

Jurisdictional Determination Report

West Anchorage Snow Disposal Site

Municipality of Anchorage – Project Management & Engineering

Connors Bog Anchorage, Alaska

November 11, 2020

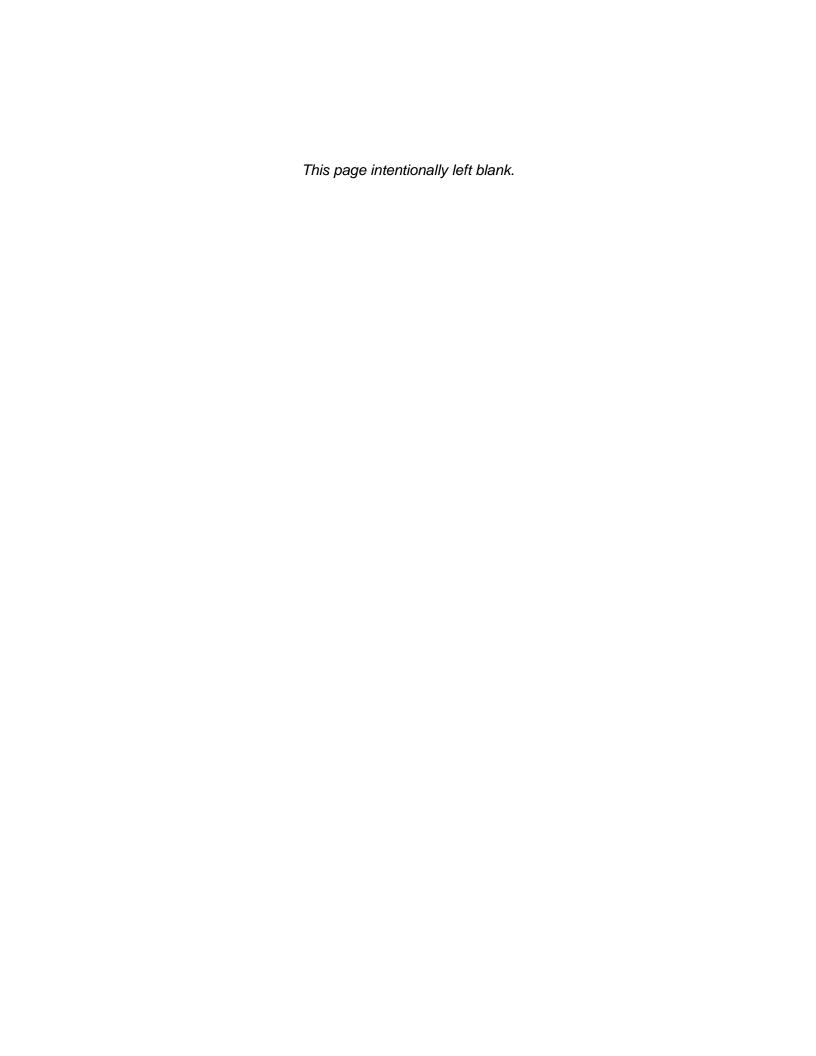


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1.0 Introduction and Purpose

The Municipality of Anchorage (MOA) is evaluating the development of a snow disposal site in West Anchorage. Currently, there are no publicly-owned snow disposal sites in the vicinity, which has adversely affected the efficiency of snow handling operations. MOA has selected a site (study area) covering a portion of three parcels (Parcel Numbers 01204106000, 01204107000, and 01257101000; Figure 1) owned by MOA that is immediately south of Javier De La Vega Park in Connors Bog, adjacent to Minnesota Drive. MOA has contracted HDR, Inc. (HDR) to assist with delineation of wetlands within the study area and to preliminarily determine whether those wetlands are subject to U.S. Army Corps of Engineers' (USACE) jurisdiction under authority of Section 404 of the Clean Water Act of 1972 (as amended) or Section 10 of the Rivers and Harbors Act of 1899 according to the definitions provided in the Navigable Waters Protection Rule (NWPR; 85 FR 22250).

The purpose of this report is to present evidence that supports a preliminary determination that wetlands identified within the study area are not subject to USACE jurisdiction according to the definitions. Information presented herein complies with the USACE guidance for jurisdictional determination reports, Special Public Notice (SPN) 2020-00399 (USACE 2020).

