
Depth (in	ches): 22, 8									
		oit continu	ously	sloughing, c	annot excavate	e clean pit.				
HYDROL Wetland Hy	OGY drology Ind	icators:							Secondary	y Indicators (two or more are required)
Primary India	cators (any or	ne is suffic	ient)						Wate	r Stained Leaves (B9)
Surface	Water (A1)				Inundatio	n Visible c	on Aerial Im	nagery (B7) Drain	age Patterns (B10)
0	ater Table (A2	2)			Sparsely	legetated	Concave S	urface (B8) 🗌 Oxidi	zed Rhizospheres along Living Roots (C3)
Saturati						osits (B15)				ence of Reduced Iron (C4)
Water N						Sulfide O				Deposits (C5)
	nt Deposits (B	32)					Table (C2)			ted or Stressed Plants (D1)
_	posits (B3)				U Other (Ex	plain in Re	emarks)			norphic Position (D2)
	at or Crust (B	4)							_	ow Aquitard (D3)
	posits (B5) Soil Crocks (I	74)							_	otopographic Relief (D4)
	Soil Cracks (E	50)								neutral Test (D5)
Field Observ		Vee	\bigcirc	No 🖲	Depth (in	choc).				
Surface Wat						,				
Water Table	Present?	Yes	ullet	No \bigcirc	Depth (in	ches): 4		W	etland Hydrology Pres	ent? Yes $ullet$ No $igodom$

(includes capillary fringe) Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes \bullet No \bigcirc

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches): 2

Remarks:

Saturation Present?

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date:22-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_09
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks et	.): Channel (active)
Local relief (concave, convex, none): none	Slope: <u>5.2</u> % / <u>3.0</u> ° Elevation: <u>8</u>	0
Subregion : Northern Alaska Lat.:	66.97375 Long.: _160.454	2 Datum: WGS84
Soil Map Unit Name:	NWI c	assification: PSS1C
	ear? Yes O No O (If no, expla tly disturbed? Are "Normal Circumstanc problematic? (If needed, explain any a	•

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes 🖲 Yes 🖲		Is the Sampled Area	Yes \bullet No \bigcirc		
Wetland Hydrology Present?	Yes 🖲	No 🔾	within a wetland.			
Remarks: wet sedge/willow meadow SLOBW. Physio riverine, geomorph active channel, nonpatterned.						

			Absolu	te Dominant	Indicator	Dominance Test worksheet:
Tr	ee Stratum		% Cov	er Species?	Status	Number of Dominant Species
1.			-	. Ц		That are OBL, FACW, or FAC: (A)
2.				. Ц		Total Number of Dominant Species Across All Strata: 4 (B)
3.				. Ц		
4.				. 📋		Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
5				. 🗆		
0.		Total Cover:	0	_		Prevalence Index worksheet:
Sap	ling/Shrub Stratum	50% of Total Cover:	0 20	% of Total Cover:	0	Total % Cover of: Multiply by:
1	Betula glandulosa		10	\checkmark	FAC	OBL species $49 \times 1 = 49$
1. 2.	Dasiphora fruticosa		2		FAC	FACW species 13 x 2 =26
2. 3.	Salix richardsonii		10		FACW	FAC species x 3 =156
3. 4	Chamaedaphne calyculata		3		FACW	FACU species3 x 4 =12
4.	Vaccinium uliginosum		5		FAC	UPL species $-\frac{0}{x} \times 5 = -\frac{0}{x}$
5.	Arctostanhulos rubra		5		FAC	Column Totals:117 (A)243 (B)
6.	Diana alarra		1		FACU	
7.					1400	Prevalence Index = B/A = 2.077
						Hydrophytic Vegetation Indicators:
				. 🗆		✓ Dominance Test is > 50%
10.						✓ Prevalence Index is ≤3.0
		Total Cover:	36	_		Morphological Adaptations ¹ (Provide supporting
<u>_H</u>	erb Stratum	50% of Total Cover:	18 20	% of Total Cover:	7.2	data in Remarks or on a separate sheet)
1	Comarum palustre		5		OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Calamagrostis canadensis		30	\checkmark	FAC	¹ Indicators of hydric soil and wetland hydrology must
2. 3.	Carex aquatilis		40		OBL	be present, unless disturbed or problematic.
J. ⊿	Eriophorum scheuchzeri		2		OBL	
4. 5.	Eriophorum angustifolium		2		OBL	
5. 6	Equisetum scirpoides		2		FACU	Plot size (radius, or length x width) <u>10m</u>
υ.						% Cover of Wetland Bryophytes (Where applicable)
•••				- 		% Bare Ground
-						Total Cover of Bryophytes
•.						
10.		Total Cover:	81			Hydrophytic Verstation
				– % of Total Cover:	16.2	Vegetation Present? Yes • No O
		-				
Rem	arks: bryophyte layer subme	erged. trace unidentified h	erbs.			

Profile Desc	ription: Describe to	depth need	ded to document the	e presence	e or abs	ence of ind	icators	
Depth	Matrix			ox Feature				
(inches)	Color (moist)	_%	Color (moist)	_%	Type ¹	Loc ²	Texture	Remarks
			, ,				. <u> </u>	
¹ Type: C=Cor	ncentration D=Depleti	on RM=Red	uced Matrix ² Locatio		-		nannel M=Matrix	
Hydric Soil	Indicators:		Indicators for			c Soils: ³		
Histosol o	or Histel (A1)		🗌 Alaska Color	0 .			Alaska Gleyed Withou	t Hue 5Y or Redder
Histic Epi	ipedon (A2)		Alaska Alpine				Underlying Layer	
Hydrogei	n Sulfide (A4)		Alaska Redox	With 2.5Y	Hue		Other (Explain in Rem	narks)
	rk Surface (A12)		³ One indicator	of hydrophy	vtic vere	tation one i	primary indicator of wetlan	d bydrology
	leyed (A13)		and an appropri					a nya ology,
	edox (A14)		⁴ Give details of	color chan	ae in Rer	narks		
Alaska G	leyed Pores (A15)				J			
	_ayer (if present):							
Туре:							Hydric Soil Present	? Yes 🖲 No 🔾
Depth (ind	ches):							
Remarks:								
assume hydrid	c soil due to hydrophyt	ic vegetatior	n and flowing water					
HYDROLO	JGV							
	drology Indicators:						Secondary I	ndicators (two or more are required)
-	ators (any one is suffi	cient)						Stained Leaves (B9)
Surface	Water (A1)		Inundation	Visible on A	Aerial Im	agery (B7)	Drainag	je Patterns (B10)
🗌 High Wa	iter Table (A2)		Sparsely Ve	egetated Co	oncave S	urface (B8)	Oxidize	d Rhizospheres along Living Roots (C3)
Saturatio	on (A3)		Marl Depos	its (B15)			Presence	ce of Reduced Iron (C4)
	arks (B1)		Hydrogen S					posits (C5)
	t Deposits (B2)		Dry-Seasor					I or Stressed Plants (D1)
	posits (B3)		Other (Exp	lain in Rem	narks)		_	rphic Position (D2)
🔄 🗋 Algal Ma	it or Crust (B4)						Shallow	Aquitard (D3)

✓ Iron Deposits (B5)				Microtopogra	aphic Relief (D4)	
Surface Soil Cracks (B6)				FAC-neutral	Test (D5)	
Field Observations:	-	-				
Surface Water Present?	Yes 🖲	No \bigcirc	Depth (inches): 4			
Water Table Present?	$_{ m Yes}$ \bigcirc	No 🖲	Depth (inches):	Wetland Hydrology Present?	Yes 🔍 No 🔾	
Saturation Present? (includes capillary fringe)	Yes NO Denth (inches):					
Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:						
BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).						

Remarks:

small creek has topped banks and flooded entire willow/carex community. 4-12 in water through willows/carex.

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic	Borouah	Sampling Date:	22-Aug-12
Applicant/Owner: USKH/ADOT&PF			Sampling Point:	K_10
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace,	hummocks etc.):	Hillside	
Local relief (concave, convex, none): none	Slope: <u>17.6</u> % / 10.0 °	Elevation: 140		
Subregion : Northern Alaska Lat.	<u>.66.97348</u> Lon	g.: <u>-160.4589</u>	Datu	m: WGS84
Soil Map Unit Name:		NWI classif	ication: PSS1/4B	
	tly disturbed? Are "Normal	(If no, explain in Circumstances" p explain any answe	resent? Yes 🖲	No O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc
Remarks: SFWWS, physio upland	, geomorpl	h fto, nonpatterned.		

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1. Picea glauca	7		FACU	That are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata:6_ (B)
4.				Percent of dominant Species That Are OBL_EACW_or_EAC: 66.7% (A/B)
5				That Are OBL, FACW, or FAC:66.7% (A/B)
5: Total Cover:	7			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover: 3	3.5 20% o	of Total Cover:	1.4	Total % Cover of: Multiply by:
1 Picea glauca	15	\checkmark	FACU	OBL species x 1 =
	7		FAC	FACW species $5 x 2 = 10$
2	7		FAC	FAC species X 3 =219
0	10		FAC	FACU species22 x 4 =88
т	10		FAC	UPL species $0 \times 5 = 0$
5. Vaccinium uliginosum	2		FAC	•
6. Empetrum nigrum				Column Totals: <u>100</u> (A) <u>317</u> (B)
7. Arctostaphylos rubra	5		FAC	Prevalence Index = $B/A = $ <u>3.170</u>
8. Ledum decumbens	5		FACW	Hydrophytic Vegetation Indicators:
9. Salix reticulata	3		FAC	Dominance Test is > 50%
10. Betula nana	3		FAC	Prevalence Index is ≤ 3.0
Total Cover:	67			
_Herb Stratum50% of Total Cover:3	3.5 20% c	of Total Cover:	13.4	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1 Calamagrostis canadensis	10	\checkmark	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
	7	\checkmark	FAC	
Z	1		FAC	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
	5		FAC	
	3		FAC	
5				Plot size (radius, or length x width) <u>10m</u>
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8				% Bare Ground <u>0</u>
9				Total Cover of Bryophytes 45
10				Hydrophytic
Total Cover:	26	f Tatal Cau	5.2	Vegetation Present? Yes • No O
50% of Total Cover:	L3 20% o	of Total Cover:	5.2	Present? Yes \bullet No \bigcirc
Remarks: carmic no infl, but strongly tristichous, low to gr	ound leave	s. descae as (collected ea	arlier today. ca 45% lichen.

S	O	I	L
-	~		-

Depth	Matrix Redox Features									
(inches)	Color	(moist)	%	Color	(moist)	%	Type ¹	Loc ²	Texture	Remarks
0-2									Hemic Organics	
2-3									Sapric Organics	
3-9	5Y	4/1	85	10YR	4/4	15	С	PL	Silty Clay Loam	
9-15	5Y	4/1	85	2.5Y	4/4	15	С	М	Silty Clay Loam	>2% oxidized rhizospheres around living roo
15-16									Sapric Organics	buried O horizon
16-20	5Y	4/1	50	10YR	5/6	50	C	PL	Silty Clay Loam	
¹ Type: C=Cor	ncentration	D=Depleti	ion RM=R [,]	educed Matrix	x ² Locatir	on: PL=P	ore Lining	RC=Root	Channel M=Matrix	
Hydric Soil	Indicator	s:		Indic	ators for	Problem	natic Hydr	ic Soils: ³		
Histosol	or Histel (A	.1)			laska Color		4			out Hue 5Y or Redder
Histic Ep	pipedon (A2)	.)			laska Alpine	e swales ((TA5)		Underlying Layer	
Hydroge	en Sulfide (A	44)			laska Redo	x With 2.	5Y Hue		Other (Explain in Re	emarks)
Thick Da	ark Surface	(A12)		2.0						
🗌 Alaska G	Gleyed (A13))					phytic vege Iscape posit		e primary indicator of wetle	and hydrology,
🖌 Alaska Re	Redox (A14)	i.					• •		Je present	
🗌 Alaska G	Gleyed Pores	s (A15)		4 Give	e details of	f color cha	ange in Rei	marks		
Restrictive L	Layer (if p	resent):								
Type: sil	Ity clay loam	n							Hydric Soil Prese	nt? Yes $ullet$ No $igcap$
Depth (ind	iches): 3									
Remarks:									I	
16-20: redox f features. Thix) PL. Thro	ughout pr	rofile, C are	∍ a mix of	4/3 and 4/4. multiple C co	olors indicate contemporary (not relict)
I										
HYDROLO	OGY									
Wetland Hy		ndicators:							Secondary	y Indicators (two or more are required)
Primary Indic	cators (any	one is suffi	cient)							r Stained Leaves (B9)
Surface	Water (A1))			Inundatior	n Visible c	on Aerial Im	nagery (B7	') 🗌 Drain	nage Patterns (B10)
🗌 High Wa	ater Table (/	(A2)					Concave S	0 .		zed Rhizospheres along Living Roots (C3)
✓ Saturatio	ion (A3)				Marl Depos	0				ence of Reduced Iron (C4)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Salt Deposits (C5)						Deposits (C5)				

Describe Recorded	Data (stream	gauge, monitor	well, aerial	photos,	previous inspe	ction) if av	allable:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Dry-Season Water Table (C2)

Other (Explain in Remarks)

Depth (inches):

Depth (inches): 19

Depth (inches): 1

Remarks:

soils very cold, but not frozen. water pooling in bottom of pit, considering this water table.

No \bigcirc

Yes 🔘 No 🖲

 $_{\rm Yes} \odot \ _{\rm No} \bigcirc$

Yes 🖲

Sediment Deposits (B2)

Algal Mat or Crust (B4)

Surface Soil Cracks (B6)

Drift Deposits (B3)

Iron Deposits (B5)

Field Observations:

Surface Water Present?

Water Table Present?

(includes capillary fringe)

Saturation Present?

No 🔿

Stunted or Stressed Plants (D1)

Geomorphic Position (D2)

Microtopographic Relief (D4)

Yes 🖲

Shallow Aquitard (D3)

FAC-neutral Test (D5)

Wetland Hydrology Present?

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borough</u>	Sampling Date: 22	-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_11
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Swale	
Local relief (concave, convex, none):	Slope: <u>12.2</u> % / <u>7.0</u> ° Elevation: <u>150</u>		
Subregion : Northern Alaska Lat.:	<u>66.9733083333333</u> Long.: <u>-160.461875</u>	Datum	WGS84
Soil Map Unit Name:	NWI classi	ification: PEM1E	
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No 〇

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?		No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc		
Remarks: emergent swale used as ATV trail (tracks visible onsite and in aerial). flowing water at time of site visit, likely due to recent heavy precip.						

physio riverine, geomorph fto. HGWSL.

VEGETATION Use scientific names of plants. List all species in the plot.

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum		% Cover	Species?	Status	Number of Dominant Species
1					That are OBL, FACW, or FAC:6(A)
2					Total Number of Dominant
3					Species Across All Strata:6(B)
4					Percent of dominant Species That Are OBL_EACW_or_EAC+100.0% (A/B)
5					That Are OBL, FACW, or FAC:(A/B)
	otal Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total	Cover: 0	20%	of Total Cover:	0	Total % Cover of: Multiply by:
1 Salix reticulata		3	\checkmark	FAC	OBL species <u>73.5</u> x 1 = <u>73.5</u>
2. Salix richardsonii		3	\checkmark	FACW	FACW species <u>6.5</u> x 2 = <u>13</u>
O Deciphere fruticece		2	\checkmark	FAC	FAC species x 3 = 36
C		2	\checkmark	FAC	FACU species $0 \times 4 = 0$
4. Betula giandulosa 5. Andromeda polifolia		1		FACW	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
6. Chamaedaphne calyculata		1		FACW	Column Totals: <u>92</u> (A) <u>122.5</u> (B)
7 Vaccinium uliginosum		2	\checkmark	FAC	
		0.5		OBL	Prevalence Index = B/A = <u>1.332</u>
9					Hydrophytic Vegetation Indicators:
					✓ Dominance Test is > 50%
	otal Cover:	14.5			✓ Prevalence Index is ≤3.0
50% of Total			of Total Cover:	2.9	Morphological Adaptations ¹ (Provide supporting
Herb Stratum	cover. 7	20/0			data in Remarks or on a separate sheet)
1. Carex aquatilis		70		OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Eriophorum angustifolium		3		OBL	¹ Indicators of hydric soil and wetland hydrology must
3. Carex bigelowii		2		FAC	be present, unless disturbed or problematic.
4. Arctagrostis latifolia		1		FACW	
5. Parnassia palustris		0.5		FACW	Plot size (radius, or length x width) 2m x 5m
6. Polemonium acutiflorum		0.5		FAC	% Cover of Wetland Bryophytes
7. Iris setosa		0.5		FAC	(Where applicable)
8					% Bare Ground
9					Total Cover of Bryophytes
10					Hydrophytic
-	otal Cover:	77.5			Vegetation
50% of Total	Cover:38.	.75 20%	of Total Cover:	15.5	Present? Yes \bullet No \bigcirc
Remarks: broophyte layer submerged polacu.	parpal, vaco	xy on loc:	al high point		

rged. polacu, parpal, vacoxy on local high point.

(inches) Color (moist)			Redox Features	1			. .
) %	Color (moist) <u>%</u> 1	Type Loc		Texture	Remarks
		······					
		·					
		,					
Type: C=Concentration D=Dep	letion RM=Rec			0		M=Matrix	
Hydric Soil Indicators:		Indicators	for Problematic	Hydric Soil	s:		
Histosol or Histel (A1)			olor Change (TA4				t Hue 5Y or Redder
Histic Epipedon (A2)			lpine swales (TA5		_	derlying Layer	
Hydrogen Sulfide (A4)		Alaska R	edox With 2.5Y H	lue	✓ Oth	ner (Explain in Ren	narks)
Thick Dark Surface (A12)		³ One indica	tor of hydrophyt	ic vegetation	one primary	indicator of wetlar	d hydrology
Alaska Gleyed (A13)			ropriate landscap				a nya ology,
Alaska Redox (A14)		⁴ Give detai	Is of color change	e in Remarks			
Alaska Gleyed Pores (A15)							
Restrictive Layer (if present)	:						
Туре:					Hy	dric Soil Present	? Yes 🖲 No 🔾
Depth (inches):							
emarks:							
	hytic vegetation	ו and flowing wate	r				
assume hydric soil due to hydrop	J						
assume hydric soil due to hydrop							
ssume hydric soil due to hydrop							
ssume hydric soil due to hydrop							
YDROLOGY						_Secondary	ndicators (two or more are required)
YDROLOGY Vetland Hydrology Indicator	rs:						ndicators (two or more are required) Stained Leaves (B9)
Vetland Hydrology Indicator Primary Indicators (any one is su	rs:	Inunda	ition Visible on Ae		(B7)	Water	
YDROLOGY Vetland Hydrology Indicator Primary Indicators (any one is sumary Indicators (any one is sumy Indicators (any one is sumary Indicators (an	rs:		ation Visible on Ae	0,2		Water	Stained Leaves (B9)
YDROLOGY Vetland Hydrology Indicator Primary Indicators (any one is surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3)	rs:	Sparse		0,2		Water : Drainag Oxidize	Stained Leaves (B9) je Patterns (B10) d Rhizospheres along Living Roots (C: ee of Reduced Iron (C4)
IYDROLOGY Vetland Hydrology Indicator Primary Indicators (any one is surface Water (A1) Image: Surface Water Table (A2) Image: Saturation (A3) Image: Water Marks (B1)	rs:	Sparse	ly Vegetated Con eposits (B15) gen Sulfide Odor ((C1)		Water : Drainag Oxidize Presend Salt De	Stained Leaves (B9) je Patterns (B10) d Rhizospheres along Living Roots (C3 e of Reduced Iron (C4) posits (C5)
YDROLOGY Vetland Hydrology Indicator Primary Indicators (any one is su Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	rs:	Sparse Sparse Marl De Hydrog Dry-Se	ly Vegetated Con eposits (B15) gen Sulfide Odor (ason Water Table	(C1) e (C2)		Water Water Water Variation Variati	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C3 ee of Reduced Iron (C4) posits (C5) I or Stressed Plants (D1)
IYDROLOGY Vetland Hydrology Indicator Primary Indicators (any one is su Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	rs:	Sparse Sparse Marl De Hydrog Dry-Se	ly Vegetated Con eposits (B15) gen Sulfide Odor ((C1) e (C2)		Water Water Variation Orainag Oxidize Presend Salt De Stunted Geomo	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C3 ee of Reduced Iron (C4) posits (C5) I or Stressed Plants (D1) rphic Position (D2)
IYDROLOGY Wetland Hydrology Indicator Primary Indicators (any one is st Image: Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	rs:	Sparse Sparse Marl De Hydrog Dry-Se	ly Vegetated Con eposits (B15) gen Sulfide Odor (ason Water Table	(C1) e (C2)		Water Water Water Variation Oxidizer Oxidizer Salt De Salt De Geomo Shallow	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C: ee of Reduced Iron (C4) posits (C5) I or Stressed Plants (D1) rphic Position (D2) r Aquitard (D3)
YDROLOGY Vetland Hydrology Indicator Primary Indicators (any one is st ✓ Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5)	rs:	Sparse Sparse Marl De Hydrog Dry-Se	ly Vegetated Con eposits (B15) gen Sulfide Odor (ason Water Table	(C1) e (C2)		 Water 3 Drainag Oxidizer Present Salt De Stunted Geomo Shallov Microto 	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C: ee of Reduced Iron (C4) posits (C5) I or Stressed Plants (D1) rphic Position (D2) r Aquitard (D3) pographic Relief (D4)
YDROLOGY Vetland Hydrology Indicator Primary Indicators (any one is summary Indicators (any one is summary Indicators) ✓ Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (B6)	rs:	Sparse Sparse Marl De Hydrog Dry-Se	ly Vegetated Con eposits (B15) gen Sulfide Odor (ason Water Table	(C1) e (C2)		 Water 3 Drainag Oxidizer Present Salt De Stunted Geomo Shallov Microto 	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C: ee of Reduced Iron (C4) posits (C5) I or Stressed Plants (D1) rphic Position (D2) r Aquitard (D3)
 High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (B6) Field Observations:	rs:	Sparse Marl D Hydrog Dry-Se Other (ly Vegetated Con eposits (B15) gen Sulfide Odor (ason Water Table	(C1) e (C2)		 Water 3 Drainag Oxidizer Present Salt De Stunted Geomo Shallov Microto 	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C: ee of Reduced Iron (C4) posits (C5) I or Stressed Plants (D1) rphic Position (D2) r Aquitard (D3) pographic Relief (D4)

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes 🔿 No 🖲

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

Saturation Present?

(includes capillary fringe)

appears to be swale flooded by recent heavy precip, no obvious channel (banks/bed). water depth 4-8in, fast-flowing.

Depth (inches):

Depth (inches):

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough Sampling	Date: 22-Aug-12
Applicant/Owner: USKH/ADOT&PF	Sampli	ng Point: K_12
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.): Hillside	
Local relief (concave, convex, none):	Slope: <u>5.2</u> % / <u>3.0</u> ° Elevation: <u>145</u>	
Subregion : Northern Alaska Lat.:	66.97368666666666666667Long.:160.4627016666667	Datum: WGS84
Soil Map Unit Name:	NWI classification:	PSS1B
	ear? Yes O No O (If no, explain in Remarks. tly disturbed? Are "Normal Circumstances" present? problematic? (If needed, explain any answers in Rem	Yes 🔍 No 🔾

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc
Remarks: SFWWS, physio upland	l, geomorpl	h fto, nonpatterned.		

	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1. Picea glauca	5		FACU	That are OBL, FACW, or FAC:6_ (A)
2				Total Number of Dominant Species Across All Strata: 7 (B)
3				
4				Percent of dominant Species That Are OBL, FACW, or FAC:85.7% (A/B)
5				
Total Cover:	5			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover: 2	.5 20% c	of Total Cover:	1	Total % Cover of: Multiply by:
1. Picea glauca	5		FACU	OBL species $0 \times 1 = 0$
2 Vaccinium uliginosum	10	\checkmark	FAC	FACW species $5 \times 2 = 10$
Decinhora fruticosa	3		FAC	FAC species 64 x 3 = 192
	7	\checkmark	FAC	FACU species $10 \times 4 = 40$
	5		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
	5		FAC	Column Totals: (A) (B)
	3		FAC	
/	2		FAC	Prevalence Index = $B/A = 3.063$
O	2		FAC	Hydrophytic Vegetation Indicators:
10. Salix reticulata	10	\checkmark	FAC	✓ Dominance Test is > 50%
Total Cover:	52	_		Prevalence Index is ≤3.0
		of Total Cover:	10.4	Morphological Adaptations ¹ (Provide supporting
Herb Stratum	20/00			data in Remarks or on a separate sheet)
1. Rubus chamaemorus	5		FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Carex bigelowii	10		FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Deschampsia cespitosa	5		FAC	be present, unless disturbed or problematic.
4. Saussurea angustifolia	2		FAC	
5				Plot size (radius, or length x width) _10m
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8				% Bare Ground 2
9				Total Cover of Bryophytes 70
10				Hydrophytic
Total Cover:	22			Vegetation
50% of Total Cover:1	1 20% c	of Total Cover:	4.4	Present? Yes \bullet No \bigcirc
Remarks: ca 20% lichen cover, descae as collected earlier	today.			

Depth	Ma	trix		to document th	lox Feature	06		dicators	
(inches)	Color (mo			Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-5		10						Fibric Organics	
5-8			0			·		Hemic Organics	
8-9		10						Sapric Organics	
9-23	10Y 4	4/1 95		5Y 4/3	5	C	PL	Fine Sandy Loam	10% organic inclusions and thin layers
	. <u> </u>								
¹ Type: C=Co	ncentration D=[Depletion RI	M=Reduced	Matrix ² Locati	on: PL=Por	e Lining	RC=Root C	Channel M=Matrix	
Hydric Soil	Indicators:			Indicators for	Problema	tic Hydri	c Soils: ³		
Histosol	or Histel (A1)			Alaska Colo	r Change (T	4 A4)		Alaska Gleyed Witho	ut Hue 5Y or Redder
✓ Histic Ep	pipedon (A2)			Alaska Alpir	ne swales (T	A5)		Underlying Layer	
Hydroge	en Sulfide (A4)			Alaska Redo	ox With 2.5Y	' Hue		Other (Explain in Rei	marks)
Thick Da	ark Surface (A12))		3 One indicator	of hydroph	utic vogo	tation ono	primary indicator of wetla	nd hydrology
	Gleyed (A13)			and an approp					na nyarology,
	Redox (A14)			⁴ Give details of	of color chan	in Rer	narks		
Alaska G	Gleyed Pores (A1	5)				ige in iter	nunto		
	Layer (if prese							Ubadaia Calil Dasaaa	••• •• ••
	ctive layer (frozer	ר)						Hydric Soil Presen	t? Yes 🖲 No 🔾
Depth (in	nches): 23								
Remarks:									
IYDROL	OGY								
	OGY /drology Indica	tors:						_Secondary	Indicators (two or more are required)
Wetland Hy									Indicators (two or more are required) Stained Leaves (B9)
Wetland Hy Primary Indi	vdrology Indica icators (any one i Water (A1)			Inundatio	n Visible on	Aerial Im	agery (B7)	Water	Stained Leaves (B9) ge Patterns (B10)
Wetland Hy Primary Indi	ydrology Indica icators (any one i Water (A1) ater Table (A2)			Sparsely	/egetated C			Water	Stained Leaves (B9) ge Patterns (B10) ed Rhizospheres along Living Roots (C3)
Wetland Hy Primary Indi U Surface W High Wa Saturati	ydrology Indica icators (any one i Water (A1) ater Table (A2) ion (A3)			Sparsely Marl Depo	/egetated Cosits (B15)	oncave Si		Water Draina	Stained Leaves (B9) ge Patterns (B10) ed Rhizospheres along Living Roots (C3) ce of Reduced Iron (C4)
Wetland Hy Primary Indi Surface High Wa Saturati Water N	ydrology Indica icators (any one i Water (A1) ater Table (A2) ion (A3) Marks (B1)			Sparsely Marl Depo	/egetated Co osits (B15) Sulfide Odo	oncave Si or (C1)		Water Water Oraina Oxidize Preser Salt De	Stained Leaves (B9) ge Patterns (B10) ed Rhizospheres along Living Roots (C3) ce of Reduced Iron (C4) eposits (C5)
Wetland Hy Primary Indi Surface ✓ High Wa ✓ Saturati Water N Sediment	vdrology Indica icators (any one i Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2)			Sparsely Marl Depe Hydrogen Dry-Sease	/egetated Co osits (B15) Sulfide Odc on Water Ta	oncave Si or (C1) ble (C2)		Water Water Violation Water Violation Violatio	Stained Leaves (B9) ge Patterns (B10) ed Rhizospheres along Living Roots (C3) ce of Reduced Iron (C4) eposits (C5) d or Stressed Plants (D1)
Primary Indi Surface High Wa Saturati Water M Sedime Drift De	Adrology Indica icators (any one i Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) eposits (B3)			Sparsely Marl Depe Hydrogen Dry-Sease	/egetated Co osits (B15) Sulfide Odo	oncave Si or (C1) ble (C2)		Water Water Violation Water Violation Violatio	Stained Leaves (B9) ge Patterns (B10) ed Rhizospheres along Living Roots (C3) ce of Reduced Iron (C4) eposits (C5) d or Stressed Plants (D1) orphic Position (D2)
Wetland Hy Primary Indi Surface Image: Surface Image: Statutati Water N Sediment Drift De Algal Mathematical Mathematical Statutation	Adrology Indica icators (any one i Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) eposits (B3) at or Crust (B4)			Sparsely Marl Depe Hydrogen Dry-Sease	/egetated Co osits (B15) Sulfide Odc on Water Ta	oncave Si or (C1) ble (C2)		Water Water Draina Oxidize Salt De Stunte Geome Shallon Shallon	Stained Leaves (B9) ge Patterns (B10) ed Rhizospheres along Living Roots (C3) ce of Reduced Iron (C4) eposits (C5) d or Stressed Plants (D1) orphic Position (D2) w Aquitard (D3)
Wetland Hy Primary Indi Surface ✓ High Wa ✓ Saturati Water N Sedimer Drift De Algal Ma Iron De	Adrology Indica icators (any one i Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) eposits (B3) at or Crust (B4) iposits (B5)			Sparsely Marl Depe Hydrogen Dry-Sease	/egetated Co osits (B15) Sulfide Odc on Water Ta	oncave Si or (C1) ble (C2)		Water Water Draina Oxidiz Preser Salt Do Stunte Geomo Microto	Stained Leaves (B9) ge Patterns (B10) ed Rhizospheres along Living Roots (C3) ce of Reduced Iron (C4) eposits (C5) d or Stressed Plants (D1) orphic Position (D2) w Aquitard (D3) opographic Relief (D4)
Wetland Hy Primary Indi Surface ✓ High W2 ✓ Saturati Water N Sedimei Drift De Algal M2 Iron De Surface	ydrology Indica icators (any one i Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) eposits (B3) at or Crust (B4) eposits (B5) Soil Cracks (B6)			Sparsely Marl Depe Hydrogen Dry-Sease	/egetated Co osits (B15) Sulfide Odc on Water Ta	oncave Si or (C1) ble (C2)		Water Water Draina Oxidiz Preser Salt Do Stunte Geomo Microto	Stained Leaves (B9) ge Patterns (B10) ed Rhizospheres along Living Roots (C3) ce of Reduced Iron (C4) eposits (C5) d or Stressed Plants (D1) orphic Position (D2) w Aquitard (D3)
Wetland Hy Primary Indi Surface ✓ High Wa ✓ Saturati Water N Sedimei Drift De Algal Ma Surface Field Obser	ydrology Indica icators (any one i Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) eposits (B3) at or Crust (B4) eposits (B5) Soil Cracks (B6)		No •	Sparsely Marl Depe Hydrogen Dry-Sease	/egetated Cr osits (B15) Sulfide Odo on Water Ta plain in Rem	oncave Si or (C1) ble (C2)		Water Water Draina Oxidiz Preser Salt Do Stunte Geomo Microto	Stained Leaves (B9) ge Patterns (B10) ed Rhizospheres along Living Roots (C3) ce of Reduced Iron (C4) eposits (C5) d or Stressed Plants (D1) orphic Position (D2) w Aquitard (D3) opographic Relief (D4)

(includes capillary fringe) Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

 $_{\rm Yes} \odot ~_{\rm No} \bigcirc$

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches): 3

Depth (inches): 1

Remarks:

Saturation Present?

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date: 22-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_13
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Hillside
Local relief (concave, convex, none): none	_ Slope: <u>8.7</u> % / <u>5.0</u> ° Elevation: <u>170</u>	
Subregion : Northern Alaska Lat.:	<u>66.9738</u> Long.: <u>-160.464853</u>	3333333 Datum: WGS84
Soil Map Unit Name:	NWI class	sification: PSS1B
	ear? Yes O No O (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes No

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc
Remarks: caribou scat, game trai	ils. SLOBE,	physio upland, geomorph fto,	nonpatterned.	

	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum	% Cover		Status	Number of Dominant Species
1. Picea glauca	5		FACU	That are OBL, FACW, or FAC:(A)
2				Total Number of Dominant Species Across All Strata: 6 (B)
3				
4				Percent of dominant Species That Are OBL, FACW, or FAC: <u>83.3%</u> (A/B)
5				
Total Cover:	5			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover: 2	2.5 20% (of Total Cover:	1	Total % Cover of: Multiply by:
1. Picea glauca	7		FACU	0BL species 0 x 1 = 0
2. Betula glandulosa	15	\checkmark	FAC	FACW species X 2 = 30
2	5		FAC	FAC species65_ x 3 =195
A Vessipium uliginosum	30	\checkmark	FAC	FACU species 12 x 4 = 48
	5		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
O. Ledum decumbers	10		FACW	Column Totals: 92 (A) 273 (B)
	2		FAC	
	3	\square	FAC	Prevalence Index = $B/A = 2.967$
0				Hydrophytic Vegetation Indicators:
9				✓ Dominance Test is > 50%
10Total Cover:	77			✓ Prevalence Index is ≤3.0
			15.4	Morphological Adaptations ¹ (Provide supporting
<u>Herb Stratum</u> 50% of Total Cover: <u>3</u>	8.5 20%	of Total Cover:	15.4	data in Remarks or on a separate sheet)
1. Arctagrostis latifolia	5	\checkmark	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Deschampsia caespitosa	2	\checkmark	FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Carex bigelowii	3	\checkmark	FAC	be present, unless disturbed or problematic.
4				
5				Plot size (radius, or length x width) 10m
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8				% Bare Ground 3
9				Total Cover of Bryophytes 40
10				Hudronhutia
Total Cover:	10		_	Hydrophytic Vegetation
50% of Total Cover:	5 20% (of Total Cover:	2	Present? Yes \bullet No \bigcirc
Remarks: descae as collected earlier today. ca 50% lichen	over.			

Color (moist) % Color (moist) % Type ¹ Loc ² Texture Remarks 0-3	Profile Descrip		Matrix				ox Featu				
5-14 5Y 4/1 90 10YR 4/4 10 C PL Sity Clay Loom 2% outdated rhizopheres around heig in the second height in the secon	(inches)	Color (n	noist)	%	Color	· (moist)	%	Type ¹	Loc ²		Remarks
5-14 5Y 4/1 90 10YR 4/4 10 C PL Sity Clay Loom 2% outdated rhizopheres around heig in the second height in the secon	3-5				L					Hemic Organics	
14.15 5Y 4/1 40 10YR 4/4 60 C M/PL Sity Cay Leam 15.20 5Y 4/2 50 5Y 4/3 50 C M Sity Cay Leam Type: C-Concentration D-Depletion RM-reduced Matrix * (Location: PL-Pore Lining RC-Root Channel M-Matrix Hydrogen Suffice (A1) Indicators for Problematic Hydric Solis? Indicators in transmit Change (TA) Indicator of tweeting Layer Indicator of welland hydrology, and an appropriate landscape position must be present Hydrogen Suffice (A12) ³ One indicator of hydrophydic vogetation, one primary indicator of welland hydrology, and an appropriate landscape position must be present Alaska Cleyed Pores (A13) Alaska Cleyed Pores (A13) ⁴ Give details of color change in Remarks Hydric Soil Present? Yes No ○ Type: silly clay loam Depth (Inches): 5 Stande Under (A1) Depth (Inches): 5 Deft (Inches): 5 VDROLOCY Yes (A1) Inundation Visible on Aerial Imagery (B7) Dreinape Patterns (B10) Depth (Inches): 5 Startice Water (A1) Inundation Visible on Aerial Imagery (B7) Dreinape Patterns (B10) Depater (C1) Startice Water (A1) Startice Water (A1) D		5Y	4/1	90	10YR	 	10	C	PI		2% oxidized rhizospheres around living root
15:20 5Y 4/2 50 5Y 4/3 50 C M Sity Clay Leam Type: C=Concentration D=Depletion RM=Reduced Matrix *Location: PL=Pare Lining RC=Red Channel M=Matrix Historio of Historio of Historio of Historio of Maska Cleyed Without Hue 5Y or Redder Historio of Historio of Historio of Maska Cleyed Without Hue 5Y or Redder Historio of Historio of Historio of Maska Cleyed Without Hue 5Y or Redder Historio of Alaska Apine swakes (TA) Underfying Layer Alaska filewed (A1) Alaska Apine swakes (TA) Underfying Layer Alaska filewed (A13) ³ One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position was be present Alaska filewed fores (L15) * Give details of color change in Remarks testrictive Layer (If present): Type:: sity day loam Lepth (Inches): 5 Emarchicators (Sin) WetRed (A1) Inundation Visible on Aerial Imagery (B7) Dealage Petternes (B0) High Water Table (A2) Sparsely Vegetated Concare Surface (B8) Presence of Reduced Iron (C4) WetRed Marks (B1)											
Type: C-Concentration D-Depiletion RM-Reduced Matrix *Location: PL-Pore Lining RC-Root Channel M-Matrix Hydric Soil Indicators: Indicators for Problematic Hydric Soils. ² Ataska Gleyed Without Hue SY or Redder Underlying Layer Histis: Epileon (A2) Ataska Color Change (TA4) Underlying Layer Hydric Soil Indicators: Underlying Layer Thick Dark Surface (A12) a One Indicator of Hydrophydic vegetation, one primary Indicator of wetland hydrology, and an appropriate landscape position must be present Ataska Redox (A14) Give details of color change in Remarks Extrictive Layer (If present): Type: silty cay leam Depth (inches): 5 Type: silty cay leam Depth (inches): 5 Hydric Soil Present? YEROLOGY Sacondary Indicators: Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Surface Water (A1) Saturation (A3) Hydrogen Sulfde (A4) Hydrogen Sulfde (A6) Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Surface Water (A1) Surface Water (A1) Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Surface Water (A1) Hydrogen Sulface Globary C(1) Surface Water (A1)										·	
Hydric Soil Indicators: Indicators for Problematic Hydric Soils. ³ Histosal or Histel (A1) Alaska Color Change (TA4) Indicetying Layer Histic Epipedon (A2) Alaska Alpine swales (TA5) Other (Explain in Remarks) Thick Dark Surface (A12) ³ One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology. Alaska Gleyed (A13) ³ One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology. Alaska Gleyed Pores (A15) ⁴ Give details of color change in Remarks Exetrictive Layer (If present): Type: sitly clay tom Depth (inches): 5 Hydrology Indicators: Wetland Hydrology Indicators: Yes ● No ○ Prinze Water (A1) Inundation Visible on Aerial Imagery (87) Staturation (A3) Math Progens Sufficient) Staturation (A3) Hydrogens Sufficient) Staturation (A3) Hydrogens Sufficient) Staturation (A3) Hydrogens Sufficient) High Water Table (A2) Sparsely Vegetated Concave Surface (88) Sediment Deposits (B2) Dry Season Water Table (C2) Suther Stature (C1) Drift Deposits (B3) Other (Explain in Remarks) Math Deposits (B2) Drift Deposits (B3) Other (Explain in Remarks) <td></td> <td></td> <td>4/2</td> <td>50</td> <td></td> <td>4/3</td> <td></td> <td></td> <td></td> <td></td> <td></td>			4/2	50		4/3					
Istosol or Histel (A1) Alaska Color Change (TA4) Alaska Gleyed Without Hue SY or Redder Istosol or Histel (A1) Alaska Alpine swales (TA5) Underlying Layer Istosol or Kurtace (A12) Alaska Redox With 2 SY Hue Other (Explain in Remarks) Thick Dark Surface (A13) ³ One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present Alaska Cleyed (A13) ⁴ Give details of color change in Remarks Alaska Redox (A14) ⁴ Give details of color change in Remarks Alaska Cleyed Pores (A15) ⁴ Give details of color change in Remarks testrictive Layer (If present): Type: sitly day uam Depth (inches): 5 Bernarks: emarks: Secondary Indicators (two or more are required finance Patterns (B10) Surface Water (A1) Inundation Visible on Aerial Imagery (B7) High Water Table (A2) Sparsely Vegetated Concave Surface (B8) Ø Oxidized Rhizospheres along Living Roots (C1) Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Satt Cleyeed Into (C4) Surface Water (A1) Inundation Visible OC (C1) Satt Cleyee (C2) Surface Water (A1) Inundation Visible OC (C1) Satt Cleyee (C2) Surface Water Present? <t< td=""><td>Type: C=Conce</td><td>entration D</td><td>=Depletic</td><td>on RM=Re</td><td>educed Matr</td><td>rix ²Locatio</td><td>on: PL=P</td><td>Pore Lining</td><td>RC=Root</td><td>Channel M=Matrix</td><td></td></t<>	Type: C=Conce	entration D	=Depletic	on RM=Re	educed Matr	rix ² Locatio	on: PL=P	Pore Lining	RC=Root	Channel M=Matrix	
Induger Junice (kg) Inska Redox (A12) Alaska Redox (A13) Alaska Redox (A14) Alaska Redox (A15) * Give details of color change in Remarks Hydric Soil Present? Yes No Popeln (inches): 5 emarks: ails very cold but not frozen YUROLOGY Vettand Hydrology Indicators: **********************************	Histosol or	Histel (A1) edon (A2)				Alaska Color Alaska Alpin	Change e swales	4 (TA4) (TA5)	ic Soils: ³	Underlying Layer	
A data displayed roles (Aris) - Prestrictive Layer (if present): Type: sity clay loam Depth (inches): 5 - emarks: - alls very cold but not frozen - VPROLOGY - Vetland Hydrology Indicators: - Circlastors: - Water Table (A2) - Saturation (A3) - Circlastors: - Circlastors: - Circlastors: - Circlastors: - Sediment Deposits (B3) -	 ☐ Thick Dark ☐ Alaska Gley ✓ Alaska Red 	Surface (A /ed (A13) ox (A14)	12)		³ O and	ne indicator 1 an appropr	of hydrop riate land	phytic vege scape posit	ion must b	e primary indicator of wetla	
Secondary Indicators: Primary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2) Sufficient) High Water Table (A2) Sufficient (A3) Mart Deposits (B15) Presence of Reduced Iron (C4) Hydrogen Sulfide Odor (C1) Salt Deposits (B2) Dry-Season Water Table (C2) Sufface Water Crust (B4) Iron Deposits (B5) Surface Sulf Cracks (B6) Water Table Present? Yes No Depth (inches): Water Table Present? Yes Yes No Depth (inches): Water Table Present? Yes Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Bortible Present? Yes	Restrictive La	yer (if pre clay loam								Hydric Soil Presen	t? Yes 🖲 No 🔿
Vetland Hydrology Indicators: Secondary Indicators (two or more are required Primary Indicators (any one is sufficient) Water Stained Leaves (B9) Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Drainage Patterns (B10) High Water Table (A2) Sparsely Vegetated Concave Surface (B8) Oxidized Rhizospheres along Living Roots (C1) Water Marks (B1) Hydrogen Sulfide Odor (C1) Salt Deposits (C5) Sediment Deposits (B2) Dry-Season Water Table (C2) Stunted or Stressed Plants (D1) Drift Deposits (B3) Other (Explain in Remarks) Geomorphic Position (D2) Algal Mat or Crust (B4) Microtopographic Relief (D4) FAC-neutral Test (D5) Surface Soil Cracks (B6) Depth (inches): Wetland Hydrology Present? Yes No Saturation Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Saturation Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Saturation Present? Yes No Depth (inches): Wetland Hydrology Present? Yes No Saturation Present? Yes No Depth (inches): Wetland Hydrology Present?	oils very cold b	ut not froze	en								
rimary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2) Sparsely Vegetated Concave Surface (B8) Water Stained Leaves (B9) Drainage Patterns (B10) Water Stained Leaves (B9) Drainage Patterns (B10) Water Stained Leaves (B9) Drainage Patterns (B10) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Drift Deposits (B3) Other (Explain in Remarks) Geomorphic Position (D2) Staface Soil Cracks (B6) Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches):	IYDROLO	GY									
Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Saturation Present? Yes No Depth (inches): Secribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available: Wetland Hydrology Present? Yes No	Primary Indicat Surface Wa High Wate Saturation Water Mar Sediment I Drift Depo: Algal Mat o Iron Depos	ors (any or ater (A1) r Table (A2 (A3) ks (B1) Deposits (B sits (B3) or Crust (B4 sits (B5)	<u>e is suffic</u>) 2) 1)	ient)] Sparsely V] Marl Depo] Hydrogen] Dry-Seaso	'egetated sits (B15) Sulfide O n Water ⊺	Concave S dor (C1) Table (C2)	0 5 .) Water) Draina) ✔ Oxidiz Preser Salt Du Stunte Geomo ✔ Shallo Microt	Stained Leaves (B9) ige Patterns (B10) ed Rhizospheres along Living Roots (C3) ice of Reduced Iron (C4) eposits (C5) ed or Stressed Plants (D1) orphic Position (D2) w Aquitard (D3) opographic Relief (D4)
Saturation Present? Yes No O Depth (inches): escribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:	Field Observa	tions:	Yes		-	Depth (inc	ches):				0
	Saturation Pres	sent?							w	etland Hydrology Prese	nt? Yes 🔍 No 🔾
			-	-				-			

soils moist but not saturated

Project/Site: Kiana Wetlands					- Alaska Region Arctic Borouah	Sampling Date: 2	2-Aug-12
Applicant/Owner: USKH/ADOT&PF						Sampling Point:	
-				nillside ter	rrace, hummocks etc.):		
ocal relief (concave, convex, none)	concavo				 Elevation: 160 		
		Lat.: <u>66</u>	5.9738333333	3333	Long.: <u>160.467531</u>	000001	n: <u>WGS84</u>
oil Map Unit Name:				0		ification: PEM1H	
e climatic/hydrologic conditions o		-		O No (
Are Vegetation, Soil		gnificantly		Are "N	lormal Circumstances"	present? Yes 🖲	No 🔿
Are Vegetation 🗌 , Soil 🔽	, or Hydrology 📃 n	aturally pro	blematic?	(If ne	eded, explain any answ	vers in Remarks.)	
SUMMARY OF FINDINGS	- Attach site map	showing	g samplin	g point	locations, trans	ects, important	features
Hydrophytic Vegetation Present?	Yes $lacksquare$ No $igcap$		ls tho	Sampled <i>I</i>	Aroa		
Hydric Soil Present?	Yes 💿 No 🔾			-	V 🔍 N 🔿		
Wetland Hydrology Present?	Yes 💿 No 🔾		within	a Wetland	$d_?$ res \odot no \bigcirc		
Remarks: characterizing bright							
	physio lacustrine, geomor			et mean n	ot isol?). Adjacent brow	wh in aerial is slightly e	elevated
EGETATION Use scientific	names of plants. List	all specie	es in the p	lot.			
Tree Stratum		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test wor		
		76 COVEL		Status	Number of Dominant S That are OBL, FACW, o		(A)
1					Total Number of Domin		
2					Species Across All Strat		(B)
3					Percent of dominant		
4 5					That Are OBL, FACW	, or FAC:100.0	<u>%</u> (A/B)
5	Total Cover:	0			Prevalence Index wo	rksheet:	
Sapling/Shrub Stratum	50% of Total Cover:	0 20% o	f Total Cover:	0	Total % Cover	of: Multiply by:	
1					OBL species	<u>86</u> x 1 = 8	36
2					FACW species	<u> </u>	0
3.					FAC species	<u> </u>	0
4					FACU species	<u> </u>	0
5.					UPL species —	<u> </u>	0
6					Column Totals:	<u>86</u> (A) <u>8</u>	<u>36</u> (B)
7					Prevalence Inde	x = B/A = 1.000	n
8							
9					Hydrophytic Vegetati		
10					Dominance Test		
	Total Cover:	0			Prevalence Inde		
Herb Stratum	50% of Total Cover:	0 20% o	f Total Cover:	0	Morphological A data in Remarks	daptations ¹ (Provide s s or on a separate shee	supporting et)
1 Equisetum fluviatile		10		OBL		Irophytic Vegetation ¹	
2. Carex utriculata		30	\checkmark	OBL		soil and wetland hydr	
3. Eriophorum scheuchzeri		5		OBL	be present, unless di	isturbed or problemati	C.
4. Arctophila fulva		30		OBL			
5. Eleocharis palustris		10		OBL	Plot size (radius,	or length x width) 5	m
6. Potamogeton gramineus		_1		OBL		nd Bryophytes	
7					(Where ap		
8					% Bare Ground	95	
9					Total Cover of B	ryophytes_0	_
10					Hydrophytic		
	Total Cover:	86			Vegetation		
			f Total Cover:	17.2	Present?	res 🔍 No 🔾	