1.1. Study Area Description

The study area is located in the Anchorage Bowl within the Municipality of Anchorage (MOA) in an area known as Connors Bog. The bog is situated on a relatively flat glacial till plain connected to Connors Lake and is surrounded by surface roads, residential development, industrial development at the MOA-owned Kloep Station, and park lands (Inset 1).

The study area is relatively flat and is defined by the southern boundary of Javier De La Vega Park, Minnesota Drive to the east, Raspberry Road to the south, and a trail (Connors Bog Trail) that lies on top of a 54-inch rolled concrete sewer line that serves as the western boundary of the study area (Figures 1 and 2). Connors Bog. especially within the study area, exhibits a string bog surface form where slightly higher ridges dominated by shrubs are interspersed with low sedge and moss-dominated areas. The ridges in a string bog are oriented perpendicular to the flow of surface water, which suggests that surface water present during spring snow melt



Inset 1. Study Area

moves southwest toward the sewer line. A 12-inch diameter culvert runs through the sewer line trail and acts as an intermittent surface water connection between the study area and the



remainder of Connors Bog to the west. Raspberry Road, constructed in 1980, separates Connors Bog from Strawberry Bog, which lies to the south of Connors Bog across Raspberry Road. Existing wetland mapping for Connors Bog is shown in Figure 3.

The 72.8-acre study area can be found on Anchorage A-8 U.S. Geological Survey (USGS) quadrangles and is located in Sections 1 and 2 of Township 12 North, Range 4 West, Seward Meridian. The study area is divided between the North Fork Campbell Creek (12-digit Hydrologic Unit Code [HUC] 190204010603) watershed and the Knik Arm-Frontal Cook Inlet (190204010808) watershed (USGS 2020; Figure 4).

2.0 Methods

2.1. Wetland Delineation

On October 2, 2020 HDR wetland scientists Alena Gerlek (Professional Wetland Scientist [PWS] #3144), and Valerie Watkins (PWS #2958) conducted an on-site investigation of wetlands and waterbodies within the 72.8-acre study area. Soil conditions, hydrology, and plant communities were studied using methods described in the 1987 *Wetlands Delineation Manual* and the 2007 *Regional Supplement* (USACE 1987, 2007). The field work occurred within the USACE recommended growing season for the Cook Inlet ecoregion (USACE 2007).

The USACE Antecedent Precipitation Tool (APT) was used to determine the degree to which any recent climatic events (e.g., abnormally wet or dry conditions) may have influenced hydrology conditions during the time of the field investigation. The APT utilizes 30 years of data on precipitation, drought, and other climatic factors to determine "normal" conditions (Deters 2020). Hydrologic indicators observed in the field on October 2, 2020 would be expected to correlate with the APT output for these days (Appendix B). The APT calculated that the hydrologic conditions were normal, which is consistent with field observation.

Standard USACE Wetland Determination Forms were completed at eight sites within the study area (Appendix A). Photographs and observational data were collected at 17 additional locations (Observation Points) to document sites that were similar to those areas for which a Wetland Determination Form had already been completed. Locations of Wetland Determination Form sites and Observation Points were collected using a handheld global positioning system (GPS) and are shown on Figure 5. Photos at Wetland Determination Form sites and Observation Points are available upon request.

2.2. Investigation of Potential Surface Water Connections

A consideration when determining jurisdictional status of a wetland is the presence or absence of a surface water connection between wetlands within the study area and any potentially jurisdictional tributaries, waterbodies, or wetlands. During the wetland delineation a small culvert that runs through the Connors Bog Trail was observed. Since this culvert represents a surface water connection to wetlands west of the trail and outside of the study area, the investigation of potential surface water connections was expanded to include the remainder of Connors Bog and Connors Lake. Potential surface water connections were investigated by HDR wetland



scientist Simon Wigren (PWS #2699) on October 13, 2020 by walking publicly-owned land around the perimeter of Connors Bog and Connors Lake to document conditions at all possible surface water connections. These possible connections may include streams, culverts, and ditches. Known drainage features mapped by MOA (2020) were targeted for field observation. During the investigation a track line was recorded and GPS points were collected to document the areas observed and the locations of all culverts that could allow surface water flow into or out of Connors Bog (Figure 6). The APT calculated that antecedent hydrologic conditions on October 13 were drier than normal which was taken into consideration during the investigation. Photographs taken during the investigation are provided in Appendix C.