Depth	Matrix			Features			
(inches)	Color (moist)	%	Color (moist)	% Type	Loc ²	Texture	Remarks
Type: C=Cor	ncentration D=Deple	tion RM=Redu	uced Matrix ² Location:			annel M=Matrix	
Hydric Soil	Indicators:		Indicators for Pro	blematic Hydr	ic Soils: ³		
	or Histel (A1) bipedon (A2)		Alaska Color Cha	0	[Alaska Gleyed Withou Underlying Layer	It Hue 5Y or Redder
Hydrogei	en Sulfide (A4)		Alaska Redox W		ſ	Other (Explain in Rem	narks)
	ark Surface (A12) Gleyed (A13)					rimary indicator of wetlar	nd hydrology,
	Redox (A14)		and an appropriate	Iandscape position	ion must be p	oresent	
	Gleyed Pores (A15)		⁴ Give details of col	lor change in Rer	narks		
	Layer (if present):					Liudria Sail Procent	t? Yes 🔍 No 🔿
Type:						Hydric Soil Present	t? Yes 🖲 No 🔾
Depth (ind	ches):						
Remarks:							
assume hydric	c soil due to hydrophy	ytic vegetation	and standing water				
HYDROLO	OGY drology Indicators					Secondary	Indicators (two or more are required)
	cators (any one is suf						Stained Leaves (B9)
·	Water (A1)	noiont,	Inundation Vi	sible on Aerial Im	Pagery (B7)		ge Patterns (B10)
	ater Table (A2)			etated Concave Si			ed Rhizospheres along Living Roots (C3)
			Marl Deposits		שוומנה נסטי	_	ce of Reduced Iron (C4)
Water M	. ,		Hydrogen Sulf	. ,			eposits (C5)
_	nt Deposits (B2)			Vater Table (C2)			d or Stressed Plants (D1)
	posits (B3)		Other (Explain				rphic Position (D2)
	at or Crust (B4)		<u> </u>	,		_	v Aquitard (D3)
	posits (B5)					_	ppographic Relief (D4)
	Soil Cracks (B6)						utral Test (D5)
Field Observ							
Surface Wat	er Present? Ye	es 💿 🛛 No 🤇	Depth (inches	٤: 8			

Wetland Hydrology Present?

Yes 🖲

No 🔿

(includes capillary fringe) Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes 🔿 No 🖲

 $_{\rm Yes} \odot \ _{\rm No} \odot$

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches):

Depth (inches):

Remarks:

Water Table Present?

Saturation Present?

8in standing water in sedge community.

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough Sampling Date: 22-Aug-12
Applicant/Owner: USKH/ADOT&PF	Sampling Point: K_15
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.): Flat
Local relief (concave, convex, none): none	Slope: <u>0.0</u> % / <u>0.0</u> ° Elevation: <u>200</u>
Subregion : Northern Alaska Lat.:	<u>66.97419666666667</u> Long.: <u>-160.4683566666667</u> Datum: <u>WGS84</u>
Soil Map Unit Name:	NWI classification: PSS1B
	ear? Yes O No O (If no, explain in Remarks.) tly disturbed? Are "Normal Circumstances" present? Yes No O problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present?	Yes 🖲	No 🔿	Is the Sampled Area				
Hydric Soil Present?	Yes 🖲	No 🔿	•	Yes 🖲 No 🔾			
Wetland Hydrology Present?	Yes 🖲	No 🔿	within a Wetland?				
Remarks: house hotwoon two stoop slopes SLOPW/ physic upland, geometric fite, perpetterned							

Remarks: bench between two steep slopes. SLOBW, physio upland, geomorph fto, nonpatterned.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover		Status	Number of Dominant Species
1 Picea glauca	5	\checkmark	FACU	That are OBL, FACW, or FAC: (A)
2. Picea mariana	2	\checkmark	FACW	Total Number of Dominant
3.				Species Across All Strata:8 (B)
4				Percent of dominant Species
				That Are OBL, FACW, or FAC: <u>87.5%</u> (A/B)
5Total Cover:	7			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover: 3	3.5 20%	of Total Cover:	1.4	Total % Cover of: Multiply by:
1 Picea glauca	7		FACU	OBL species <u>0</u> x 1 = <u>0</u>
2. Betula glandulosa	10	\checkmark	FAC	FACW species X 2 =62
3. Salix pulchra	10	\checkmark	FACW	FAC species x 3 = 111
4 Ledum decumbens	15	\checkmark	FACW	FACU species $12 \times 4 = 48$
5. Vaccinium uliginosum	15	\checkmark	FAC	UPL species $0 \times 5 = 0$
6 Vaccinium vitis-idaea	5		FAC	Column Totals: <u>80</u> (A) <u>221</u> (B)
7. Betula nana	5		FAC	Prevalence Index = $B/A = 2.763$
8				
9				Hydrophytic Vegetation Indicators:
10.				✓ Dominance Test is > 50%
Total Cover:	67			✓ Prevalence Index is ≤3.0
_Herb Stratum50% of Total Cover:3	3.5 20%	of Total Cover:	13.4	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1. Petasites frigidus	3	\checkmark	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Arctagrostis latifolia	1		FACW	¹ Indicators of hydric soil and wetland hydrology must
3 Carex bigelowii	2	\checkmark	FAC	be present, unless disturbed or problematic.
4				
5				Plot size (radius, or length x width) 5m
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8.				% Bare Ground _0
9				Total Cover of Bryophytes 95
10				Hydrophytic
Total Cover:	6			Vegetation
50% of Total Cover:	3 20%	of Total Cover:	1.2	Present? Yes \bullet No \bigcirc
Remarks:				

Profile Desc	ription: Desci	ribe to dept	h needed	to document the	e presen	ice or abs	ence of in	dicators		
Depth	M	atrix		Redo	ox Featu					
(inches)	Color (mo	oist) 9	<u> </u>	Color (moist)	_%	Type ¹	Loc ²	Texture	Remarks	
0-17		10	0					Fibric Organics		
17-19	2.5Y	3/1 10	0					Sandy Loam		
	1									
						- <u></u>				
		-								
¹ Type: C=Cor	ncentration D=	Depletion R	M=Reduced	d Matrix ² Locatio	n: PL=Pe	ore Lining	RC=Root	Channel M=Matrix		
Hydric Soil	Indicators:			Indicators for I	Problem	atic Hydr	ic Soils: ³			
Histosol	or Histel (A1)			Alaska Color		4		Alaska Gleyed Wit	hout Hue 5Y or Redder	
Histic Ep	ipedon (A2)			Alaska Alpine	swales ((TA5)		Underlying Layer		
Hydroge	n Sulfide (A4)			Alaska Redox	With 2.5	5Y Hue		Other (Explain in F	Remarks)	
	rk Surface (A12	2)		³ One indicator	of hydror	hytic yeae	tation one	e primary indicator of we	tland hydrology	
	leyed (A13)			and an appropri					tulia riyulology,	
	edox (A14) leyed Pores (A1	15)		⁴ Give details of	color cha	ange in Rei	marks			
	y	•								
	ayer (if prese							Hydric Soil Pres	ent? Yes \bullet No \bigcirc	
Depth (in	tive layer (froze ches): 19	en)								
Remarks:										
HYDROL	JGV									
	drology Indic	ators:						Seconda	ry Indicators (two or more are	required)
Primary India	ators (any one	is sufficient)						Wat	er Stained Leaves (B9)	
	Water (A1)			Inundation	Visible o	n Aerial Im	nagery (B7) 🗌 Drai	inage Patterns (B10)	
	ter Table (A2)			Sparsely Ve	-		urface (B8	·	dized Rhizospheres along Living	Roots (C3)
Saturatio				Marl Depos				_	sence of Reduced Iron (C4)	
	arks (B1)			Hydrogen S					Deposits (C5)	
_	it Deposits (B2) posits (B3)			Dry-Seasor					nted or Stressed Plants (D1) morphic Position (D2)	
	t or Crust (B4)					enidi KS)			llow Aquitard (D3)	
	osits (B5)								otopographic Relief (D4)	
	Soil Cracks (B6)							-neutral Test (D5)	
Field Observ	vations:	~	~							
Surface Wat	er Present?	Yes O		Depth (incl	nes):					
Water Table	Present?	Yes 🖲	No \bigcirc	Depth (incl	hes): 11		w	etland Hydrology Pre	sent? Yes $oldsymbol{O}$ No $oldsymbol{O}$	
Saturation P (includes cap	resent? pillary fringe)	Yes 🖲	No O	Depth (incl	nes): 5					
				I, aerial photos, pr						
BLM RAWS Ki	ana site recorde	ed 5.4in prec	ip in Aug 2	012, mean for prev	vious 10	yrs in Aug	is 3.0in (Sl	D 1.5in).		

Remarks:

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 22-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_16
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Hillside
Local relief (concave, convex, none): none	_ Slope: <u>% /</u> ° Elevation:	
Subregion : Northern Alaska Lat.:	<u>66.974335</u> Long.: <u>-160.468706</u>	666667 Datum: WGS84
Soil Map Unit Name:	NWI class	ification: Upland
	ear? Yes O No O (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes $ullet$ No $igodot$

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ○ Yes ○		Is the Sampled Area within a Wetland?	Yes $^{\bigcirc}$ No $^{\textcircled{o}}$			
Remarks: steep southern aspect slope. FNWWS, physio upland, geomorph fto, nonpatterned.							

Picea glauca 20 FACU Number of Dominant Species 1 Picea glauca 20 FACU That are OBL, FACW, or FAC: 4	
	(A)
2 Total Number of Dominant Species Across All Strata: 5	(B)
3.	_ (A/B)
5 Total Cover: 20 Prevalence Index worksheet:	
Sapling/Shrub Stratum 50% of Total Cover: 10 20% of Total Cover: 4 Total % Cover of: Multiply by:	_
$\square \square $	_
FACW FACW species $28 \times 2 = 56$	_
2. Saix putchia 7 Image: Additional state of the state of th	_
4. Vaccinium vitis-idaea 10 FACU speci es $\frac{26.5}{x 4} = \frac{106}{x 4}$	_
5. Rosa acicularis 1 FACU UPL speci es $-\frac{0}{x}$ $x = -\frac{0}{x}$	_
6 Column Totals:71.5 (A)213	(B)
7 Prevalence Index = B/A = 2.979	
8	
9 Hydrophytic Vegetation Indicators:	
10 Total Cover: 20	
Herb Stratum 50% of Total Cover: 15 20% of Total Cover: 6 Morphological Adaptations ¹ (Provide suppleter the stratum data in Remarks or on a separate sheet)	orting
1 Equisetum pratense FACW Problematic Hydrophytic Vegetation ¹ (Exp	olain)
2. Petasites frigidus ¹ FACW ¹ Indicators of hydric soil and wetland hydrolog	iv must
3. Equisetum scirpoides FACU be present, unless disturbed or problematic.	
4	
5 Plot size (radius, or length x width) 5m	
6 % Cover of Wetland Bryophytes	
7 (Where applicable)	
8 % Bare Ground <u>30</u>	
9 Total Cover of Bryophytes <u>55</u>	
10 Hydrophytic	
I otal Cover: 21.5 Vegetation 50% of Total Cover: 10.75 20% of Total Cover: 4.3 Present? Yes Image: No Image: Source So	

Profile Desc	ription: Des	scribe to	depth r	eeded to	document th	e preser	nce or abs	ence of i	ndicators	
Depth		Matrix			Red	ox Featu			-	
(inches)	Color (r	moist)	%	Co	lor (moist)	_%	Type ¹	Loc ²	Texture	Remarks
0-1									Hemic Organics	
1-19	2.5Y	4/1	80	2.5	(3/2	20	С	PL	Sandy Loam	
19-22	2.5Y	4/1	60	2.5	4/4	40	С	PL	Sandy Loam	thin organic layer at 18 and 17 in bgs
¹ Type: C=Cor	ncentration [D=Depletic	on RM=				0		Channel M=Matrix	
Histic Ep Hydrogel Thick Da Alaska G	or Histel (A1) ipedon (A2) n Sulfide (A4) rk Surface (A leyed (A13) edox (A14)) .12)			ndicators for Alaska Color Alaska Alpin Alaska Redo Alaska Redo One indicator and an appropi	Change e swales x With 2. of hydrop riate land:	(TA4) (TA5) 5Y Hue phytic vege scape posit	etation, on tion must	Underlying Layer Other (Explain in Re e primary indicator of wetla	
🔄 Alaska G	leyed Pores (A15)								
Restrictive I	ayer (if pre	esent):								
Type:									Hydric Soil Preser	nt? Yes 🔿 No 🖲
Depth (in	ches):									
Remarks: no hydric soil	indicators									
HYDROL	OGY									
Wetland Hy		icators:							Secondary	Indicators (two or more are required)
Primary India	ators (any or	ne is suffic	cient)						Water	Stained Leaves (B9)
Surface	Water (A1)				Inundation	n Visible d	on Aerial In	nagery (B7	7) 🗌 Draina	age Patterns (B10)
High Wa	iter Table (A2	2)			Sparsely V	egetated	Concave S	Surface (B8	3) 🗌 Oxidiz	zed Rhizospheres along Living Roots (C3)
Saturatio					Marl Depo	. ,				nce of Reduced Iron (C4)
Water M	arks (B1)				Hydrogen	Sulfide O	dor (C1)		Salt D	Deposits (C5)
Sedimer	nt Deposits (B	32)			Dry-Seaso	n Water 1	Table (C2)		Stunte	ed or Stressed Plants (D1)
Drift De	oosits (B3)				Other (Exp	olain in Re	emarks)		Geom	orphic Position (D2)
	t or Crust (B	4)							_	ow Aquitard (D3)
	oosits (B5)								_	topographic Relief (D4)
Surface	Soil Cracks (E	36)							🖌 FAC-n	eutral Test (D5)
Field Observ	vations:		\sim	\sim						
Surface Wat	er Present?		-	lo 🖲	Depth (ind	ches):				
Water Table	Present?	Yes	O	lo 🖲	Depth (ind	ches):		v	Vetland Hydrology Prese	ent? Yes 🔿 No 🖲
Saturation P	resent?	Vac	\bigcirc		Dauth (in					

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes 🔿 No 🖲

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches):

Remarks:

(includes capillary fringe)

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough Sampling Date: 22-Aug-12
Applicant/Owner: USKH/ADOT&PF	Sampling Point: K_17
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.): Hillside
Local relief (concave, convex, none):	Slope: <u>8.7</u> % / <u>5.0</u> ° Elevation: <u>110</u>
Subregion : Northern Alaska Lat.:	<u></u>
Soil Map Unit Name:	NWI classification: PSS1/4B
	ear? Yes No (If no, explain in Remarks.) tly disturbed? Are "Normal Circumstances" present? Yes No problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc
Remarks: SFWWS, physio upland	l, geomorph	n fto, nonpatterned.		

		Absolute	e Dominant	Indicator	Dominance Test worksheet:
Tr	ee Stratum	% Cove		Status	Number of Dominant Species
1	Picea glauca	5	\checkmark	FACU	That are OBL, FACW, or FAC:6(A)
2.	Picea mariana	2	\checkmark	FACW	Total Number of Dominant
					Species Across All Strata: <u>8</u> (B)
	p				Percent of dominant Species
					That Are OBL, FACW, or FAC: 75.0% (A/B)
э.	Total Cover:	7			Prevalence Index worksheet:
Sap	ling/Shrub Stratum 50% of Total Cover: 3	.5 20%	of Total Cover:	1.4	Total % Cover of: Multiply by:
1	Picea glauca	15	\checkmark	FACU	OBL species x 1 =
2.	Vaccinium uliginosum	7		FAC	FACW species <u>8</u> x 2 = <u>16</u>
2. 3.	Betula glandulosa	3		FAC	FAC speciles 57 x 3 = 171
3. 4	Salix glauca	7		FAC	FACU speciles 20 x 4 = 80
4. 5.	Salix reticulata	10	\checkmark	FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
5. 6.	Arctostaphylos rubra	10	\checkmark	FAC	Column Totals: 85 (A) 267 (B)
0. 7		10	\checkmark	FAC	
7. 8.	Andromodo nolifolio	1		FACW	Prevalence Index = B/A =3.141
9. 9	Betula nana	2		FAC	Hydrophytic Vegetation Indicators:
9. 10.					✓ Dominance Test is > 50%
10.	Total Cover:	65			Prevalence Index is ≤3.0
			of Total Cover:	13	Morphological Adaptations ¹ (Provide supporting
<u>_H</u>	erb Stratum	20/0			data in Remarks or on a separate sheet)
1.	Carex bigelowii	7		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Tofieldia pusilla	1		FAC	¹ Indicators of hydric soil and wetland hydrology must
3.	Eriophorum vaginatum	3	\checkmark	FACW	be present, unless disturbed or problematic.
4.	Arctagrostis latifolia	2		FACW	
5.					Plot size (radius, or length x width) 10m
6.					% Cover of Wetland Bryophytes
7.					(Where applicable)
8.					% Bare Ground
9.					Total Cover of Bryophytes
•.					Hydrophytic
	Total Cover:	13			Vegetation
	50% of Total Cover:6	.5 20%	of Total Cover:	2.6	Present? Yes • No O
Rem	arks:				

Depth	Matrix		Redo	ox Features			
(inches)	Color (moist)	%	Color (moist)	% Type	Loc ²	Texture	Remarks
0-4						Fibric Organics	
4-8						Hemic Organics	
8-21	5YR 4/1	100				Fine Sandy Loam	
Type: C=Cor	ncentration D=Deple	tion RM=Red	duced Matrix ² Locatio	n: PL=Pore Lining	g RC=Root	Channel M=Matrix	
Hydric Soil	Indicators:		Indicators for I	Problematic Hyd	ric Soils: ³		
Histosol d	or Histel (A1)		Alaska Color	Change (TA4)		Alaska Gleyed Withou	at Hue 5Y or Redder
✔ Histic Epi	ipedon (A2)		🗌 Alaska Alpine	swales (TA5)		Underlying Layer	
Hydroger	n Sulfide (A4)		Alaska Redox	With 2.5Y Hue		Uther (Explain in Rer	narks)
	rk Surface (A12)		³ One indicator	of hydrophytic ver	netation one	primary indicator of wetla	ad hydrology
	leyed (A13)			ate landscape pos			
	edox (A14) leyed Pores (A15)		⁴ Give details of	color change in R	emarks		
	ayer (if present):					Hydric Soil Present	t? Yes 🖲 No 🔾
Depth (ind	tive layer (frozen)						
Remarks:	,-						
Kernarks.							
HYDROLO	DGY						
-	drology Indicators						Indicators (two or more are required)
	ators (any one is sul	ficient)					Stained Leaves (B9)
	Water (A1)			Visible on Aerial			ge Patterns (B10)
	ter Table (A2)			egetated Concave	Surface (B8)		ed Rhizospheres along Living Roots (C3)
Saturatio			Marl Depos				ce of Reduced Iron (C4)
	arks (B1)			Sulfide Odor (C1)			eposits (C5)
_	t Deposits (B2)			Water Table (C2)	_	d or Stressed Plants (D1)
	oosits (B3)		U Other (Exp	lain in Remarks)		_	rphic Position (D2)
	t or Crust (B4)					Shallov	v Aquitard (D3)
Iron Dep	oosits (B5)					Microto	ppographic Relief (D4)
Surface	Soil Cracks (B6)					FAC-ne	utral Test (D5)
Field Observ		\sim	~				
Surface Wat	er Present? Y	es 🔿 No	 Depth (incl 	nes):			

Water Table Present?

(includes capillary fringe)

Saturation Present?

Remarks:

 $_{\rm Yes} \bullet _{\rm No} \bigcirc$

 $_{\rm Yes} \odot \ _{\rm No} \bigcirc$

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available: BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches): 5

Depth (inches): 1

Yes 💿

Wetland Hydrology Present?

No 🔿

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borouah	Sampling Date:	22-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_18
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Bluff	
Local relief (concave, convex, none): none	Slope: <u>99.9</u> % / <u>45.0</u> ° Elevation: <u>140</u>		
Subregion : Northern Alaska Lat.:	: <u>66.9754283333333</u> Long.: <u>-160.46223</u>	Datu	um: WGS84
Soil Map Unit Name:	NWI class	ification: Upland	
	rear? Yes No (If no, explain ir htly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No \bigcirc

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes O Yes O Yes O	No ● No ● No ●	Is the Sampled Area within a Wetland?	Yes \bigcirc No \odot		
Remarks: at top of steep southern aspect bluff. small drainage at bottom w flowing water and salix. FMOAS, physio upland, geomorph fto, nonpatterned.						

		Absolute		Indicator	Dominance Test worksheet:
Tr_	ee Stratum	% Cover	_	Status	Number of Dominant Species
1.	Picea glauca	20		FACU	That are OBL, FACW, or FAC: (A)
2.	Populus tremuloides	40		FACU	Total Number of Dominant
3.					Species Across All Strata:6_ (B)
	-				Percent of dominant Species That Are OBL_EACW_or_EAC: 50.0% (A/B)
					That Are OBL, FACW, or FAC:(A/B)
0.	Total Cover:	60			Prevalence Index worksheet:
Sap	ling/Shrub Stratum50% of Total Cover:3	0 20%	of Total Cover:	12	Total % Cover of: Multiply by:
1.	Populus tremuloides	25	\checkmark	FACU	OBL species x 1 =
1. 2.	Picea glauca	10		FACU	FACW species $0 \times 2 = 0$
2. 3.	Vaccinium vitis-idaea	15	\checkmark	FAC	FAC species 29.5 x 3 = 88.5
3. 4		7		FAC	FACU species $97 \times 4 = 388$
4. 5	Empotrum nigrum	2		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$
υ.					Column Totals: <u>126.5</u> (A) <u>476.5</u> (B)
					Prevalence Index = $B/A = 3.767$
					Hydrophytic Vegetation Indicators:
					Dominance Test is > 50%
10.	Total Cover:	59			Prevalence Index is ≤3.0
				11.0	Morphological Adaptations ¹ (Provide supporting
Щ	erb Stratum50% of Total Cover: 29	9.5 20%	of Total Cover:	11.8	data in Remarks or on a separate sheet)
1.	Mertensia paniculata	_1		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Equisetum arvense	2		FAC	¹ Indicators of hydric soil and wetland hydrology must
3.	Deschampsia caespitosa	3	\checkmark	FAC	be present, unless disturbed or problematic.
4.	Chamerion angustifolium	1		FACU	
5.	Saussurea angustifolia	0.5		FAC	Plot size (radius, or length x width) 10m
6.					% Cover of Wetland Bryophytes
7.					(Where applicable)
8.					% Bare Ground 75
					Total Cover of Bryophytes 20
•.					Hydrophytic
.0.	Total Cover:	7.5			Vegetation
	50% of Total Cover:3.	75 20%	of Total Cover:	1.5	Present? Yes \bigcirc No \bigcirc
Rem	arks: descae as collected earlier today				

Depth		Matrix		Red	lox Features			
(inches)	Color (I	moist)	%	Color (moist)	% Тур	De ¹ Loc ²	Texture	Remarks
0-1					· /		Hemic Organics	
1-3	10YR	4/3	100				Silty Clay Loam	
3-4	2.5Y	4/3	100				Silty Clay Loam	
4-21	5Y	4/2	100				Silty Clay Loam	thin layers of 2.5Y4/2
								_
				,	·			
¹ Type: C=Cor	ncentration [D=Depletio	n RM=Red	uced Matrix ² Locatio	on: PL=Pore Lini	ing RC=Root	Channel M=Matrix	
Hydric Soil	Indicators:			Indicators for	Problematic H	ydric Soils: ³		
Histosol	or Histel (A1))			Change (TA4)		Alaska Gleyed With	out Hue 5Y or Redder
	ipedon (A2)				e swales (TA5)		Underlying Layer	ana arka)
	n Sulfide (A4)	-		🔲 Alaska Redo	ox With 2.5Y Hue			emarks)
	irk Surface (A ileyed (A13)	(12)					e primary indicator of wet	and hydrology,
	edox (A14)			and an approp	riate landscape p	osition must I	be present	
	leyed Pores ((A15)		⁴ Give details of	f color change in	Remarks		
Restrictive I	Layer (if pre	esent):						2 0
	ty clay loam						Hydric Soil Prese	nt? Yes 🔾 No 🖲
Depth (in	ches): 1							
Remarks:								
no hydric soil	indicators							
HYDROL								
Wetland Hy								/ Indicators (two or more are required)
	cators (any or	ne is suffici	ent)		Mallala on Aprilo			r Stained Leaves (B9)
Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Drainage Patterns (B10) High Water Table (A2) Sparsely Vegetated Concave Surface (B8) Oxidized Rhizospheres along Living Root					age Patterns (BTO) zed Rhizospheres along Living Roots (C3)			
				ence of Reduced Iron (C4)				
Water Marks (B1) Hydrogen Sulfide Odor (C1) Salt Deposits (C5)								
Sediment Deposits (B2)				ed or Stressed Plants (D1)				
Drift Deposits (B3)			Geomorphic Position (D2)					
	at or Crust (B	34)			Julii in Romanie,	/		w Aquitard (D3)
	posits (B5)	.,						topographic Relief (D4)
	Soil Cracks (I	B6)						neutral Test (D5)
Field Observ								
Surface Wat		Yes	O No (Depth (inc	ches):			
Water Table	Present?	Yes	O No (Depth (inc	ches):	v	/etland Hydrology Pres	ent? Yes 🔿 No 🖲
Saturation P	resent? pillary fringe)	Yes	O No (Depth (inc	ches):			

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough Sampling Date: 22-Aug-12
Applicant/Owner: USKH/ADOT&PF	Sampling Point: K_19
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.): <u>Hillside</u>
Local relief (concave, convex, none): none	Slope: <u>17.6</u> % / <u>10.0</u> ° Elevation: <u>190</u>
Subregion : Northern Alaska Lat.:	Long.: _160.460728333333 Datum: WGS84
Soil Map Unit Name:	NWI classification: Upland
	ear? Yes O No O (If no, explain in Remarks.) tly disturbed? Are "Normal Circumstances" present? Yes No O problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ○ Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bigcirc No \odot		
Remarks: slobw, physio upland, geomorph fto, non-patterned. Transition plot between steep upland aspen stand and adjacent slope wetlands. Ecotone.						

			Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stra			% Cover	Species?	Status	Number of Dominant Species
1. Picea g			5		FACU	That are OBL, FACW, or FAC:(A)
						Total Number of Dominant Species Across All Strata: 5 (B)
3						Percent of dominant Species
4						That Are OBL, FACW, or FAC: <u>80.0%</u> (A/B)
5		otal Cover:	5			Prevalence Index worksheet:
Sanling /Sh	rub Stratum 50% of Total			of Total Cover:	1	Total % Cover of: Multiply by:
			50		FAC	OBL species x 1 =
· ·	glandulosa decumbens		10		FACW	FACW species X 2 =34
Z .	um vitis-idaea		15		FAC	FAC species x 3 =285
0.			20		FAC	FACU species $5 \times 4 = 20$
5 Salix gl			3		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
6 Salix p			2		FACW	Column Totals: <u>117</u> (A) <u>339</u> (B)
0						Prevalence Index = B/A = 2.897
						Flevalence muex = D/A =
						Hydrophytic Vegetation Indicators:
						✓ Dominance Test is > 50%
		otal Cover:	100			✓ Prevalence Index is ≤3.0
Herb Stra	atum50% of Total	Cover: 50	0 20% c	of Total Cover:	20	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1 Petasit	es frigidus		2		FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Calama	agrostis canadensis		2		FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Equise	tum pratense		3		FACW	be present, unless disturbed or problematic.
4. Carex l	bigelowii		5		FAC	
5						Plot size (radius, or length x width) 10m
6						% Cover of Wetland Bryophytes
7						(Where applicable)
8						% Bare Ground _0
9						Total Cover of Bryophytes 60
10						Hydrophytic
	50% of Total	Total Cover: Cover: 6	12	of Total Cover:	2.4	Vegetation Present? Yes • No O
	50% OF 10tal	cover: b	20% 0	n rotal cover:		
Remarks: (ca 45% lichen cover					

Depth		Matrix			Red	ox Featu	res			
(inches)			Color (moist) % Type ¹ Loc ²					Texture	Remarks	
0-4									Fibric Organic	
4-6				8					Sapric Organic	charcoal, orga
6-19	5Y	3/1	90	2.5Y	4/3	10	С	PL	Silty Clay Loam	
·							·			
Type: C=Con	centration [D=Depletio	on RM=Re	duced Matrix	² Locatio	n: PL=P	ore Lining	RC=Root (Channel M=Matrix	
Hydric Soil	Indicators:			Indic	ators for	Problem	atic Hydr	ic Soils: ³		
Histosol d	or Histel (A1)	1			aska Color					hout Hue 5Y or Redder
Histic Epi	pedon (A2)				aska Alpine				Underlying Layer	
	n Sulfide (A4)				aska Redox	With 2.5	5Y Hue		Other (Explain in F	Remarks)
	k Surface (A	.12)		³ On	e indicator	of hydrop	hytic vege	tation, one	primary indicator of we	tland hydrology,
	eyed (A13) edox (A14)			and	an appropr	iate lands	scape posit	ion must b	e present	
_	eyed Pores (A15)		⁴ Giv	e details of	color cha	ange in Re	marks		
Restrictive L	5									
	ive layer (fro								Hydric Soil Pres	ent? Yes 🔿 No 🖲
	:hes): 19, 6	2011), 31 CI	10						-	
Remarks:										
no hydric soil	indicators									
2										
IYDROLO)CV									
Wetland Hyd		icators:							Seconda	ry Indicators (two or more are required)
Primary Indic	ators (any or	ne is suffic	cient)							er Stained Leaves (B9)
Surface V	Nater (A1)				Inundation	Visible o	n Aerial Im	nagery (B7)	Drai	nage Patterns (B10)
🗌 High Wa	ter Table (A2	2)			Sparsely V	egetated	Concave S	urface (B8)) 🗌 Oxic	lized Rhizospheres along Living Roots (C3)
✓ Saturatio	n (A3)				Marl Depos	sits (B15)			Pres	sence of Reduced Iron (C4)
Water M	arks (B1)				Hydrogen	Sulfide Od	dor (C1)		Salt	Deposits (C5)
Sedimen	t Deposits (E	32)			Dry-Seasor	n Water T	able (C2)		Stur	nted or Stressed Plants (D1)
Drift Dep	osits (B3)				Other (Exp	lain in Re	emarks)			morphic Position (D2)
Algal Ma	t or Crust (B	4)							✓ Shal	llow Aquitard (D3)
Iron Dep	osits (B5)								Micr	otopographic Relief (D4)
Surface S	Soil Cracks (I	B6)							FAC-	-neutral Test (D5)

Field Ob	oservations:
----------	--------------

 Surface Water Present?
 Yes
 No
 Depth (inches):

 Water Table Present?
 Yes
 No
 Depth (inches):

 Saturation Present?
 Yes
 No
 Depth (inches):

 Saturation Present?
 Yes
 No
 Depth (inches):

 Ves
 No
 Depth (inches):
 Wetland Hydrology Present?

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

water perched atop thixotropic silty clay loam @6in bgs

Yes

No O

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 22-Aug-1	2
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_2	20
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Hillside	
Local relief (concave, convex, none): none	Slope: <u>8.7</u> % / <u>5.0</u> ° Elevation: <u>130</u>		
Subregion : Northern Alaska Lat.:	<u>66.9756383333334</u> Long.: <u>-160.4559533</u>	333333 Datum: WGS	34
Soil Map Unit Name:	NWI classi	ification: Upland	
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🔍 No 🔾	

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No ● Yes No ● Yes No ●	Is the Sampled Area within a Wetland? Yes O No O			
Remarks: partially barren shrub-forb BPV, physio upland, geomorph fto (disturbed). Hiked up picgla poptre knob adjacent to flooded drainage. Small					

holes dug in sand, unid scat (fox?).

	Absolute	Dominant	Indicator	Dominance Test worksheet:
1	% Cover	Species?	Status	Number of Dominant Species That are OBL, FACW, or FAC:(A)
2				Total Number of Dominant Species Across All Strata: <u>6</u> (B)
3				Percent of dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
5				Prevalence Index worksheet:
Total Cover:	0	f Tabal Causan	0	Total % Cover of: Multiply by:
Sapling/Shrub Stratum 50% of Total Cover:	0 20% o	of Total Cover:		OBL species x 1 =
1. Salix arbusculoides	3		FACW	FACW species $3 \times 2 = 6$
2. Salix alaxensis	5		FAC	• • • • • • • • • • • • • • • • • • • •
3. Picea glauca	3		FACU	FAC species $11 \times 3 = 33$
4. Betula glandulosa	1		FAC	FACU species $\frac{11.5}{2}$ x 4 = $\frac{46}{2}$
5. Populus balsamifera	0.5		FACU	UPL species $0 \times 5 = 0$
6. Salix glauca	2		FAC	Column Totals: (A) (B)
7				Prevalence Index = $B/A = 3.333$
8				Hudronhutia Vagatatian Indiastara
9				Hydrophytic Vegetation Indicators: Dominance Test is > 50%
10				
Total Cover:	14.5			Prevalence Index is ≤3.0
Herb Stratum 50% of Total Cover: 7.	25 20% c		2.9	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1 Chamerion angustifolium	5	\checkmark	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Equisetum arvense	3	\checkmark	FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Artemisia tilesii	3		FACU	be present, unless disturbed or problematic.
4				
5				Plot size (radius, or length x width) _10m
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8				% Bare Ground 50
9				Total Cover of Bryophytes 45
10				Hydrophytic
Total Cover:	11			Vegetation
50% of Total Cover:5	.5 20% o	of Total Cover:	2.2	Present? Yes No 🔍
Remarks: shrubs encroaching upon mostly barren site				

Depth		Matrix			Red	ox Featu			_
(inches)	Color	(moist)	%	Color	(moist)	%	Type ¹	Loc ²	Texture Remarks
0-18	5Y	4/2	85	5Y	4/3	15	C	M	Fine Loamy Sand
18-24	5Y	5/2	90	5Y	4/3	10	C	М	Fine Loamy Sand
·									
Type: C=Con	centration	D=Depleti	on RM=Re	duced Matrix		on: PL=P	ore Lining	RC=Root	Channel M=Matrix
Hydric Soil	ndicator	s:		Indic	ators for	Problem	atic Hydr	ic Soils: ³	
Histic Epi Hydroger Thick Dar Alaska Gl Alaska Re Alaska Gl	r Histel (A pedon (A2 Sulfide (/ k Surface eyed (A13 dox (A14) eyed Pore	(A12) (A12)) s (A15)		A A 3 On and	an appropr	e swales (x With 2.! of hydrop iate lands	(TA5) 5Y Hue phytic vege	ion must b	 Alaska Gleyed Without Hue 5Y or Redder Underlying Layer Other (Explain in Remarks) ne primary indicator of wetland hydrology, be present
Restrictive L Type: Depth (inc		oresent):							Hydric Soil Present? Yes O No 🖲
emarks:									
no hydric soil i	ndicators								
IYDROLO	-	- dia atawa							
Vetland Hyd Primary Indic			rient)						Secondary Indicators (two or more are required Water Stained Leaves (B9)
_	Vater (A1)				Inundation	n Visible o	n Aerial Im	agery (R7	
	er Table (Concave S	0 .	,
Saturatio					Marl Depo:				Presence of Reduced Iron (C4)
Water Ma					Hydrogen				Salt Deposits (C5)
Sedimen	t Deposits	(B2)			Dry-Seaso				Stunted or Stressed Plants (D1)

			Dry-season water rable (C2)		
Drift Deposits (B3)			Other (Explain in Remarks)	Geomorphic	Position (D2)
Algal Mat or Crust (B4)				Shallow Aqu	itard (D3)
Iron Deposits (B5)					aphic Relief (D4)
Surface Soil Cracks (B6)				FAC-neutral	Test (D5)
Field Observations:		_			
Surface Water Present?	Yes \bigcirc	No 🖲	Depth (inches):		
Water Table Present?	$_{\rm Yes} \bigcirc$	No 🖲	Depth (inches):	Wetland Hydrology Present?	Yes 🔿 🛛 No 🖲
Saturation Present? (includes capillary fringe)	$_{\rm Yes} \bigcirc$	No 🖲	Depth (inches):		
Describe Recorded Data (strea	am gauge, m	nonitor well	, aerial photos, previous inspection) if ava	ilable:	
BLM RAWS Kiana site recorde	d 5.4in preci	ip in Aug 20	012, mean for previous 10 yrs in Aug is 3.	Din (SD 1.5in).	
Remarks:					
no wetland hydrology indicate	ors				

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 22-Aug-	12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_	_21
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Hillside	
Local relief (concave, convex, none):	Slope: <u>8.7</u> % / <u>5.0</u> ° Elevation: <u>135</u>		
Subregion : Northern Alaska Lat.:	<u>66.9756866666666666666666666666666666666666</u>	Datum: WGS	<u>584</u>
Soil Map Unit Name:	NWI classi	fication: Upland	
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🔍 No 🔾)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes No Yes No	Is the Sampled Area			
Wetland Hydrology Present?	Yes O No O	within a Wetland? Yes \bigcirc No \textcircled{ullet}			
Remarks: stow physical upland (disturbed), geometric fits (disturbed), non patterned, transitions to stow more seat and browse					

stow, physio upland (disturbed), geomorph fto (disturbed), non-patterned. transitions to stcw. moose scat and browse.

	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC: <u>3</u> (A)
2				Total Number of Dominant Species Across All Strata: 3 (B)
3				
4				Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
5				
Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0 20%	of Total Cover:	0	Total % Cover of: Multiply by:
1 Salix richardsonii	15	\checkmark	FACW	OBL species 0 x 1 = 0
2 Salix arbusculoides	5		FACW	FACW species <u>42.5</u> x 2 = <u>85</u>
3. Salix alaxensis	40	\checkmark	FAC	FAC speciles 46.5 x 3 = 139.5
4. Betula glandulosa	1		FAC	FACU species 12 x 4 = 48
5 Picea glauca	3		FACU	UPL species x 5 =
6. Populus balsamifera	1		FACU	Column Totals: <u>101</u> (A) <u>272.5</u> (B)
7 Salix bebbiana	5		FAC	Prevalence Index = B/A = 2.698
8. Sallx pulchra	2		FACW	
9				Hydrophytic Vegetation Indicators:
10				✓ Dominance Test is > 50%
Total Cover:	72			✓ Prevalence Index is ≤3.0
Herb Stratum 50% of Total Cover:	36 20%	of Total Cover:	14.4	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1. Chamerion angustifolium	5		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Artemisia tilesii	3		FACU	¹ Indicators of hydric soil and wetland hydrology must
3. Equisetum pratense	20	\checkmark	FACW	be present, unless disturbed or problematic.
4 Parnassia palustris	0.5		FACW	
5. Polemonium acutiflorum	0.5		FAC	Plot size (radius, or length x width) 5m
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8				% Bare Ground 25
9				Total Cover of Bryophytes 70
10				Hydrophytic
Total Cover:	29			Vegetation
50% of Total Cover:	4.5 20%	of Total Cover:	5.8	Present? Yes No
Remarks:				

Profile Desc	ription: De	Matrix	deptime	eded to docu		e presen ox Featu		sence of in	ndicators	
Depth (inches)	Color	(moist)	%	Color (i		%	Type ¹	Loc ²	Texture Remarks	
0-1									Fibric Organics	
1-3	2.5Y	4/1	100			5			Fine Sandy Loam	
3-10	5Y	5/1	95	5Y	4/1	5	С	М	Fine Loamy Sand	
10-14	2.5Y	4/1	95	2.5Y	4/2	5	С	М	Fine Loamy Sand	
14-24	5Y	4/1	85	2.5Y	5/3	15	С	М	Fine Loamy Sand	
¹ Type: C=Cor	ncentration	D=Depleti	on RM=Re						Channel M=Matrix	
Hydric Soil	Indicators	:					atic Hydr	ric Soils:°	_	
Histosol (or Histel (A1)				Change (Alaska Gleyed Without Hue 5Y or Redder	
	ipedon (A2)				•	e swales (Underlying Layer	
Hydroger	n Sulfide (A	4)		Ala	ska Redo	x With 2.5	SY Hue		Uther (Explain in Remarks)	
Thick Da	rk Surface (A12)		3.0		- £	I			
Alaska G	leyed (A13)							tion must b	e primary indicator of wetland hydrology, pe present	
Alaska Ro	edox (A14)									
Alaska G	leyed Pores	(A15)		⁴ Give	details o	f color cha	ange in Re	marks		
Restrictive L	ayer (if p	esent):								
Type:									Hydric Soil Present? Yes \bigcirc No $oldsymbol{igodol}$	
Depth (ind	ches):									
Remarks:										
no hydric soil	indicators									
no nyune son	inuicators									
HYDROLO	DGY									
		dicators:							Secondary Indicators (two or more are requ	red)
Wetland Hyd									Water Stained Leaves (B9)	
Wetland Hyd Primary Indic	•••	one is suffic	cient)							
Primary Indic	•••	one is suffic	cient)		nundatior	n Visible o	n Aerial In	nagery (B7		
Primary Indic	ators (any o		cient)					nagery (B7) Surface (B8)) Drainage Patterns (B10)	ts (C3)
Primary Indic	ators (any o Water (A1) ter Table (A		cient)		parsely V	egetated		0) Drainage Patterns (B10)	ts (C3)
Primary Indic	ators (any o Water (A1) ter Table (A		cient)		sparsely V Aarl Depo	egetated sits (B15)	Concave S	0) Drainage Patterns (B10)) Oxidized Rhizospheres along Living Roo	ts (C3)
Primary Indic Surface V High Wa Saturatic Water M	water (A1) Water (A1) ter Table (A on (A3) arks (B1)	.2)	cient)	S M H	Sparsely V Aarl Depo Iydrogen	egetated sits (B15) Sulfide Od	Concave S dor (C1)	0) Drainage Patterns (B10)) Oxidized Rhizospheres along Living Roo Presence of Reduced Iron (C4)	ts (C3)
Primary Indic Surface V High Wa Saturatic Water M Sedimen	water (A1) Water (A1) ter Table (A on (A3) arks (B1) t Deposits (.2)	cient)		Sparsely V Marl Depo Hydrogen Dry-Seaso	egetated sits (B15) Sulfide Oo n Water T	Concave S dor (C1) Table (C2)	0) Drainage Patterns (B10)) Oxidized Rhizospheres along Living Roo Presence of Reduced Iron (C4) Salt Deposits (C5) Stunted or Stressed Plants (D1)	ts (C3)
Primary Indic Surface V High Wa Saturatic Water M Sedimen Drift Dep	water (Any of Water (A1) ter Table (A on (A3) arks (B1) th Deposits (posits (B3)	.2) B2)	cient)		Sparsely V Marl Depo Hydrogen Dry-Seaso	egetated sits (B15) Sulfide Od	Concave S dor (C1) Table (C2)	0) Drainage Patterns (B10)) Oxidized Rhizospheres along Living Roo Presence of Reduced Iron (C4) Salt Deposits (C5) Stunted or Stressed Plants (D1) Geomorphic Position (D2)	ts (C3)
Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma	water (A1) Water (A1) ter Table (A on (A3) arks (B1) t Deposits (.2) B2)	cient)		Sparsely V Marl Depo Hydrogen Dry-Seaso	egetated sits (B15) Sulfide Oo n Water T	Concave S dor (C1) Table (C2)	0) Drainage Patterns (B10)) Oxidized Rhizospheres along Living Roo Presence of Reduced Iron (C4) Salt Deposits (C5) Stunted or Stressed Plants (D1)	ts (C3)

 Surface Water Present?
 Yes
 No
 Depth (inches):

 Water Table Present?
 Yes
 No
 Depth (inches):

 Saturation Present? (includes capillary fringe)
 Yes
 No
 Depth (inches):

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

no wetland hydrology indicators

Yes 🔿 No 💿

Wetland Hydrology Present?

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borouah	Sampling Date: 22-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_22
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Hillside
Local relief (concave, convex, none): none	Slope: <u>5.2</u> % / <u>3.0</u> ° Elevation: <u>120</u>	
Subregion : Northern Alaska Lat.	66.9737983333333 Long.: <u>-160.445935</u>	Datum: WGS84
Soil Map Unit Name:	NWI class	ification: PSS1B
	rear? Yes No (If no, explain ir ntly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes No

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc
Remarks: slob, physio upland, ge	eomorph fto	o, nonpatterned.		

	Abs	solute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	%	Cover	Species?	Status	Number of Dominant Species
1	-				That are OBL, FACW, or FAC: (A)
2	-				Total Number of Dominant Species Across All Strata: 3 (B)
3	_				
4	_				Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
5	_				
Total Cover	· _	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0	20% c	of Total Cover:	0	Total % Cover of: Multiply by:
1 Betula nana	_	25	\checkmark	FAC	OBL species x 1 =
2. Betula glandulosa	_	5		FAC	FACW species <u>11</u> x 2 = <u>22</u>
3 Vaccinium uliginosum	_	15	\checkmark	FAC	FAC species X 3 =
4 Vaccinium vitis-idaea	_	3		FAC	FACU species $0 \times 4 = 0$
5. Ledum decumbens		7		FACW	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
6. Alnus viridis ssp. sinuata	_	5		FAC	Column Totals: <u>84</u> (A) <u>241</u> (B)
7. Andromeda polifolia	_	1		FACW	Prevalence Index = $B/A = 2.869$
8					
9					Hydrophytic Vegetation Indicators:
10	_				✓ Dominance Test is > 50%
Total Cover	:	61			✓ Prevalence Index is ≤3.0
50% of Total Cover:	30.5	20% c	of Total Cover:	12.2	Morphological Adaptations ¹ (Provide supporting
Herb Stratum		-			data in Remarks or on a separate sheet)
1. Carex bigelowii		20		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Arctagrostis latifolia	-	3		FACW	¹ Indicators of hydric soil and wetland hydrology must
3					be present, unless disturbed or problematic.
4					
5	-				Plot size (radius, or length x width) 5m
6	-				% Cover of Wetland Bryophytes
7	-				(Where applicable)
8					% Bare Ground _0
9	-				Total Cover of Bryophytes 95
10					Hydrophytic
Total Cover	_	23	f Total Course	1.0	Vegetation Present? Yes • No O
50% of Total Cover:	11.5	20% 0	of Total Cover:	4.6	Present? Yes • No ·
Remarks:					

SOIL	30	I	L
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(inches) Color (moist) %	Color (moist)	% Type ¹	Loc ²	Texture	Remarks
0-4				ibric Organics	
4-16	·			lemic Organics	
4-10					
Type: C=Concentration D=Depletion RM=R	educed Matrix ² Location:	PL=Pore Lining R	C=Root Cha	annel M=Matrix	
Hydric Soil Indicators:	Indicators for Pro	oblematic Hydric	Soils: ³		
 Histosol or Histel (A1) 	Alaska Color Ch		[Alaska Gleyed Withou	It Hue 5Y or Redder
Histic Epipedon (A2)	Alaska Alpine s		Г		
Hydrogen Sulfide (A4)	Alaska Redox W	Vith 2.5Y Hue	L	Other (Explain in Rer	narks)
Thick Dark Surface (A12)	³ One indicator of	hydrophytic vegeta	ion, one pr	imary indicator of wetla	nd hydrology,
Alaska Gleyed (A13)	and an appropriate	e landscape positio	n must be p	resent	
Alaska Gleyed Pores (A15)	⁴ Give details of co	olor change in Rema	rks		
estrictive Layer (if present):					
Type: active layer (frozen)				Hydric Soil Presen	:? Yes 🖲 No 🔿
Depth (inches): 16					
emarks:				1	
emarks:					
emarks: YDROLOGY				Secondary	Indicators (two or more are required)
emarks: YDROLOGY Vetland Hydrology Indicators:					ndicators (two or more are required) Stained Leaves (B9)
emarks: YDROLOGY Vetland Hydrology Indicators:	Inundation Vi	isible on Aerial Ima	jery (B7)	Water	
emarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1)		isible on Aerial Ima	, , ,	Water	Stained Leaves (B9)
emarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2)		etated Concave Sur	, , ,	Water Uraina Oxidize	Stained Leaves (B9) ge Patterns (B10)
emarks: YDROLOGY /etland Hydrology Indicators: 'rimary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2) Saturation (A3)	Sparsely Vege	etated Concave Sur (B15)	, , ,	Water Uraina Oxidize Presen	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C:
emarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2) Saturation (A3)	Sparsely Vege Marl Deposits Hydrogen Sul	etated Concave Sur 6 (B15) Ifide Odor (C1)	, , ,	Water Water Oraina Oxidize Sature	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C: ce of Reduced Iron (C4)
emarks: YDROLOGY /etland Hydrology Indicators: trimary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	Sparsely Vega Marl Deposits Hydrogen Sul Dry-Season V	etated Concave Sur (B15)	, , ,	Water Water Oraina Oxidize Salt De Stute	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C ce of Reduced Iron (C4) posits (C5)
emarks: YDROLOGY /etland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1) Image: High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	Sparsely Vega Marl Deposits Hydrogen Sul Dry-Season V	etated Concave Sur (B15) Ifide Odor (C1) Vater Table (C2)	, , ,	Water Water Oraina Oxidize Salt De Salt De Stunte Geomo	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C ce of Reduced Iron (C4) posits (C5) d or Stressed Plants (D1)
emarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1) ✓ High Water Table (A2) ✓ Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	Sparsely Vega Marl Deposits Hydrogen Sul Dry-Season V	etated Concave Sur (B15) Ifide Odor (C1) Vater Table (C2)	, , ,	Water Uraina Oxidize Salt De Salt De Geomo Geomo Shallow Shallow	Stained Leaves (B9) ge Patterns (B10) d Rhizospheres along Living Roots (C ce of Reduced Iron (C4) posits (C5) d or Stressed Plants (D1) rphic Position (D2)

 Saturation Present? (includes capillary fringe)
 Yes
 No
 Depth (inches): 4

 Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Depth (inches): 8

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Yes

No O

Remarks:

Water Table Present?

Yes 🖲

Wetland Hydrology Present?

No 🔿

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough Sampling Date: 22-A	ug-12
Applicant/Owner: USKH/ADOT&PF	Sampling Point:	K_23
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.): Hillside	
Local relief (concave, convex, none): none	Slope: <u>5.2</u> % / <u>3.0</u> ° Elevation: <u>145</u>	
Subregion : Northern Alaska Lat.:	: <u>66.973415</u> Long.: <u>-160.444861666667</u> Datum: <u>\</u>	NGS84
Soil Map Unit Name:	NWI classification: PSS1B	
		, O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc
Remarks: STCA, physio upland, g	jeomorph f	to (disturbed?).		

	A	bsolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	9	6 Cover	Species?	Status	Number of Dominant Species
1					That are OBL, FACW, or FAC: (A)
2					Total Number of Dominant
3.					Species Across All Strata:3 (B)
4					Percent of dominant Species That Are OBL_EACW_or EAC: 66.7% (A/B)
5					That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)
5. – Total Cov	er:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0	20% (of Total Cover:	0	Total % Cover of: Multiply by:
1 Alnus viridis ssp. crispa		90	\checkmark	FAC	OBL species x 1 =
2. Vaccinium uliginosum		5		FAC	FACW species $4 \times 2 = 8$
3 Ledum decumbens		1		FACW	FAC species 96 x 3 =288
4					FACU species x 4 =2
5.					UPL species $0 \times 5 = 0$
6					Column Totals: <u>103</u> (A) <u>308</u> (B)
7					Prevalence Index = B/A = 2.990
8.					
9					Hydrophytic Vegetation Indicators:
10					✓ Dominance Test is > 50%
TO:Total Cov		96			✓ Prevalence Index is ≤3.0
Herb Stratum 50% of Total Cover:	48		of Total Cover:	19.2	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1 Chamerion angustifolium		_1		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Rubus chamaemorus		3	\checkmark	FACW	¹ Indicators of hydric soil and wetland hydrology must
3. Lycopodium clavatum		2	\checkmark	FACU	be present, unless disturbed or problematic.
4 Calamagrostis canadensis				FAC	
5					Plot size (radius, or length x width) 5m
6					% Cover of Wetland Bryophytes
7					(Where applicable)
8					% Bare Ground 95
9					Total Cover of Bryophytes 0
10	_				Hydrophytic
Total Cov	er:	7			Vegetation
50% of Total Cover:	3.5	20% (of Total Cover:	1.4	Present? Yes \bullet No \bigcirc
Remarks: bare ground includes dead leaves					

	-	-
SO		L
30		

Depth <u>Ma</u> (inches) Color (moi	trix st) %	Color (moist)	x Features % Type ¹	Loc ²	Toxture	Domorko
0-3	<u>st) %</u>		<u>%</u> Type	LOC-	Fibric Organics	Remarks
,,,		· · · · · · · · · · · · ·			Hemic Organics	
3-13						
13-15					Sapric Organics	
		· · · · · · · · · · · · · · · · · · ·				
,,		· · · · · · · · · · · · · · · · · · ·				
Type: C=Concentration D=D	epletion RM=R				hannel M=Matrix	
Hydric Soil Indicators:		_	Problematic Hydr	ic Soils:		
Histosol or Histel (A1)		_	Change (TA4) swales (TA5)		Alaska Gleyed Without Hu Underlying Layer	e 5Y or Redder
 ✓ Histic Epipedon (A2) ☐ Hydrogen Sulfide (A4) 			With 2.5Y Hue		Other (Explain in Remarks)
Thick Dark Surface (A12)						
Alaska Gleyed (A13)			of hydrophytic vege ate landscape posit		primary indicator of wetland hy	drology,
Alaska Redox (A14)					present	
Alaska Gleyed Pores (A15)	Give details of	color change in Re	narks		
Restrictive Layer (if prese	nt):					
Type: active layer (frozer)				Hydric Soil Present?	Yes 🖲 No 🔾
Depth (inches): 15						
Remarks:						
IYDROLOGY						
Netland Hydrology Indica						tors (two or more are required)
Primary Indicators (any one in Surface Water (A1)	s sufficient)	 		(87)		ed Leaves (B9)
 ✓ High Water Table (A2) 			Visible on Aerial Im	5 5 4 7	Drainage Pa	zospheres along Living Roots (C3
Saturation (A3)		Marl Depos	egetated Concave S	unace (B8)		Reduced Iron (C4)
Water Marks (B1)			Sulfide Odor (C1)		Salt Deposit	
Sediment Deposits (B2)		_				s (CS) Stressed Plants (D1)
Drift Deposits (B3)			Water Table (C2)			Position (D2)
Algal Mat or Crust (B4)			ain in Remarks)		Shallow Aqu	()
Iron Deposits (B5)						aphic Relief (D4)
Surface Soil Cracks (B6)					FAC-neutral	
						1031 (03)
Field Observations:						

Wetland Hydrology Present?

Yes 💿

No \bigcirc

 $_{\rm Yes} \odot ~_{\rm No} \bigcirc$ Depth (inches): 3 (includes capillary fringe) Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Depth (inches): 4

 $_{\rm Yes} \bullet _{\rm No} \bigcirc$

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

Water Table Present?

Saturation Present?

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borouah	Sampling Date: 23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_24
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Hillside
Local relief (concave, convex, none): none	Slope: <u>5.2</u> % / <u>3.0</u> ° Elevation: <u>165</u>	
Subregion : Northern Alaska Lat.:	66.97554 Long.: <u>-160.434246</u>	666667 Datum: WGS84
Soil Map Unit Name:	NWI class	ification: PSS1B
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes $lacksquare$ No $igodol $
	ing compliant point locations, then	a stalling a suba sub fa struct

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes () Yes () Yes ()	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc
Remarks: SLOBE, physio upland,	geomorph	fto, nonpatterned.		

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum		% Cover	Species?	Status	Number of Dominant Species
1					That are OBL, FACW, or FAC: (A)
2					Total Number of Dominant Species Across All Strata: 4 (B)
3					
4					Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
5					
	Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of	Total Cover:	0 20%	of Total Cover:	0	Total % Cover of: Multiply by:
1 Betula glandulosa		30	\checkmark	FAC	OBL species $0 \times 1 = 0$
2. Dasiphora fruticosa		5		FAC	FACW species <u>8</u> x 2 = <u>16</u>
O Vaccinium uliginosum		25	\checkmark	FAC	FAC species x 3 =
		1		FACU	FACU species x 4 =2
5 Salix reticulata		5		FAC	UPL species $0 \times 5 = 0$
6 Dryas integrifolia		2		FACU	Column Totals: _101.5_ (A) _299.5_ (B)
		1		FACW	Prevalence Index = $B/A = 2.951$
o Arstostankulas rubra		7		FAC	Prevalence Index = $B/A = 2.951$
g Salix pulchra		5		FACW	Hydrophytic Vegetation Indicators:
10. Salix richardsonii		1		FACW	✓ Dominance Test is > 50%
10	Total Cover:	82			✓ Prevalence Index is ≤3.0
50% of	Total Cover:		of Total Cover:	16.4	Morphological Adaptations ¹ (Provide supporting
<u>Herb Stratum</u>					data in Remarks or on a separate sheet)
1. Deschampsia caespitosa		5		FAC	Problematic Hydrophytic Vegetation (Explain)
2. Equisetum arvense		3		FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Carex bigelowii		10		FAC	be present, unless disturbed or problematic.
4. Parnassia palustris				FACW	
5. Luzula arctica		0.5		FAC	Plot size (radius, or length x width) 5m
6. Carex williamsii		0.5		FAC	% Cover of Wetland Bryophytes
7					(Where applicable)
8					% Bare Ground _0
9					Total Cover of Bryophytes 90
10					Hydrophytic
	Total Cover:	20			Vegetation
50% of	Total Cover:	10 20%	of Total Cover:	4	Present? Yes No
Remarks: descae as collected 8/22/12. tr	ace pedicularis s	o. carwil a	s collected 8/2	1. ca 5% li	ichen cvr

Profile Desc Depth		Matrix				ox Featu			
(inches)	Color	(moist)	%	Color ((moist)	%	Type ¹	Loc ²	Texture Remarks
0-3									Fibric Organics
3-9									Hemic Organics
9-10	10YR	4/6	100						Silty Clay Loam
10-22	10Y	5/1	98	10YR	3/4	2	C	PL	Silty Clay Loam
¹ Type: C=Cor	ncentration	D=Depletio	on RM=Re	duced Matrix	2Locatio	n: PL=Pc	ore Lining	RC=Root (Channel M=Matrix
Hydric Soil	Indicators	:		Indic	ators for	Problem	atic Hydr	ric Soils: ³	
Histosol o	or Histel (A	1)			aska Color aska Alpine	Change (TA4)		Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
= .	n Sulfide (A				aska Redo	x With 2.5	iY Hue		Other (Explain in Remarks)
Alaska G	rk Surface (leyed (A13) edox (A14) leyed Pores	. ,		and a		iate lands	cape posi	tion must b	e primary indicator of wetland hydrology, be present
		rozen), si cl	ю						Hydric Soil Present? Yes 💿 No 🔿
Remarks:									
HYDROL(Wetland Hyd		dicators							_Secondary Indicators (two or more are required)
Primary Indic			cient)						Water Stained Leaves (B9)
	Water (A1)				Inundation	visible o	n Aerial In	nagery (B7)	
🗌 High Wa	ter Table (/	A2)						Surface (B8)	,
Saturatio	on (A3)				Marl Depos	0			Presence of Reduced Iron (C4)
Water M	arks (B1)				Hydrogen	Sulfide Oc	dor (C1)		Salt Deposits (C5)
Sedimen	t Deposits	(B2)			Dry-Seaso	n Water T	able (C2)		Stunted or Stressed Plants (D1)
Drift Dep	oosits (B3)				Other (Exp	lain in Re	marks)		Geomorphic Position (D2)
Algal Ma	t or Crust (B4)							Shallow Aquitard (D3)

Iron Deposits (B5)				Microtopogr	raphic Relief (I	D4)		
Surface Soil Cracks (B6)				FAC-neutral	Test (D5)			
Field Observations:	_	-						
Surface Water Present?	Yes \bigcirc	No 🖲	Depth (inches):					
Water Table Present?	$_{ m Yes}$ \bigcirc	No 🖲	Depth (inches):	Wetland Hydrology Present?	Yes 🖲	No \bigcirc		
Saturation Present? (includes capillary fringe)	Yes 🖲	No \bigcirc	Depth (inches): 3					
Describe Recorded Data (strea	am gauge, m	nonitor well,	aerial photos, previous inspection)	if available:				
BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).								
Remarks:	Remarks:							

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date: 23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_25
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Flat
Local relief (concave, convex, none):	Slope:% / ° Elevation:85	
Subregion : Northern Alaska Lat	·· <u>66.97573166666667</u> Long.: <u>-160.434478</u>	3333333 Datum: WGS84
Soil Map Unit Name:	NWI class	sification: Upland
	year? Yes No (If no, explain i ntly disturbed? Are "Normal Circumstances" y problematic? (If needed, explain any ansv	present? Yes • No O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?		No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bigcirc No \odot		
Remarks: disturbed, adjacent to runway. upl/wetland bound at veg change. SLOW, physio upland (disturbed), geomorph fto (disturbed). moose scat.						

		Α	bsolute	Dominant	Indicator	Dominance Test worksheet:	
	ree Stratum	%	6 Cover	Species?	Status	Number of Dominant Species	
1.						That are OBL, FACW, or FAC: <u>3</u> (A)	
2.						Total Number of Dominant Species Across All Strata: 4 (B)	
3.							
4.						Percent of dominant Species That Are OBL, FACW, or FAC:75.0% (A/B)	
5.							
	Total Cove	er: _	0			Prevalence Index worksheet:	
Sap	ling/Shrub Stratum 50% of Total Cover:	0	20% o	f Total Cover:	0	Total % Cover of: Multiply by:	
1.	Picea glauca		2		FACU	OBL species x 1 =	
2.	Betula glandulosa	_	10		FAC	FACW species 5.5 x 2 = 11	
3.	Salix alaxensis	_	40	\checkmark	FAC	FAC species 98.5 x 3 = 295.5	
4	Salix bebbiana	_	40	\checkmark	FAC	FACU species5_ x 4 =20	
5.	Arctostaphylos rubra	_	2		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$	
6.	Salix reticulata	_			FAC	Column Totals: <u>109</u> (A) <u>326.5</u> (B)	
7.	Salix arbusculoides		5		FACW	Prevalence Index = $B/A = 2.995$	
8.		_					
9.		_				Hydrophytic Vegetation Indicators:	
10.		_				✓ Dominance Test is > 50%	
	Total Cove		100			✓ Prevalence Index is ≤3.0	
<u>_H</u>	erb Stratum50% of Total Cover:	50	20% c	of Total Cover:	20	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
1.	Artemisia tilesii		2	\checkmark	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)	
2.	Equisetum arvense		3	\checkmark	FAC	¹ Indicators of hydric soil and wetland hydrology must	
3.	Polemonium acutiflorum		0.5		FAC	be present, unless disturbed or problematic.	
4.	Calamagrostis canadensis	_			FAC		
5.	Parnassia palustris	_	0.5		FACW	Plot size (radius, or length x width) 5m	
6.	Plantago major	_	_1		FAC	% Cover of Wetland Bryophytes	
7.	Equisetum scirpoides	_	_1		FACU	(Where applicable)	
8.						% Bare Ground 85	
9.						Total Cover of Bryophytes <u>10</u>	
10.		_				Hydrophytic	
	Total Cove		9			Vegetation	
	50% of Total Cover:	4.5	20% o	f Total Cover:	1.8	Present? Yes No	
Rem	temarks: trace gallium sp.						

	-	-
SO		L
30		

Depth Matrix Redox Features (inches) Color (moist) % Type ¹ Loc ² Texture 0-2	Remarks
	Remarks
2-15 5Y 5/2 98 10YR 4/6 2 C PL Silty Clay Loam	
	pressed O horizon
20-22 5Y 4/1 93 10YR 4/4 7 C PL Silty Clay Loam	
¹ Type: C=Concentration D=Depletion RM=Reduced Matrix ² Location: PL=Pore Lining RC=Root Channel M=Matrix	
Hydric Soil Indicators: Indicators for Problematic Hydric Soils: ³	
Histosol or Histel (A1) Alaska Color Change (TA4) ⁴ Alaska Gleyed Without Hue 5Y or	Redder
Histic Epipedon (A2)	
Hydrogen Sulfide (A4)	
Thick Dark Surface (A12)	
Alaska Gleyed (A13) ³ One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology and an appropriate landscape position must be present	1,
Alaska Redox (A14)	
Alaska Gleyed Pores (A15) ⁴ Give details of color change in Remarks	
Restrictive Layer (if present):	<u> </u>
Type: si cl lo Hydric Soil Present? Yes	🔾 🛛 No 🖲
Depth (inches): 20	
Remarks:	
no hydric soil indicators	
HYDROLOGY	
	wo or more are required)
Primary Indicators (any one is sufficient) Utater Stained Leav	/es (B9)
Surface Water (A1)	(B10)
	eres along Living Roots (C3)
Saturation (A3) Marl Deposits (B15) Presence of Reduce	ed Iron (C4)
Water Marks (B1) Hydrogen Sulfide Odor (C1) Salt Deposits (C5)	
Sediment Deposits (B2) Dry-Season Water Table (C2) Stunted or Stressed	d Plants (D1)
Drift Deposits (B3) Other (Explain in Remarks) Geomorphic Positio	
□ Algal Mat or Crust (B4) □ Striet (Explain in Kennarks) □ Store (Explain in Kennarks) □ Store (Explain in Kennarks)	
□ Iron Deposits (B5) □ Microtopographic R	
□ Surface Soil Cracks (B6) □ FAC-neutral Test (D	

U.S. Army Corps of Engineers

Yes 🔿 No 🖲

Yes 🔿 No 🖲

Yes 🔿 No 🖲

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available: BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches):

Depth (inches):

Depth (inches):

Field Observations:

Surface Water Present?

(includes capillary fringe)

Water Table Present?

Saturation Present?

Remarks:

Alaska Version 2.0

Yes 🔿 No 💿

Wetland Hydrology Present?

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 23	8-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_26
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Flat	
Local relief (concave, convex, none): <u></u>	_ Slope:% /° Elevation:		
Subregion : Northern Alaska Lat.:	<u>66.9753</u> Long.: <u>-160.439768</u>	333333 Datum	: WGS84
Soil Map Unit Name:	NWI class	sification: PEM1H	
	ear? Yes No (If no, explain ir tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes N Yes N Yes N Yes N		Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc			
Remarks: small area of ponded water/emergent veg(HFWF), surrounded by SLOBE. Second small emergent area directly E is carutr/caraqu w standing							

water. Sediment retention ponds. Physog upland.

	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC:(A)
2				Total Number of Dominant Species Across All Strata:(B)
3 4				Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
5Total Cover:	0			Prevalence Index worksheet:
		of Total Cover:	0	Total % Cover of: Multiply by:
	2		FACW	OBL species <u>35.5</u> x 1 = <u>35.5</u>
				FACW species X 2 =64.2
2				FAC speciles x 3 =
4				FACU species $0 \times 4 = 0$
5				UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$
6				Column Totals: <u>67.7</u> (A) <u>100</u> (B)
7				Prevalence Index = B/A = <u>1.477</u>
8				Hydrophytic Vegetation Indicators:
9				✓ Dominance Test is > 50%
TO:Total Cover:	2			✓ Prevalence Index is ≤3.0
50% of Total Cover:	1 20% c	of Total Cover:	0.4	Morphological Adaptations ¹ (Provide supporting
Herb Stratum	30		OBL	data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation ¹ (Explain)
1. Sparganium hyperboreum 2 Ranunculus gmelinii	30		FACW	
	0.5		OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Eriophorum scheuchzeri	3		OBL	
5. Comarum palustre	1		OBL	Plot size (radius, or length x width) _2m x 2m
6. Carex utriculata	1		OBL	% Cover of Wetland Bryophytes
7. Carex canescens	0.1		FACW	(Where applicable)
8. Carex crawfordii	0.1		FAC	% Bare Ground _95
9				Total Cover of Bryophytes 3
10				Hydrophytic
Total Cover:	65.7	(42.44	Vegetation
50% of Total Cover: 32	85 20% c	of Total Cover:	13.14	Present? Yes No
Remarks:				

DepthI	Matrix		Red	ox Features				
(inches) Color (n	noist)	%(Color (moist)	<u>%</u> <u>T</u>	ype ¹ L	0C ²	Texture	Remarks
ype: C=Concentration D	=Depletion I	RM=Reduced	Matrix ² Locatio	on: PL=Pore L	ining RC:	Root Cha	annel M=Matrix	
lydric Soil Indicators:			Indicators for	Problematic	Hydric S	oils: ³		
Histosol or Histel (A1)				Change (TA4)		[Alaska Gleyed Withou	t Hue 5Y or Redder
Histic Epipedon (A2)				e swales (TA5)		Г	Underlying Layer	
Hydrogen Sulfide (A4)			Alaska Redo	x With 2.5Y Hu	ie	Ľ	✓ Other (Explain in Rem	narks)
Thick Dark Surface (A Alaska Gleyed (A13)	12)		³ One indicator	of hydrophytic	vegetatio	on, one pi	rimary indicator of wetlar	d hydrology,
Alaska Redox (A14)			and an appropr	iate landscape	position	must be p	present	
Alaska Gleyed Pores (A	A15)		⁴ Give details of	f color change	in Remar	(S		
estrictive Layer (if pre	sent):							
Туре:							Hydric Soil Present	? Yes 🖲 No 🔾
Depth (inches):								
emarks:								
issume hydric soil due to h	ydrophytic ve	egetation and	standing water					
YDROLOGY								
Vetland Hydrology Indi	icators:						Secondary I	ndicators (two or more are required)
Primary Indicators (any or	e is sufficient	:)					Water S	Stained Leaves (B9)
Surface Water (A1)				n Visible on Aer	-			e Patterns (B10)
High Water Table (A2)			egetated Conc	ave Surfa	ce (B8)	_	d Rhizospheres along Living Roots (C3
Saturation (A3)			Marl Depo					ce of Reduced Iron (C4)
Water Marks (B1)				Sulfide Odor (posits (C5)
Sediment Deposits (B	2)		_	n Water Table			_	I or Stressed Plants (D1)
Drift Deposits (B3)			☐ Other (Exp	olain in Remark	s)		_	rphic Position (D2)
Algal Mat or Crust (B4	ł)						_	Aquitard (D3)
Iron Deposits (B5)								pographic Relief (D4)
Surface Soil Cracks (B	6)						FAC-ne	utral Test (D5)
ield Observations:	Yes 🖲) No ()						
Surface Water Present?			Depth (inc	nes): 24				\sim
Water Table Present?	Yes C) No 🖲	Depth (inc	hes):		Wet	and Hydrology Preser	it? Yes 🖲 No 🔾

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes 🔿 No 🖲

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches):

Remarks:

Saturation Present?

(includes capillary fringe)

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borouah	Sampling Date: 23	8-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_27
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Swale	
Local relief (concave, convex, none):	Slope: <u>5.2</u> % / <u>3.0</u> ° Elevation: <u>135</u>		
Subregion : Northern Alaska Lat.:	66.974745 Long.: -160.444376	6666667 Datum	: WGS84
Soil Map Unit Name:	NWI class	sification: PEM1F	
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present?	Yes 🖲	No O	Is the Sampled Area				
Hydric Soil Present?	Yes 🖲	No 🔿		Yes \bullet No \bigcirc			
Wetland Hydrology Present?	Yes 🖲	No 🔿	within a Wetland?				
Remarks: swale ca 10ft wide surrounded by slobe watland. Haws physic upland (disturbed), geometric (disturbed)							

Remarks: swale, ca 10ft wide, surrounded by slobe wetland. Hgwsl,physio upland (disturbed), geomorph fto (disturbed).

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum		% Cover	Species?	Status	Number of Dominant Species
1					That are OBL, FACW, or FAC: (A)
2					Total Number of Dominant Species Across All Strata: 3 (B)
3					
4					Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
5.					
	Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum	50% of Total Cover:	0 20% o	f Total Cover:	0	Total % Cover of: Multiply by:
1 Salix pulchra		2	\checkmark	FACW	OBL species $62 \times 1 = 62$
2. Betula glandulosa		3	\checkmark	FAC	FACW species $4 \times 2 = 8$
3.					FAC species 10 x 3 =30
					FACU species x 4 =0
4 5					UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
6					Column Totals: <u>76</u> (A) <u>100</u> (B)
7					Prevalence Index = $B/A = 1.316$
8					Hydrophytic Vegetation Indicators:
9					✓ Dominance Test is > 50%
10	Total Cover:	5			✓ Prevalence Index is ≤3.0
			f Total Course	1	Morphological Adaptations ¹ (Provide supporting
Herb Stratum	50% of Total Cover: 2	20%0	of Total Cover:		data in Remarks or on a separate sheet)
1. Calamagrostis canadensis		7		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Eriophorum angustifolium		50	\checkmark	OBL	¹ Indicators of hydric soil and wetland hydrology must
3. Comarum palustre		7		OBL	be present, unless disturbed or problematic.
Equicatum fluxiatila		5		OBL	
- Carax canascons		2		FACW	Plot size (radius, or length x width) 2m x 5m
6					% Cover of Wetland Bryophytes
7					(Where applicable)
8.					% Bare Ground 85
9					Total Cover of Bryophytes 10
10.					
10.	Total Cover:	71			Hydrophytic Vegetation
	50% of Total Cover: 35	5.5 20% o	f Total Cover:	14.2	Present? Yes I No
Remarks: trace epilobium sp. carl	big tussocks in northern e	end of swale	e.		

-	ption: Describ Matı	-	h needed	to document th	e presenc ox Featur		ence of in	dicators			
Depth – (inches)	Color (mois		5	Color (moist)	%	Type ¹	Loc ²	Textur	e	Ren	narks
	-	-	-								
					······································						
									_		
				2							
51		pletion Ri	/I=Reduced			0		Channel M=Matri	x		
Hydric Soil In				Indicators for			ic Solls:				
Histosol or				Alaska Color				L Alaska Gley Underlying		Hue 5Y or Redder	
Histic Epipe				Alaska Redo				✓ Other (Expl	5	ırks)	
	Surface (A12)				X WIGH 2.01	THUC					
Alaska Gley	. ,							primary indicator	of wetland	hydrology,	
Alaska Red				and an approp	riate landsc	ape posit	ion must d	e present			
🗌 Alaska Gley	ed Pores (A15)			⁴ Give details of	f color char	nge in Rei	marks				
Restrictive La	yer (if presen	t):									
Туре:								Hydric Soi	I Present?	Yes 🖲 🛛 N	o 🔿
Depth (inche	es):										
Remarks:											
issume hydric s	oil due to hydro	phytic veg	etation and	standing water							
IYDROLO	GY										
	ology Indicate	ors:						Se	condary In	dicators (two or m	ore are required)
Primary Indicat	ors (any one is	sufficient)							Water St	ained Leaves (B9)	
Surface Wa	. ,			Inundation	n Visible on	Aerial Im	agery (B7)			Patterns (B10)	
	r Table (A2)				egetated C	oncave S	urface (B8)		_		g Living Roots (C3)
Saturation	(A3)			Marl Depo					Presence	of Reduced Iron (C4)
Water Mar				Hydrogen	Sulfide Odd	or (C1)		L	Salt Dep		
_	Deposits (B2)			Dry-Seaso	n Water Ta	ble (C2)			Stunted (or Stressed Plants	(D1)
Drift Depos				Uther (Exp	olain in Ren	narks)			Geomorp	hic Position (D2)	
Algal Mat o	or Crust (B4)							L	Shallow /	Aquitard (D3)	
Iron Depos	sits (B5)							L	•	ographic Relief (D4	1)
Surface So	il Cracks (B6)							v	FAC-neut	ral Test (D5)	
Field Observa											
Surface Water	Present?	Yes •	-	Depth (inc	ches): 4					\sim	\sim
Water Table Pr		$Yes \bigcirc$	No 🖲	Depth (inc	ches):		W	etland Hydrolog	gy Present	? Yes 🖲 I	No 🔿
Saturation Pres (includes capill		$_{\rm Yes} \bigcirc$	No 🖲	Depth (inc	ches):						

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date: 23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_28
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Swale
Local relief (concave, convex, none): <u></u>	_ Slope:% / ° Elevation:85	
Subregion : Northern Alaska Lat.:	<u>66.97521166666667</u> Long.: <u>-160.4441083</u>	333333 Datum: WGS84
Soil Map Unit Name:	NWI classi	fication: PSS1B
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes $ullet$ No $igodot$

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc			
Remarks: wet willow swale, with standing water. visible in aerial. ca 40ft wide. STOW physog upland.moose scat and browse.							

		Ał	osolute	Dominant	Indicator	Dominance Test worksheet:
<u> </u>	ree Stratum	_%	Cover	Species?	Status	Number of Dominant Species
1.						That are OBL, FACW, or FAC: (A)
2.						Total Number of Dominant
3.						Species Across All Strata: (B)
4						Percent of dominant Species That Are OBL_EACW_or_EAC: 100.0% (A/B)
						That Are OBL, FACW, or FAC:(A/B)
0.	Total Cover:		0			Prevalence Index worksheet:
Sap	bling/Shrub Stratum50% of Total Cover:	0	_ 20% d	of Total Cover:	0	Total % Cover of: Multiply by:
1	Salix alaxensis		60	\checkmark	FAC	OBL species $0 \times 1 = 0$
2	Salix arbusculoides		2		FACW	FACW species $7 \times 2 = 14$
2. 3	Salix bebbiana		20	\checkmark	FAC	FAC species x 3 =243
•.						FACU species x 4 =0
						UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
-						Column Totals: <u>88</u> (A) <u>257</u> (B)
						Prevalence Index = $B/A = 2.920$
						Hydrophytic Vegetation Indicators:
						✓ Dominance Test is > 50%
10.	Total Cover:		82			✓ Prevalence Index is ≤3.0
		41		of Total Cover:	16.4	Morphological Adaptations ¹ (Provide supporting
_H	lerb Stratum	41	20%			data in Remarks or on a separate sheet)
1.	Equisetum pratense		5	\checkmark	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Calamagrostis canadensis		1		FAC	¹ Indicators of hydric soil and wetland hydrology must
3.						be present, unless disturbed or problematic.
4.						
5.						Plot size (radius, or length x width) 2m x 5m
6.						% Cover of Wetland Bryophytes
7.						(Where applicable)
8.						% Bare Ground
9.						Total Cover of Bryophytes
10						Hydrophytic
	Total Cover:		6			Vegetation
	50% of Total Cover:	3	20% (of Total Cover:	1.2	Present? Yes \bullet No \bigcirc
Ren	narks: trace epilobium sp					

	cription: Describe to Matrix	depth need		-	absence of i	ndicators	
Depth (inches)	Color (moist)	%	Color (moist)	ox Features % Ty	/pe ¹ Loc ²	- Texture	Remarks
(<u>pc</u>	10/12/0	
	p p						
			,				
			,				
	·		,				
1- 0.0							
Type: C=Cor	ncentration D=Depletion	on RM=Rea			-		
Hydric Soil	Indicators:		Indicators for I	4			
_	or Histel (A1)			Change (TA4)		Alaska Gleyed Withou Underlying Layer	ut Hue 5Y or Redder
	pipedon (A2)			e swales (TA5)			
	en Sulfide (A4)		Alaska Redox	x With 2.5Y Hue	e	✓ Other (Explain in Rer	narks)
	ark Surface (A12)		³ One indicator	of hydrophytic	vegetation, on	ne primary indicator of wetla	nd hydrology.
	Sleyed (A13)		and an appropri				
_	Redox (A14)		⁴ Give details of	color change i	n Remarks		
	Gleyed Pores (A15)						
Restrictive I	Layer (if present):						
Type:						Hydric Soil Present	t? Yes 🖲 No 🔾
Depth (in	ches):						
Remarks:							
assume hydri	c soil due to hydrophyt	tic vegetation	1 and standing water.				
והסמעניי							
HYDROL	drology Indicators:					Socondary	Indicators (two or more are required)
	cators (any one is sufficient	cient)					Stained Leaves (B9)
	Water (A1)	sient,		Visible on Aeria	ial Imagery (B		ge Patterns (B10)
	ater Table (A2)			egetated Conca	0 5 .	,	ed Rhizospheres along Living Roots (C3)
Saturatio	. ,		Marl Depos	-	100 0011000 (-,	ice of Reduced Iron (C4)
	Narks (B1)			Sulfide Odor (C	:1)		eposits (C5)
	nt Deposits (B2)			n Water Table (d or Stressed Plants (D1)
_	posits (B3)			lain in Remarks		_	prphic Position (D2)
	at or Crust (B4)		— · ·		-,		w Aquitard (D3)
Iron De	posits (B5)					Microte	opographic Relief (D4)

site ranges from saturated at surface to standing water.

Yes

No O

Yes 🔿 No 🖲

Yes 🔿 No 👁

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available: BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches): 24

Depth (inches):

Depth (inches):

Surface Soil Cracks (B6)

Field Observations:

Surface Water Present?