During the investigation, the north end of a known culvert through Raspberry Road could not be located due to thick grass cover on the road embankment. MOA ordered the inspection of the culvert by the Street Maintenance Department which was conducted using a mobile culvert inspection unit on October 14, 2020 by MOA Street Maintenance staff. The culvert is shown in the MOA Drainage Viewer¹ (Drainageway ID 1436-11-1) and the location is shown on Figure 6. The MOA culvert inspection report is provided in Appendix D.

3.0 Summary of Findings

3.1. Wetlands

The vegetation, hydrology, and soil conditions described below are based on field data collected on-site on October 2, 2020. Six of the eight sites where Wetland Determination Forms were completed were determined to be wetland and the remaining two sites were determined to be upland. Of the upland sites, two of the vegetation communities were hydrophytic but lacked hydric soils or indicators of wetland hydrology. Upland sites were located within dense black spruce stands in topographic high points. Completed Wetland Determination Forms are included in Appendix A. Observation Points that were determined to be wetland were similar to Wetland Determination Form sites and exhibited signs of prolonged flooding or saturation. Observation Points in uplands were also situated on topographic highs and were composed of similar vegetation types as Wetland Determination Form sites that were determined to be in uplands. Based on wetland mapping (Figure 5) completed from analysis of the field data, there is 66.2 acres of wetland and 6.6 acres of upland within the study area. Digital wetland mapping is available upon request.

3.2. Investigation of Potential Surface Water Connections

A total of 17 sites were documented during the investigation of potential surface water connections. While the APT found that conditions on October 13, 2020 were drier than normal, none of the culverts or potential surface water connections at these sites exhibited any observable evidence (water marks, scour lines, etc.) that they convey surface flow out of

¹ The MOA Drainage Viewer is available at http://moapw.maps.arcgis.com/apps/webappviewer/index.html?id=e482230f740e464989cc9e4fb8fef786



Connors Bog in a typical year. Additionally, surface water conditions did not appear to vary from those observed during the wetland delineation performed 11 days prior. Observational photos taken at each site are presented in Appendix C. Table 1 summarizes the observations at each site.

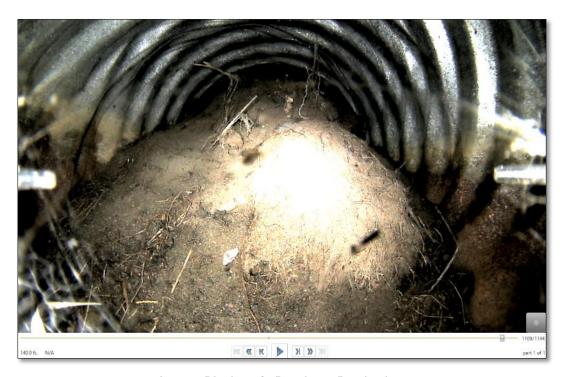
Table 1. Summary of Potential Surface Water Connection Investigation Sites