Water Table Present?

(includes capillary fringe)

Saturation Present?

Remarks:

✓ FAC-neutral Test (D5)

Wetland Hydrology Present?

Yes 🖲

No 🔿

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough S	ampling Date: 23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_29
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.): _F	lat
Local relief (concave, convex, none):	Slope: <u>5.2</u> % / <u>3.0</u> ° Elevation: <u>180</u>	
Subregion : Northern Alaska Lat.:	<u>66.9761083333333</u> Long.: <u>-160.44783666</u>	6667 Datum: WGS84
Soil Map Unit Name:	NWI classific	cation: PSS3/1B
	Iy disturbed? Are "Normal Circumstances" pro	
Are Vegetation, Soil, or Hydrology naturally	oroblematic? (If needed, explain any answer:	s in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc
Remarks: slobe, physio upland, g	eomorph f	to. moose scat.		

	Absolute	e Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cove	r Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of dominant Species That Are OBL_EACW_or_EAC+100.0% (A/B)
5				That Are OBL, FACW, or FAC:(A/B)
Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0 20%	of Total Cover:	0	Total % Cover of: Multiply by:
1 Betula nana	20	\checkmark	FAC	OBL species x 1 =
2. Ledum decumbens	5		FACW	FACW species 25 x 2 =50
2	30		FAC	FAC species69 x 3 =207
0	5		FAC	FACU species $0 \times 4 = 0$
T. Caliy habbiana	1		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
0				Column Totals: <u>94</u> (A) <u>257</u> (B)
6				
7				Prevalence Index = $B/A = 2.734$
8				Hydrophytic Vegetation Indicators:
9				\checkmark Dominance Test is > 50%
10				 ✓ Prevalence Index is ≤3.0
Total Cover:				
_Herb Stratum50% of Total Cover:3	80.5 20%	of Total Cover:	12.2	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1 Eriophorum vaginatum	20	\checkmark	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Carex bigelowii	10	\checkmark	FAC	¹ Indicators of hydric soil and wetland hydrology must
2. Calamagrostis canadensis	3		FAC	be present, unless disturbed or problematic.
4			p	
4 5			p	
5				Plot size (radius, or length x width) <u>10m</u>
8 7				% Cover of Wetland Bryophytes (Where applicable)
8				% Bare Ground <u>5</u>
				Total Cover of Bryophytes 80
9				
10Total Cover:	33			Hydrophytic Vegetation
		of Total Cover:	6.6	Vegetation Present? Yes • No O
Remarks: ca 10% lichen cover. several tussocks crushed f	from atvs.			

Depth (inches)	Mat	trix		Red	ox Featu	res		dicators		
	Color (moi			Color (moist)		Type ¹	Loc ²	Texture Fibric Organics		Remarks
0-5	<u>-</u>									
5-13								Hemic Organics		
13-17	10YR 3	8/1 10	0					Silty Clay Loam		
Type: C=Cond	centration D=D	epletion R	M=Reduced	I Matrix ² Locatio	on: PL=Pc	ore Lining	RC=Root (Channel M=Matrix		
Hydric Soil I	ndicators:			Indicators for		4	ic Soils: ³			
_	or Histel (A1)			Alaska Color				Alaska Gleyed W		5Y or Redder
=	pedon (A2)			Alaska Alpin				Underlying Laye		
	Sulfide (A4)			Alaska Redo	x with 2.5	Y Hue			II Kelliaiks)	
Alaska Gle	k Surface (A12) eyed (A13) edox (A14) eyed Pores (A15			 ³ One indicator and an appropr ⁴ Give details of 	iate lands	cape posit	ion must b	primary indicator of v e present	wetland hyd	Irology,
	ayer (if preser									
Type: acti	ive layer (frozen hes): 17, 13							Hydric Soil Pre	esent?	Yes No
Primary Indica Surface V High Wat Saturation Water Ma Sediment Drift Dep Algal Mat	Irology Indica ators (any one is Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4)				egetated (sits (B15) Sulfide Oc n Water T	Concave S lor (C1) able (C2)	nagery (B7) urface (B8)		Vater Staine rainage Pat xidized Rhiz resence of F alt Deposits tunted or Si eomorphic I hallow Aqui	rressed Plants (D1) Position (D2) tard (D3) phic Relief (D4)
Wetland Hyd Primary Indica Surface V ✓ High Wat ✓ Saturation Water Ma Sediment Drift Dep Algal Mat Iron Depo Surface S	Irology Indica ators (any one is Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6)	s sufficient).		Sparsely V Marl Depo Hydrogen Dry-Seaso	egetated (sits (B15) Sulfide Oc n Water T	Concave S lor (C1) able (C2)	5 5 . ,		Vater Staine rainage Pat xidized Rhiz resence of F alt Deposits tunted or St eomorphic I hallow Aqui licrotopogra	d Leaves (B9) terns (B10) cospheres along Living Roots (C3) Reduced Iron (C4) (C5) tressed Plants (D1) Position (D2) tard (D3) phic Relief (D4)
Wetland Hyd Primary Indica Surface V ✓ High Wat ✓ Saturation Water Ma Sediment Drift Dep Algal Mat Iron Depo Surface S	Irology Indica ators (any one is Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) ations:	s sufficient) Yes 〇		Sparsely V Marl Depo Hydrogen Dry-Seaso	egetated (sits (B15) Sulfide Oc n Water T olain in Re	Concave S lor (C1) able (C2)	5 5 . ,		Vater Staine rainage Pat xidized Rhiz resence of F alt Deposits tunted or St eomorphic I hallow Aqui licrotopogra	d Leaves (B9) terns (B10) rospheres along Living Roots (C3) Reduced Iron (C4) (C5) tressed Plants (D1) Position (D2) tard (D3) phic Relief (D4) Fest (D5)
Wetland Hyd Primary Indica Surface V ✓ High Wat ✓ Saturation Water Ma Sediment Drift Dep Algal Mat Iron Depo Surface S Field Observation	Irology Indica ators (any one is Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) oosits (B3) t or Crust (B4) osits (B5) Soil Cracks (B6) ations: er Present?	s sufficient).		Sparsely V Marl Depo Hydrogen Dry-Seaso Other (Exp	egetated (sits (B15) Sulfide Oc n Water T Jain in Re	Concave S lor (C1) able (C2)	urface (B8)		Vater Staine rainage Pat xidized Rhiz resence of F alt Deposits tunted or St eomorphic I hallow Aqui iicrotopogra AC-neutral 1	d Leaves (B9) terns (B10) cospheres along Living Roots (C3) Reduced Iron (C4) (C5) tressed Plants (D1) Position (D2) tard (D3) phic Relief (D4)

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borough</u>	Sampling Date: 23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_30
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Swale
Local relief (concave, convex, none):	Slope: <u>0.0</u> % / <u>0.0</u> ° Elevation: <u>200</u>	
Subregion : Northern Alaska Lat.:	<u>66.97567</u> Long.: <u>-160.447721</u>	666667 Datum: WGS84
Soil Map Unit Name:	NWI class	ification: Upland
	ear? Yes No (If no, explain ir tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes $ullet$ No $igodot$

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No Yes ● No Yes ○	Is the Sampled Area within a Wetland? Yes \bigcirc No \textcircled{ullet}
		sio upland (disturbed), geomorph fto (disturbed). soils and scattered OBL

veg - site once did, or occassionally does, hold water. however, site visit during extremely wet period and no wetland hydrology indicators

VEGETATION Use scientific names of plants. List all species in the plot.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of dominant Species That Are OBL_EACW_or_EAC: 75.0% (A/B)
5				That Are OBL, FACW, or FAC:(A/B)
Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0 20% c	of Total Cover:	0	Total % Cover of: Multiply by:
1 Salix alaxensis	10		FAC	OBL species <u>1</u> x 1 = <u>1</u>
2. Salix bebbiana	50	\checkmark	FAC	FACW species <u>5.5</u> x 2 = <u>11</u>
3 Betula glandulosa	5		FAC	FAC species X 3 =
Arstostanhulos rubra	3		FAC	FACU speciles 3.5 x 4 = 14
T				UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
5				Column Totals: <u>83</u> (A) <u>245</u> (B)
6				
7				Prevalence Index = $B/A = 2.952$
8				Hydrophytic Vegetation Indicators:
9				✓ Dominance Test is > 50%
10Total Cover:	68			✓ Prevalence Index is ≤3.0
		of Total Cover:	13.6	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1. Artemisia tilesii	3	\checkmark	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Equisetum pratense	5	\checkmark	FACW	¹ Indicators of hydric soil and wetland hydrology must
3. Calamagrostis canadensis	5	\checkmark	FAC	be present, unless disturbed or problematic.
4 Achillea millefolium	0.5		FACU	
5. Comarum palustre	0.5		OBL	Plot size (radius, or length x width) 10m
6. Parnassia palustris	0.5		FACW	% Cover of Wetland Bryophytes
7. Equisetum fluviatile	0.5		OBL	(Where applicable)
8				% Bare Ground 40
9				Total Cover of Bryophytes 55
10				
Total Cover:	15			Hydrophytic Vegetation
50% of Total Cover:7	.5 20% c	of Total Cover:	3	Present? Yes \bullet No \bigcirc
Remarks: trace gallium sp., platanthera sp.				

US Army Corps of Engineers

(inches)		Matrix			Reu	lox Featu				
	Color (moist)	_%	Color ((moist)	_%	Type ¹	Loc ²	Texture	Remarks
0-2			90						Fibric Organics	10% fine gravel
2-3	5Y	5/2	100						Coarse Sandy Loam	
3-22	5Y	4/1	80	10YR	4/4	20	С	PL	Silty Clay Loam	
,										
					2					
Type: C=Con	centration	D=Depletio	on RM=Re						Channel M=Matrix	
	Indicators: or Histel (A1) pedon (A2)				ators for aska Color aska Alpin	⁻ Change (ic Soils:	Alaska Gleyed Wit Underlying Layer	hout Hue 5Y or Redder
=	n Sulfide (A4	1)			aska Redo				Other (Explain in I	Remarks)
Thick Dar Alaska Glo Alaska Re	rk Surface (A eyed (A13) edox (A14) eyed Pores	412)		and	an appropi	riate lands		ion must b	primary indicator of we present	tland hydrology,
		esent):							Hydric Soil Pres	ent? Yes 🖲 No 🔿
Type: si c Depth (inc										
Depth (inc										
Depth (inc	thes): 3									
Depth (inc Remarks: IYDROLC Vetland Hyd	hes): 3 DGY drology Inc									ry Indicators (two or more are required)
Depth (inc Remarks: IYDROLC Vetland Hyd Primary Indica	thes): 3 DGY drology Inc ators (any o		cient)						Wat	er Stained Leaves (B9)
Depth (inc temarks: NYDROLC Vetland Hyd Primary Indica Surface V	ches): 3 DGY drology Inc ators (any o Water (A1)	one is suffic	cient)					nagery (B7)	Wat	er Stained Leaves (B9) nage Patterns (B10)
Depth (inc Remarks: IYDROLC Vetland Hyd Primary Indica Surface V High Wat	Contemporary of the second sec	one is suffic	cient)		Sparsely V	/egetated	Concave S	nagery (B7) urface (B8)	Wat	er Stained Leaves (B9) nage Patterns (B10) lized Rhizospheres along Living Roots (C3
Depth (inc remarks: PPDROLC Vetland Hyd Primary Indica Surface V High Wat Saturatio	Ches): 3 Contemporal and the second s	one is suffic	cient)		Sparsely V Marl Depo	/egetated osits (B15)	Concave S	5 5 . ,	Wat	er Stained Leaves (B9) nage Patterns (B10) lized Rhizospheres along Living Roots (C3 ence of Reduced Iron (C4)
Depth (inc Remarks: IYDROLC Vetland Hyd Primary Indica Surface V High Wat Saturatio Water Ma	DGY drology Inc ators (any o Water (A1) ter Table (A on (A3) arks (B1)	o <u>ne is suffic</u> 2)	cient)		Sparsely V Marl Depo Hydrogen	/egetated osits (B15) Sulfide Oo	Concave S dor (C1)	5 5 . ,	Wat Urai Urai Urai Urai Urai Urai Urai Urai	er Stained Leaves (B9) nage Patterns (B10) lized Rhizospheres along Living Roots (C3 sence of Reduced Iron (C4) Deposits (C5)
Depth (inc remarks: IYDROLC Vetland Hyd Primary Indic: Surface V High Wat Saturatio Water Ma Sediment	DGY drology Inc ators (any o Water (A1) ter Table (A on (A3) arks (B1) t Deposits (I	o <u>ne is suffic</u> 2)	cient)		Sparsely V Marl Depo Hydrogen Dry-Seaso	/egetated osits (B15) Sulfide Oo on Water T	Concave S dor (C1) Table (C2)	5 5 . ,	Wat Urai Urai Urai Urai Urai Urai Urai Urai	er Stained Leaves (B9) nage Patterns (B10) lized Rhizospheres along Living Roots (C3 sence of Reduced Iron (C4) Deposits (C5) tted or Stressed Plants (D1)
Depth (inc Remarks: IYDROLC Vetland Hyc Primary Indic: Surface V High Wat Saturatio Water Ma Sedimeni Drift Dep	DGY drology Inc ators (any o Water (A1) ter Table (A on (A3) arks (B1) t Deposits (I posits (B3)	n <u>e is suffic</u> 2) B2)	cient)		Sparsely V Marl Depo Hydrogen	/egetated osits (B15) Sulfide Oo on Water T	Concave S dor (C1) Table (C2)	5 5 . ,	Wat Urai Urai Urai Urai Urai Urai Urai Urai	er Stained Leaves (B9) nage Patterns (B10) lized Rhizospheres along Living Roots (C3 sence of Reduced Iron (C4) Deposits (C5) tted or Stressed Plants (D1) morphic Position (D2)
Depth (inc Remarks: ATTENDEDCO ANDECO ANDECO	DGY drology Inc ators (any o Water (A1) ter Table (A on (A3) arks (B1) t Deposits (I oosits (B3) t or Crust (B	n <u>e is suffic</u> 2) B2)	cient)		Sparsely V Marl Depo Hydrogen Dry-Seaso	/egetated osits (B15) Sulfide Oo on Water T	Concave S dor (C1) Table (C2)	5 5 . ,	Wat Wat Wat Wat Wat Stat Geo Stat Stat Stat Stat Stat Stat Stat Sta	er Stained Leaves (B9) nage Patterns (B10) lized Rhizospheres along Living Roots (C3 ence of Reduced Iron (C4) Deposits (C5) nted or Stressed Plants (D1) morphic Position (D2) low Aquitard (D3)
Depth (inc Remarks: IVDROLC Vetland Hyc Primary Indic: Surface V High Wat Saturatio Water Ma Sedimeni Drift Dep Algal Mat Iron Dep	DGY drology Inc ators (any o Water (A1) ter Table (A on (A3) arks (B1) t Deposits (I posits (B3)	<u>ne is suffic</u> 2) B2) 34)	cient)		Sparsely V Marl Depo Hydrogen Dry-Seaso	/egetated osits (B15) Sulfide Oo on Water T	Concave S dor (C1) Table (C2)	5 5 . ,	Wat Wat Wat Wat Wat Wat Wat Stat Salt Geo Wat Micr	er Stained Leaves (B9) nage Patterns (B10) lized Rhizospheres along Living Roots (C3 sence of Reduced Iron (C4) Deposits (C5) tted or Stressed Plants (D1) morphic Position (D2)

Depth (inches):

Depth (inches):

Depth (inches):

Yes 🔘 No 🖲

Yes 🔿 No 🖲

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available: BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

U.S. Army Corps of Engineers

Surface Water Present?

(includes capillary fringe)

Water Table Present?

Saturation Present?

Remarks:

Yes 🔿 No 💿

Wetland Hydrology Present?

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date: 2	3-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_31
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Flat	
Local relief (concave, convex, none): <u>flat</u>	Slope: <u>0.0</u> % / <u>0.0</u> ° Elevation: <u>175</u>		
Subregion : Northern Alaska Lat.:	66.9758883333333 Long.: _160.4478733	333333 Datum	n: WGS84
Soil Map Unit Name:	NWI classi	ification: Upland	
	ear? Yes No (If no, explain in htly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No 〇
			. .

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ○ Yes ●		Is the Sampled Area within a Wetland?	Yes \bigcirc No \odot
Remarks: spoils area? elevated 2	-3 ft from a	djacent undisturbed tundra.	STCW, physio upland (c	listurbed), geomorph fto (disturbed).

		bsolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	%	5 Cover	Species?	Status	Number of Dominant Species
1					That are OBL, FACW, or FAC: <u>6</u> (A)
2	_				Total Number of Dominant
3					Species Across All Strata:6(B)
4.					Percent of dominant Species That Are OBL_EACW_or EAC: 100.0% (A/B)
5	_				That Are OBL, FACW, or FAC:(A/B)
5. Total Cove	r:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0	20% (of Total Cover:	0	Total % Cover of: Multiply by:
1 Betula glandulosa		10		FAC	OBL species $0 \times 1 = 0$
2. Salix alaxensis	-	40	\checkmark	FAC	FACW species36 x 2 =72
3. Salix bebbiana	-	30	\checkmark	FAC	FAC species x 3 =393
4 Betula nana	-	10		FAC	FACU species8_ x 4 =32
5. Salix arbusculoides	-	5		FACW	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
6. Salix richardsonli	_	10		FACW	Column Totals:(A)497(B)
7 Picea glauca	-	5		FACU	Prevalence Index = $B/A = 2.840$
8 Vaccinium vitis-idaea	_	30	\checkmark	FAC	
9. Ledum decumbens	_	7		FACW	Hydrophytic Vegetation Indicators:
10. Dasiphora fruticosa	_	1		FAC	✓ Dominance Test is > 50%
Total Cove	r:	148			✓ Prevalence Index is ≤3.0
_Herb Stratum50% of Total Cover:	74	20%	of Total Cover:	29.6	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1 Carex bigelowii		10	\checkmark	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Chamerion angustifolium	_	3		FACU	¹ Indicators of hydric soil and wetland hydrology must
3. Equisetum pratense		7	\checkmark	FACW	be present, unless disturbed or problematic.
4 Arctagrostis latifolia	_	7	\checkmark	FACW	
5					Plot size (radius, or length x width) 5m
6					% Cover of Wetland Bryophytes
7					(Where applicable)
8					% Bare Ground _0
9					Total Cover of Bryophytes 95
10	_				
Total Cove	r:	27			Hydrophytic Vegetation
50% of Total Cover:	13.5	20% (of Total Cover:	5.4	Present? Yes \bullet No \bigcirc
Remarks: trace spiste					

Profile Description: Describe to depth needed Depth Matrix		Red	ox Featur	es				
Depth - (inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-22					<u></u>		Sapric Organics	
			······································					
					······································			
							_	
¹ Type: C=Cond	centration D=Depletion	on RM=Red	uced Matrix ² Locatio	n: PL=Po	re Lining	RC=Root	Channel M=Matrix	
Hydric Soil I	ndiactore		Indicators for	Problema	tic Hydri	c Soils ³		
_			Alaska Color		4	c 30113.	Alaska Gleyed Without	Live EV or Dedder
	r Histel (A1) bedon (A2)						Underlying Layer	Hue SY OF Reddel
=			Alaska Redox				Other (Explain in Rema	rks)
	Sulfide (A4)			C WITT 2.5	nue			
	< Surface (A12)		³ One indicator	of hydroph	nytic veget	ation, one	primary indicator of wetland	hydrology,
Alaska Gle			and an appropr	iate landso	ape positi	on must b	e present	
Alaska Red	. ,		⁴ Give details of	color chai	nge in Rer	narks		
	eyed Pores (A15)				5			
Restrictive La	ayer (if present):							
Type: activ	ve layer (frozen)						Hydric Soil Present?	Yes 🔿 No 🖲
Depth (incl	nes): 22							
Remarks:							· ·	
	is a spoils area during	original air	strip construction, whe	re overbu	rden was j	oiled. Canr	not apply A2 as no indication	that soils have wetland hydrology
	1 5							, ,
suspect this wa (saturation).								
(saturation).								
(saturation).	IGY						Secondary In	dicators (two or more are required)
(saturation). HYDROLO Wetland Hyd		cient)						dicators (two or more are required) ained Leaves (B9)
(saturation). HYDROLO Wetland Hyd	GY rology Indicators:	cient)		Visible on	Aerial Im	agery (B7	Water Sta	
(saturation). HYDROLO Wetland Hyd Primary Indica Surface W	GY rology Indicators: itors (any one is suffic	cient)	Inundation			0 5) Water Sta	ained Leaves (B9)
(saturation). HYDROLO Wetland Hyd Primary Indica Surface W	GY rology Indicators: itors (any one is suffic vater (A1) er Table (A2)	cient)	Inundation Sparsely Vo	egetated C		0 5	Water State) Drainage) Oxidized	ained Leaves (B9) Patterns (B10)

Saturation (A3)			Marl Deposits (B15)	Presence of Reduced Iron (C4)
Water Marks (B1)			Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)
Sediment Deposits (B2)			Dry-Season Water Table (C2) Stunted or Stressed Plants (D1)
Drift Deposits (B3)			Other (Explain in Remarks)	Geomorphic Position (D2)
Algal Mat or Crust (B4)				Shallow Aquitard (D3)
Iron Deposits (B5)				Microtopographic Relief (D4)
Surface Soil Cracks (B6)				FAC-neutral Test (D5)
Field Observations:				
Surface Water Present?	$_{ m Yes}$ \bigcirc	No 🖲	Depth (inches):	
Water Table Present?	$_{ m Yes}$ \bigcirc	No 🖲	Depth (inches):	Wetland Hydrology Present? Yes $ullet$ No $igodot$
Saturation Present? (includes capillary fringe)	$_{\rm Yes} \bigcirc$	No 🖲	Depth (inches):	
Describe Recorded Data (strea	ım gauge, m	nonitor well	, aerial photos, previous inspection)) if available:
BLM RAWS Kiana site recorded	15.4in preci	p in Aug 20	012, mean for previous 10 yrs in Au	g is 3.0in (SD 1.5in).
Remarks:				
soils moist to active layer, but	no saturatio	on.		

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_32
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Flat
Local relief (concave, convex, none): <u>flat</u>	_ Slope:% / ° Elevation:	
Subregion : Northern Alaska Lat.:	<u>66.9762133333333</u> Long.: <u>-160.44133</u>	Datum: WGS84
Soil Map Unit Name:	NWI classi	fication: PEM1B
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes \odot No \bigcirc

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes •	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc		
Remarks: wet emergent area (br green in aerial), adjacent to slightly higher, drier emergent area dominated by chaang (tan in aerial). Swale next to						

airstrip here is dry.HGMB. Physog upland.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of dominant Species
5				That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
D. — Total Cover	. 0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0 20% c	of Total Cover:	0	Total % Cover of: Multiply by:
				OBL species x 1 =
1				FACW species 3 x 2 = 6
2				FAC species <u>104</u> x 3 = <u>312</u>
3				FACU species $5 \times 4 = 20$
4				
5				
6				Column Totals: <u>112</u> (A) <u>338</u> (B)
7				Prevalence Index = $B/A = 3.018$
8				
9				Hydrophytic Vegetation Indicators:
10				✓ Dominance Test is > 50%
Total Cover	. 0			Prevalence Index is ≤3.0
50% of Total Cover:	0 20% 0	of Total Cover:	0	Morphological Adaptations ¹ (Provide supporting
Herb Stratum				data in Remarks or on a separate sheet)
1. Calamagrostis canadensis	90		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Chamerion angustifolium	5		FACU	¹ Indicators of hydric soil and wetland hydrology must
3. Carex bigelowii	10		FAC	be present, unless disturbed or problematic.
4 Equisetum arvense	3		FAC	
5. Polemonium acutiflorum	1		FAC	Plot size (radius, or length x width) 5m
6 Salix pulchra	3		FACW	
7				% Cover of Wetland Bryophytes (Where applicable)
8				% Bare Ground _0
				Total Cover of Bryophytes 95
9				
10Total Cover	112			Hydrophytic
		of Total Cover:	22.4	Vegetation Present? Yes • No O
	20%0	n rotai Cover:		
Remarks: carbig tussocks w shallow standing water. Sal	oul grouped	with herbs fo	r dominan	ce test, as total shrub cover <5%

Profile Desc	cription: Desc	cribe to (depth	needed to d	ocument th	ie presen	ice or abs	sence of in	dicators	
Depth (inchos)		Matrix				dox Featu	ures Type ¹		Taxtura	Demorko
(inches) 0-1	Color (m	10151)	%	000	or (moist)	_%	Type	Loc ²	Texture Fibric Organics	Remarks
1-9									Hemic Organics	pocket of 10Y4/1 si cl lo
9-19	10Y	4/2	85	10YR	4/4	15	C	PL	Silty Clay Loam	2% semi-ang fine gravels
		,								
										•
	·	r								
¹ Type: C=Cor	ncentration D	=Depletic	n RM-	=Reduced Ma	trix ² Locati	on: PL=P	ore Lining	RC=Root (Channel M=Matrix	
Hydric Soil	Indicators:		_	Inc	dicators for	Problem	natic Hydr	ric Soils: ³		
Histosol	or Histel (A1)				Alaska Color	r Change ((TA4) ⁴		✓ Alaska Gleyed Witho	ut Hue 5Y or Redder
Histic Ep	oipedon (A2)				Alaska Alpin				Underlying Layer	
_ , ,	en Sulfide (A4)				Alaska Redo	ox With 2.5	5Y Hue		Other (Explain in Re	marks)
	ark Surface (A1	12)		3 (One indicator	of hydror	nhvtic veg	etation one	e primary indicator of wetla	and hydrology
	Gleyed (A13)			ar	nd an approp	riate lands	scape posi	ition must b	e present	nu nyu ology,
	Redox (A14)	A 1 F \		4 (Give details o	of color cha	ange in Re	emarks		
	Gleyed Pores (A									
	Layer (if pres	-							Hydric Soil Presen	nt? Yes $ullet$ No $igodom$
	ctive layer (froz	<u>z</u> en)							Hydric soli Presen	Triangle in the second
Depth (in	ches): 10									
Remarks:										
HYDROL	000				1			1		
-	drology India	cators:							Secondary	Indicators (two or more are required)
5	cators (any one		cient)							Stained Leaves (B9)
Surface				[Inundatio	n Visible c	on Aerial Ir	magery (B7)		age Patterns (B10)
	ater Table (A2))			_			Surface (B8)	, 	ed Rhizospheres along Living Roots (C3)
Saturatio	. ,			Γ	Marl Depo					nce of Reduced Iron (C4)
Water Marks (B1)							Salt D	eposits (C5)		
_	nt Deposits (B2	2)		E	Dry-Seaso				_	ed or Stressed Plants (D1)
	eposits (B3)			L	Other (Exp	plain in Re	emarks)		_	orphic Position (D2)
	at or Crust (B4))							_	w Aquitard (D3)
	posits (B5)								_	opographic Relief (D4)
	Soil Cracks (Be	6)							E FAC-ne	eutral Test (D5)
Field Observ		Vos	.		Drath (in	·). 0				
Surface Wat					Depth (ind					
Water Table	Present?	Yes	; • I	No 🔿	Depth (ind	ches): 5		W	etland Hydrology Prese	ent? Yes 🖲 No 🔾

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes 💿 No 🔿

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches): 1

Remarks:

Saturation Present?

(includes capillary fringe)

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough Sampling Date: 23-Aug-12
Applicant/Owner: USKH/ADOT&PF	Sampling Point: K_33
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.): Flat
Local relief (concave, convex, none):	_ Slope:% /° Elevation:165
Subregion : Northern Alaska Lat.:	<u>66.9761116666667</u> Long.: <u>-160.441348333333</u> Datum: <u>WGS84</u>
Soil Map Unit Name:	NWI classification: Upland
Are climatic/hydrologic conditions on the site typical for this time of ye	
Are Vegetation 🗌 , Soil 🗌 , or Hydrology 🗌 significant	tly disturbed? Are "Normal Circumstances" present? Yes $ullet$ No $igodot$
Are Vegetation 🗌 , Soil 🗌 , or Hydrology 🗌 naturally p	problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present?	Yes 🔾 No 🖲	Is the Sampled Area				
Hydric Soil Present?	Yes 🔘 No 🖲	within a Wetland? Yes \bigcirc No \bigcirc				
Wetland Hydrology Present?	Yes 🔿 No 🖲					

narks: spoils area? herb gram mesic calcan/chaang, physio upland (disturbed), geomorph fto (disturbed), nonpatterned. if indistinguishable from adjacent PEM,map whole herb community as wetland. both u and pem present along side of airstrip.HGMB.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4.				Percent of dominant Species That Are OBL_EACW_or_EAC: 50.0% (A/B)
5				That Are OBL, FACW, or FAC:
Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0 20%	of Total Cover:	0	Total % Cover of: Multiply by:
1				OBL species x 1 =
1				FACW species $0 \times 2 = 0$
2				FAC species x 3 =159
3				FACU species42 x 4 =168
4				UPL species $0 \times 5 = 0$
5				Column Totals:95(A)327(B)
6				
7				Prevalence Index = $B/A = 3.442$
8				Hydrophytic Vegetation Indicators:
9				Dominance Test is > 50%
TO: Total Cover:	0	_		Prevalence Index is ≤3.0
		of Total Cover:	0	Morphological Adaptations ¹ (Provide supporting
Herb Stratum	20/0			data in Remarks or on a separate sheet)
1. Chamerion angustifolium	40		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Calamagrostis canadensis	40		FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Deschampsia caespitosa	3		FAC	be present, unless disturbed or problematic.
4. Artemisia tilesii	2		FACU	
5. Carex bigelowii	10		FAC	Plot size (radius, or length x width) 2m
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8				% Bare Ground
9				Total Cover of Bryophytes
10				Hydrophytic
Total Cover:	95			Vegetation
50% of Total Cover:4	7.5 20%	of Total Cover:	19	Present? Yes 🔿 No 🖲
Remarks:				

Profile Desc	ription: Describe	to depth ne	eded to document th	e presen	ce or abs	ence of in	ndicators	
Depth Matrix Redox Features								
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-1							Hemic Organics	
1-25		100				-	Sapric Organics	pocket of 2.5y 5/2 silt loam.
1-25								
					-	-	·	
¹ Type: C=Cor	ncentration D=Depl	etion RM=Re	educed Matrix ² Locatio		0		Channel M=Matrix	
Hydric Soil	Indicators:		Indicators for	Problem	atic Hydr	ric Soils: ³		
Histosol	or Histel (A1)		Alaska Color	Change (TA4)		Alaska Gleyed Withou	It Hue 5Y or Redder
Histic Ep	ipedon (A2)		🗌 Alaska Alpin	e swales (TA5)		Underlying Layer	
Hydroge	n Sulfide (A4)		🗌 Alaska Redo	x With 2.5	iY Hue		Other (Explain in Ren	narks)
Thick Da	rk Surface (A12)							
🗌 Alaska G	leyed (A13)		³ One indicator and an approp				e primary indicator of wetlar	nd hydrology,
🗌 Alaska R	edox (A14)		anu an approp	late lanus	cape posi	lion must b	e present	
🗌 Alaska G	leyed Pores (A15)		⁴ Give details o	f color cha	inge in Re	marks		
Postrictivo I	_ayer (if present):							
							Hydric Soil Present	? Yes 🔿 No 🖲
Type: ac Depth (in	5							
	20							
Remarks:								
disturbed, like	ely was a spoils site t	for organic ov	erburden during origin	al airstrip	construction	on. Cannot	apply A2 as there is no ind	cation of wetland hydrology (saturation).
HYDROL	OGY							
	drology Indicators	s:					Secondary	ndicators (two or more are required)
-	ators (any one is su							Stained Leaves (B9)
·	Water (A1)			n Visible o	n Aerial In	nagery (B7)		ge Patterns (B10)
	iter Table (A2)					Surface (B8	· ·	d Rhizospheres along Living Roots (C3)
Saturatio			Marl Depo	0	- 5			ce of Reduced Iron (C4)
Water M			Hydrogen		dor (C1)			posits (C5)
	t Deposits (B2)		Dry-Seaso					d or Stressed Plants (D1)
	posits (B3)		Other (Exp					rphic Position (D2)
· _ ·	t or Crust (B4)				indi noy			v Aquitard (D3)
	oosits (B5)							pographic Relief (D4)
Surface	Soil Cracks (B6)							utral Test (D5)
Field Observ								
Surface Wat		ves 🔿 No	Depth (ind	hes):				
Water Table		ves 💿 No				w	etland Hydrology Preser	nt? Yes 🔿 No 🖲
Saturation P		'es 🖲 No	(
		nauge monity	pr well, aerial photos, p	revious in	spection	if available.		
			Aug 2012, mean for pre					
	and site recorded 5.		nay 2012, mean for pre		yi sini Aug	13 3.011 (31	י י.טווון.	
Remarks:								
no wetland h	ydrology indicators							

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_34
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.)	Swale
Local relief (concave, convex, none):	_ Slope:% /° Elevation:175	ı
Subregion : Northern Alaska Lat.	<u>66.97602</u> Long.: <u>-160.440113</u>	3333333 Datum: WGS84
Soil Map Unit Name:	NWI class	sification: PEM1H
	ear? Yes O No O (If no, explain i itly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes No
	ing compliant point locations, trans	a a ta line a sut a sut fa a turra a

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc			
Remarks: equflu swale w standing water. HFWF. Physog upland.							

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3.				Species Across All Strata: (B)
4.				Percent of dominant Species
				That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
5. — Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0 20% c	of Total Cover:	0	Total % Cover of: Multiply by:
				OBL species <u>34</u> x 1 = <u>34</u>
1				FACW species $0 \times 2 = 0$
2				FAC species $0 \times 3 = 0$
3				FACU species $1 \times 4 = 4$
4				UPL species $\frac{0}{x5} = \frac{0}{2x5}$
5				Column Totals: 35 (A) 38 (B)
6				$\begin{array}{c} \text{Column lotals:} \underline{33} (A) \underline{36} (C) \\ \end{array}$
7				Prevalence Index = $B/A = 1.086$
8				Hydrophytic Vegetation Indicators:
9				✓ Dominance Test is > 50%
10				✓ Prevalence Index is ≤3.0
Total Cover:	0			Morphological Adaptations ¹ (Provide supporting
_Herb Stratum50% of Total Cover:	0 20% c	of Total Cover:	0	data in Remarks or on a separate sheet)
1. Equisetum fluviatile	30	\checkmark	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Hordeum jubatum	1		FACU	¹ Indicators of hydric soil and wetland hydrology must
3 Carex aquatilis	1		OBL	be present, unless disturbed or problematic.
Juncus arcticus	2		OBL	
5. Juncus alpinoarticulatus ssp. nodulosus	1		OBL	Plot size (radius, or length x width) 2m x5m
6				% Cover of Wetland Bryophytes
7				(Where applicable)
8				% Bare Ground 95
9				Total Cover of Bryophytes _0
10				Hydrophytic
Total Cover:	35			Vegetation
50% of Total Cover:1	7.5 20% c	of Total Cover:	7	Present? Yes \bullet No \bigcirc
Remarks:				

	Redox Features		
(inches) Color (moist) 9	<u>Color (moist) % Type</u> I	oc ² Texture	Remarks
	M=Reduced Matrix ² Location: PL=Pore Lining RC		
Hydric Soil Indicators: Histosol or Histel (A1)	Indicators for Problematic Hydric S Alaska Color Change (TA4)	olls:	lue 5V or Redder
Histic Epipedon (A2)	Alaska Alpine swales (TA5)	Underlying Layer	
Hydrogen Sulfide (A4)	Alaska Redox With 2.5Y Hue	✓ Other (Explain in Remain Memain)	ks)
Thick Dark Surface (A12)	³ One indicator of hydrophytic vegetati	on, one primary indicator of wetland	hydrology,
Alaska Gleyed (A13)	and an appropriate landscape position	must be present	
Alaska Gleyed Pores (A15)	⁴ Give details of color change in Remar	<s< td=""><td></td></s<>	
Restrictive Layer (if present):			0.00
Туре:		Hydric Soil Present?	Yes $ullet$ No $igcap$
Depth (inches):			
Depth (inches): Remarks:	estation and standing water		
Depth (inches):	getation and standing water		
Depth (inches): Remarks:	getation and standing water		
Depth (inches): Remarks:	getation and standing water		
Depth (inches): Remarks:	getation and standing water		
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators:			icators (two or more are required)
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one is sufficient)		Water Sta	ined Leaves (B9)
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1)	Inundation Visible on Aerial Image	ry (B7) Water Sta	ined Leaves (B9) Patterns (B10)
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2)	Inundation Visible on Aerial Image	ry (B7) Water Sta ce (B8) Oxidized	ined Leaves (B9) Patterns (B10) Rhizospheres along Living Roots (C3)
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2) Saturation (A3)	Inundation Visible on Aerial Image Sparsely Vegetated Concave Surfa	ry (B7) Water Sta ce (B8) Oxidized Presence	ined Leaves (B9) Patterns (B10) Rhizospheres along Living Roots (C3) of Reduced Iron (C4)
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	Inundation Visible on Aerial Image Sparsely Vegetated Concave Surfa Marl Deposits (B15) Hydrogen Sulfide Odor (C1)	ry (B7) Water Sta ce (B8) Oxidized Presence Salt Depo	ined Leaves (B9) Patterns (B10) Rhizospheres along Living Roots (C3) of Reduced Iron (C4) sits (C5)
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	Inundation Visible on Aerial Image Sparsely Vegetated Concave Surfa Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)	ry (B7) Water Sta ce (B8) Oxidized Presence Salt Depo	ined Leaves (B9) Patterns (B10) Rhizospheres along Living Roots (C3) of Reduced Iron (C4) sits (C5) r Stressed Plants (D1)
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) ✓ Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	Inundation Visible on Aerial Image Sparsely Vegetated Concave Surfa Marl Deposits (B15) Hydrogen Sulfide Odor (C1)	ry (B7) Water Sta ce (B8) Oxidized Presence Salt Depo Stunted o Geomorpl	ined Leaves (B9) Patterns (B10) Rhizospheres along Living Roots (C3) of Reduced Iron (C4) sits (C5) r Stressed Plants (D1) hic Position (D2)
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) ✓ Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	Inundation Visible on Aerial Image Sparsely Vegetated Concave Surfa Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)	ry (B7) Water Sta ce (B8) Oxidized Presence Salt Depo Geomorpl Shallow A	ined Leaves (B9) Patterns (B10) Rhizospheres along Living Roots (C3) of Reduced Iron (C4) sits (C5) r Stressed Plants (D1) nic Position (D2) quitard (D3)
Depth (inches): Remarks: assume hydric soil due to hydrophytic veg HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) ✓ Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	Inundation Visible on Aerial Image Sparsely Vegetated Concave Surfa Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)	ry (B7) Water Sta ce (B8) Oxidized Presence Salt Depo Geomorpl Shallow A	ined Leaves (B9) Patterns (B10) Rhizospheres along Living Roots (C3) of Reduced Iron (C4) sits (C5) r Stressed Plants (D1) nic Position (D2) quitard (D3) graphic Relief (D4)

Depth (inches): 20

Depth (inches):

Depth (inches):

Yes 🔘 No 🖲

 $_{\rm Yes} \odot \ _{\rm No} \odot$

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available: BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Surface Water Present?

(includes capillary fringe)

iron floc and biogenic sheen

Water Table Present?

Saturation Present?

Remarks:

Yes 🖲

Wetland Hydrology Present?

No 🔿

	Sampling Point:	K_35
Landform (hillside, terrace, hummocks etc.):	Flat	
Slope: <u>0.0</u> % / <u>0.0</u> ° Elevation: <u>190</u>		
66.976875 Long.: <u>-160.436981</u>	666667 Datum	n: WGS84
NWI class	ification: PSS1B	
ntly disturbed? Are "Normal Circumstances"	present? Yes 🖲	No O
/	Slope:% /° Elevation:90 :Long.:160.436981 NWI class year? Yes ○ No	Landform (hillside, terrace, hummocks etc.): Flat Slope: 0.0 % / 0.0 ° Elevation: 190 : 66.976875 Long.: -160.436981666667 Datum NWI classification: PSS1B year? Yes No (If no, explain in Remarks.) htly disturbed? Are "Normal Circumstances" present? Yes ()

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present?	Yes 🖲	No O	Is the Sampled Area		
Hydric Soil Present?	Yes 🖲	No 🔿		Yes 🖲 No 🔾	
Wetland Hydrology Present?	Yes 🖲	No O	within a Wetland?		
Demarks: disturbed calls where a Q begins where is small evaluation and exact to singly in where between small evaluated by the EDMT					

Remarks: disturbed soils w buried O horizon. water in small swale adjacent to airstrip, upland between small swale and here.FBWT.

		Absolute		Indicator	Dominance Test worksheet:
<u></u>	ee Stratum	% Cover		Status	Number of Dominant Species
1.	Salix alaxensis	25		FAC	That are OBL, FACW, or FAC:5 (A)
2. 3.	Salix arbusculoides			FACW	Total Number of Dominant Species Across All Strata: <u>6</u> (B)
4.					Percent of dominant Species That Are OBL, FACW, or FAC: <u>83.3%</u> (A/B)
5.					Prevalence Index worksheet:
	Total Cover:	30	(c	Total % Cover of: Multiply by:
Sap	ling/Shrub Stratum 50% of Total Cover: 1	.5 20%	of Total Cover:	6	OBL species x 1 =
1.	Picea glauca	3		FACU	
2.	Salix arbusculoides	10		FACW	
3.	Salix alaxensis	20	\checkmark	FAC	FAC speciles $97 \times 3 = 291$
4.	Salix richardsonii	5		FACW	FACU speci es $28 - x 4 = 112$
5.	Salix bebbiana	10	\checkmark	FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$
6.					Column Totals: <u>147</u> (A) <u>447</u> (B)
					Prevalence Index = $B/A = 3.041$
8.					Hydrophytic Vegetation Indicators:
9.					Dominance Test is > 50%
10.					
	Total Cover:	48			☐ Prevalence Index is ≤3.0
"Н	erb Stratum 50% of Total Cover: 2	20%	of Total Cover:	9.6	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1.	Artemisia tilesii	5		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Equisetum arvense	30	\checkmark	FAC	¹ Indicators of hydric soil and wetland hydrology must
3.	Chamerion angustifolium	20	\checkmark	FACU	be present, unless disturbed or problematic.
4.	Parnassia palustris	1		FACW	
5.	Calamagrostis canadensis	5		FAC	Plot size (radius, or length x width) 5m
6.	Galium trifidum	1		FACW	% Cover of Wetland Bryophytes
7.	Polemonium acutifiorum	2		FAC	(Where applicable)
8.	Deschampsia caespitosa	5		FAC	% Bare Ground 50
9.					Total Cover of Bryophytes 45
•.					
10.	Total Cover:	69			Hydrophytic Vegetation
	50% of Total Cover:34	1.5 20%	of Total Cover:	13.8	Present? Yes No
Rem	arks:				

S	O	I	L
-	~		-

Depth	ription: Desc M	latrix				ox Featu				
(inches)	Color (m		%	Color	(moist)	%	Type ¹	Loc ²	Texture	Remarks
0-1									Fibric Organics	
1-7	5Y	4/1	95	10YR	4/4	5	С	PL	Silty Clay Loam	substantial organic inclusions
7-15									Sapric Organics	
15-18	10Y	4/1	90	2.5Y	4/2	10	C	PL	Silty Clay Loam	
18-22	5Y	4/1 8	30	2.5Y	4/4	20	C	PL	Silty Clay Loam	
	ncentration D=	=Depletion	RM=Reduc	ced Matrix		on: PL=P	ore Linina	RC=Root	Channel M=Matrix	
5.	Indicators:				ators for					
Histosol Histic Ep Hydroge	or Histel (A1) ipedon (A2) n Sulfide (A4)			□ A □ A	laska Color laska Alpine laska Redo	Change e swales	4 (TA4) (TA5)		 Alaska Gleyed Without Underlying Layer Other (Explain in Reference) 	out Hue 5Y or Redder emarks)
✓ Alaska G✓ Alaska R	irk Surface (A1: ileyed (A13) iedox (A14) ileyed Pores (Ai			and	e indicator an appropr e details of	riate land	scape posi	tion must k	e primary indicator of weth e present	and hydrology,
Restrictive I Type: si Depth (in		ent):							Hydric Soil Prese	nt? Yes 🖲 No 🔿
Remarks:										
IYDROL	OGY									
Primary India Surface High Wa Saturati Water N Sedimer Drift De Algal Ma	drology Indic cators (any one Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	e is sufficient)		Inundatior Sparsely V Marl Depo Hydrogen Dry-Seaso Other (Exp	'egetated sits (B15) Sulfide O n Water 기	Concave S dor (C1) Table (C2)) Wated) Drain) Oxidiz Prese Salt D Stunt Geom V Shallo	r Indicators (two or more are required) r Stained Leaves (B9) age Patterns (B10) zed Rhizospheres along Living Roots (C3) nce of Reduced Iron (C4) Deposits (C5) ed or Stressed Plants (D1) norphic Position (D2) ow Aquitard (D3) topographic Relief (D4)
	Soil Cracks (B6	b)								neutral Test (D5)
Field Obser		N C) N- (A)						
Surface Wat Water Table		Yes ⊂ Yes ⊂	-		Depth (inc	-		w	etland Hydrology Prese	ent? Yes $ullet$ No $igodom$

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes 💿 No 🔾

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches): 7

Remarks:

Saturation Present?

(includes capillary fringe)

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date:	23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_36
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Flat	
Local relief (concave, convex, none):	Slope: <u>0.0</u> % / <u>0.0</u> ° Elevation: <u>175</u>		
Subregion : Northern Alaska La	t.: <u>66.97696166666667</u> Long.: <u>-160.43494</u>	Datu	im: WGS84
Soil Map Unit Name:	NWI class	ification: PEM1H	
	f year? Yes No (If no, explain ir antly disturbed? Are "Normal Circumstances" ly problematic? (If needed, explain any answ	present? Yes 🖲	No O
SUMMARY OF FINDINGS - Attach site map sho	wing sampling point locations, trans	ects, importan	t features

Hydrophytic Vegetation Present?	Yes $ullet$ No $igcap$	Is the Sampled Area
Hydric Soil Present?	Yes $ullet$ No $igodot$	
Wetland Hydrology Present?	Yes 🔍 No 🔾	within a Wetland? Tes \odot NO \bigcirc
Remarks: small pond w emerger	nt vegetation. Hgwlgh. Physio upland.	

VEGETATION Use scientific names of plants. List all species in the plot.

			Absolute	Dominant	Indicator	Dominance Test worksheet:
	ee Stratum		% Cover	Species?	Status	Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A)
2.	-					Total Number of Dominant Species Across All Strata:3(B)
						Percent of dominant Species That Are OBL, FACW, or FAC:100.0% (A/B)
5.		Total Cover:	0			Prevalence Index worksheet:
San				of Total Cover:	0	Total % Cover of: Multiply by:
						OBL species 45 x 1 = 45
						FACW species x 2 =
						FAC species $1 \times 3 = 3$
						FACU species $0 \times 4 = 0$
						UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$
						Column Totals:
						Prevalence Index = B/A = 1.054
-						
						Hydrophytic Vegetation Indicators:
						✓ Dominance Test is > 50%
		Total Cover:	0			✓ Prevalence Index is ≤3.0
<u>_H</u>	erb Stratum 50% of Tota	al Cover:	020%	of Total Cover:	0	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1.	Carex utriculata		10		OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Equisetum fluviatile		25		OBL	¹ Indicators of hydric soil and wetland hydrology must
3.	Comarum palustre		10		OBL	be present, unless disturbed or problematic.
4.	Rubus arcticus		0.5		FAC	
5.	Carex crawfordii		0.5		FAC	Plot size (radius, or length x width) 5m
6. 7	Carex canescens		0.5		FACW	% Cover of Wetland Bryophytes (Where applicable)
•••						% Bare Ground 80
-						Total Cover of Bryophytes 15
•.						Hydrophytic
10.		Total Cover:	46.5			Vegetation
	50% of Tota	al Cover: 23	.25 20%	of Total Cover:	9.3	Present? Yes No

Remarks: majority of pond dominated by equflu. point taken where carutr and compal are codominant. water levels high, rubarc submerged. veg may include species not typically submerged.

<u>(inches)</u> Color (moist) % Color (moist) % Type ¹ Loc	
	c ² Texture Remarks
Type: C=Concentration D=Depletion RM=Reduced Matrix ² Location: PL=Pore Lining RC=Rc	voot Channel M=Matrix
Hydric Soil Indicators: Indicators for Problematic Hydric Soils	is: ³
Histosol or Histel (A1) Alaska Color Change (TA4) Histic Epipedon (A2) Alaska Alpine swales (TA5)	Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
Hydrogen Sulfide (A4)	✓ Other (Explain in Remarks)
Thick Dark Surface (A12) Alacha Shund (A12) ³ One indicator of hydrophytic vegetation,	, one primary indicator of wetland hydrology,
Alaska Gleyed (A13) and an appropriate landscape position mu	ust be present
Alaska Gleyed Pores (A15) ⁴ Give details of color change in Remarks	
Restrictive Layer (if present):	Hydric Soil Present? Yes No
Type: Depth (inches):	
emarks:	
ssume hydric soil due to hydrophytic vegetation and standing water	
	Secondary Indicators (two or more are required)
YDROLOGY Vetland Hydrology Indicators: Primary Indicators (any one is sufficient)	Secondary Indicators (two or more are required) U Water Stained Leaves (B9)
Vetland Hydrology Indicators: Primary Indicators (any one is sufficient)	Water Stained Leaves (B9)
/etland Hydrology Indicators:	(B7) Water Stained Leaves (B9)
Vetland Hydrology Indicators: Primary Indicators (any one is sufficient) Surface Water (A1)	(B7) Water Stained Leaves (B9)
Vetland Hydrology Indicators: 'rimary Indicators (any one is sufficient) ✓ Surface Water (A1) High Water Table (A2) Sparsely Vegetated Concave Surface Saturation (A3) Marl Deposits (B15)	(B7) Water Stained Leaves (B9) (B7) Drainage Patterns (B10) (B8) Oxidized Rhizospheres along Living Roots (C3)
Vetland Hydrology Indicators: Primary Indicators (any one is sufficient) ✓ Surface Water (A1) Inundation Visible on Aerial Imagery High Water Table (A2) Sparsely Vegetated Concave Surface Saturation (A3) Marl Deposits (B15) Water Marks (B1) Hydrogen Sulfide Odor (C1)	(B7) Water Stained Leaves (B9) (B7) Drainage Patterns (B10) (B8) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4)
Vetland Hydrology Indicators: Primary Indicators (any one is sufficient) Image: Surface Water (A1) High Water Table (A2) Saturation (A3) Marl Deposits (B15) Water Marks (B1)	(B7) Water Stained Leaves (B9) (B7) Drainage Patterns (B10) (B8) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Salt Deposits (C5)
Vetland Hydrology Indicators: Primary Indicators (any one is sufficient) ✓ Surface Water (A1) High Water Table (A2) Sparsely Vegetated Concave Surface Saturation (A3) Marl Deposits (B15) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2)	(B7) Drainage Patterns (B10) (B8) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Salt Deposits (C5) Stunted or Stressed Plants (D1) Geomorphic Position (D2)
Vetland Hydrology Indicators: Primary Indicators (any one is sufficient) Image: Sufface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	Water Stained Leaves (B9) Drainage Patterns (B10) (B8) Oxidized Rhizospheres along Living Roots (C3) Presence of Reduced Iron (C4) Salt Deposits (C5) Stunted or Stressed Plants (D1)

U.S. Army Corps of Engineers

Water Table Present?

water depth 24+ inches

(includes capillary fringe)

Saturation Present?

Remarks:

Yes 🔘 No 🖲

 $_{\rm Yes} \odot \ _{\rm No} \odot$

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available: BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches):

Depth (inches):

Yes 🖲

Wetland Hydrology Present?

No 🔿

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date:	23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_37
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Flat	
Local relief (concave, convex, none):	Slope: <u>0.0</u> % / <u>0.0</u> ° Elevation: 160		
Subregion : Northern Alaska Lat.:	Long.:	066667 Datu	im: WGS84
Soil Map Unit Name:	NWI classi	fication: PSS1B	
	year? Yes No (If no, explain in ntly disturbed? Are "Normal Circumstances" p problematic? (If needed, explain any answe	present? Yes 🖲	No \bigcirc

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes		Is the Sampled Area within a Wetland?	Yes \bullet No \bigcirc		
Remarks: caribou and moose scat. two dead birds (feathers). SFWWS, physio upland, geomorph fto (disturbed - utility line cleared for lift station?)						

VEGETATION Use scientific names of plants. List all species in the plot.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC:5_(A)
2				Total Number of Dominant Species Across All Strata: 6 (B)
3				
4				Percent of dominant Species That Are OBL, FACW, or FAC:83.3% (A/B)
5				
Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	0 20% c	of Total Cover:	0	Total % Cover of: Multiply by:
1 Betula glandulosa	15	\checkmark	FAC	OBL species <u>1</u> x 1 = <u>1</u>
2. Salix reticulata	7		FAC	FACW species 13 x 2 = 26
3. Salix pulchra	3		FACW	FAC species <u>66</u> x 3 = <u>198</u>
4. Vaccinium uliginosum	15	\checkmark	FAC	FACU species $11 - x 4 = 44$
5. Vaccinium vitis-idaea	5		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$
6. Ledum decumbens	3		FACW	Column Totals:(A)(B)
7 Arctostaphylos rubra	7		FAC	Prevalence Index = $B/A = 2.956$
8. Dasiphora fruticosa	2		FAC	
g Dryas integrifolia	1		FACU	Hydrophytic Vegetation Indicators:
10. Picea glauca	10	\checkmark	FACU	✓ Dominance Test is > 50%
Total Cover:	68			✓ Prevalence Index is ≤3.0
_Herb Stratum50% of Total Cover:	34 20% (of Total Cover:	13.6	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
	5	\checkmark	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
- Caren biralawii	10	\checkmark	FAC	1
Carey magellanica	1		OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
J. Frienberum vaginatum	7	\checkmark	FACW	
6				Plot size (radius, or length x width) 5m
8 7				% Cover of Wetland Bryophytes (Where applicable)
8				% Bare Ground
9				Total Cover of Bryophytes 85
9				
TO Total Cover:	23			Hydrophytic Vegetation
		of Total Cover:	4.6	Present? Yes \bullet No \bigcirc
Remarks: ca 10% lichen cover. trace pedicularis, unid her	bs, polviv, v	vacoxy, parpa	I, valerianr	na

US Army Corps of Engineers

SOIL	SO	L
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Profile Desc	ription: De	escribe to de	epth ne	eded to docu	ment the	preser	nce or abs	ence of in	dicators	
Depth		Matrix				Featu				
(inches)	Color	(moist)	%	Color (I	noist)	%	Type	Loc ²	Texture	Remarks
0-3		·							Fibric Organics	thin band of 5Y4/1 mineral layer at 3in
3-5									Hemic Organics	
5-7									Sapric Organics	
7-20	10Y	4/1	98	2.5Y	5/3	2	C	PL	Silty Clay Loam	thin band of 10YR3/6 at 7in
¹ Type: C=Co	ncentration	D=Depletion	RM=R	educed Matrix	² Location:	: PL=P	ore Lining	RC=Root	Channel M=Matrix	
Hydric Soil	Indicators	:		Indica	tors for Pr	oblem	natic Hydr	ic Soils: ³		
Histosol	or Histel (A1 ipedon (A2)	1)		🗌 Ala	iska Color Cl Iska Alpine s	hange swales	4 (TA4) (TA5)		Alaska Gleyed Witho Underlying Layer	
 Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue Other (Explain in Remarks) Thick Dark Surface (A12) Alaska Gleyed (A13) ³ One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present 										
	edox (A14)			and a	n appropria	te land	scape posit	ion must b	e present	
🗌 Alaska G	leyed Pores	(A15)		⁴ Give	details of c	olor ch	ange in Re	marks		
Restrictive	Layer (if pi	resent):								_
Type: si	cl lo								Hydric Soil Preser	nt? Yes $ullet$ No $igodom$
Depth (in	ches): 7									
HYDROL										
Wetland Hy		dicators:							Secondary	Indicators (two or more are required)
-		one is sufficie	nt)							Stained Leaves (B9)
Surface	Water (A1)			🗌 I	nundation V	isible c	on Aerial Im	nagery (B7)) Drain	age Patterns (B10)
	ater Table (A	42)		_	parsely Veg			urface (B8)		zed Rhizospheres along Living Roots (C3)
Saturati					larl Deposit				_	nce of Reduced Iron (C4)
	larks (B1)				lydrogen Su					Deposits (C5)
	nt Deposits ((82)		_	Dry-Season					ed or Stressed Plants (D1)
	posits (B3) at or Crust (I	D <i>1</i>)			Other (Expla	in in Re	emarks)			orphic Position (D2) w Aquitard (D3)
	posits (B5)	В4)								topographic Relief (D4)
	Soil Cracks	(B6)							_	eutral Test (D5)
Field Obser		(60)								
Surface Wat		Yes () No) (Depth (inche	es):				
Water Table	Present?	Yes (🖲 Na	о [Depth (inche	es): 2		w	etland Hydrology Prese	ent? Yes 🖲 No 🔾
Saturation P (includes ca	pillary fringe	*)) No		Depth (inche	-				
Describe Reco	orded Data ((stream gauge	e, monit	or well, aerial	photos, prev	vious in	ispection) i	f available:		
3LM RAWS Ki	ana site rec	orded 5.4in p	recip in	Aug 2012, me	an for previ	ous 10	yrs in Aug	is 3.0in (SI	D 1.5in).	

Remarks:

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borough</u>	Sampling Date:	23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_38
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Flat	
Local relief (concave, convex, none):	Slope: <u>0.0</u> % / <u>0.0</u> ° Elevation: <u>135</u>		
Subregion : Northern Alaska Lat.:	66.97704166666667 Long.: _160.4280583	333333 Datu	m: WGS84
Soil Map Unit Name:	NWI classi	fication: Upland	
	ear? Yes O No O (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No 🔿

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Ves No Yes No Yes Vo	Is the Sampled Area within a Wetland? Yes O No O				
Wetland Hydrology Present?	Yes 🔾 No 🖲					
Remarks: characterizing danse deciduous signature open tall willow - trees rather than shruhs (15-20ft) FRWT Physica upland						

characterizing dense deciduous signature. open tall willow - trees, rather than shrubs (15-20ft). FBWT. Physog upland.

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tro	ee Stratum	% Cover		Status	Number of Dominant Species
1.	Salix alaxensis	10		FAC	That are OBL, FACW, or FAC:5(A)
2.	Salix arbusculoides			FACW	Total Number of Dominant Species Across All Strata:6(B)
4.					Percent of dominant Species That Are OBL, FACW, or FAC: <u>83.3%</u> (A/B)
5.					Prevalence Index worksheet:
	Total Cover:	15	6		Total % Cover of: Multiply by:
Sapl	ing/Shrub Stratum 50% of Total Cover: 7	.5 20%	of Total Cover:	3	$0\text{BL species} \qquad 0 \qquad \text{x 1} = 0$
1	Salix alaxensis	60		FAC	
2.	Salix arbusculoides	20		FACW	FACW species $55 \times 2 = 110$
3.					FAC speciles $80 \times 3 = 240$
					FACU speci es 25 x 4 = 100
					UPL species x 5 =
-					Column Totals: <u>160</u> (A) <u>450</u> (B)
_					Prevalence Index = B/A =2.813
8					Hydrophytic Vegetation Indicators:
9					\checkmark Dominance Test is > 50%
10					$\mathbf{V} \text{ Prevalence Index is } \leq 3.0$
	Total Cover:	80			
He	erb Stratum50% of Total Cover:4	0 20%	of Total Cover:	16	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1.	Artemisia tilesii	20		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Equisetum pratense	30		FACW	¹ Indicators of hydric soil and wetland hydrology must
3.	Calamagrostis canadensis	10		FAC	be present, unless disturbed or problematic.
4.	Galium boreale	5		FACU	
5.					Plot size (radius, or length x width) _5m
0.					% Cover of Wetland Bryophytes (Where applicable)
					% Bare Ground 85
					Total Cover of Bryophytes 10
10.					Hydrophytic
	Total Cover:	65			Vegetation
	50% of Total Cover: 32	2.5 20%	of Total Cover:	13	Present? Yes No
Rem	arks: galium 4 lvs.				

Depth		Matrix			Red	ox Featu	ires			
(inches)	Color	(moist)	%	Color	(moist)	%	Туре	Loc ²	Texture	Remarks
0-3									Hemic Organics	
3-23	5Y	5/2	65	2.5Y	5/4	15	С	PL	Silt Loam	20% wood and organic inclusions
Type: C=Cor	ncentration	D=Depleti	on RM=Rec	luced Matri	x ² Locatio	on: PL=P	ore Lining	RC=Root C	Channel M=Matrix	
Hydric Soil	Indicators	:		India	cators for	Problem	atic Hydr	ic Soils: ³		
_	or Histel (A1 ipedon (A2))			laska Color laska Alpine	0			Alaska Gleyed Wi Underlying Layer	thout Hue 5Y or Redder
	n Sulfide (A4	4)			laska Redo				Other (Explain in	Remarks)
Thick Da	rk Surface (A12)		3.0		- f				Allowed by selector and
	leyed (A13)				an appropr				primary indicator of we e present	etiand hydrology,
	edox (A14)			4 Giv	ve details of	color cha	ange in Re	marks		
	leyed Pores						3			
Restrictive I	_ayer (if pr	esent):							Hydric Soil Pres	sent? Yes $ullet$ No $igodom$
Type: Depth (in	chos).									
	51103).									
Remarks: disturbed soils	~									
	5.									
HYDROLO Wetland Hy		dicators:							Second	ary Indicators (two or more are required)
Primary India			cient)							iter Stained Leaves (B9)
Surface	Water (A1)				Inundation	visible o	n Aerial Im	nagery (B7)	Dra	ainage Patterns (B10)
High Wa	iter Table (A	2)		\Box				urface (B8)		idized Rhizospheres along Living Roots (C3)
					Marl Depos	-				esence of Reduced Iron (C4)
🗌 Water M	arks (B1)				Hydrogen				Sal	t Deposits (C5)
	nt Deposits (B2)			Dry-Seasor					inted or Stressed Plants (D1)
	oosits (B3)			\Box	Other (Exp				_	omorphic Position (D2)
	t or Crust (E	34)			(_ /p		,			allow Aquitard (D3)
	posits (B5)								_	crotopographic Relief (D4)
	Soil Cracks	(B6)								C-neutral Test (D5)
Field Observ		/								
Surface Wat		Yes	s 🔿 No 🕯	ullet	Depth (inc	hes):				

(includes capillary fringe) Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes 🔿 No 🖲

Yes 🔿 No 🖲

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches):

Depth (inches):

Remarks:

no wetland hydrology indicators

Water Table Present?

Saturation Present?

 $_{\sf Yes}$ \bigcirc

Wetland Hydrology Present?

No 💿

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough	Sampling Date:	23-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_39
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Flat	
Local relief (concave, convex, none): <u>flat</u>	Slope:% /° Elevation:		
Subregion : Northern Alaska Lat.:	: <u>66.9768883333333</u> Long.: <u>-160.425815</u>	Datu	um: WGS84
Soil Map Unit Name:	NWI class	ification: PSS1B	
	year? Yes O No O (If no, explain in ntly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No 🔿

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present?	Yes 🖲	No 🔿	Is the Sampled Area			
Hydric Soil Present?	Yes 🖲	No 🔿		Yes 🖲 No 🔾		
Wetland Hydrology Present?	Yes 🖲	No 🔿	within a Wetland?			
Permarks: flooded small areas appear to tunically have standing water, but doubt the entire willow community does. STOW, Drucing upland						

temarks: flooded. small areas appear to typically have standing water, but doubt the entire willow community does. STOW. Physiog upland.

	Abso	olute D	ominant	Indicator	Dominance Test worksheet:
 1		over S	pecies?	Status	Number of Dominant Species That are OBL, FACW, or FAC:(A)
2					Total Number of Dominant Species Across All Strata:4(B)
3 4		_			Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
5	Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cov			tal Cover:	0	Total % Cover of: Multiply by:
1 Salix richardsonii		20		FACW	OBL species <u>30</u> x 1 = <u>30</u>
I		30		FAC	FACW species 33.5 x 2 = 67
2. Salix alaxensis 3. Salix arbusculoides		10		FACW	FAC species X 3 =249
4 Salix bebbiana		5	\square	FAC	FACU species $0 \times 4 = 0$
5 Salix pulchra	C).5		FACW	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
6.					Column Totals: <u>146.5</u> (A) <u>346</u> (B)
7					Prevalence Index = $B/A = 2.362$
8					
9					Hydrophytic Vegetation Indicators:
10					✓ Dominance Test is > 50%
Tota	Cover: 65	5.5			✓ Prevalence Index is ≤3.0
Herb Stratum 50% of Total Cov	er: <u>32.75</u>	20% of To		13.1	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1. Calamagrostis canadensis		30	\checkmark	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Deschampsia caespitosa		10		FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Equisetum pratense		3		FACW	be present, unless disturbed or problematic.
4. Carex bigelowii		5		FAC	
5. Eriophorum angustifolium		30		OBL	Plot size (radius, or length x width) 5m
6. Equisetum arvense		3		FAC	% Cover of Wetland Bryophytes
7					(Where applicable)
8					% Bare Ground
9					Total Cover of Bryophytes
10					Hydrophytic
		$\frac{31}{20\%}$ of To	tal Covari	16.2	Vegetation Present? Yes • No O
50% of Total Cov	r: <u>40.5</u>	20% Of 10	otal Cover:	16.2	Present? Yes No
Remarks:					

	ription: Describe to Matrix	depth nee	ded to document the Redo	presence or x Features	absence of in	ndicators	
Depth (inches)	Color (moist)	%	Color (moist)		pe ¹ Loc ²	Texture	Remarks
				µ	<i>u</i>	_	
¹ Type: C=Cor	ncentration D=Depleti	on RM=Red	luced Matrix ² Location		-	Channel M=Matrix	
Hydric Soil	Indicators:		Indicators for F		lydric Soils: ³		
Histosol	or Histel (A1)		Alaska Color			Alaska Gleyed Witho	ut Hue 5Y or Redder
Histic Ep	ipedon (A2)		Alaska Alpine			Underlying Layer	
	n Sulfide (A4)		Alaska Redox	With 2.5Y Hue	9	✓ Other (Explain in Rei	marks)
	rk Surface (A12)		³ One indicator of	f hydrophytic	vegetation, on	e primary indicator of wetla	nd hydrology.
	leyed (A13)		and an appropri	ate landscape	position must I	be present	
	edox (A14) Ieyed Pores (A15)		⁴ Give details of	color change i	n Remarks		
	3						
	Layer (if present):					Hydric Soil Presen	t? Yes ● No ◯
Type:						Hydric Soli Presen	\sim Yes \odot No \bigcirc
Depth (in	cnes):						
Remarks:							
assume hydri	c soil due to hydrophyt	ic vegetatior	n and standing water				
HYDROL	DGY						
Wetland Hy	drology Indicators:					Secondary	Indicators (two or more are required)
Primary India	cators (any one is suffi	cient)				Water	Stained Leaves (B9)
Surface	Water (A1)		Inundation	Visible on Aeri	al Imagery (B7		ge Patterns (B10)
	iter Table (A2)		Sparsely Ve	getated Conca	ive Surface (B8		ed Rhizospheres along Living Roots (C3)
Saturatio	. ,		Marl Depos				nce of Reduced Iron (C4)
	larks (B1)			ulfide Odor (C			eposits (C5)
	nt Deposits (B2)			Water Table (_	ed or Stressed Plants (D1)
	posits (B3)		U Other (Expl	ain in Remarks	5)	_	orphic Position (D2)
🔛 Algal Ma	it or Crust (B4)					Shallov	w Aquitard (D3)

Yes

No O

Yes 🔿 No 🖲

Yes 🔿 No 👁

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available: BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches): 6

Depth (inches):

Depth (inches):

✓ Iron Deposits (B5)

Field Observations:

Surface Water Present?

(includes capillary fringe)

iron floc and biogenic sheen in places

Water Table Present?

Saturation Present?

Remarks:

Surface Soil Cracks (B6)

Microtopographic Relief (D4)

Yes 💿

No 🔿

✓ FAC-neutral Test (D5)

Wetland Hydrology Present?

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borouah	Sampling Date: 21-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_MS_01
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Toeslope
Local relief (concave, convex, none): <u>tussocks</u>	Slope: <u>5.2</u> % / <u>3.0</u> ° Elevation: <u>90</u>	
Subregion : Northern Alaska Lat.:	<u>67.00405666666667</u> Long.: <u>-160.501598</u>	333333 Datum: WGS84
Soil Map Unit Name:	NWI class	ification: PSS1B
	ear? Yes No (If no, explain ir tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes $lacksquare$ No $igodol $

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ● Yes ●	No () No () No ()	Is the Sampled Area within a Wetland?	Yes 🖲 No 🔿			
Remarks: flowing water throughout community. All streams high, Kobuk River approaching flood stage. Community may typically be a saturated (B)							

system, w sedimentation and flowing water an unusual event - difficult to tell at this water level. FNWWS, physic upland, geomorph mfrif?, drainages

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1. Picea glauca	7		FACU	That are OBL, FACW, or FAC: (A)
2. Picea mariana	3		FACW	Total Number of Dominant Species Across All Strata:5(B)
3				Percent of dominant Species That Are OBL, FACW, or FAC: <u>80.0%</u> (A/B)
5				Prevalence Index worksheet:
Total Cover:	10			Total % Cover of: Multiply by:
Sapling/Shrub Stratum 50% of Total Cover:	520% d	of Total Cover:	2	
1. Picea glauca	5		FACU	
2. Betula glandulosa	25	\checkmark	FAC	FACW species 16 x 2 = 32
3. Salix richardsonii	10	\checkmark	FACW	FAC species <u>46</u> x 3 = <u>138</u>
4. Vaccinium uliginosum	7		FAC	FACU species 12 x 4 = 48
5. Dasiphora fruticosa	7		FAC	UPL species $0 \times 5 = 0$
6. Salix reticulata	5		FAC	Column Totals: (A) (B)
7. Rubus arcticus	1		FAC	Prevalence Index = $B/A = 2.455$
8. Arctostaphylos rubra	1		FAC	
9				Hydrophytic Vegetation Indicators:
10				✓ Dominance Test is > 50%
Total Cover:	61			✓ Prevalence Index is ≤3.0
Herb Stratum 50% of Total Cover: 30		of Total Cover:	12.2	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1. Carex aquatilis	25	\checkmark	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
2 Equisetum pratense	3		FACW	¹ Indicators of hydric soil and wetland hydrology must
3				be present, unless disturbed or problematic.
4	_			
5				
6				Plot size (radius, or length x width) <u>10m</u>
7				% Cover of Wetland Bryophytes (Where applicable)
8				% Bare Ground
				Total Cover of Bryophytes 50
9				
10Total Cover:	28			Hydrophytic Vegetation
		of Total Cover:	5.6	Present? Yes \odot No \bigcirc
Remarks: picgla stunted, similar in appearance to picmar b			P	

Depth Matrix Redox Features Cinches) Color (moist) % Cype1 Loc2 Texture Remarks 0-3	Profile Desc	ription: Des	cribe to de	pth ner	eded to docu	ument the	preser	nce or abs	sence of ir	ndicators	
Inches) Color (moist) %6 Color (moist) %6 Type ¹ Loc ² Texture Remarks 0-3	Depth		Matrix			Redo	x Featu	ures			
3-7 Hemic Organics 7-8 10YR 2/1 100 Loam heavy organics 8-15 5Y 4/1 85 7.5YR 4/4 15 C PL Sit Loam 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 1* 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 1* 10YPe: C=Concentration D=Depletion RM=Reduced Matrix * Load Addita Add		Color (n	noist)	%	Color (r	moist)	%	Type ¹	Loc ²		Remarks
7.8 10YR 2/1 100 Loam heavy organics 8-15 5Y 4/1 85 7.5YR 4/4 15 C PL Silt Loam 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 15-17 10YR 3/1 7.5 10YR 3/2 Loats heavy organics intervert interve	0-3									Fibric Organics	some mineral content (from flooding)
8-15 5Y 4/1 B5 7.5YR 4/4 15 C PL Sitt Loam 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 15-17 10YR 3/1 75 10YR 3/3 25 C PL Loam heavy organics 15 11dicators Indicators for Problematic Hydric Soils? Alaska Gleyed Without Hue 5Y or Redder Underlying Layor Haska Gleyed Nithout Hue 5Y or Redder Underlying Layor 14 Hydro Suffac (A12) Alaska Redox With 2.5Y Hue O ther (Explain in Remarks) O ther (Explain in Remarks) Restrictive Layer (If present): Type: Type: Hydric Soil Present? Yes No Type: Depth (inches): Econdary Indicators: Secondary Indicators (Inv ore are required) Maska Redox (A	3-7									Hemic Organics	
15-17 10YR 3/1 75 10YR 3/3 25 C PL Leam Meany organics ** Type: C-Concentration D=Depletion RM-Reduced Matrix ** Location: PL=Pore Lining RC=Root Channel M=Matrix Hydric Soli Indicators: Indicators for Problematic Hydric Solis ³ Alaska Cleyed Without Hue 5V or Redder Underlying Layer Histic Epipedion (A2) Alaska Cloir Change (TA4) Alaska Cleyed Without Hue 5V or Redder Underlying Layer Hydrigen Suffice (A1) Alaska Alpine swales (TA5) Other (Explain in Remarks) Thick Dark Surface (A12) and an appropriate landscape position must be present Other (Explain in Remarks) Maska Redox (A14) * Give details of color change in Remarks Restrictive Layer (if present): Type: Type: Depth (inches): * Give details of color change in Remarks No Remarks: soil pit in high area Secondary. Indicators: (two or more are required) * Marka Refox (A13) Give details of Concave Surface (B8) Water Stained Leaves (B9) Mater Stained Leaves (B9) * Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Oxidized Rhizospheres along Living Roots (C	7-8	10YR	2/1	100						Loam	heavy organics
¹ Type: C=Concentration D=Depletion RM=Reduced Matrix ² Location: PL=Pore Lining RC=Root Channel M=Matrix Hydric Soil Indicators: Indicators for Problematic Hydric Soils ³ Alaska Cleyed Without Hue 5Y or Redder Histic Epipedon (A2) Alaska Cloy Change (TA4) Underlying Layer Histic Epipedon (A2) Alaska Apine swales (TA5) Underlying Layer Hydrogen Sulfide (A4) Alaska Apine swales (TA5) Underlying Layer Alaska Redox With 2.SY Hue Other (Explain in Remarks) Alaska Cleyed (A13) ^a One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present Alaska Redox (A14) ^a Give details of color change in Remarks Restrictive Layer (If present): Type: Type: Petph (inches): Remarks: soil pit in high area Wetland Hydrology Indicators: Primary Indicators: (two or more are required) Primary Indicators (Ray one is sufficient) Inundation Visible on Aerial Imagery (87) Water Marks (B1) Inundation Visible on Aerial Imagery (87) Oxidized Rhizospheres along Living Roots (C Mater Marks (B1) Hydrogen Suffide Odor (C1) Satt Deposits (63) Oxidized Rhizospheres along Living Roots (C Water Marks (B1)	8-15	5Y	4/1	85	7.5YR	4/4	15	C	PL	Silt Loam	
Hydric Soil Indicators: Indicators for Problematic Hydric Soils. ³ Histosol or Histel (A1) Alaska Color Change (TA4) Alaska Gleyed Without Hue 5Y or Redder Histic Epipedon (A2) Alaska Color Change (TA4) Underlying Layer Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue Other (Explain in Remarks) Alaska Gleyed (A13) ³ One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present Alaska Gleyed Pores (A15) 4 Give details of color change in Remarks Restrictive Layer (if present): Type: Type: Hydric Soil Present? Yep: Yes (No () Primary Indicators: Secondary Indicators (two or more are required) Primary Indicators (any one is sufficient) Inundation Visible on Aerial Imagery (87) Wettand Hydrology Indicators: Sparsely Vegetated Concave Surface (B8) Primary Indicators (R1) Sparsely Vegetated Concave Surface (B8) Water Table (A2) Sparsely Vegetated Concave Surface (B8) Water Marks (B1) Hydrogen Sulfide Odor (C1) Satt Deposits (C5) Water Marks (B1) Hydrogen Sulfide Odor (C1) Satt Deposits (C5) Water Marks (B1) Hydrogen Sulfide Odor (C1) Sat	15-17	10YR	3/1	75	10YR	3/3	25	C	PL	Loam	heavy organics
Hydric Soil Indicators: Indicators for Problematic Hydric Soils. ³ Histosol or Histel (A1) Alaska Color Change (TA4) Underlying Layer Histic Epipedon (A2) Alaska Color Change (TA4) Underlying Layer Hydrogen Sulfide (A4) Alaska Redox With 2.5Y Hue Other (Explain in Remarks) Alaska Gleyed (A13) ^a One Indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present Alaska Gleyed Pores (A15) ^a One Indicator of color change in Remarks Restrictive Layer (If present): Type: Type: bpth (inches): Remarks: soil pit in high area Soil pit in high area Surface Water (A1) Wettand Hydrology Indicators: Sparsely Vegetated Concave Surface (B8) Primary Indicator s(B1) Innundation Visible on Aerial Imagery (B7) Water Table (A2) Sparsely Vegetated Concave Surface (B8) Water Marks (B1) Hydrogen Sufficient) Drint Deposits (B15) Water Marks (B1) Hydrogen Suffice Odor (C1) Satt Deposits (C5) Water Marks (B1) Hydrogen Suffice Odor (C1) Satt Deposits (C5) Water Marks (B4) Other (Explain in Remarks) Geomorphic Positino (D2)	I										
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Image: state of the state	Hydric Soil	Indicators:						4	ric Soils:	_	
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Imploring unitable (w) Imploring unitable (w) Imploring unitable	Histic Ep	ipedon (A2)									
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Alaska Gleged (A13) and an appropriate fandscape position must be present Image: Contract of the present of t		•	12)		³ One	indicator o	of bydrou	nhytic year	etation on	e primary indicator of wetla	and hydrology
▲ Alaska Gleyed Pores (A15) 4 Give details of color change in Remarks Restrictive Layer (if present): Type: Depth (inches): Hydric Soil Present? Yes ● No ● Remarks: soil pit in high area Soil pit in high area HYDROLOGY Vectand Hydrology Indicators: Primary Indicators (any one is sufficient) Inundation Visible on Aerial Imagery (B7) Vectandage Patterns (B10) Yindicators (A1) Inundation Visible on Aerial Imagery (B7) Oralinage Patterns (B10) Yindicators (A3) Mari Deposits (B15) Presence of Reduced Iron (C4) Water Marks (B1) Hydrogen Sulfide Odor (C1) Salt Deposits (C5) Yes Genomphic Position (D2) Stunted or Stressed Plants (D1) Yes finde Mark (B3) Other (Explain in Remarks) Geomorphic Position (D2)											ina nya ology,
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✓ Saturation (A3) Marl Deposits (B15) Presence of Reduced Iron (C4) Water Marks (B1) Hydrogen Sulfide Odor (C1) Salt Deposits (C5) ✓ Sediment Deposits (B2) Dry-Season Water Table (C2) Stunted or Stressed Plants (D1) ✓ Drift Deposits (B3) Other (Explain in Remarks) Geomorphic Position (D2) ▲ Algal Mat or Crust (B4) Shallow Aquitard (D3))		_					·	
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✓ Sediment Deposits (B2) □ Dry-Season Water Table (C2) □ Stunted or Stressed Plants (D1) ✓ Drift Deposits (B3) □ Other (Explain in Remarks) □ Geomorphic Position (D2) □ Algal Mat or Crust (B4) □ Shallow Aquitard (D3)										_	· · /
✓ Drift Deposits (B3) □ Other (Explain in Remarks) □ Geomorphic Position (D2) □ Algal Mat or Crust (B4) □ Shallow Aquitard (D3)			2)								
Algal Mat or Crust (B4)	_				_	5					
			ł)					-		Shallo	w Aquitard (D3)
										Microt	opographic Relief (D4)
□ Surface Soil Cracks (B6)	Surface	Soil Cracks (B	6)							FAC-n	eutral Test (D5)
Field Observations:	Field Obser	vations:									
Surface Water Present? Yes No Depth (inches): 6	Surface Wat	er Present?	Yes 🤆) No	0 1	Depth (inch	ies): 6				
Water Table Present? Yes No O Depth (inches): 1 Wetland Hydrology Present? Yes No O	Water Table	Present?	Yes 🤆) No	. O	Depth (inch	ies): 1		w	etland Hydrology Prese	ent? Yes 🖲 No 🔾
Saturation Present? (includes capillary fringe) Yes O No Depth (inches): 0			Yes 🤆) No	О (Depth (inch	ies): 0				

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Remarks:

water flowing through community to downslope willow-filled drainage. sedimentation and drift deposits throughout. shrubs/trees on hummocks. high water throughout region at time of site visit.

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date:2	21-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_MS_02
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.):	Hillside	
Local relief (concave, convex, none):	Slope: <u>26.7</u> % / <u>15.0</u> ° Elevation: <u>220</u>		
Subregion : Northern Alaska Lat.:	<u>67.0040816666667</u> Long.: <u>-160.5039666</u>	666667 Datur	m: WGS84
Soil Map Unit Name:	NWI class	ification: Upland	
	ear? Yes No (If no, explain ir tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No Yes No Yes No Yes No	Is the Sampled Area within a Wetland? Yes O No O					
Remarks: light signature in aerial is lichen-heavy hillslope/knob. FNWWS, physio upland, geomorph fto (most likely old riverine influence - geotech							

spoils on knob = rounded gravels, proximity to Kobuk River), nonpatterned.

		Abso	olute	Dominant	Indicator	Dominance Test worksheet:
<u></u>	ee Stratum	<u>%</u> C	over	Species?	Status	Number of Dominant Species
1.	Picea glauca		10	\checkmark	FACU	That are OBL, FACW, or FAC: (A)
2.	Betula neoalaskana		2		FACU	Total Number of Dominant Species Across All Strata: 8 (B)
3.						
		_				Percent of dominant Species That Are OBL, FACW, or FAC:50.0%(A/B)
5.	Total Cover:	1	2			Prevalence Index worksheet:
Sar				f Total Cover:	2.4	Total % Cover of: Multiply by:
Jap						OBL species x 1 =
1.	Betula neoalaskana		10		FACU	FACW speci es 5 x 2 = 10
2.	Picea glauca	_	5		FACU	
3.	Alnus viridis ssp. crispa	C).5		FAC	
4.	Salix pulchra	_	3		FACW	FACU species 30.5 x 4 = 122
5.	Empetrum nigrum		10	\checkmark	FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{x 5}$
6.	Ledum decumbens	_	2		FACW	Column Totals: <u>60.5</u> (A) <u>207</u> (B)
7.	Vaccinium uliginosum	_	5		FAC	Prevalence Index = $B/A = 3.421$
8.	Vaccinium vitis-idaea		5	\checkmark	FAC	
9.	Arctostaphylos rubra	_0).5		FAC	Hydrophytic Vegetation Indicators:
10.		_				Dominance Test is > 50%
	Total Cover:	4	1			Prevalence Index is ≤3.0
.н	erb Stratum 50% of Total Cover: 2	0.5	20% c	of Total Cover:	8.2	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1.	Chamerion angustifolium).5		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Diphasiastrum alpinum	_	3	\checkmark	FACU	¹ Indicators of hydric soil and wetland hydrology must
3.	Saussurea angustifolia		1		FAC	be present, unless disturbed or problematic.
4	Deschampsia caespitosa		3	\checkmark	FAC	
••						Diet size (redius, or length y width) 10-
υ.						Plot size (radius, or length x width) <u>10m</u>
υ.						% Cover of Wetland Bryophytes (Where applicable)
						% Bare Ground 10
						Total Cover of Bryophytes 0
		_				Hydrophytic
10.	Total Cover:	7	.5			Hydrophytic Vegetation
	50% of Total Cover: 3	.75	20% o	f Total Cover:	1.5	Present? Yes No 🔍
Ren	narks: 85% lichen cover					

Profile Desc	ription: Desc	ribe to d	epth nee	ded to document th	e preser	ice or abs	ence of ir	ndicators	
Depth	N	latrix		Red	ox Featu	ires			
(inches)	Color (m	oist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-1								Hemic Organics	
1-6	2.5Y	4/3	100					Silty Clay Loam	
6-17	2.5Y	4/2	80					Loamy Coarse Sand	20% rounded to angular gravels to cobbles
· ·		<u>_</u>							
	. 10						-		
¹ Type: C=Con	centration D=	Depletion	RM=Rec	uced Matrix ² Locatio	on: PL=P	ore Lining	RC=Root	Channel M=Matrix	
Hydric Soil	ndicators:			Indicators for	Problem	atic Hvdr	ic Soils: ³		
	or Histel (A1)			Alaska Color		4		Alaska Gleved Witho	ut Hue 5Y or Redder
	pedon (A2)			Alaska Alpin	-			Underlying Layer	
	Sulfide (A4)			Alaska Redo	x With 2.	5Y Hue		Other (Explain in Re	marks)
	k Surface (A1	2)							
🗌 Alaska Gl	eyed (A13)			³ One indicator and an appropr	of hydrop	phytic vege scape posit	etation, one	e primary indicator of wetla	ind hydrology,
🗌 Alaska Re	edox (A14)							F	
🔄 Alaska Gl	eyed Pores (A	15)		⁴ Give details of	COIOF CH	ange in Re	marks		
Restrictive L	ayer (if pres	ent):							
Type:								Hydric Soil Presen	nt? Yes 🔾 No 🖲
Depth (inc	hes):								
Remarks:									
no hydric soil	ndicators								
HYDROLO	DGY								
Wetland Hyd	Irology India	cators:						Secondary	Indicators (two or more are required)
Primary Indic	ators (any one	e is sufficie	ent)					Water	Stained Leaves (B9)
	Water (A1)			Inundation	n Visible o	n Aerial In	nagery (B7	,	age Patterns (B10)
🗌 High Wa	ter Table (A2)			Sparsely V	egetated	Concave S	urface (B8) 🗌 Oxidiz	ed Rhizospheres along Living Roots (C3)
Saturatio	. ,			Marl Depo					nce of Reduced Iron (C4)
Water M	arks (B1)			Hydrogen	Sulfide O	dor (C1)		Salt D	eposits (C5)
Sedimen	t Deposits (B2	!)		Dry-Seaso	n Water 1	Table (C2)		Stunte	ed or Stressed Plants (D1)
🗌 Drift Dep	osits (B3)			Other (Exp	lain in Re	emarks)		Geom	orphic Position (D2)
🗌 Algal Ma	t or Crust (B4))						Shallo	w Aquitard (D3)
Iron Dep	osits (B5)							Microt	opographic Relief (D4)
Surface S	Soil Cracks (Bé	5)						FAC-ne	eutral Test (D5)
Field Observ	ations:								
Surface Wate	er Present?	Yes	O No '	Depth (inc	hes):				
Water Table	Present?	Yes	O No	Depth (inc	hes):		W	etland Hydrology Prese	nt? Yes 🔿 No 🖲
Saturation Pr (includes cap		Yes (○ No (Depth (inc	hes):				
Describe Reco	rded Data (str	eam gaug	e, monitor	well, aerial photos, p	revious in	spection) i	f available	:	
BLM RAWS Kia	na site record	led 5.4in p	recip in A	ug 2012, mean for pre	vious 10	yrs in Aug	is 3.0in (S	D 1.5in).	

Remarks:

no wetland hydrology indicators

Project/Site: Kiana Wetlands	Borough/City: Northwest Arctic Borough Sampling Date: 21-Aug-12
Applicant/Owner: USKH/ADOT&PF	Sampling Point: K_MS_03
Investigator(s): <u>SLI/EKJ</u>	Landform (hillside, terrace, hummocks etc.): Hillside
Local relief (concave, convex, none):	Slope: <u>8.7</u> % / <u>5.0</u> ° Elevation: <u>230</u>
Subregion : Northern Alaska Lat.:	67.00489166666667 Long.:160.5069466666667 Datum: WGS84
Soil Map Unit Name:	NWI classification: PSS1/4B
Are Vegetation, Soil, or Hydrology naturally	ear? Yes No (If no, explain in Remarks.) tly disturbed? Are "Normal Circumstances" present? Yes No problematic? (If needed, explain any answers in Remarks.) ing sampling point locations, transects, important features
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No	Is the Sampled Area

 Hydric Soil Present?
 Yes
 No
 within a Wetland?
 Yes
 No

 Wetland Hydrology Present?
 Yes
 No
 No
 within a Wetland?
 Yes
 No
 O

 Remarks:
 characterizing yellow-green tundra on slight slope. wetland/upland bound at bright lichen-dominated community (see K_MS_02). SFWWS, physio upland, geomorph fto (most likely old riverine influence - geotech spoils on knob = rounded gravels, proximity to Kobuk River), nonpatterned

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1. Picea glauca	5		FACU	That are OBL, FACW, or FAC: <u>6</u> (A)
2				Total Number of Dominant
3				Species Across All Strata:8_ (B)
4.				Percent of dominant Species That Are OBL_EACW_or_EAC: 75.0% (A/B)
5				That Are OBL, FACW, or FAC:(A/B)
Total Cover:	5			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover: 2	20% c	of Total Cover:	1	Total % Cover of: Multiply by:
1 Picea glauca	10	\checkmark	FACU	OBL species x 1 =
2 Salix glauca	7	\checkmark	FAC	FACW species 9 x 2 = 18
3. Betula glandulosa	10	\checkmark	FAC	FAC species x 3 =114
	7	\checkmark	FAC	FACU species 15 x 4 = 60
4. Vaccinium diiginosum 5. Ledum decumbens	5		FACW	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
6. Empetrum nigrum	1		FAC	Column Totals: <u>62</u> (A) <u>192</u> (B)
	3		FAC	
A Detuie sens	2	\square	FAC	Prevalence Index = $B/A = 3.097$
0		\square		Hydrophytic Vegetation Indicators:
9				✓ Dominance Test is > 50%
10Total Cover:	45			Prevalence Index is ≤3.0
			0	Morphological Adaptations ¹ (Provide supporting
_Herb Stratum50% of Total Cover:	2.5 20% (of Total Cover:	9	data in Remarks or on a separate sheet)
1. Deschampsia caespitosa	0.5		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Carex bigelowii	5	\checkmark	FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Petasites frigidus	2	\checkmark	FACW	be present, unless disturbed or problematic.
4 Equisetum arvense	1		FAC	
5. Carex williamsii	1		FAC	Plot size (radius, or length x width) 10m
6. Calamagrostis canadensis	1		FAC	% Cover of Wetland Bryophytes
7. Rubus chamaemorus	2	\checkmark	FACW	(Where applicable)
8				% Bare Ground
9				Total Cover of Bryophytes
10				Hydrophytic
Total Cover:	12.5			Vegetation
50% of Total Cover:6	.25 20% c	of Total Cover:	2.5	Present? Yes \bullet No \bigcirc
Remarks:				

SOIL

Profile Description: Describe to depth needed to document the presence or absence of indicators									
Depth Matrix Redox Features									
(inches)	Color (moi	st) %	<u> </u>	Color (moist)	%	Туре	Loc ²	Texture Fibric Organics	Remarks
0-5							2		
								Hemic Organics	
8-13								Sapric Organics	mineral soil inclusions, same as underlying
	5Y 5	6/1 85	5 10	YR 4/6	15	C	PL	Silty Clay Loam	
		<u>_</u>					-	-	
¹ Type: C=Cor	ncentration D=D	epletion RI	M=Reduced	Matrix ² Locat	ion: PL=P	ore Lining	RC=Root	Channel M=Matrix	
Hydric Soil		•		Indicators fo		0			
	or Histel (A1)			Alaska Colo		4		Alaska Gleyed Withou	ut Hue 5Y or Redder
	ipedon (A2)			🗌 Alaska Alpi	•			Underlying Layer	
	n Sulfide (A4)			Alaska Red				Other (Explain in Rer	narks)
Thick Da	rk Surface (A12)			3 One indicate	r of hydror	butic yoor	tation on	nrimary indicator of watla	nd hydrology
	leyed (A13)			and an approp				e primary indicator of wetla be present	na nyarology,
	edox (A14) leyed Pores (A15	`		⁴ Give details	of color cha	ange in Re	marks		
						-			
	L ayer (if preser ty clay loam	nt):						Hydric Soil Presen	t? Yes 🖲 No 🔿
Depth (in								,	
HYDROL	OGY								
Wetland Hy	drology Indica	tors:						Secondary	Indicators (two or more are required)
·	cators (any one is	s sufficient)							Stained Leaves (B9)
	Water (A1)						nagery (B7	, 	ge Patterns (B10)
	ater Table (A2)				-		Surface (B8	·	ed Rhizospheres along Living Roots (C3)
Saturatio					osits (B15)				ce of Reduced Iron (C4)
	larks (B1)			Hydroger					eposits (C5)
	nt Deposits (B2)				on Water T				d or Stressed Plants (D1)
	posits (B3)			U Other (E)	plain in Re	emarks)		_	prphic Position (D2)
▲ Algal Mat or Crust (B4) ✓ Shallow Aquitard (D3) □ Iron Deposits (B5) ■ Microtopographic Relief (D4)								opographic Relief (D4)	
	Soil Cracks (B6)								eutral Test (D5)
Field Observ									
Surface Wat		$_{\rm Yes}$ \bigcirc	No 🖲	Depth (ir	nches):				
Water Table		Yes 🖲	No \bigcirc		nches): 2		w	etland Hydrology Prese	nt? Yes 🖲 No 🔿
Saturation P (includes cap	resent? pillary fringe)	Yes 🖲			nches): 0				
Describe Reco	orded Data (strea	im gauge, n	nonitor well,	, aerial photos,	previous in	spection) i	if available	:	
BLM RAWS Ki	ana site recordeo	d 5.4in prec	ip in Aug 20	12, mean for p	revious 10	yrs in Aug	is 3.0in (S	D 1.5in).	
Remarks:									

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 2	1-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_MS_04
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Hillside	
Local relief (concave, convex, none): <u>flat</u>	Slope: <u>8.7</u> % / <u>5.0</u> ° Elevation: <u>270</u>		
Subregion : Northern Alaska Lat.:	67.0004633333333 Long.: _160.50664	Datun	n: WGS84
Soil Map Unit Name:	NWI class	ification: PSS1/3B	
	ear? Yes No (If no, explain ir tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● No ○ Yes ● No ○ Yes ● No ○	Is the Sampled Area within a Wetland? Yes \odot No \bigcirc					
Remarks: characterizing yellow-green tundra on slight slope, same as K MS 03. SFWWS, physio upland, geomorph fto (most likely old riverine							

influence - geotech spoils on knob = rounded gravels, proximity to Kobuk River), nonpatterned.

	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1. Picea glauca	5		FACU	That are OBL, FACW, or FAC:(A)
2				Total Number of Dominant Species Across All Strata: 7 (B)
3				
4				Percent of dominant Species That Are OBL, FACW, or FAC:71.4% (A/B)
5				
Total Cover:	5			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover: 2	2.5 20% 0	of Total Cover:	1	Total % Cover of: Multiply by:
1 Picea glauca	10	\checkmark	FACU	OBL species x 1 =
2. Betula glandulosa	15	\checkmark	FAC	FACW species 21 x 2 = 42
3 Ledum decumbens	10	\checkmark	FACW	FAC species 40 x 3 = 120
4 Vaccinium uliginosum	10	\checkmark	FAC	FACU species 15 x 4 = 60
5. Vaccinium vitis-idaea	5		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
6. Alnus viridis ssp. crispa	3		FAC	Column Totals:
7 Salix richardsonii	2		FACW	Prevalence Index = $B/A = 2.921$
8. Sallx pulchra	3		FACW	
9				Hydrophytic Vegetation Indicators:
10				✓ Dominance Test is > 50%
Total Cover:	58			✓ Prevalence Index is ≤3.0
Herb Stratum50% of Total Cover:	29 20%	of Total Cover:	11.6	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
Concurs binalouil	7	\checkmark	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
1. Carex bigelowii 2. Rubus chamaemorus		\checkmark	FACW	
Z	1		FACW	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
J. Arctagractic latifalia	2		FACW	
4. Alctagrosus latilolia				
				Plot size (radius, or length x width) <u>10m</u>
6				% Cover of Wetland Bryophytes (Where applicable)
8.				% Bare Ground
				Total Cover of Bryophytes
9				
10Total Cover:	13			Hydrophytic Vegetation
		of Total Cover:	2.6	Present? Yes \bullet No \bigcirc
Remarks:				

Profile Description: Describe to depth needed to document the presence or absence of indicators									
Depth Matrix Redox Features									
(inches)	(inches) Color (moist) % Color (moist) % Type Loc ²				Loc ²	Texture	Remarks		
0-3	. <u> </u>						L	Fibric Organics	
3-10								Hemic Organics	
10-12								Sapric Organics	
12-15	2.5Y	4/1	100					Silty Clay Loam	
15-17	10YR	4/3	95					Loam	5% parent rocks (schisty flutes)
								·	
				ced Matrix ² Locatio	— − PI – Pi	ore Lining		Channel M-Matrix	
51		Depletion	RM-Redu	Indicators for		Ű			
Hydric Soil				Alaska Color		4	ic 30115.		ut Llus IV or Doddor
	or Histel (A1) ipedon (A2)			Alaska Color				Underlying Layer	ut Hue 5Y or Redder
· ·	n Sulfide (A4)			Alaska Redo				Other (Explain in Re	marks)
	rk Surface (A1								
🗌 Alaska G	leyed (A13)			³ One indicator and an appropriate and appropriate and an appropriate and appropriate and appropriate and appropriate and appropriate and appropriate and appropriate appropri appropriate appropriate appropri appropriate appropriate				e primary indicator of wetla	ind hydrology,
Alaska R	edox (A14)							be present	
Alaska G	leyed Pores (A	415)		⁴ Give details o	r color cha	ange in Re	marks		
Restrictive I	ayer (if pre	sent):							
	ty clay loam							Hydric Soil Presen	nt? Yes 🖲 No 🔾
Depth (in	ches): 12								
Remarks: soils very cold	but not froz	on							
	, but not noz	en.							
HYDROL	OGY								
Wetland Hy	drology Indi	cators:						Secondary	Indicators (two or more are required)
Primary India	ators (any on	e is sufficie	nt)					Water	Stained Leaves (B9)
	Water (A1)						nagery (B7	,	age Patterns (B10)
	iter Table (A2))					urface (B8	·	ed Rhizospheres along Living Roots (C3)
Saturatio				Marl Depo				_	nce of Reduced Iron (C4)
	arks (B1)			Hydrogen					eposits (C5)
Sediment Deposits (B2) Dry-Season Water Table (C2) Stunted or Stressed Plants (D1)									
Drift Deposits (B3) Other (Explain in Remarks) Geomorphic Position (D2)									
Algal Mat or Crust (B4) Shallow Aquitard (D3)									
Iron Deposits (B5) Microtopographic Relief (D4) Surface Soil Cracks (B6) FAC-neutral Test (D5)									
Field Observ		0)							
Surface Wat		Yes		Depth (ind	ches):				
Water Table			• No C				w	etland Hydrology Prese	nt? Yes $ullet$ No $igodom$
Saturation P			No C						
		ream gaug	e, monitor	well, aerial photos, p	revious in	spection) i	f available:	:	
BLM RAWS Ki	ana site recor	ded 5.4in p	recip in Au	g 2012, mean for pre	evious 10	yrs in Aug	is 3.0in (Sl	D 1.5in).	
Remarks:									

water table near surface, likely due to recent heavy precip and silty clay loam

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 21-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_MS_05
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Hillside
Local relief (concave, convex, none): <u>flat</u>	_ Slope: <u>17.6</u> % / <u>10.0</u> ° Elevation: <u>165</u>	
Subregion : Northern Alaska Lat.:	<u>67.0003933333333</u> Long.: <u>-160.502521</u>	666667 Datum: WGS84
Soil Map Unit Name:	NWI class	ification: Upland
	ear? Yes No (If no, explain in tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes • No O

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?		No	Is the Sampled Area within a Wetland?	Yes \bigcirc No \odot				
Remarks: FNWWS. poptre at site, but not a large % of community as a whole. physio upland, geomorph fto. lichen-dominated knob/hillside is upl, bound at color change/topo break.								

		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tr	ee Stratum	% Cover	Species?	Status	Number of Dominant Species
1.	Populus tremuloides			FACU	That are OBL, FACW, or FAC: (A)
2.	Picea glauca	10		FACU	Total Number of Dominant Species Across All Strata: 6 (B)
3.					
4.					Percent of dominant Species That Are OBL, FACW, or FAC:33.3% (A/B)
5.					, ,,
	Total Cover:	17			Prevalence Index worksheet: Total % Cover of: Multiply by:
Sap	ling/Shrub Stratum 50% of Total Cover: 8	.5 20% o	of Total Cover:	3.4	
1.	Picea glauca	5		FACU	OBL species $0 \times 1 = 0$
2.	Populus tremuloides	10	\checkmark	FACU	FACW species $5 \times 2 = 10$
3.	Betula glandulosa	2		FAC	FAC species 37 x 3 = 111
4.	Salix glauca	5		FAC	FACU speci es 37.5 x 4 = 150
5.	Vaccinium uliginosum	7		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{-x 5}$
6.	Empetrum nigrum	20	\checkmark	FAC	Column Totals: (A) (B)
7.	Ledum decumbens	5		FACW	Prevalence Index = $B/A = 3.409$
8.	Rosa acicularis	0.5		FACU	
9.	Loiseleuria procumbens	2		FACU	Hydrophytic Vegetation Indicators:
10.					Dominance Test is > 50%
	Total Cover:	56.5			Prevalence Index is ≤3.0
_Н	erb Stratum50% of Total Cover:28	.25 20% c	of Total Cover:	11.3	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1	Chamerion angustifolium	1		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2.	Saussurea angustifolia	1		FAC	¹ Indicators of hydric soil and wetland hydrology must
3.	Diphasiastrum alpinum	2	\checkmark	FACU	be present, unless disturbed or problematic.
4	Deschampsia caespitosa	2	\checkmark	FAC	
•••					Plot size (radius, or length x width) 10m
•.					% Cover of Wetland Bryophytes
-					(Where applicable)
•••					% Bare Ground _20
					Total Cover of Bryophytes 10
•.					Hydrophytic
10.	Total Cover:	6			Vegetation
	50% of Total Cover:	3 20% o	of Total Cover:	1.2	Present? Yes \bigcirc No \bigcirc
Rem	arks: descae as collected earlier today. 60% lichen co	ver			

Profile Desc	ription: Des	cribe to (depth	needed t	o document th	ie presen	ice or abs	ence of ir	ndicators	
Depth	N	Matrix			Red	lox Featu	ıres			
(inches)	Color (m	noist)	%	c	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-2									Hemic Organics	
2-9	10YR	4/3	95						Coarse Loamy Sand	w patches of 2.5Y5/1
9-18	2.5Y	4/2	95						Coarse Loamy Sand	5% rounded to semi-ang coarse sand-gravel
	. <u> </u>		,							
	. <u> </u>									
¹ Type: C=Cor	ncentration D	=Depletio	on RM	=Reduced	Matrix ² Locatio	on: PL=Pr	ore Lining	RC=Root	Channel M=Matrix	
Hydric Soil	Indicators:				Indicators for	Problem	natic Hydr	ric Soils: ³		
	or Histel (A1)				Alaska Color		4		Alaska Gleyed Witho	out Hue 5Y or Redder
	ipedon (A2)			I	Alaska Alpin	ie swales ((TA5)		Underlying Layer	
	n Sulfide (A4)			I	🗌 Alaska Redo	x With 2.5	5Y Hue		Other (Explain in Re	marks)
Thick Da	ark Surface (A1	12)			20	<u>.</u>				
Alaska G	ileyed (A13)				³ One indicator and an appropri				e primary indicator of wetla pe present	ind hydrology,
	edox (A14)						• •		,	
🗌 Alaska G	ileyed Pores (A	15)			⁴ Give details of	f color cha	ange in kei	marks		
Restrictive L	Layer (if pres	sent):								
Туре:									Hydric Soil Presen	nt? Yes 🔾 No 🖲
Depth (ind	ches):									
Remarks:										
no hydric soil	indicators									
	~~~									
HYDROLO	OGY drology Indi	eators:							Secondary	La diastera (hua es more ere reguired)
5	cators (any on		vient)							Indicators (two or more are required) Stained Leaves (B9)
	Water (A1)	<u>C 13 301113</u>				n Visible o	οn Δerial Ir	magery (B7)		age Patterns (B10)
	ater Table (A2)	)						Surface (B8	·	ed Rhizospheres along Living Roots (C3)
		,				Ũ			·	nce of Reduced Iron (C4)
	Saturation (A3)     Marl Deposits (B15)       Water Marks (B1)     Hydrogen Sulfide Odor (C1)								_	eposits (C5)
	Sediment Deposits (B2)									ed or Stressed Plants (D1)
	posits (B3)				Other (Exp				Geom	orphic Position (D2)
Algal Ma	at or Crust (B4	ł)							Shallo	w Aquitard (D3)
Iron Dep	posits (B5)								Microt	opographic Relief (D4)
Surface	Soil Cracks (B	6)							FAC-no	eutral Test (D5)
Field Observ	vations:	_	_			_	_			
Surface Wat	er Present?	Yes	, ()	No 🖲	Depth (inc	ches):				
Water Table	Present?	Yes	<b>,</b> O	No 🖲	Depth (inc	ches):		w	/etland Hydrology Prese	ent? Yes 🔿 No 🖲

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

Yes 🔿 No 🖲

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

Depth (inches):

Remarks:

no wetland hydrology indicators

Saturation Present?

(includes capillary fringe)

Project/Site: Kiana Wetlands	Borough/City:	Northwest Arc	ic Borouah	Sam	pling Date:	21-Aug-12
Applicant/Owner: USKH/ADOT&PF				S	ampling Point:	K_MS_06
Investigator(s): <u>SLI/EKJ</u>	Landform (	hillside, terrac	e, hummocks	etc.): <u>Hills</u>	ide	
Local relief (concave, convex, none):	Slope:	_%/°	Elevation:	115		
Subregion : Northern Alaska Lat.:	66.999866666	6667 L	ong.:160.50	0239833333	33 Dat	um: <u>WGS84</u>
Soil Map Unit Name:			NWI	classificat	ion: Upland	
	ear? Ye tly disturbed? problematic?	Are "Norr	(If no, exp nal Circumsta d, explain any	•	ent? Yes 🖲	) No ()

# SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present?		No ○ No ● No ●	Is the Sampled Area within a Wetland?	Yes 🔿 No 🖲			
Wetland Hydrology Present?	$res \cup$	NO S					
Remarks: FNWWS, physio upland, geomorph fto, nonpatterned. several animal burrows (ground squirrels).							

	Absolut		Indicator	Dominance Test worksheet:
Tree Stratum	% Cove		Status	Number of Dominant Species
1. Picea glauca	10		FACU	That are OBL, FACW, or FAC: (A)
2				Total Number of Dominant Species Across All Strata: 5 (B)
3	. —			
4				Percent of dominant Species That Are OBL, FACW, or FAC: <u>80.0%</u> (A/B)
5				
Total Cover	: 10	-		Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover:	5 20%	6 of Total Cover:	2	Total % Cover of: Multiply by:
1 Salix richardsonii	7		FACW	OBL species $0 \times 1 = 0$
2. Salix glauca	7		FAC	FACW species <u>8.5</u> x 2 = <u>17</u>
3. Betula glandulosa	35	$\checkmark$	FAC	<b>FAC speciles</b> $80 \times 3 = 240$
4. Vaccinium uliginosum	10	$\checkmark$	FAC	<b>FACU species</b> $10.5$ <b>x 4 =</b> $42$
5. Empetrum nigrum	. 10	$\checkmark$	FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
6. Salix reticulata	7		FAC	Column Totals:(A)(B)
7 Arctostaphylos rubra	5		FAC	Prevalence Index = $B/A = 3.020$
8				Prevalence Index = $B/A = 3.020$
9				Hydrophytic Vegetation Indicators:
10.				✓ Dominance Test is > 50%
Total Cover				Prevalence Index is ≤3.0
50% of Total Cover:		6 of Total Cover:	16.2	Morphological Adaptations ¹ (Provide supporting
Herb Stratum				data in Remarks or on a separate sheet)
1. Saussurea angustifolia	-		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Carex bigelowii	5		FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Petasites frigidus			FACW	be present, unless disturbed or problematic.
4. Equisetum pratense	0.5		FACW	
5. Mertensia paniculata	0.5		FACU	Plot size (radius, or length x width) 10m
6	. —			% Cover of Wetland Bryophytes
7				(Where applicable)
8	. —			% Bare Ground 5
9	. —			Total Cover of Bryophytes 85
10				Hydrophytic
Total Cover	: 8			Vegetation
50% of Total Cover:	4 20%	6 of Total Cover:	1.6	Present? Yes  No
Remarks: 5% lichens				

Depth		Matrix	·		Red	lox Featu	4		
(inches)	Color (r	noist)	%	Color (	(moist)	%	Type	Loc ²	Texture Remarks
0-2		,							Fibric Organics
2-3									Hemic Organics
3-8	5Y	4/1	95	10YR	4/4	5	С	PL	Silt Loam small redox ftrs, cannot accurately color to
8-10	10YR	4/1	90	7.5YR	3/3	10	С	PL	Silt Loam
10-12	7.5YR	2.5/2	100						Loam
12-17	2.5Y	4/1	100						Silt Loam
Type: C=Co	ncentration D	)=Depletic	on RM=Red				Ũ		Channel M=Matrix
Hydric Soil	Indicators:			Indic	ators for	Problem	atic Hydr	ic Soils: ³	
_	or Histel (A1) Dipedon (A2)				laska Color laska Alpine				Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
	en Sulfide (A4)	)			laska Redo	x With 2.5	5Y Hue		Other (Explain in Remarks)
	ark Surface (A	.12)		3 On:	o indicator	of bydror	obytic year	station one	e primary indicator of wetland hydrology,
	Gleyed (A13)				an appropr				
	Redox (A14)			⁴ Giv	e details of	f color ch;	ande in Re	marks	
	Gleyed Pores (A								
	Layer (if pre	sent):							Hydric Soil Present? Yes O No 🖲
Type:									Hydric Soil Present? Yes 🔿 No 🖲
Depth (in	cnes):								
Remarks:									
3-10: organic	s throughout,	heavier a	t depth. all	mineral soi	Is micaceo	us. no hyd	dric soil inc	licators.	
HYDROL	OGY								
Wetland Hy	drology Ind	icators:							Secondary Indicators (two or more are required)
Primary Indi	cators (any or	<u>ne is suffic</u>	cient)						Water Stained Leaves (B9)
Surface	Water (A1)				Inundatior	1 Visible o	on Aerial Im	nagery (B7)	) Drainage Patterns (B10)
	ater Table (A2	2)			Sparsely V	egetated	Concave S	urface (B8)	) Oxidized Rhizospheres along Living Roots (C3
	ian (12)			Sparsely Vegetated Concave Surface (B8) Marl Deposits (B15)					Presence of Reduced Iron (C4)
Saturati	on (A3)			Hydrogen Sulfide Odor (C1)					
	. ,				Hydrogen	• • •			Salt Deposits (C5)
Saturation	. ,	(2)			Hydrogen : Dry-Seasor	Sulfide Oc	dor (C1)		
Saturatie Water N Sedimer	/larks (B1)	12)			Dry-Seasor	Sulfide Oc n Water T	dor (C1) Fable (C2)		Salt Deposits (C5)
Saturation Saturation Saturation Water M	Marks (B1) nt Deposits (B eposits (B3)					Sulfide Oc n Water T	dor (C1) Fable (C2)		<ul> <li>Salt Deposits (C5)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> </ul>
Saturati UWater M Sedimer Drift De Algal Ma	/arks (B1) nt Deposits (B				Dry-Seasor	Sulfide Oc n Water T	dor (C1) Fable (C2)		<ul> <li>Salt Deposits (C5)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> </ul>
Saturatii Water M Sedimer Drift De Algal Ma	Aarks (B1) nt Deposits (B posits (B3) at or Crust (B4 posits (B5)	4)			Dry-Seasor	Sulfide Oc n Water T	dor (C1) Fable (C2)		Salt Deposits (C5) Stunted or Stressed Plants (D1) Geomorphic Position (D2)
Saturati	Marks (B1) nt Deposits (B eposits (B3) at or Crust (B4 posits (B5) Soil Cracks (E	4)			Dry-Seasor	Sulfide Oc n Water T	dor (C1) Fable (C2)		<ul> <li>Salt Deposits (C5)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> <li>Microtopographic Relief (D4)</li> </ul>

 
 Water Table Present?
 Yes
 No
 Depth (inches):
 Wetland Hydrology Present?

 Saturation Present? (includes capillary fringe)
 Yes
 No
 Depth (inches):

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

#### Remarks:

no wetland hydrology indicators (soils moist but not saturated). animal burrows (ground squirrels) in this community increase confidence in stating no wetland hydrology.

Yes 🔿 No 🖲

Borough/City: Northwest Arctic Borough Sampling Date	te: 21-Aug-12
Sampling	Point: K_MS_07
Landform (hillside, terrace, hummocks etc.): Channel (action)	ve)
Slope: <u>5.2</u> % / <u>3.0</u> ° Elevation: <u>120</u>	
<u>67.0000733333333</u> Long.: <u>-160.50061</u>	Datum: WGS84
NWI classification: PSS	1C
	es  No  s.)
	Sampling         Landform (hillside, terrace, hummocks etc.):       Channel (active content of the second secon

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present?	Yes 🖲	No 🔿	Is the Sampled Area				
Hydric Soil Present?	Yes 🖲	No 🔿	•	Yes 🖲 No 🔾			
Wetland Hydrology Present?	Yes 🖲	No 🔿	within a Wetland?				
Remarks: small creek has overtonned banks to flood entire SLCW community physical invertine							

**Remarks:** small creek has overtopped banks to flood entire SLCW community.physog riverine.

### **VEGETATION** Use scientific names of plants. List all species in the plot.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1				That are OBL, FACW, or FAC: <u>3</u> (A)
2				Total Number of Dominant Species Across All Strata: 3 (B)
3				
4				Percent of dominant Species That Are OBL_EACW_or_EAC+100.0% (A/B)
5				That Are OBL, FACW, or FAC:(A/B)
5. Total Cover:	0			Prevalence Index worksheet:
Sapling/Shrub Stratum 50% of Total Cover: 0	20% (	of Total Cover:	0	Total % Cover of: Multiply by:
1 Salix richardsonii	85	$\checkmark$	FACW	OBL species <u>2</u> x 1 = <u>2</u>
I	2		FAC	FACW species 86 x 2 =172
				FAC species x 3 =21
3				FACU species $0 \times 4 = 0$
4				UPL species $0 \times 5 = 0$
5				
6				Column Totals: (A) (B)
7				Prevalence Index = B/A =2.053_
8				Hydrophytic Vegetation Indicators:
9				Dominance Test is > 50%
10				
Total Cover:	87			✓ Prevalence Index is ≤3.0
_Herb Stratum50% of Total Cover:43	.5 20%	of Total Cover:	17.4	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1 Carex membranacea	1		FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Carex aquatilis	2	$\checkmark$	OBL	¹ Indicators of hydric soil and wetland hydrology must
Calamagrostis canadensis	5	$\checkmark$	FAC	be present, unless disturbed or problematic.
4				
5				Dist size (redius, or langth wouldth) 40
6				Plot size (radius, or length x width) <u>10m</u>
7				% Cover of Wetland Bryophytes (Where applicable)
8				% Bare Ground
				Total Cover of Bryophytes
9				
10Total Cover:	8			Hydrophytic Veretetion
		of Total Cover:	1.6	Vegetation Present? Yes • No O

**Remarks:** other vegetation present, but submerged - cannot id or estimate percentages.

Profile Desc	ription: Describ	e to dept	h needed t	to document th	e presen	ice or abs	ence of in	ndicators			
Depth	Mat				ox Featu	4				_	_
(inches)	Color (mois	st) %	<u> </u>	Color (moist)	_%	Туре	Loc ²	Texture		R	emarks
	. <u> </u>							·			
	. <u> </u>				-						
¹ Type: C=Cor	ncentration D=De	epletion RI	√=Reduced					Channel M=Matrix			
Hydric Soil	Indicators:			Indicators for	Problem	atic Hydr	ic Soils: ³				
Histosol	or Histel (A1)			Alaska Color	Change (	(TA4) ⁴		Alaska Gleyed		e 5Y or Redde	er
Histic Ep	ipedon (A2)			Alaska Alpine				Underlying La	5		
	n Sulfide (A4)			Alaska Redo	x With 2.5	5Y Hue		<ul> <li>Other (Explain</li> </ul>	n in Remark	s)	
	rk Surface (A12)			3 One indicator	of hydror	obytic year	station one	e primary indicator o	f wetland b	udrology	
	leyed (A13)			and an appropr					n wettand n	yai ology,	
	edox (A14)			⁴ Give details of	f color cha	ange in Re	marks				
🔄 Alaska G	leyed Pores (A15)					inge in Ke	marks				
Restrictive I	Layer (if presen	t):								0	
Type:								Hydric Soil F	Present?	Yes 🖲	No 🔿
Depth (in	ches):										
Remarks:											
assume hydri	c soil due to hydro	ophytic veg	etation and	inundation.							
HYDROL	JGV										
-	drology Indicat	ors:						Sec	ondary Indic	ators (two or	more are required)
-	cators (any one is									ed Leaves (B	
Surface	Water (A1)			Inundation	י Visible ס	n Aerial In	nagery (B7	)		atterns (B10)	,
	iter Table (A2)			Sparsely V			0 5	·	-		ong Living Roots (C3)
Saturatio	on (A3)			Marl Depos				, 🗌		Reduced Iror	
Water N	larks (B1)			Hydrogen					Salt Deposi	ts (C5)	
	Sediment Deposits (B2)     Dry-Season Water Table (C2)							Stunted or	Stressed Plant	:s (D1)	
Drift De	posits (B3)			Other (Exp					Geomorphi	c Position (D2)	)
🗌 Algal Ma	it or Crust (B4)								Shallow Aq	uitard (D3)	
Iron Dep	oosits (B5)									raphic Relief (	D4)
Surface	Soil Cracks (B6)							$\checkmark$	FAC-neutra	Test (D5)	
Field Observ	vations:	$\sim$	$\sim$								
Surface Wat	er Present?	Yes 🖲	No $\bigcirc$	Depth (inc	:hes): 12	2					
Water Table	Present?	Yes $\bigcirc$	No 🖲	Depth (inc	:hes):		w	etland Hydrology	Present?	Yes 🖲	No 🔿
Saturation P	resent?	$_{\rm Yes}$ $\bigcirc$	No 🖲	Depth (inc	ches):						

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:

BLM RAWS Kiana site recorded 5.4in precip in Aug 2012, mean for previous 10 yrs in Aug is 3.0in (SD 1.5in).

#### Remarks:

small creek has overtopped banks to flood entire willow community. cannot reach bottom of channel w shovel. channel visible in aerials, ca 2ft wide at bankfull.

(includes capillary fringe)

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date: 21-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point: K_MS_08
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Hillside
Local relief (concave, convex, none): <u>flat</u>	Slope: <u>12.2</u> % / <u>7.0</u> ° Elevation: <u>180</u>	
Subregion : Northern Alaska Lat.:	<u>66.9954433333333</u> Long.: <u>-160.502655</u>	Datum: WGS84
Soil Map Unit Name:	NWI class	ification: Upland
	ear? Yes No (If no, explain ir tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes $\bullet$ No $\bigcirc$

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes ○	No O No O	Is the Sampled Area within a Wetland?	Yes $\bigcirc$ No $\odot$				
Wetland Hydrology Present?	$Yes \bigcirc$	No 🖲	within a wetland?					
Remarks: moose scat. FNWWS, physio upland, geomorph fto, nonpatterned.								

	Absolute		Indicator	Dominance Test worksheet:
Tree Stratum	% Cover	Species?	Status	Number of Dominant Species
1. Picea glauca	10		FACU	That are OBL, FACW, or FAC:(A)
2				Total Number of Dominant Species Across All Strata: 4 (B)
3				()
4				Percent of dominant Species That Are OBL, FACW, or FAC:(A/B)
5				Prevalence Index worksheet:
Total Cover:	10			Total % Cover of: Multiply by:
Sapling/Shrub Stratum 50% of Total Cover: 5	5 20% c	of Total Cover:	2	
1. Picea glauca	5		FACU	· <u> </u>
2. Salix richardsonii	25		FACW	<b>FACW species</b> $52 \times 2 = 104$
3. Salix pulchra	5		FACW	FAC species $47$ x 3 = $141$
4. Vaccinium uliginosum	25		FAC	FACU species $15$ x 4 = $60$
5. Vaccinium vitis-idaea	3		FAC	UPL species $0 \times 5 = 0$
6. Dasiphora fruticosa	5		FAC	Column Totals: <u>115</u> (A) <u>306</u> (B)
7. Ledum decumbens	5		FACW	Prevalence Index = B/A = 2.661
8. Empetrum nigrum	7		FAC	
9. Salix reticulata	3		FAC	Hydrophytic Vegetation Indicators:
10				✓ Dominance Test is > 50%
Total Cover:	83			✓ Prevalence Index is ≤3.0
Herb Stratum 50% of Total Cover: 41	L.5 20% o	of Total Cover:	16.6	Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
1. Rubus chamaemorus	2		FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
2. Carex bigelowii	3		FAC	¹ Indicators of hydric soil and wetland hydrology must
3. Saussurea angustifolia	1		FAC	be present, unless disturbed or problematic.
4. Equisetum pratense	15		FACW	
5. Ranunculus lapponicus	1		OBL	Plot size (radius, or length x width) <u>10m</u>
6				% Cover of Wetland Bryophytes (Where applicable)
7				% Bare Ground
8				Total Cover of Bryophytes
9				
Total Cover:	22			Hydrophytic Vegetation
		of Total Cover:	4.4	Present? Yes No
Remarks:				1

Profile Desc	ription: Desci	ribe to dept	th needed to	document th	ne presen	nce or abs	sence of in	ndicators		
Depth Matrix Redox Features										
(inches)	Color (mo	oist) 🤊	%Col	lor (moist)	_%	Type ¹	Loc ²	Texture		Remarks
0-3								Fibric Organics		
3-20	10YR	2/1 10	00					Silt Loam		
		<u>_</u>								
¹ Type: C=Con	centration D=	Depletion R	M=Reduced M	latrix ² Locati	ion: PL=P	ore Lining	RC=Root	Channel M=Matrix		
Hydric Soil	Indicators:		 I/	ndicators for	Problem	natic Hydr	ric Soils: ³			
	or Histel (A1)		Г	Alaska Color		4	10 00	Alaska Gleved	Without Hu	e 5Y or Redder
	pedon (A2)		Γ	Alaska Alpin				Underlying La		
	n Sulfide (A4)			Alaska Redo				Other (Explair	n in Remarks	.)
	rk Surface (A12	2)								
	eyed (A13)	,						e primary indicator o	f wetland hy	drology,
	edox (A14)		d	and an approp	riate ianus	scape posi	τιόπ πίμει μ	e present		
	eyed Pores (A1	15)	4	⁴ Give details o	of color cha	ange in Re	emarks			
Restrictive L	ayer (if prese	ent):								
Type:	ayor (	<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						Hydric Soil F	vresent?	Yes 🔿 No 🖲
Depth (inc	ches):							-		
Remarks:								l		
no hydric soil i	indicators									
no nyuno se.	Indicator 5									
HYDROLO										
-	drology Indic									ators (two or more are required)
	ators (any one	is sufficient)								ed Leaves (B9)
	Water (A1)		I				magery (B7)	·	-	atterns (B10)
	ter Table (A2)		I		-		Surface (B8)	·		izospheres along Living Roots (C3)
Saturatio			I	•	osits (B15)					Reduced Iron (C4)
Water Ma			I	Hydrogen					Salt Deposit	
	t Deposits (B2) oosits (B3)	i.	I		on Water T					Stressed Plants (D1) : Position (D2)
	t or Crust (B3)		I	Uther (Exp	plain in Re	emarks)		_	Shallow Aqu	
	osits (B5)							_	-	aphic Relief (D4)
	Soil Cracks (B6)	١							FAC-neutral	
Field Observ		<u>,</u>							The neares	
Surface Wate		$_{ m Yes}$ $\bigcirc$	No 🖲	Depth (ind	ches):					
Water Table			No 🖲				w	etland Hydrology	Dresent?	Yes 🔿 No 🖲
Saturation Pr				Depth (ind	ches):			etiana nya alagy	FICSULL.	
(includes cap		Yes $\cup$	No 🖲	Depth (ind	ches):					
Describe Reco	rded Data (stre	eam gauge, r	monitor well, a	erial photos, p	previous in	spection)	if available:	:		
BLM RAWS Kia	ana site recorde	ed 5.4in prec	cip in Aug 2012	2, mean for pre	evious 10	yrs in Aug	, is 3.0in (SI	D 1.5in).		
Remarks:										

Project/Site: Kiana Wetlands	Borough/City: <u>Northwest Arctic Borouah</u>	Sampling Date:	21-Aug-12
Applicant/Owner: USKH/ADOT&PF		Sampling Point:	K_MS_09
Investigator(s): <u>SLI/EKJ</u>	_ Landform (hillside, terrace, hummocks etc.):	Hillside	
Local relief (concave, convex, none):	Slope: <u>12.2</u> % / <u>7.0</u> ° Elevation: <u>275</u>		
Subregion : Northern Alaska Lat.:	<u>66.9951783333333</u> Long.: <u>-160.505315</u>	Datu	m: WGS84
Soil Map Unit Name:	NWI class	ification: Upland	
	ear? Yes No (If no, explain ir tly disturbed? Are "Normal Circumstances" problematic? (If needed, explain any answ	present? Yes 🖲	No O
			<i>c</i> .

### SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes ● Yes ○ Yes ○	No () No () No ()	Is the Sampled Area within a Wetland?	Yes $\bigcirc$ No $\odot$
Remarks: FNOWS, physio upland	, geomorpl	n fto, nonpatterned.		

		Abs	solute	Dominant	Indicator	Dominance Test worksheet:
Tree	Stratum	%	Cover	Species?	Status	Number of Dominant Species
1. <u>P</u>	icea glauca		30		FACU	That are OBL, FACW, or FAC: (A)
2						Total Number of Dominant
		_				Species Across All Strata:6 (B)
						Percent of dominant Species
_						That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)
э. —	Total Cover:		30			Prevalence Index worksheet:
Saplin	g/Shrub Stratum 50% of Total Cover: 1	15	20% o	f Total Cover:	6	Total % Cover of: Multiply by:
1 P	icea glauca		5		FACU	OBL species x 1 =
· ·	asiphora fruticosa		5	$\square$	FAC	<b>FACW species</b> $26$ <b>x 2 =</b> $52$
<u> </u>	alix richardsonii		25		FACW	FAC species x 3 =294
J	accinium uliginosum		30		FAC	<b>FACU species</b> $40.5$ <b>x 4 =</b> $162$
	accinium vitis-idaea		5		FAC	UPL species $-\frac{0}{x 5} = -\frac{0}{2}$
J	mpetrum nigrum		15		FAC	Column Totals: _164.5_ (A) _508_ (B)
•	alix reticulata		10		FAC	Prevalence Index = $B/A = 3.088$
	rctostaphylos rubra		7		FAC	
0	inus viridis ssp. crispa		20	$\checkmark$	FAC	Hydrophytic Vegetation Indicators:
•	innaea borealis		1		FACU	✓ Dominance Test is > 50%
10	Total Cover:		123			Prevalence Index is ≤3.0
	50% of Total Cover: 6	1.5		of Total Cover:	24.6	Morphological Adaptations ¹ (Provide supporting
Her	b Stratum	1.5	_ 20/00			data in Remarks or on a separate sheet)
1. <u>L</u>	ycopodium clavatum	_	1		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u> </u>	arex bigelowii	_	3	$\checkmark$	FAC	¹ Indicators of hydric soil and wetland hydrology must
3 <b>s</b>	aussurea angustifolia	_	1		FAC	be present, unless disturbed or problematic.
	ubus arcticus	_	2		FAC	
5. E	quisetum pratense	_	1		FACW	Plot size (radius, or length x width) 10m
	lertensia paniculata	_	0.5		FACU	% Cover of Wetland Bryophytes
-	apaver macounii	_	3	$\checkmark$	FACU	(Where applicable)
_		_				% Bare Ground
-		_				Total Cover of Bryophytes
0		_				Hydrophytic
	Total Cover:	_1	1.5			Vegetation
	50% of Total Cover:5.	.75	20% o	f Total Cover:	2.3	Present? Yes • No
Remar	ks:					

Profile Desc	cription: D	escribe to	depth nee	ded to document the	e presen	ce or abs	ence of ir	ndicators
Depth		Matrix			ox Featu			
(inches)	Color	(moist)	_%	Color (moist)	_%_	Type ¹	Loc ²	Texture Remarks
0-5								Fibric Organics
5-7								Hemic Organics
7-8								Sapric Organics
8-13	10YR	2/1	100					
13-16	2.5Y	4/1	100					Silt Loam
16-21	10YR	2/1	100					Silt Loam
¹ Type: C=Co	ncentration	D=Deplet	on RM=Re	duced Matrix ² Locatio	n: PL=P	ore Lining	RC=Root	Channel M=Matrix
Hydric Soil	Indicators	5:		Indicators for	Problem	atic Hydr	ic Soils: ³	
Histic Ep Hydroge Thick Da Alaska G	or Histel (A pipedon (A2) en Sulfide (A ark Surface Gleyed (A13) Redox (A14) Gleyed Pores	,4) (A12)		Alaska Color Alaska Alpine Alaska Redo: ³ One indicator and an appropr ⁴ Give details of	e swales ( w With 2.5 of hydrop iate lands	(TA5) 5Y Hue ohytic vege scape posit	ion must b	Alaska Gleyed Without Hue 5Y or Redder Underlying Layer     Other (Explain in Remarks)     e primary indicator of wetland hydrology,     be present
Restrictive Type:	Layer (if p	resent):						Hydric Soil Present? Yes $\bigcirc$ No $oldsymbol{igodol}$
Depth (in	iches):							
Remarks: no hydric soil	indicators -	cannot ap	ply A2 as th	ere is no indication tha	t organics	s are satura	ated.	
HYDROL	OGY							
Wetland Hy	•••		cient)					Secondary Indicators (two or more are required) Water Stained Leaves (B9)
Surface	Water (A1)				Visible o	n Aorial Im	agery (B7	Drainage Patterns (B10)

Surface Water (A1)			Inundation Visible on Aerial Im	agery (B7)	Drainage Pa	tterns (B10)	
High Water Table (A2)			Sparsely Vegetated Concave Su	urface (B8)	Oxidized Rhi	izospheres alc	ong Living Roots (C3)
Saturation (A3)			Marl Deposits (B15)		Presence of	Reduced Iron	i (C4)
Water Marks (B1)			Hydrogen Sulfide Odor (C1)		Salt Deposits	s (C5)	
Sediment Deposits (B2)			Dry-Season Water Table (C2)		Stunted or S	Stressed Plant	s (D1)
Drift Deposits (B3)			Other (Explain in Remarks)		Geomorphic	Position (D2)	
Algal Mat or Crust (B4)					Shallow Aqu	itard (D3)	
Iron Deposits (B5)					Microtopogra	aphic Relief (I	D4)
Surface Soil Cracks (B6)					FAC-neutral	Test (D5)	
Field Observations:	_						
Surface Water Present?	$Yes \bigcirc$	No 🖲	Depth (inches):				
Water Table Present?	$_{ m Yes}$ $\bigcirc$	No 🖲	Depth (inches):	Wetland Hydrold	ogy Present?	$_{ m Yes}$ $\bigcirc$	No 🖲
Saturation Present? (includes capillary fringe)	$_{\rm Yes} \bigcirc$	No 🖲	Depth (inches):				
Describe Recorded Data (stream	m gauge, m	ionitor we	II, aerial photos, previous inspection) if	available:			
BLM RAWS Kiana site recorded	5.4in preci	p in Aug 2	012, mean for previous 10 yrs in Aug i	s 3.0in (SD 1.5in).			
Remarks:							
no wetland hydrology indicator	s						

Plot ID	Cowardin	Date Completed	Investigators	Dominant Species	Field Notes
K_V01	PF04B	8/20/2012	SLJ, EKJ	Picea glauca, Picea mariana, Alnus viridis ssp. crispa, Betula glandulosa, Salix glauca, Vaccinium uliginosum, Vaccinium vitis- idaea, Carex bigelowii, Equisetum arvense, Petasites frieidus	Open white spruce woodland adjacent to roadside. Disturbed area with metal debris and histic epipedon, frozen at 18 inches.
K_V02	Us	8/20/2012	SLJ, EKJ	Artemisia tilesti, Bromus pumpellianus ssp pumpelians, Chamerion angustifolium, Hordeum jubatum, Elymus alaskanus ssp alaskanus	Partially vegetated, barren edge of runway with invasive species.
K_V03	D	8/20/2012	SLI, EKJ	Picea glauca, Salix alaxensis, Salix glauca, Shepherdia canadensis	Bluff leading down to the Kobuk River. White spruce woodland with high chroma mineral soils. Floodplain at bottom of bluff a flooded <i>Salix</i> community, cannot access due to high water.
K_V04	n	8/20/2012	SLI, EKJ	Picea glauca, Picea mariana, Betula neoalaskana, Salix bebbiana, Vaccinium vitis-idea	White spruce woodland with a 40 percent lichen cover on rounded upland feature.
K_V05	PSS4/1B	8/22/2012	SLI, EKJ	Picea glauca, Picea mariana, Betula glandulosa,Carex bigelowii	Dwarf white spruce woodland on hillside with scattered <i>Eriophorum vaginatum</i> tussocks and 15 percent lichen. Wetland soils (histic epipedon) saturated at the surface with the active layer at 16 inches below ground surface.
K_V06	PSS1B	8/22/2012	SLI, EKJ	Alnus viridis ssp. crispa, Betula glandulosa, Empetrum nigrum, Picea glauca, Salix richardsonii, Vaccinium vitis-idaea, Petasites frigidus	<ul> <li>Alnus viridis ssp. crispa, Betula glandulosa, Steep hillside with saturated Alaska redox soils.</li> <li>Empetrum nigrum, Picea glauca, Salix Active layer at 20 inches below ground surface.</li> <li>richardsonii, Vaccinium vitis-idaea, Petasites Open low shrub birch-willow community with frigidus</li> </ul>
K_V07	R3UBH	8/22/2012	SLI, EKJ	Betula glandulosa, Salix richardsonii, Vaccinium uliginosum	Small riverine feature flowing into lake.
K_V08	PSSIB	8/22/2012	SLI, EKJ	Picea glauca, Salix richardonii, Petasites frigidus	Shallow swale visible in aerial. Probing shows saturated mineral hydric soils. Connects uphill to a small PEM1E wet sedge meadow with <i>Carex</i> <i>utriculata</i> , <i>Eriophorum angustifolium</i> and <i>Menyanthes trifoliata</i>

Appendix A.	Appendix A1. Continued.				
Plot ID	Cowardin	Date Completed	Investigators	Dominant Species	Field Notes
K_V09	PSS1C	8/22/2012	SLI, EKJ	Betula glandulosa, Dasiphora fruticosa, Salix richardsonii. Carex aquatilis, Comarum valustre	Betula glandulosa, Dasiphora fruticosa, Salix Flooded low open willow community. Water 12 richardsonii. Carex aquatilis, Comarum to 16 inches deep. polustre
K_V10	PSS1B	8/22/2012	SLI, EKJ	Picea glauca, Picea mariana, Arctostaphylos White Spruce woodland community with rubra, Betula glandulosa, Ledum decumbens, wetland soils (histic epipedon over satura Vaccinium ulicinosum Carex bioelowii	Picea glauca, Picea mariana, Arctostaphylos White Spruce woodland community with rubra, Betula glandulosa, Ledum decumbens, wetland soils (histic epipedon over saturated silty Vaccinium uliainosum Creex hioelowii clay loam) and mores cost found within nlot
K_V12	PEMIB	8/22/2012	SLI, EKJ	Betula mana, Salix alaxensis, Salix Betula nana, Salix alaxensis, Salix arbusculoides, Salix bebbiana, Calamagrostis canadensis, Equisetum fluviatile, Eriophorum scheuchzeri, Hordeum iubatum. Poa nalustrus	Wet sedge-grass meadow tundra swale between road and airstrip.
K_V13	Ŋ	8/23/2012	SLI, EKJ	Picea glauca, Salix alaxensis, Salix bebbiana, Chamerion angustifolium, Equisetum arvense	Tall closed willow community in a narrow swale (15 ft) on fill. Swale has changed from a clear wide swale to what looks like erosional features with standing water and thick willow cover. Mose scat and browse in community.
K_V14	PSS1B	8/23/2012	SLI, EKJ	Salix alaxensis, Calamagrostis canadensis,	In small swale that is 2 ft wide with 2 ft tall banks, surrounded by upland fill. Tall open willow community
K_V16 U K_MS_V01 PSS1B	U PSS1B	8/23/2012 8/21/2012	SLI, EKJ SLI, EKJ	Populus balsamifera Picea glauca, Picea mariana, Betula glandulosa, Picea glauca, Salix glauca	Small open balsam poplar forest White spruce woodland community with with birch understory. Organic soils over silty clay loam.
K_MS_V02 PSS1/3B	PSS1/3B	8/21/2012	SLI, EKJ	Picea glauca, Salix spp.	Non-RPW drainage through Sfwws community. Incised banks 7 ft high on left bank and 2 ft high on right bank. Slow velocity flowing water with a silt substrate and step pools. 12 to 24 inches wide and 2 to 6 inches deep. White spruce woodland community with a <i>Salix glauca</i> canopy.

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Appendix A1. Continued.	l. Continued.				
Plot ID	Cowardin	Date Completed	Date Completed Investigators	Dominant Species	Field Notes
K_MS_V03	D	8/21/2012	SLI, EKJ	Picea glauca, Betula glandulosa, Salix glauca, Salix richardonii	Non-wetland hillside with ground squirrel burrows. Probing shows thin organic mat over high chroma soils. Open white spruce forest community.
K_MS_V04	D	8/21/2012	SLI, EKJ	Picea glauca, Picea mariana, Alnus viridis ssp. crispa, Betula glandulosa, Salix richardsonii	White spruce woodland community on hillside.
K_MS_V05 PSS1B	PSS1B	8/21/2012	SLI, EKJ	Picea glauca, Picea mariana, Alnus viridis ssp. crispa, Betula glandulosa, Salix richardsonii	White spruce woodland with wetland soils. Histic epipedon with saturated soils at the surface and active laver 12 inches below ground surface.
K_MS_V06 U	U	8/21/2012	SLI, EKJ	Betula neoalaskana, Picea glauca, Alnus viridis ssp. crispa. Vaccinium uliginosum	Open white spruce community
K_MS_V07 PSS1B	PSS1B	8/21/2012	SLI, EKJ	Picea glauca, Picea mariana, Betula glandulosa, Salix richardsonii	White spruce woodland surrounding small stream (unsure if stream is just related to recent heavy precipitation or around year round)

Appendix B. Site Photos

# **I. SITE PHOTOS**



K_01: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PF04B



K_02: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1/4B



K_03: Palustrine Saturated Deciduous Shrub Scrub NWI Class: PSS1B



**Hydrology:** Saturated (A3) with a shallow aquitard (D3) **Soils:** Organics over silty clay loam (Histic Epipedon A2)



**Hydrology:** Saturated (A3) with oxidized rhizospheres (C3) **Soils:** Organics over silty clay loam (Alaska Redox A14)



**Hydrology:** Saturated (A3) with a shallow aquitard (D3) **Soils:** Organics over silty clay loam (Histic Epipedon A2)



K_04: Upland NWI Class: U



K_05: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1/4B



K_06: Upland NWI Class: U



Hydrology: Well drained Soils: Organics over loamy sand



**Hydrology:** Saturated (A3) with high water table (A2) **Soils:** Organics (Histel A1)



Hydrology: Well drained Soils: Organic over sandy loam



**K_07:** Riverine Seasonally Flooded Low and Tall Willow Scrub **NWI Class:** PSS1C



K_08: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B



K_09: Riverine Seasonally Flooded Low and Tall Willow Scrub NWI Class: PSS1C



**Hydrology:** Surface water (A1) and sediment deposits (B2) **Soils:** No pit dug, inundated



**Hydrology:** Saturated (A3) with high water table (A2) **Soils:** Organics over silty clay loam (Histic Epipedon A2)



**Hydrology:** Surface water (A1) and iron deposits (B5) **Soils:** No pit dug, inundated



K_10: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1/4B



K_11: Riverine Seasonally Flooded Wet Sedge Meadow NWI Class: PEM1E



K_12: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B



**Hydrology:** Saturated (A3) with oxidized rhizospheres (C3) **Soils:** Organics over silty clay loam (Alaska Redox A14)



**Hydrology:** Surface water (A1) and FAC-neutral (D5) **Soils:** No pit dug, inundated



**Hydrology:** Saturated (A3) with a high water table (A2) **Soils:** Organics over fine sandy loam (Histic Epipedon A2)



K_13: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B



K_14: Lacustrine Flooded Sedge-Grass Marsh NWI Class: PEM1H



K_15: Palustrine Saturated Deciduous Shrub Scrub NWI Class: PSS1B



**Hydrology:** Oxidized Rhizospheres (C3) and Aquitard (D3) **Soils:** Organics over silty clay loam (Alaska Redox A14)



**Hydrology:** Surface water (A1) and FAC-neutral (D5) **Soils:** No pit dug, inundated



**Hydrology:** Saturated (A3) with a high water table (A2) **Soils:** Organics over sandy loam (Histosol A1)



K_16: Upland NWI Class: U



K_17: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1/4B



K_18: Upland NWI Class: U



Hydrology: Well drained and FAC-neutral (D5) Soils: Organics over sandy loam



**Hydrology:** Saturated (A3) with a high water table (A2) **Soils:** Organics over fine sandy loam (Histic Epipedon A2)



**Hydrology:** Well drained with a shallow aquitard (D3) **Soils:** Organics over silty clay loam



K_19: Upland NWI Class: U



K_20: Upland NWI Class: U



K_21: Upland NWI Class: U



Hydrology: Saturated (A3) with a shallow aquitard (D3) Soils: Organics over silty clay



Hydrology: Well drained Soils: Fine sandy loam



Hydrology: Well drained and FAC-neutral (D5) Soils: Organics over fine loamy sand



K_22: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B



K_23: Palustrine Saturated Deciduous Shrub Scrub NWI Class: PSS1B



K_24: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B



**Hydrology:** Saturated (A3) with a high water table (A2) **Soils:** Organics (Histel A1)



**Hydrology:** Saturation (A3) and high water table (A2) **Soils:** Organics (Histic Epipedon A2)



**Hydrology:** Saturation (A3) with a shallow aquitard (D3) **Soils:** Organics over silty clay loam (Histic Epipedon A2)







K_26: Palustrine Flooded Wet Emergent Meadow NWI Class: PEM1H



K_27: Palustrine Flooded Wet Emergent Meadow NWI Class: PEM1F



**Hydrology:** Well drained with a shallow aquitard (D3) **Soils:** Organics over silty clay loam



**Hydrology:** Surface water (A1) and FAC-neutral (D5) **Soils:** No pit dug, inundated



**Hydrology:** Surface water (A1) and FAC-neutral (D5) **Soils:** No pit dug, inundated



K_28: Palustrine Saturated Deciduous Shrub Scrub NWI Class: PSS1B



K_29: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS3/1B



K_30: Upland NWI Class: U



Hydrology: Surface water (A1) and FAC-neutral (D5) Soils: No pit dug, inundated



**Hydrology:** Saturation (A3) with high water table (A2) **Soils:** Organics and silty clay loam (Histic Epipedon A2)



Hydrology: Shallow aquitard (D3) Soils: Organics over silty clay loam (Alaska Redox A14)



K_31: Upland NWI Class: U



K_32: Palustrine Saturated Graminoid Meadow NWI Class: PEM1B



K_33: Upland NWI Class: U



**Hydrology:** Shallow aquitard (D3) and FAC-neutral (D5) **Soils:** Organics



**Hydrology:** Surface water (A1) with a shallow aquitard (D3) **Soils:** Organics over silty clay loam (Histic Epipedon A2)



Hydrology: Well drained Soils: Organics



K_34: Palustrine Flooded Wet Emergent Meadow NWI Class: PEM1H



K_35: Palustrine Saturated Deciduous Shrub Scrub NWI Class: PSS1B



K_36: Palustrine Flooded Wet Emergent Meadow NWI Class: PEM1H



Hydrology: Surface water (A1) and iron deposits (B5) Soils: No pit dug, inundated



**Hydrology:** Saturation (A3) with a shallow aquitard (D3) **Soils:** Organics over silty clay loam (Histic Epipedon A2)



**Hydrology:** Surface water (A1) and FAC-neutral (D5) **Soils:** No pit dug, inundated



K_37: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B



K_38: Upland NWI Class: U



K_39: Palustrine Saturated Deciduous Shrub Scrub NWI Class: PSS1B



**Hydrology:** Saturation (A3) with high water table (A2) **Soils:** Organics over silty clay loam (Problematic Alaska Gleyed)



**Hydrology:** Well drained and FAC-neutral (D5) **Soils:** Organics over silt loam (Alaska Redox A14)



**Hydrology:** Surface water (A1) and iron deposits (B5) **Soils:** No pit dug, inundated



K_MS_01: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B



**Hydrology:** Surface water (A1) and sediment deposits (B2) **Soils:** Organics over loam (Alaska Redox A14)



K_MS_02: Upland NWI Class: U



K_MS_03: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1/4B



Hydrology: Well drained Soils: Organics over loamy course sand



**Hydrology:** Saturation with a high water table **Soils:** Organics over silty clay loam (Histic Epipedon A2)



K_MS_04: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1/3B



**Hydrology:** Saturated (A3) with high water table (A3) **Soils:** Organics over loam (Histic Epipedon A2)



K_MS_05: Upland NWI Class: U



K_MS_06: Upland NWI Class: U



Hydrology: Well drained Soils: Organics over loamy course sand



Hydrology: Well drained Soils: Organics over silt loam



K_MS_07: Riverine Seasonally Flooded Low and Tall Willow NWI Class: PSS1C



K_MS_08: Upland NWI Class: U



K_MS_09: Upland NWI Class: U

**Hydrology:** Surface water (A1) and FAC-neutral **Soils:** No soil pit dug, inundated



**Hydrology:** Well drained and FAC-neutral (D5) **Soils:** Organics over silt loam



Hydrology: Well drained Soils: Organics over silt loam

# **II. VERIFICATION SITE PHOTOS**



K_V01: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PFO4B



K_V03: Upland NWI Class: U



K_V05: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1/4B

K_V04: Upland NWI Class: U



K_V06: Palustrine Saturated Deciduous Shrub Scrub

8/20/2012 15:54



K_V07: Upper Perennial Stream NWI Class: R3BUH



K_V09: Riverine Seasonally Flooded Low and Tall Willow NWI Class: PSS1C



K_V12: Palustrine Saturated Graminoid Meadow NWI Class: PEM1B



K_V08: Riverine Seasonally Flooded Low and Tall Willow NWI Class: PSS1B



K_V10: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B



K_V13: Upland NWI Class: U



K_V14: Palustrine Saturated Deciduous Shrub Scrub NWI Class: PSS1B



K_MS_V01: Palustrine Saturated Needleleaf-Shrub Birch Woodland

NWI Class: PSS1B



K_MS_V03: Upland NWI Class: U



K_V16: Upland NWI Class: U



K_MS_V02: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1/3B



K_MS_V04: Upland NWI Class: U



K_MS_V05: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B



K_MS_V06: Upland NWI Class: U



K_MS_V07: Palustrine Saturated Needleleaf-Shrub Birch Woodland NWI Class: PSS1B

Appendix C. Functional Assessment Forms

### CHARACTERIZATION

### (Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Airstrip Improvement, Kiana, AKDate: 10/18/2012Wetland: Upper Perennial StreamPM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland is within a permafrost system, with a near-surface active layer. IF YES, PROCEED NO FURTHER.</li> <li>Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions.</li> <li>Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding.</li> <li>If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.</li> <li>Wetland has dense (≥40% cover) woody vegetation.</li> <li>Wetland receives floodwater from an adjacent water course at least once every 10 years.</li> <li>Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.</li> </ol>	1. N 2. Y 3. N 4. N 5. N 6. N 7. N ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Low Function</b>
<ol> <li>Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland.</li> <li>Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Dense (≥50% cover) herbaceous vegetation is present.</li> <li>At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Sediment deposits are present (evidence of deposition during floods).</li> <li>Thick surface organic horizon and/or abundant fine organic litter is present.</li> </ol>	1. N 2. Y 3. N 4. N 5. N 6. N ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. Erosion Control and Shoreline Stabilization	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland directly abuts permanent or relatively permanent water. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion.</li> <li>An at least moderately dense herbaceous layer is present.</li> </ol>	1. N/A 2. N/A 3. N/A 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (Y or N) Rating: Moderate Function
<ol> <li>Wetland is flooded at least once every 10 years. IF NO, PROCEED NO FURTHER.</li> <li>A more than minimal amount of organic matter is flushed from the wetland by water flow at least once every 10 years. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has at least 30% cover of herbaceous vegetation.</li> <li>Woody plants in wetland are mostly deciduous.</li> <li>High degree of plant community structure, vegetation density, and</li> </ol>	1. Y 2. Y 3. N 4. N/A 5. N 6. N ≥ 4 attributes (Y)—High Function
species richness present. 6. Interspersion of vegetation and water is at least moderate.	2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (Y or N)
	Rating: Moderate Function
<ol> <li>Wetland is not fragmented by development.</li> <li>Upland surrounding wetland is undisturbed.</li> <li>Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each).</li> <li>Plant community has two or more strata, with at least two of those strata having ≥10% total cover.</li> <li>Wetland has at least a moderate degree of Cowardin Class interspersion.</li> <li>Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.</li> </ol>	<ul> <li>1. Y</li> <li>2. Y</li> <li>3. N</li> <li>4. N</li> <li>5. N</li> <li>6. N</li> <li>≥ 5 attributes (Y)—High Function</li> <li>2-4 attributes (Y)—Moderate Function</li> <li>0-1 attributes (Y)—Low Function</li> </ul>
F. General Fish Habitat	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>High Function</b>
<ol> <li>Wetland has perennial or intermittent surface water connection to a fish-bearing water body. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has sufficient size and depth of open water so as not to freeze completely during winter.</li> <li>Fish are present or are known to be present.</li> <li>Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.</li> <li>Spawning areas are present (e.g. pools with organic debris or overhanging vegetation).</li> </ol>	<ol> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>S Y</li> <li>Y</li> <li>S attributes (Y)—High Function</li> <li>3-4 attributes (Y)—Moderate Function</li> <li>0-2 attributes (Y)—Low Function</li> </ol>
G. Native Plant Richness	Wetland likely to perform function? (Y or N): N Rating: N/A
<ol> <li>At least 20 native plant species occur in the wetland</li> <li>Wetland contains two or more Cowardin Classes.</li> <li>Wetland has three or more strata of vegetation with at least 10% cover in each stratum.</li> </ol>	1. N 2. N 3. N
	<ul> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> </ul>
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (Y or N): N Rating: Moderate Function
<ol> <li>Site has documented scientific or educational use.</li> <li>Wetland is in public ownership.</li> <li>Accessible trails are available.</li> <li>Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).</li> </ol>	<ol> <li>N</li> <li>Y</li> <li>N</li> <li>A</li> <li>N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> </ol>
I. Uniqueness and Special Status	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>Wetland contains documented occurrence of a state or federally listed threatened or endangered species.</li> <li>Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service</li> <li>Wetland has biological, geological, or other features that are determined to be rare.</li> <li>Wetland has been determined significant because it provides functions scarce for the area.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>N</li> <li>A</li> <li>N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> <li>If attribute 1 is Y, then automatically High Function</li> </ol>

### CHARACTERIZATION

Project: Proposed Airstrip Improvement, Kiana, AK	Date: 10/18/2012
Wetland: Permanently Flooded Pond	PM/RS: Wendy Davis

Wetland likely to perform function? (Y or N) Rating: High Function
1 N
2. Y 3. Y 4. N 5. N 6. Y 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Moderate Function</b>
<ol> <li>N</li> <li>Y</li> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>Y</li> <li>≥ 4 attributes (Y)—High Function</li> <li>2–3 attributes (Y)—Moderate Function</li> <li>0–1 attributes (Y)—Low Function</li> </ol>
Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
1. N/A 2. N/A 3. N/A 1–2 attributes (Y)—High Function None—Low Function
Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Low Function</b>
1. Y 2. N 3. N 4. N/A 5. N 6. N/A
≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function
-

E. General Habitat Suitability	Wetland likely to perform function? (Y or N)
	Rating: Moderate Function
<ol> <li>Wetland is not fragmented by development.</li> <li>Upland surrounding wetland is undisturbed.</li> <li>Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each).</li> <li>Plant community has two or more strata, with at least two of those strata having ≥10% total cover.</li> <li>Wetland has at least a moderate degree of Cowardin Class interspersion.</li> <li>Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.</li> </ol>	<ul> <li>1. Y</li> <li>2. Y</li> <li>3. N</li> <li>4. N</li> <li>5. N</li> <li>6. N</li> <li>≥ 5 attributes (Y)—High Function</li> <li>2-4 attributes (Y)—Moderate Function</li> <li>0-1 attributes (Y)—Low Function</li> </ul>
F. General Fish Habitat	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>High Function</b>
<ol> <li>Wetland has perennial or intermittent surface water connection to a fish-bearing water body. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has sufficient size and depth of open water so as not to freeze completely during winter.</li> <li>Fish are present or are known to be present.</li> <li>Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.</li> <li>Spawning areas are present (e.g. pools with organic debris or overhanging vegetation).</li> </ol>	<ol> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>S Y</li> <li>Y</li> <li>S attributes (Y)—High Function</li> <li>3-4 attributes (Y)—Moderate Function</li> <li>0-2 attributes (Y)—Low Function</li> </ol>
G. Native Plant Richness	Wetland likely to perform function? ( <b>Y</b> or N): N Rating: Low Function
<ol> <li>At least 20 native plant species occur in the wetland</li> <li>Wetland contains two or more Cowardin Classes.</li> <li>Wetland has three or more strata of vegetation with at least 10% cover in each stratum.</li> </ol>	1. N 2. N 3. N
	≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (Y or N): N Rating: Moderate Function
<ol> <li>Site has documented scientific or educational use.</li> <li>Wetland is in public ownership.</li> <li>Accessible trails are available.</li> <li>Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).</li> </ol>	<ol> <li>N</li> <li>Y</li> <li>N</li> <li>A</li> <li>A</li> <li>N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> </ol>
I. Uniqueness and Special Status	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>Wetland contains documented occurrence of a state or federally listed threatened or endangered species.</li> <li>Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service</li> <li>Wetland has biological, geological, or other features that are determined to be rare.</li> <li>Wetland has been determined significant because it provides functions scarce for the area.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>N</li> <li>A</li> <li>N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> <li>If attribute 1 is Y, then automatically High Function</li> </ol>

### CHARACTERIZATION

Project: Proposed Airstrip Improvement, Kiana, AK	Date: 10/18/2012
Wetland: Lacustrine Flooded Sedge-Grass Marsh	PM/RS: Wendy Davis

Wetland likely to perform function? (Y or N) Rating: <b>High Function</b>
1. N 2. Y 3. Y 4. N 5. N 6. Y 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>High Function</b>
<ol> <li>N</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>N</li> <li>Y</li> <li>Attributes (Y)—High Function</li> <li>2–3 attributes (Y)—Moderate Function</li> <li>0–1 attributes (Y)—Low Function</li> </ol>
Wetland likely to perform function? (Y or N) Rating: <b>High Function</b>
1. Y 2. N 3. Y 1–2 attributes (Y)—High Function None—Low Function
Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>High Function</b>
1. Y 2. Y 3. Y 4. Y 5. Y 6. Y
≥ 4 attributes (Y)—High Function

E. General Habitat Suitability	Wetland likely to perform function? (Y or N)
E. General Habitat Suitability	Rating: High Function
<ol> <li>Wetland is not fragmented by development.</li> <li>Upland surrounding wetland is undisturbed.</li> <li>Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each).</li> <li>Plant community has two or more strata, with at least two of those strata having ≥10% total cover.</li> <li>Wetland has at least a moderate degree of Cowardin Class interspersion.</li> <li>Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.</li> </ol>	1. Y 2. Y 3. Y 4. N 5. Y 6. Y $\geq$ 5 attributes (Y)—High Function 2-4 attributes (Y)—Moderate Function 0-1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or N) Rating: <b>High Function</b>
<ol> <li>Wetland has perennial or intermittent surface water connection to a fish-bearing water body. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has sufficient size and depth of open water so as not to freeze completely during winter.</li> <li>Fish are present or are known to be present.</li> <li>Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.</li> <li>Spawning areas are present (e.g. pools with organic debris or overhanging vegetation).</li> </ol>	<ol> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>S attributes (Y)—High Function</li> <li>Y attributes (Y)—Moderate Function</li> <li>0-2 attributes (Y)—Low Function</li> </ol>
G. Native Plant Richness	Wetland likely to perform function? (Y or N): N Rating: Moderate Function
<ol> <li>At least 20 native plant species occur in the wetland</li> <li>Wetland contains two or more Cowardin Classes.</li> <li>Wetland has three or more strata of vegetation with at least 10% cover in each stratum.</li> </ol>	1. N 2. Y 3. N
	≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (Y or N): N Rating: Moderate Function
<ol> <li>Site has documented scientific or educational use.</li> <li>Wetland is in public ownership.</li> <li>Accessible trails are available.</li> <li>Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).</li> </ol>	<ol> <li>N</li> <li>Y</li> <li>N</li> <li>A</li> <li>A</li> <li>N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> </ol>
I. Uniqueness and Special Status	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>Wetland contains documented occurrence of a state or federally listed threatened or endangered species.</li> <li>Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service</li> <li>Wetland has biological, geological, or other features that are determined to be rare.</li> <li>Wetland has been determined significant because it provides functions scarce for the area.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>N</li> <li>A</li> <li>N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> <li>If attribute 1 is Y, then automatically High Function</li> </ol>

### CHARACTERIZATION

Project: Proposed Airstrip Improvement, Kiana, Ak	C Date: 10/18/2012
Wetland: Palustrine Flooded Wet Emergent Mead	ow PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	
	Wetland likely to perform function? (Y or N) Rating: Moderate Function
<ol> <li>Wetland is within a permafrost system, with a near-surface active layer. IF YES, PROCEED NO FURTHER.</li> <li>Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions.</li> <li>Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding.</li> <li>If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.</li> <li>Wetland has dense (&gt;40% cover) woody vegetation.</li> <li>Wetland receives floodwater from an adjacent water course at least once every 10 years.</li> <li>Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.</li> </ol>	1. N 2. Y 3. Y 4. N 5. N 6. N 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0-1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>High Function</b>
<ol> <li>Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland.</li> <li>Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Dense (≥50% cover) herbaceous vegetation is present.</li> <li>At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Sediment deposits are present (evidence of deposition during floods).</li> <li>Thick surface organic horizon and/or abundant fine organic litter is present.</li> </ol>	<ol> <li>Y</li> <li>Y</li> <li>Y</li> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>Y</li> <li>≥ 4 attributes (Y)—High Function</li> <li>2-3 attributes (Y)—Moderate Function</li> <li>0-1 attributes (Y)—Low Function</li> </ol>
C. Erosion Control and Shoreline Stabilization	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>High Function</b>
<ul> <li>C. Erosion Control and Shoreline Stabilization</li> <li>1. Wetland directly abuts permanent or relatively permanent water. IF NO, PROCEED NO FURTHER.</li> <li>2. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion.</li> <li>3. An at least moderately dense herbaceous layer is present.</li> </ul>	
<ol> <li>Wetland directly abuts permanent or relatively permanent water. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion.</li> </ol>	Rating: <b>High Function</b> 1. Y         2. N         3. Y         1–2 attributes (Y)—High Function
<ol> <li>Wetland directly abuts permanent or relatively permanent water. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion.</li> <li>An at least moderately dense herbaceous layer is present.</li> </ol>	Rating: <b>High Function</b> 1. Y         2. N         3. Y         1–2 attributes (Y)—High Function         None—Low Function         Wetland likely to perform function? (Y or N)

E. General Habitat Suitability	Wetland likely to perform function? (Y or N)
E. General Habitat Suitability	Rating: Low Function
<ol> <li>Wetland is not fragmented by development.</li> <li>Upland surrounding wetland is undisturbed.</li> <li>Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each).</li> <li>Plant community has two or more strata, with at least two of those strata having ≥10% total cover.</li> <li>Wetland has at least a moderate degree of Cowardin Class interspersion.</li> <li>Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.</li> </ol>	1. Y 2. N 3. N 4. N 5. N 6. N $\geq$ 5 attributes (Y)—High Function 2-4 attributes (Y)—Moderate Function 0-1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland has perennial or intermittent surface water connection to a fish-bearing water body. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has sufficient size and depth of open water so as not to freeze completely during winter.</li> <li>Fish are present or are known to be present.</li> <li>Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.</li> <li>Spawning areas are present (aquatic vegetation and/or gravel beds 6. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).</li> </ol>	1. N 2. N/A 3. N/A 4. N/A 5. N/A 5. N/A ≥ 5 attributes (Y)—High Function 3-4 attributes (Y)—Moderate Function 0-2 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>At least 20 native plant species occur in the wetland</li> <li>Wetland contains two or more Cowardin Classes.</li> <li>Wetland has three or more strata of vegetation with at least 10% cover in each stratum.</li> </ol>	1. N 2. N 3. N
	≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (Y or N): N Rating: <b>High Function</b>
<ol> <li>Site has documented scientific or educational use.</li> <li>Wetland is in public ownership.</li> <li>Accessible trails are available.</li> <li>Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).</li> </ol>	<ol> <li>N</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>A</li> <li>N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> </ol>
I. Uniqueness and Special Status	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>Wetland contains documented occurrence of a state or federally listed threatened or endangered species.</li> <li>Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service</li> <li>Wetland has biological, geological, or other features that are determined to be rare.</li> <li>Wetland has been determined significant because it provides functions scarce for the area.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> <li>If attribute 1 is Y, then automatically High Function</li> </ol>

### CHARACTERIZATION

### (Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Airstrip Improvement, Kiana, AKDate: 10/18/2012Wetland: Riverine Seasonally Flooded Wet Sedge MeadowPM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Moderate Function</b>
<ol> <li>Wetland is within a permafrost system, with a near-surface active layer. IF YES, PROCEED NO FURTHER.</li> <li>Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions.</li> <li>Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding.</li> <li>If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.</li> <li>Wetland has dense (≥40% cover) woody vegetation.</li> <li>Wetland receives floodwater from an adjacent water course at least once every 10 years.</li> <li>Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.</li> </ol>	1. N 2. N 3. N 4. N 5. N 6. Y 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Moderate Function</b>
<ol> <li>Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland.</li> <li>Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Dense (≥50% cover) herbaceous vegetation is present.</li> <li>At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Sediment deposits are present (evidence of deposition during floods).</li> <li>Thick surface organic horizon and/or abundant fine organic litter is present.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>N</li> <li>Y</li> <li>Attributes (Y)—High Function</li> <li>2-3 attributes (Y)—Moderate Function</li> <li>0-1 attributes (Y)—Low Function</li> </ol>
C. Erosion Control and Shoreline Stabilization	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Low Function</b>
<ol> <li>Wetland directly abuts permanent or relatively permanent water. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion.</li> </ol>	1. N 2. N/A 3. N/A
<ol><li>An at least moderately dense herbaceous layer is present.</li></ol>	1–2 attributes (Y)—High Function None—Low Function
<ol> <li>An at least moderately dense herbaceous layer is present.</li> <li>D. Production of Organic Matter and its Export</li> </ol>	
	None—Low Function Wetland likely to perform function? ( <b>Y</b> or N)

E. General Habitat Suitability	Wetland likely to perform function? (Y or N)
E. General Habitat Suitability	Rating: Moderate Function
<ol> <li>Wetland is not fragmented by development.</li> <li>Upland surrounding wetland is undisturbed.</li> <li>Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each).</li> <li>Plant community has two or more strata, with at least two of those strata having ≥10% total cover.</li> <li>Wetland has at least a moderate degree of Cowardin Class interspersion.</li> <li>Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.</li> </ol>	1. Y 2. Y 3. N 4. N 5. N 6. N ≥ 5 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or N) Rating: Low Function
<ol> <li>Wetland has perennial or intermittent surface water connection to a fish-bearing water body. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has sufficient size and depth of open water so as not to freeze completely during winter.</li> <li>Fish are present or are known to be present.</li> <li>Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.</li> <li>Spawning areas are present (aquatic vegetation and/or gravel beds 6. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).</li> </ol>	<ul> <li>1. N</li> <li>2. N/A</li> <li>3. N/A</li> <li>4. N/A</li> <li>5. N/A</li> <li>6. N/A</li> <li>≥ 5 attributes (Y)—High Function</li> <li>3-4 attributes (Y)—Moderate Function</li> <li>0-2 attributes (Y)—Low Function</li> </ul>
G. Native Plant Richness	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>At least 20 native plant species occur in the wetland</li> <li>Wetland contains two or more Cowardin Classes.</li> <li>Wetland has three or more strata of vegetation with at least 10% cover in each stratum.</li> </ol>	1. N 2. N 3. N
H. Educational, Scientific, Recreational, or Subsistence Use	≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
	Wetland likely to perform function? (Y or N): N Rating: <b>High Function</b>
<ol> <li>Site has documented scientific or educational use.</li> <li>Wetland is in public ownership.</li> <li>Accessible trails are available.</li> <li>Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).</li> </ol>	<ol> <li>N</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Introduction</li> <li>Attributes (Y)—High Function</li> <li>Attribute (Y)—Moderate Function</li> <li>None—Low Function</li> </ol>
I. Uniqueness and Special Status	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>Wetland contains documented occurrence of a state or federally listed threatened or endangered species.</li> <li>Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service</li> <li>Wetland has biological, geological, or other features that are determined to be rare.</li> <li>Wetland has been determined significant because it provides functions scarce for the area.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>N</li> <li>A</li> <li>N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> <li>If attribute 1 is Y, then automatically High Function</li> </ol>

### CHARACTERIZATION

Project: Proposed Airstrip Improvement, Kiana, AK	Date: 10/18/2012
Wetland: Palustrine Saturated Graminoid Meadow	PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Low Function</b>
<ol> <li>Wetland is within a permafrost system, with a near-surface active layer. IF YES, PROCEED NO FURTHER.</li> <li>Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions.</li> <li>Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding.</li> <li>If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.</li> <li>Wetland has dense (≥40% cover) woody vegetation.</li> <li>Wetland receives floodwater from an adjacent water course at least once every 10 years.</li> <li>Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.</li> </ol>	1. N 2. N 3. N 4. N 5. N 6. N 7. Y ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0-1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Moderate Function</b>
<ol> <li>Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland.</li> <li>Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Dense (≥50% cover) herbaceous vegetation is present.</li> <li>At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Sediment deposits are present (evidence of deposition during floods).</li> <li>Thick surface organic horizon and/or abundant fine organic litter is present.</li> </ol>	<ol> <li>Y</li> <li>N</li> <li>Y</li> <li>N</li> <li>N</li> <li>N</li> <li>Y</li> <li>≥ 4 attributes (Y)—High Function</li> <li>2-3 attributes (Y)—Moderate Function</li> <li>0-1 attributes (Y)—Low Function</li> </ol>
C. Erosion Control and Shoreline Stabilization	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland directly abuts permanent or relatively permanent water. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has dense, energy absorbing vegetation (trees, shrubs)</li> </ol>	1. N 2. N/A 3. N/A
	1–2 attributes (Y)—High Function None—Low Function
bordering the water course and no evidence of erosion.	None—Low Function Wetland likely to perform function? (Y or <b>N</b> )
bordering the water course and no evidence of erosion. 3. An at least moderately dense herbaceous layer is present.	None—Low Function

E. General Habitat Suitability	Wetland likely to perform function? (Y or N)
E. General Habitat Suitability	Rating: Low Function
<ol> <li>Wetland is not fragmented by development.</li> <li>Upland surrounding wetland is undisturbed.</li> <li>Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each).</li> <li>Plant community has two or more strata, with at least two of those strata having ≥10% total cover.</li> <li>Wetland has at least a moderate degree of Cowardin Class interspersion.</li> <li>Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.</li> </ol>	1. N       2. N       3. N       4. N       5. N       6. N       ≥ 5 attributes (Y)—High Function       2-4 attributes (Y)—Moderate Function       0-1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland has perennial or intermittent surface water connection to a fish-bearing water body. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has sufficient size and depth of open water so as not to freeze completely during winter.</li> <li>Fish are present or are known to be present.</li> <li>Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.</li> <li>Spawning areas are present (aquatic vegetation and/or gravel beds 6. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).</li> </ol>	<ol> <li>N</li> <li>N/A</li> <li>N/A</li> <li>N/A</li> <li>N/A</li> <li>N/A</li> <li>N/A</li> <li>S attributes (Y)—High Function</li> <li>3-4 attributes (Y)—Moderate Function</li> <li>0-2 attributes (Y)—Low Function</li> </ol>
G. Native Plant Richness	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>At least 20 native plant species occur in the wetland</li> <li>Wetland contains two or more Cowardin Classes.</li> <li>Wetland has three or more strata of vegetation with at least 10% cover in each stratum.</li> </ol>	1. N 2. N 3. N
	≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (Y or N): N Rating: <b>High Function</b>
<ol> <li>Site has documented scientific or educational use.</li> <li>Wetland is in public ownership.</li> <li>Accessible trails are available.</li> <li>Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).</li> </ol>	<ul> <li>1. N</li> <li>2. Y</li> <li>3. Y</li> <li>4. N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> </ul>
I. Uniqueness and Special Status	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>Wetland contains documented occurrence of a state or federally listed threatened or endangered species.</li> <li>Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service</li> <li>Wetland has biological, geological, or other features that are determined to be rare.</li> <li>Wetland has been determined significant because it provides functions scarce for the area.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> <li>If attribute 1 is Y, then automatically High Function</li> </ol>

### CHARACTERIZATION

### (Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Airstrip Improvement, Kiana, AKDate: 10/18/2012Wetland: Riverine Seasonally Flooded Low and Tall Willow ScrubPM/RS: Wendy Davis

Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>High Function</b>
1. N 2. Y 3. N 4. Y 5. Y 6. Y 7. N ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0-1 attributes (Y)—Low Function
Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Moderate Function</b>
<ol> <li>N</li> <li>Y</li> <li>N</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>N</li> <li>≥ 4 attributes (Y)—High Function</li> <li>2–3 attributes (Y)—Moderate Function</li> <li>0–1 attributes (Y)—Low Function</li> </ol>
Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>High Function</b>
1. Y 2. Y 3. Y 1–2 attributes (Y)—High Function None—Low Function
Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>High Function</b>
1. Y 2. Y 3. N 4. Y 5. N 6. Y ≥ 4 attributes (Y)—High Function
2–3 attributes (Y)—Moderate Function

E. General Habitat Suitability	Wetland likely to perform function? (Y or N)
E. General Habitat Suitability	Rating: Moderate Function
<ol> <li>Wetland is not fragmented by development.</li> <li>Upland surrounding wetland is undisturbed.</li> <li>Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each).</li> <li>Plant community has two or more strata, with at least two of those strata having ≥10% total cover.</li> <li>Wetland has at least a moderate degree of Cowardin Class interspersion.</li> <li>Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.</li> </ol>	1. Y 2. Y 3. N 4. N 5. N 6. N ≥ 5 attributes (Y)—High Function 2-4 attributes (Y)—Moderate Function 0-1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or N) Rating: Moderate Function
<ol> <li>Wetland has perennial or intermittent surface water connection to a fish-bearing water body. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has sufficient size and depth of open water so as not to freeze completely during winter.</li> <li>Fish are present or are known to be present.</li> <li>Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.</li> <li>Spawning areas are present (e.g. pools with organic debris or overhanging vegetation).</li> </ol>	<ol> <li>Y</li> <li>N</li> <li>Y</li> <li>N</li> <li>Y</li> <li>N</li> <li>Y</li> <li>S attributes (Y)—High Function</li> <li>3-4 attributes (Y)—Moderate Function</li> <li>0-2 attributes (Y)—Low Function</li> </ol>
G. Native Plant Richness	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>At least 20 native plant species occur in the wetland</li> <li>Wetland contains two or more Cowardin Classes.</li> <li>Wetland has three or more strata of vegetation with at least 10% cover in each stratum.</li> </ol>	1. N 2. N 3. N
	≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (Y or N): N Rating: <b>High Function</b>
<ol> <li>Site has documented scientific or educational use.</li> <li>Wetland is in public ownership.</li> <li>Accessible trails are available.</li> <li>Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).</li> </ol>	<ol> <li>N</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>Introduction</li> <li>Attributes (Y)—High Function</li> <li>Attribute (Y)—Moderate Function</li> <li>None—Low Function</li> </ol>
I. Uniqueness and Special Status	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>Wetland contains documented occurrence of a state or federally listed threatened or endangered species.</li> <li>Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service</li> <li>Wetland has biological, geological, or other features that are determined to be rare.</li> <li>Wetland has been determined significant because it provides functions scarce for the area.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> <li>If attribute 1 is Y, then automatically High Function</li> </ol>

### CHARACTERIZATION

Project: Proposed Airstrip Improvement, Kiana, AK	Date: 10/18/2012
Wetland: Palustrine Saturated Deciduous Shrub Scrub	PM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland is within a permafrost system, with a near-surface active layer. IF YES, PROCEED NO FURTHER.</li> <li>Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions.</li> <li>Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding.</li> <li>If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.</li> <li>Wetland has dense (≥40% cover) woody vegetation.</li> <li>Wetland receives floodwater from an adjacent water course at least once every 10 years.</li> <li>Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.</li> </ol>	1. Y 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A 7. N/A ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? ( <b>Y</b> or N) Rating: <b>Moderate Function</b>
<ol> <li>Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland.</li> <li>Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Dense (≥50% cover) herbaceous vegetation is present.</li> <li>At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Sediment deposits are present (evidence of deposition during floods).</li> <li>Thick surface organic horizon and/or abundant fine organic litter is present.</li> </ol>	1. Y 2. N 3. Y 4. N 5. N 6. Y ≥ 4 attributes (Y)—High Function 2–3 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
C. Erosion Control and Shoreline Stabilization	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ul> <li>C. Erosion Control and Shoreline Stabilization</li> <li>1. Wetland directly abuts permanent or relatively permanent water. IF NO, PROCEED NO FURTHER.</li> <li>2. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion.</li> </ul>	
·	Rating: N/A 1. N 2. N/A 3. N/A 1–2 attributes (Y)—High Function None—Low Function Wetland likely to perform function? (Y or N) Rating: High Function
<ul> <li>C. Erosion Control and Shoreline Stabilization</li> <li>1. Wetland directly abuts permanent or relatively permanent water. IF NO, PROCEED NO FURTHER.</li> <li>2. Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion.</li> <li>3. An at least moderately dense herbaceous layer is present.</li> </ul>	Rating: N/A 1. N 2. N/A 3. N/A 1–2 attributes (Y)—High Function None—Low Function Wetland likely to perform function? (Y or N)

E. General Habitat Suitability	Wetland likely to perform function? (Y or N)
	Rating: Moderate Function
<ol> <li>Wetland is not fragmented by development.</li> <li>Upland surrounding wetland is undisturbed.</li> <li>Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each).</li> <li>Plant community has two or more strata, with at least two of those strata having ≥10% total cover.</li> <li>Wetland has at least a moderate degree of Cowardin Class interspersion.</li> <li>Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.</li> </ol>	1. N 2. N 3. Y 4. Y 5. N 6. Y $\geq$ 5 attributes (Y)—High Function 2–4 attributes (Y)—Moderate Function 0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland has perennial or intermittent surface water connection to a fish-bearing water body. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has sufficient size and depth of open water so as not to freeze completely during winter.</li> <li>Fish are present or are known to be present.</li> <li>Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.</li> <li>Spawning areas are present (aquatic vegetation and/or gravel beds 6. Juvenile rest areas present (e.g. pools with organic debris or overhanging vegetation).</li> </ol>	1. N 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A ≥ 5 attributes (Y)—High Function 3-4 attributes (Y)—Moderate Function 0-2 attributes (Y)—Low Function
G. Native Plant Richness	Wetland likely to perform function? ( <b>Y</b> or N): N Rating: <b>Moderate Function</b>
<ol> <li>At least 20 native plant species occur in the wetland</li> <li>Wetland contains two or more Cowardin Classes.</li> <li>Wetland has three or more strata of vegetation with at least 10% cover in each stratum.</li> </ol>	1. N 2. Y 3. N
H. Educational, Scientific, Recreational, or Subsistence Use	≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
	Wetland likely to perform function? (Y or N): N Rating: <b>High Function</b>
<ol> <li>Site has documented scientific or educational use.</li> <li>Wetland is in public ownership.</li> <li>Accessible trails are available.</li> <li>Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).</li> </ol>	<ol> <li>N</li> <li>Y</li> <li>Y</li> <li>Y</li> <li>A</li> <li>N</li> <li>≥ 2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> </ol>
I. Uniqueness and Special Status	Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>Wetland contains documented occurrence of a state or federally listed threatened or endangered species.</li> <li>Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service</li> <li>Wetland has biological, geological, or other features that are determined to be rare.</li> <li>Wetland has been determined significant because it provides functions scarce for the area.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> <li>If attribute 1 is Y, then automatically High Function</li> </ol>

### CHARACTERIZATION

### (Modified by ABR, Inc.—Environmental Research & Services; September 2012)

Project: Proposed Airstrip Improvement, Kiana, AKDate: 10/18/2012Wetland: Palustrine Saturated Needleleaf-Shrub Birch WoodlandPM/RS: Wendy Davis

A. Flood Flow Regulation (Storage and Desynchronization)	Wetland likely to perform function? (Y or N) Rating: N/A
<ol> <li>Wetland is within a permafrost system, with a near-surface active layer. IF YES, PROCEED NO FURTHER.</li> <li>Wetland is capable of retaining much higher volumes of water during storm events than under normal rainfall conditions.</li> <li>Wetland is a closed (depressional) system subject to flooding or shows evidence of flooding.</li> <li>If flow-through, wetland has constricted outlet with signs of fluctuating water levels, algal mats, and/or lodged debris.</li> <li>Wetland has dense (≥40% cover) woody vegetation.</li> <li>Wetland receives floodwater from an adjacent water course at least once every 10 years.</li> <li>Floodwaters enter and flow through wetland predominantly as sheet flow rather than channel flow.</li> </ol>	1. Y 2. N/A 3. N/A 4. N/A 5. N/A 6. N/A 7. N/A ≥ 4 attributes (Y)—High Function 2-3 attributes (Y)—Moderate Function 0-1 attributes (Y)—Low Function
B. Sediment, Nutrient (N and P), Toxicant Removal	Wetland likely to perform function? (Y or N) Rating: Moderate Function
<ol> <li>Sediment, nutrients and/or toxicants (from tillage, mining, construction or other sources of pollution) appear to be or are likely to be entering the wetland.</li> <li>Slow-moving or still water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Dense (≥50% cover) herbaceous vegetation is present.</li> <li>At least moderate interspersion of vegetation and water is present or occurs during flooding that happens at least once every 10 years.</li> <li>Sediment deposits are present (evidence of deposition during floods).</li> <li>Thick surface organic horizon and/or abundant fine organic litter is present.</li> </ol>	<ol> <li>Y</li> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>Y</li> <li>≥ 4 attributes (Y)—High Function</li> <li>2–3 attributes (Y)—Moderate Function</li> <li>0–1 attributes (Y)—Low Function</li> </ol>
C. Erosion Control and Shoreline Stabilization	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland directly abuts permanent or relatively permanent water. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has dense, energy absorbing vegetation (trees, shrubs) bordering the water course and no evidence of erosion.</li> <li>An at least moderately dense herbaceous layer is present.</li> </ol>	1. N 2. N/A 3. N/A 1–2 attributes (Y)—High Function None—Low Function
D. Production of Organic Matter and its Export	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland is flooded at least once every 10 years. IF NO, PROCEED NO FURTHER.</li> <li>A more than minimal amount of organic matter is flushed from the</li> </ol>	1. N 2. N/A 3. N/A 4. N/A 5. N/A
wetland by water flow at least once every 10 years. IF NO, PROCEED NO FURTHER. 3. Wetland has at least 30% cover of herbaceous vegetation. 4. Woody plants in wetland are mostly deciduous. 5. High degree of plant community structure, vegetation density, and	6. N/A

E. General Habitat Suitability	Wetland likely to perform function? (Y or N)
E. General Habitat Suitability	Rating: Moderate Function
<ol> <li>Wetland is not fragmented by development.</li> <li>Upland surrounding wetland is undisturbed.</li> <li>Diversity (evenness of cover) of plant species is moderately high (≥5 species with at least 10% cover each).</li> <li>Plant community has two or more strata, with at least two of those strata having ≥10% total cover.</li> <li>Wetland has at least a moderate degree of Cowardin Class interspersion.</li> <li>Evidence of wildlife use (e.g., nests, tracks, scat, gnawed stumps, survey data) is present.</li> </ol>	<ul> <li>1. N</li> <li>2. N</li> <li>3. N</li> <li>4. Y</li> <li>5. Y</li> <li>6. Y</li> <li>≥ 5 attributes (Y)—High Function</li> <li>2-4 attributes (Y)—Moderate Function</li> </ul>
	0–1 attributes (Y)—Low Function
F. General Fish Habitat	Wetland likely to perform function? (Y or <b>N</b> ) Rating: <b>N/A</b>
<ol> <li>Wetland has perennial or intermittent surface water connection to a fish-bearing water body. IF NO, PROCEED NO FURTHER.</li> <li>Wetland has sufficient size and depth of open water so as not to freeze completely during winter.</li> <li>Fish are present or are known to be present.</li> <li>Herbaceous and/or woody vegetation is present in wetland and/or buffer to provide cover, shade, and/or detrital matter.</li> <li>Spawning areas are present (e.g. pools with organic debris or overhanging vegetation).</li> </ol>	<ol> <li>N</li> <li>N/A</li> <li>N/A</li> <li>N/A</li> <li>N/A</li> <li>N/A</li> <li>N/A</li> <li>attributes (Y)—High Function</li> <li>-4 attributes (Y)—Moderate Function</li> <li>0-2 attributes (Y)—Low Function</li> </ol>
G. Native Plant Richness	Wetland likely to perform function? ( <b>Y</b> or N): N Rating: <b>Medium Function</b>
<ol> <li>At least 20 native plant species occur in the wetland</li> <li>Wetland contains two or more Cowardin Classes.</li> <li>Wetland has three or more strata of vegetation with at least 10% cover in each stratum.</li> </ol>	1. N 2. Y 3. N
	≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function None—Low Function
H. Educational, Scientific, Recreational, or Subsistence Use	Wetland likely to perform function? (Y or N): N Rating: <b>High Function</b>
<ol> <li>Site has documented scientific or educational use.</li> <li>Wetland is in public ownership.</li> <li>Accessible trails are available.</li> <li>Wetland supports subsistence activities (e.g., hunting, fishing, berry picking).</li> </ol>	1. N 2. Y 3. Y 4. N ≥ 2 attributes (Y)—High Function 1 attribute (Y)—Moderate Function
I. Uniqueness and Special Status	None—Low Function Wetland likely to perform function? (Y or N): N Rating: Low Function
<ol> <li>Wetland contains documented occurrence of a state or federally listed threatened or endangered species.</li> <li>Wetland contains documented critical habitat, high quality ecosystems, or priority species, respectively designated by the U.S. Fish and Wildlife Service</li> <li>Wetland has biological, geological, or other features that are determined to be rare.</li> <li>Wetland has been determined significant because it provides functions scarce for the area.</li> </ol>	<ol> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>N</li> <li>2 attributes (Y)—High Function</li> <li>1 attribute (Y)—Moderate Function</li> <li>None—Low Function</li> <li>If attribute 1 is Y, then automatically High Function</li> </ol>

Wetland Delineation Report: Kiana Airport Improvements

Desktop Wetland Delineation for the Proposed Material Site Haul Route to Support Kiana Airport Improvements.



### Prepared for:

Alaska Department of Transportation & Public Facilities, Northern Region 2301 Peger Road, Fairbanks, AK 99709

### Prepared by:

Stantec 2515 A Street, Anchorage, AK 99503

July 2014

# Sign-off Sheet

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Prepared by	71004 YD.	(signature)
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Sora Lindberg,	CESCL	



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# PHOTO LOG

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# 1.0 INTRODUCTION

The Northern Region Alaska Department of Transportation and Public Facilities proposes to improve safety and efficiency of the Bob Baker Memorial Airport (Kiana Airport). Due to Kiana's remote location, goods and services can only be delivered to the community by barge or aircraft. The runway's current 3,400-foot length limits the type of cargo aircraft that can service Kiana Airport, so larger aircraft (such as DC-6) can only land partially loaded, which limits the amount of delivered goods and services to the community. In addition, the existing runway's deteriorating surface causes operational problems that result in frequent runway closures during spring breakup due to soft runway conditions from poor drainage. Furthermore, the airport apron is often congested with increased aircraft operations during the summer months.

A material site is needed to facilitate improvements to the Kiana Airport, as well as a haul route to access the material site. The proposed haul route study area for the proposed Kiana Airport Improvements is located in Kiana, Alaska within Sections 31 and 32, Township 19 North, Range 8 West, Kateel River Meridian (Figure 1). Kiana is located 57 miles east of Kotzebue in the Northwest Arctic Borough. The study area focus of this desktop wetland delineation includes a proposed haul route corridor between Kiana and the proposed Material Site (Figure 2).

No existing wetlands mapping covers the proposed haul route study area, including the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI). Wetland mapping was completed by ABR, Inc., in 2013 and covers the material site and airport study areas, adjacent to the haul route study area. Existing wetland mapping is shown on Figure 2. Kiana is located on a bluff overlooking the confluence of the Kobuk and Squirrel rivers. The Alaska Vegetation Classification (Viereck, et. al., 1992) identifies the study area as a boreal forest dominated by closed, open, and woodland evergreen forests of black and white spruce with extensive areas of open and closed deciduous forests of paper birch, aspen, and balsam poplar. Extensive mosaics of shrub and herbs, are identified in this region with subarctic lowland sedge and sedge-moss bog meadows as well as willow, sweetgale, and graminoid bogs. The study area's ecoregion is identified as a continental climate, with undifferentiated alluvium and slope deposits over primarily sedimentary rocks (Gallant et al., 1995).

This desktop wetland delineation of the material site haul route study area serves to support and satisfy requirements for the United States Army Corps of Engineers (USACE) Section 404 wetland permit application process.

# 2.0 METHODOLOGY

The wetland delineation for the material site haul route study area was completed using desktop wetland delineation methods by Kacy D. Hillman, Professional Wetland Scientist No. 2150. The desktop wetland delineation was evaluated using high resolution aerial imagery taken in 2011

and 20-foot contours. Esri® ArcMap[™] Version 10.1 was used to heads-up digitize the different waters, wetland, and upland vegetation types observed on the aerial imagery. Wetlands and waters were classified according to Cowardin et al (1979) NWI annotations that distinguish the dominant vegetation and water regimes.

The Wetlands Determination, Functional Assessment and Habitat Assessment for Proposed Kiana Airstrip Improvements, Alaska (ABR, 2013) was used as a guide to cross-reference ABR ground-truthed waters, and wetland and upland classification types with distinguishing signatures on aerial imagery. In addition, ground photos taken by archaeologists from SWCA Environmental Consultants June 9-12, 2014 were used to verify aerial imagery signatures.

# 3.0 **RESULTS AND DISCUSSION**

Ten Cowardin classifications were identified within the study area, three Waters of the U.S., five wetlands (vegetated), and two uplands (non-wetland).

## 3.1 WATERS OF THE U.S.

Waters within the study area include Upper Perennial Streams (Riverine, Upper Perennial, Unconsolidated Bottom [R3UB]), Lower Perennial Streams (Riverine, Lower Perennial, Streambed [R2SB]), and Flooded Ponds (Palustrine, Unconsolidated Bottom [PUB]).

### 3.1.1 Upper Perennial Stream

The Upper Perennial Stream flowing along the northwestern edge of the study area appears to eventually outlet into the Kobuk River, a navigable water. Other Upper Perennial Streams connect Flooded Ponds. Upper Perennial Streams within the study area comprise 0.3% (1.8 acre) of the study area. ABR describes observed Upper Perennial Streams near the study area as relatively permanent waters with constant flow throughout the growing season characterized by narrow channels with small riparian areas composed of wet shrub scrub wetland types. Desktop wetland delineation methods do not allow for substrate identifiers so Upper Perennial Streams were easily visible as meandering channels on the aerial imagery (figures 2-3, not shown in SWCA photos).

### 3.1.2 Lower Perennial Stream

Lower Perennial Streams were observed on aerial imagery as narrower meandering channels than the Upper Perennial Streams and were generally connected to greater Upper Perennial Streams or Flooded Ponds. Lower Perennial Streams within the study area comprise 0.1% (0.5 acre) of the study area. ABR did not observe any Lower Perennial Streams within their study areas. Desktop wetland delineation methods do not allow for substrate identifiers so Lower Perennial Streams observed on aerial imagery were given the classification R2SB (figures 2-3, not shown in SWCA photos).

#### 3.1.3 Flooded Ponds

Flooded Ponds appear scattered throughout the study area and vary in size. Flooded Ponds within the study area comprise 3.2% (17.1 acres) of the study area. Features of Flooded Ponds observed from aerial imagery show dark open water characteristics. Some Flooded Ponds within the study area appear to be connected by Upper Perennial or Lower Perennial streams. ABR classified Flooded Ponds as shallow open water ponds. Desktop wetland delineation methods do not allow for substrate identifiers so Flooded Ponds observed on aerial imagery were given the classification PUB (figures 2-3, Photo Log – SWCA Test Point #4).

Not all connections between ponds are apparent from the aerial imagery and it is assumed there are present connections, possibility Intermittent Streams that were unable to be accurately mapped from the aerial imagery. South of the study area it appears there are multiple streams flowing south that outlet into the Kobuk River. Intermittent Streams do not permanently carry water and are generally narrower than Upper or Lower Perennial streams, which are difficult to distinguish from aerial imagery.

## 3.2 WETLANDS

Wetlands within the study area include Shrub-dominated (Palustrine, Scrub-Shrub [PSS], Palustrine, Scrub-Shrub, Broad-Leaved Deciduous [PSS1], Palustrine, Scrub-Shrub, Broad-Leaved Deciduous/Broad-Leaved Evergreen, Saturated [PSS1/3B], and Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded [PSS1C]) and Emergent (Palustrine Emergent [PEM]).

#### 3.2.1 Shrub-dominated

Shrub-dominated Wetlands are the most common type of wetlands found within the study area comprising 91.6% (489.1 acres) of the study area. ABR classified these wetlands as dominated by an open canopy of shrub species including both deciduous and evergreen in some areas. Characteristics of Shrub-dominated Wetlands identified by ABR include dominant vegetation consisting of *Salix richardsonii* (Richardson's willow), *Picea glauca* (white spruce) *Betula glandulosa* (resin birch), and *Vaccinium uliginosum* (bog blueberry), with saturated organic soils. Desktop wetland delineation methods do not allow for hydrologic identifiers so Shrub-dominated Wetlands observed on aerial imagery that did not abut ABR mapped wetlands were given the classification PSS. Distinguishable features on the aerial imagery include light green open canopy shrubs sometimes connected to open areas with more scattered shrubs (figures 2-3, Photo Log – SWCA Test Points #1, 3, 4, 8-11, 13-18).

#### 3.2.2 Emergent

Emergent Wetlands within the study area comprise only 1.3% (6.9 acres) of the study area. ABR classified these wetlands as depressional features, sometimes part of a lacustrine fringe. Characteristics of Emergent Wetlands within the study area identified by ABR include emergent vegetation consisting of *Eriophorum angustifolium* (tall cottongrass), *Comarum* palustre (purple marshlocks), *Equisetum fluviatile* (water horsetail), and *Carex utriculata* (Northwest Territory sedge) with visible surface water throughout. Desktop wetland delineation methods do not allow for hydrologic identifiers so Emergent Wetlands observed on aerial imagery were given the classification PEM. These wetlands are distinguishable on the aerial imagery as open habitat devoid of shrub species (figures 2-3, not shown in SWCA photos). Many Emergent Wetlands within the study area border Flooded Ponds.

## 3.3 UPLANDS

Uplands within the study area were identified as non-wetland (Upland [U]) and filled areas (Upland, Disturbed [Us]). Upland areas were classified by evaluating contour data and ground photography. If both determination methods were not available to classify uplands, or landscape position did not correlate, a more conservative PSS designation was classified as a default.

#### 3.3.1 Non-wetland

Non-wetland upland areas comprise 2.4% (12.7 acres) of the study area. These areas are distinguishable on the aerial imagery by darker green closed canopy forested areas similar to upland areas mapped by ABR (figures 2-3, Photo Log – SWCA Test Points #2, 5-7, 12). Characteristics of Non-wetland uplands identified by ABR include predominant needleleaf forest (*Picea glauca*) and woodland or low and tall willow scrub communities (*Salix pulchra* (tealeaf willow), *Vaccinium uliginosum*, *Vaccinium vitis-idaea* (lingonberry)) located on steep slopes and bluffs, as well as smaller rounded knobs on sandy/loam soils. SWCA ground photos were also used to determine some of these areas that were harder to identify based solely on aerial imagery. ABR classified Non-wetlands as predominant needle-leaf forests, and woodland or low and tall willow shrub communities on steep slopes, bluffs, and small rounded knobs.

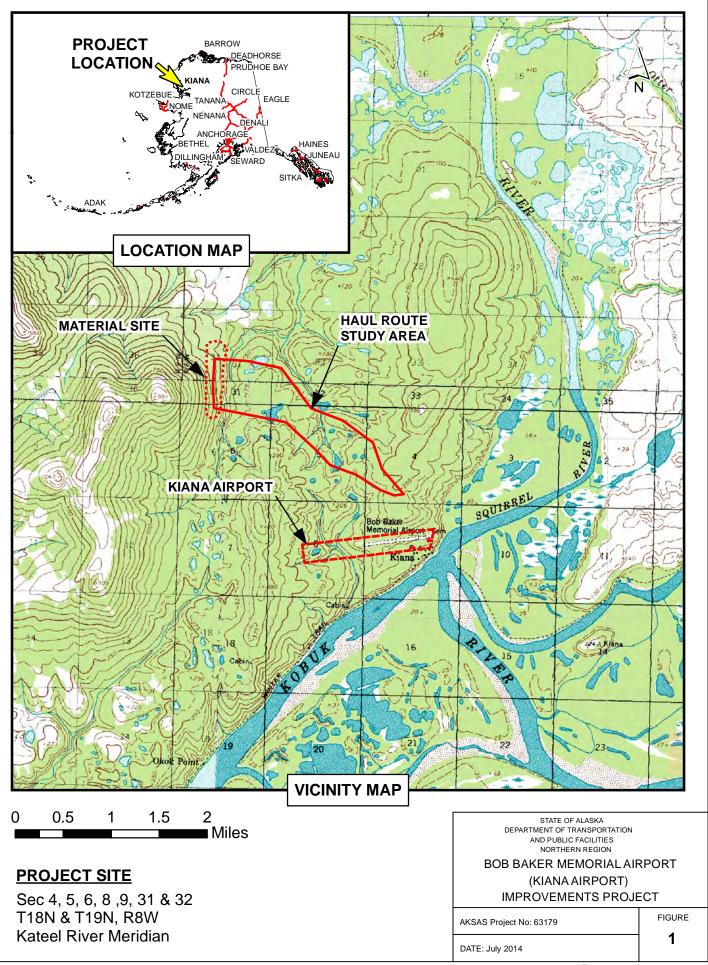
#### 3.3.2 Filled Areas

Filled upland areas comprise 1.1% (6 acres) of the study area. These areas are distinguishable on the aerial imagery by roads and filled pads devoid of vegetation (figures 2-3, not shown in SWCA photos).

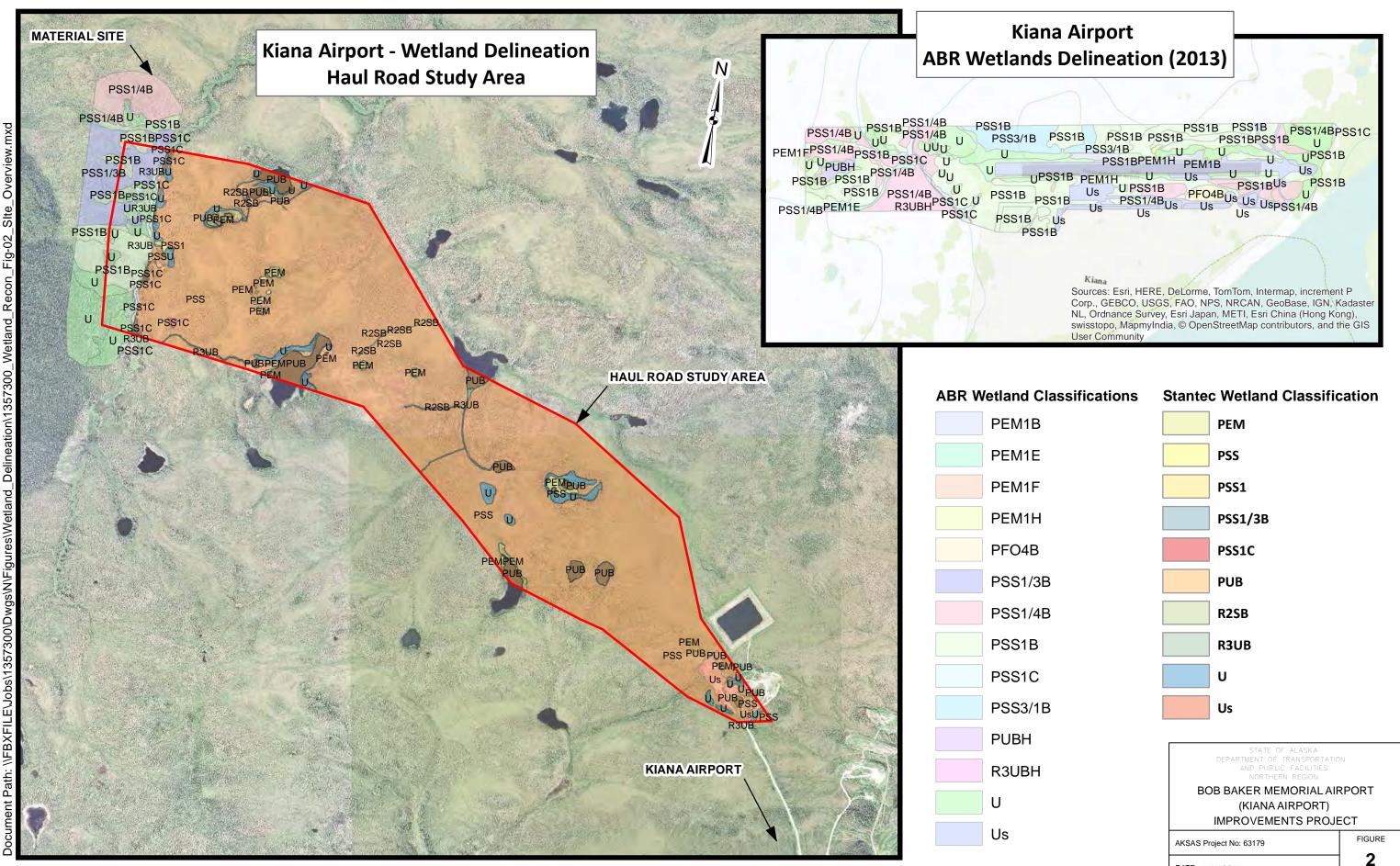
# 4.0 CONNECTION TO NAVIGABLE WATERS

The Kobuk River is a navigable water in the vicinity of Kiana and is subject to Section 10 of the Rivers and Harbors Act. All wetlands and waters within the study area are likely jurisdictional due to their direct downstream connection to the Kobuk River.

**FIGURES** 

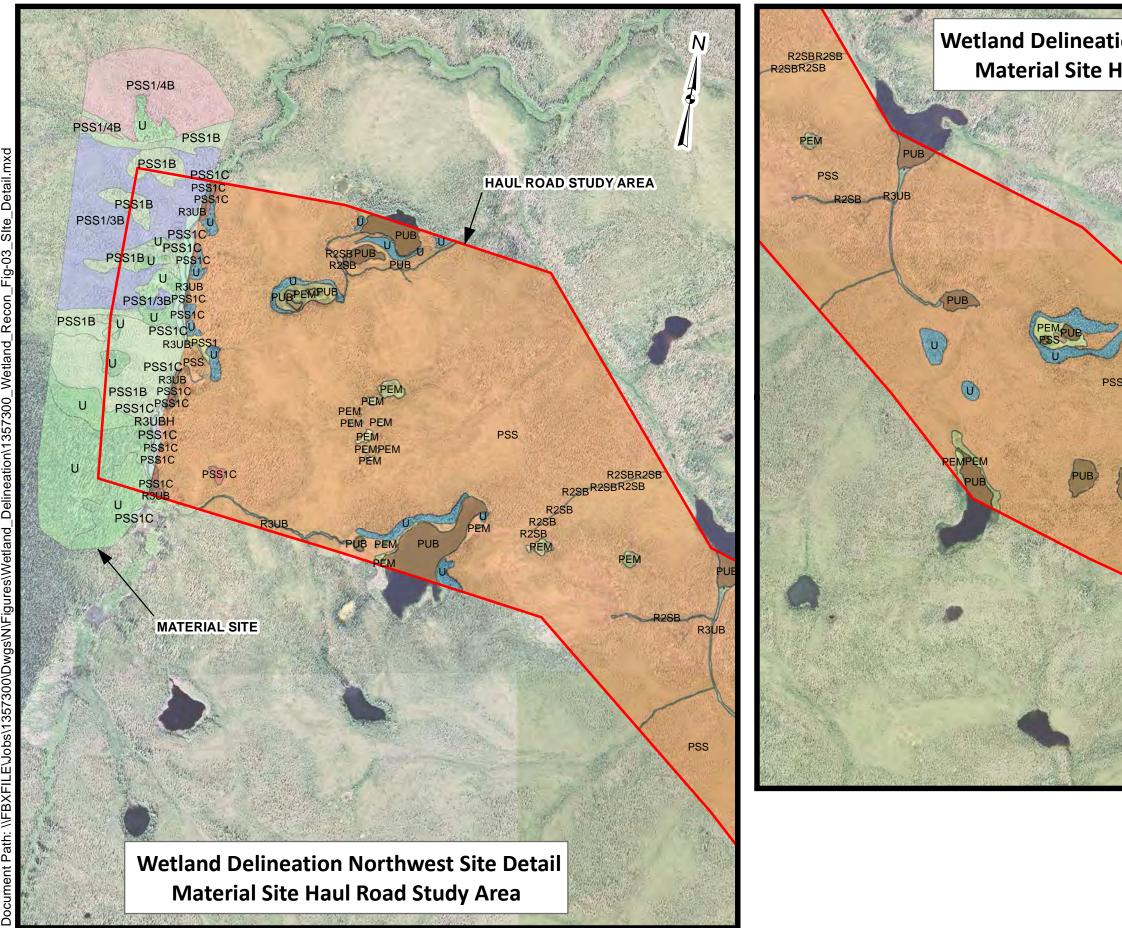


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DATE: JULY 2014



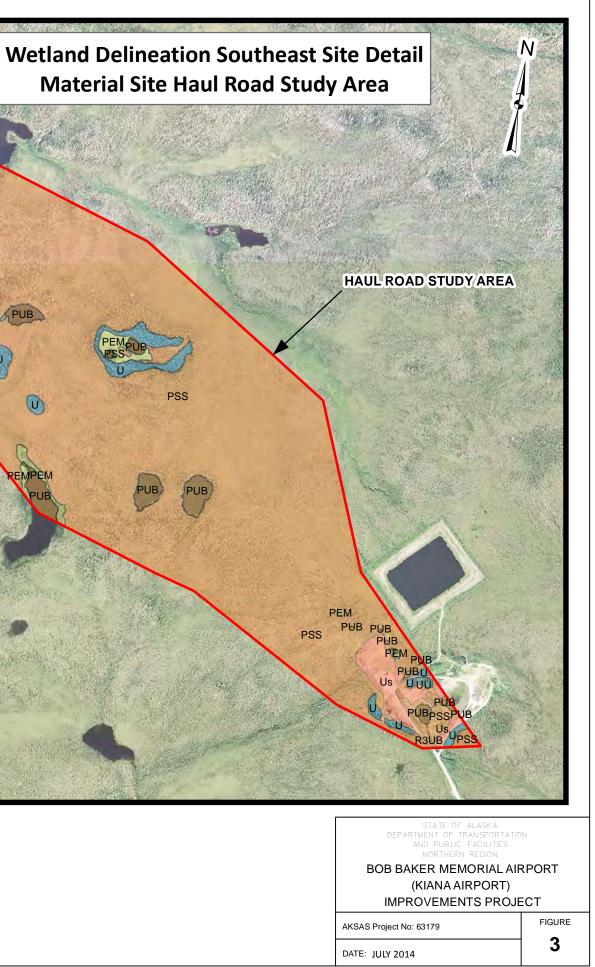
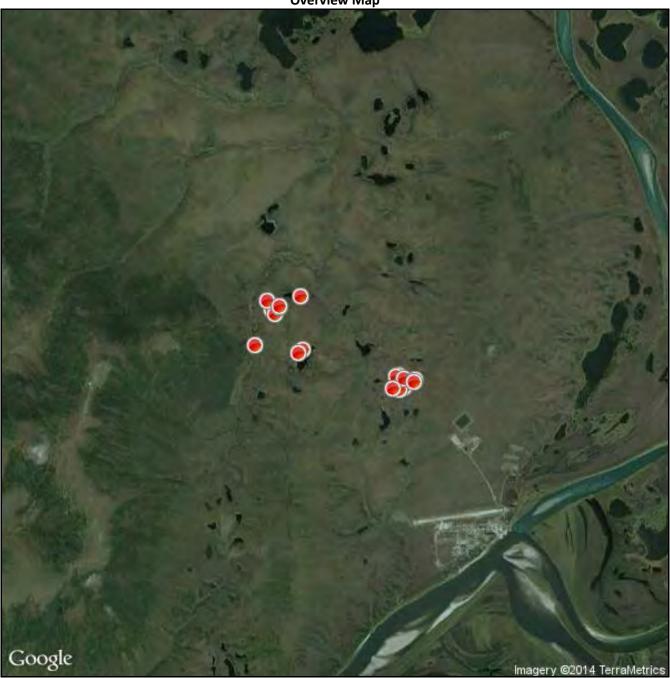


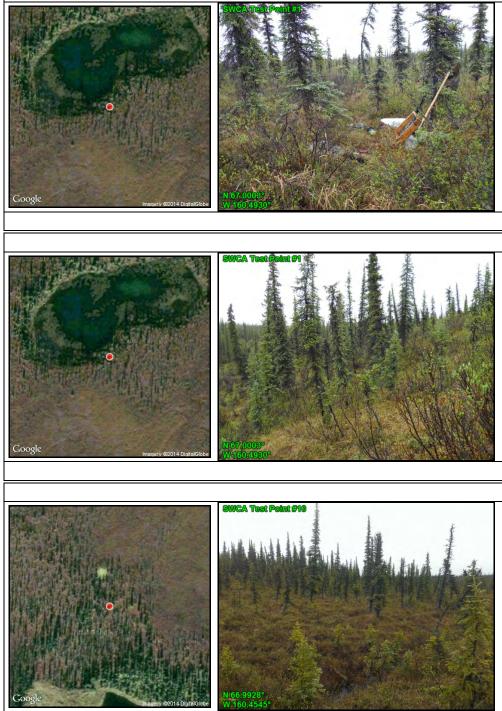
PHOTO LOG

## Kiana Airport Improvements Desktop Wetland Delineation Photo Log



**Overview Map** 

Attributes	
1	
SWCA Test Point #1	
PSS. Characteristic	
overview of PSS	
habitat.	
N 67.0003°	
W 160.4930°	



Attributes	
Title	1
Subject	SWCA Test Point #1
	PSS. Characteristic
Description	overview of PSS
	habitat.
Latitude	N 67.0003°
Longitude	W 160.4930°

10

SWCA Test Point #10 PSS. Characteristic

overview of PSS

W 160.4545°

habitat. N 66.9928°

Title

Subject

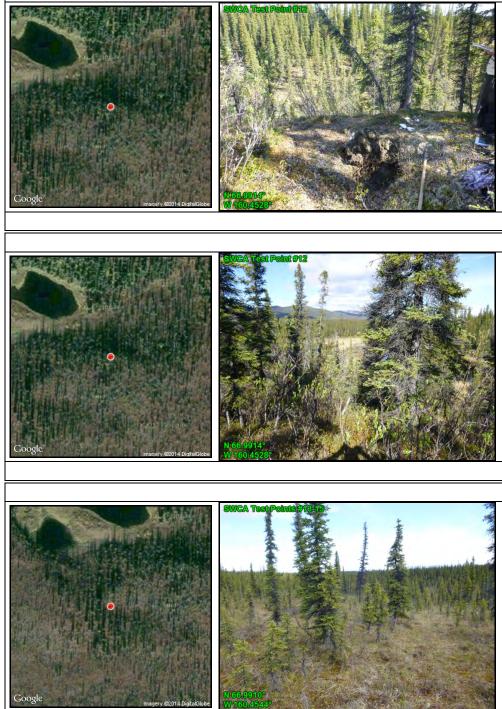
Latitude

Longitude

Description

Title     10       Subject     SWCA Test Point #10       PSS. Characteristic	
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PSS. Characteristic	and the second
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Description overview of PSS	
habitat.	
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Title 11	
Subject SWCA Test Point #11	
Description PSS. Overview of two inclusion PSC habitat	
typical PSS habitat.	
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Subject SWCA Test Point #11	
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typical PSS habitat.	7
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Longitude W 160.4530°	ALC: NO
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Attributes	
12	
SWCA Test Point #12	
Upland. View of	
hillside bluff upland	
habitat.	
N 66.9914°	
W 160.4528°	
	12 SWCA Test Point #12 Upland. View of hillside bluff upland habitat. N 66.9914°



Attributes	
Title	12
Subject	SWCA Test Point #12
Description	Upland. View of
Description	hillside bluff upland
	habitat.
Latitude	N 66.9914°
Longitude	W 160.4528°

13-15

#13-15 PSS. Area

habitat.

N 66.9910°

W 160.4544°

SWCA Test Points

characteristic of PSS

Title

Subject

Description

Latitude

Longitude

Attributes	
Title	13-15
Cultinat	SWCA Test Points
Subject	#13-15
Description	PSS. Area
	characteristic of PSS
	habitat.
Latitude	N 66.9910°
Longitude	W 160.4544°

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Attributes	
Title	16
Subject	SWCA Test Point #16
Description	PSS. Overview of PSS habitat.
Latitude	N 66.9913°
Longitude	W 160.4563°

16

habitat.

N 66.9913°

W 160.4563°

SWCA Test Point #16 PSS. Overview of PSS

Title

Subject

Latitude

Longitude

Description

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Title	17		SWCA Test Point #17
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	ibutes		
Title	18	· · · · · · · · · · · · · · · · · · ·	SWICA Treat Polint 218
Subject	SWCA Test Point #18		
Description	PSS. Overview of PSS		
	habitat.		
Latitude	N 66.9923°		
Longitude	W 160.4495°	•	
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Title	18	SWICA Test Point #18
Subject	SWCA Test Point #18	
Description	PSS. Overview of PSS	
Description	habitat.	
Latitude	N 66.9923°	
Longitude	W 160.4495°	
		Coogle magery 62014 DiatalGibe N 66.9923* W 160.4495*
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Title	2	SVCA trest.Point#2
Subject	SWCA Test Point #2	
	Upland. Area	
Description	representative of	the bar water of the second
Description	hillside upland	
	habitat.	
Latitude	N 67.0009°	
Longitude	W 160.4941°	CONTRACT OF STOLE AND A REAL OF AN AND A REAL OF AN AND A REAL OF
	tributes	Google         magery 02014 DigitalGlabs
Title	2	SV/CATESI Point #2
Subject	SWCA Test Point #2	
	Upland. Area	
Description	representative of	
Description	hillside upland	
	habitat.	
Latitude	N 67.0009°	
Longitude	W 160.4941°	
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Attributes	
3	
SWCA Test Point #3	
PSS. Area	
representiative of	
Palustrine Scrub-	
Shrub habitat.	
N 67.0019°	
W 160.4956°	

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	Attributes	
	Title	3
	Subject	SWCA Test Point #3
		PSS. Area
	Description	representiative of
	Description	Palustrine Scrub-
		Shrub habitat.
	Latitude	N 67.0019°
	Longitude	W 160.4956°

4

Pond.

N 67.0012° W 160.4918°

SWCA Test Point #4 Flooded Pond. View overlooking habitat

of a typical Flooded

Title

Subject

Description

Latitude

Longitude

Attri	Attributes	
Title	4	
Subject	SWCA Test Point #4	
	PSS. Area	
Description	representiative of	
Description	Palustrine Scrub-	
	Shrub habitat.	
Latitude	N 67.0012°	
Longitude	W 160.4918°	

Attributes

5

4

PSS. Area

N 67.0012°

W 160.4918°

SWCA Test Point #4

representiative of

Palustrine Scrub-Shrub habitat.

SWCA Test Point #5 Upland. Overview of

upland habitat.

N 67.0025° W 160.4851°

Title

Subject

Description

Latitude

Longitude

Title

Subject

Latitude

Longitude

Description

Source Treet Point 64
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SWCA Test Point 75 Cogle Inagery 62014 DigitalOble

ŀ	Attributes	
Title	5	SWCA Test Point #5
Subject	SWCA Test Point #5	
Description	Upland. Overview of	
Description	upland habitat.	
Latitude	N 67.0025°	
Longitude	W 160.4851°	
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4	Attributes	]
Title	6	StwCA Test Point 65
Subject	SWCA Test Point #6	
	Upland. Overview	
Description	representative of	
	upland habitat.	
Latitude	N 66.9959°	
Longitude	W 160.4844°	
		Coogle Imagery 62014 DigitalClobe
	Attributes	
Title	6	SWCA Test Point #0
Subject	SWCA Test Point #6	
	Upland. Overview	
Description	representative of	
	upland habitat.	
Latitude	N 66.9959°	
Longitude	W 160.4844°	

Imagery ©2014 DigitalGlobe

	Attributes	
Title	7	SWCA Test Point #7
Subject	SWCA Test Point #7	
	Upland. Overview	
Description	representative of	
	upland habitat.	
Latitude	N 66.9955°	
Longitude	W 160.4858°	
		Coogle Imagery @2014 DigitalGlobe
	Attributes	
Title	7	SWCA Test Point #7
Subject	SWCA Test Point #7	
	Upland. Overview	
Description	representative of	
	upland habitat.	
Latitude	N 66.9955°	
Longitude	W 160.4858°	
		Coogle Imagery 62014 DiditalCible N 66.9955° W 160.4858°
	Attributes	SWICA Test Point 88
Title Subject	8	
Subject	SWCA Test Point #8	
Description	PSS. Overview of	
	typical PSS habitat.	
Latitude	N 66.9964° W 160.4992°	
Longitude	W 160.4992	

Google

N 66.9964° W 160 4992

	Attributes	
Title	8	SWCA Test Point #8
Subject	SWCA Test Point #8	
	PSS. Ground view of	
Description	typical PSS	
	vegetation.	
Latitude	N 66.9964°	o o
Longitude	W 160.4992°	
		Coogle Inagery (2014 DigitalGide
	Attributes	
Title	9	SiWCA Test Point #9
Subject	SWCA Test Point #9	
	PSS. Overview of	
Description	characteristic PSS	
	habitat.	
Latitude	N 66.9927°	-
Longitude	W 160.4553°	
		Coogle         N 66.9927° W 160.4553°
	Attributes	
Title	9	SWICA Test Point (2)
Subject	SWCA Test Point #9	
	PSS. Overview of	
Description	characteristic PSS	
	habitat.	
Latitude	N 66.9927°	•
Longitude	W 160.4553°	
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		Coogle Imagery @2014 Digital@bbe NJ 06.90277