Site ID	Potential Surface Water Connection	Field Observations
SW1	Culvert through Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-11-1)	North end not found. Investigated by MOA Street Maintenance staff. See Inset 2. South end has rust from occasional flooding in Strawberry Bog but north end is buried in the road prism.
SW2	Storm pipe from catch basin in median of Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-10-1)	Dry culvert, overgrown.
SW3	Storm pipe through Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-11-1)	Dry culvert, overgrown.
SW4	Culvert through Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-17-1)	Connors Bog side of culvert. Dry and overgrown with grass.
SW5	Culvert through Raspberry Road visible in MOA Drainage Viewer (Drainageway ID 1436-17-1)	Minnesota Drive catch basin side of culvert. Dry and overgrown with grass.
SW6	Culvert through Minnesota Drive visible in MOA Drainage Viewer (Drainageway ID 1436-15-1)	Appears to flow toward Connors Bog but may only reach it during very high water conditions.
SW7	Northern extent of wetlands in Connors Bog, north of Connors Lake	No surface outlet(s) found.
SW8	Ditch along Jewel Lake Road	Disturbed, fill substrate. Higher in elevation than wetlands.
SW9	Topographic high with trail leading into Connors Bog	No channelized feature found. Several feet higher than wetlands to south.
SW10	Culvert through Frontage Road visible in MOA Drainage Viewer (Drainageway ID 1280-57-1)	Ditch and culvert dry. No channel development within ditch. Likely for snow storage and spring runoff.
SW11	North side of same culvert through Frontage Road visible in MOA Drainage Viewer (Drainageway ID 1280-57-1)	Ditch and culvert dry. No channel development within ditch. Likely for snow storage and spring runoff.
SW12	Culvert through Jewel Lake visible in MOA Drainage Viewer (Drainageway ID 1280-56-1)	Small culvert ~10" diameter. Dry and overgrown. Likely for runoff.
SW13	Northern extent of ditch along Jewel Lake Road	No channelized features found. Large, open field.
SW14	Culvert through Collins Way visible in MOA Drainage Viewer (Drainageway ID 79-40-1)	Culvert drains ditches along Jewel Lake Road and flow into Connors Bog.
SW15	Storm pipe visible in MOA Drainage Viewer (No Drainageway ID)	Storm pipes from neighborhood discharge here into catch basin.
SW16	Culvert through AWWU Sewer Line Trail	Connects wetlands east of the trail to the wetlands west of trail. Small diameter (12") and sits ~1 foot above wetland surface.
SW17	General site conditions of Connors Lake	Lake level apparently low. No outlets observed while walking perimeter of lake.

As described in Section 2.1, the north end of a known culvert through Raspberry Road could not be located (SW1). MOA Street Maintenance owns a mobile device fitted with cameras that can provide a high definition 360-degree view of pipes to assess their overall condition. MOA Street Maintenance was able to enter the south end of the culvert and move the device approximately 140 feet north under Raspberry Road. At that point a plug of soil and fill material was encountered and causes an apparent full blockage of the north end of the culvert (Inset 2). MOA Street Maintenance staff inspected the north embankment with a metal detector and found the



apparent north end of the culvert, which was covered with several feet of road material (Inset 3). A full report of the culvert inspection performed by MOA Street Maintenance is provided in Appendix D.



Inset 2. Blockage in Raspberry Road culvert



Inset 3. MOA staff detecting the north end of the culvert under Raspberry Road



4.0 Jurisdictional Determination

The wetland delineation described in Section 2.0 was prepared in compliance with the USACE Wetlands Delineation Manual (USACE 1987) and the 2007 Regional Supplement (USACE 2007). The on-site delineation conducted by HDR indicated that there are approximately 66.2 acres of wetlands within the 72.8-acre study area.

On June 22, 2020 the changes to the definition of Waters of the United States (WOUS) contained in the NWPR came into effect. For the purposes of the Clean Water Act, the NWPR defines WOUS as the following categories (33 CFR 328.3[a]):

- (1) The territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide:
- (2) Tributaries;
- (3) Lakes and ponds, and impoundments of jurisdictional waters; and
- (4) Adjacent wetlands.

The only waterbody adjacent to the study area wetlands is Connors Lake. However, Connors Lake is only approximately 20 acres in surface area and does not appear to be used for, or have the potential use for, interstate or foreign commerce. In order to provide a preliminary determination of the jurisdictional status of the wetlands within the study area, a discussion for each of the remaining three categories of WOUS is provided below as they relate to the wetlands in the study area.

4.1. Tributaries

Tributaries are defined under the NWPR as (33 CFR 328[c][12]):

"The term tributary means a river, stream, or similar naturally occurring surface water channel that contributes surface water flow to a water identified in paragraph (a)(1) of this section in a typical year either directly or through one or more waters identified in paragraph (a)(2), (3), or (4) of this section.

A tributary must be perennial or intermittent in a typical year. The alteration or relocation of a tributary does not modify its jurisdictional status as long as it continues to satisfy the flow conditions of this definition. A tributary does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through a channelized non-jurisdictional surface water feature, through a subterranean river, through a culvert, dam, tunnel, or similar artificial feature, or through a debris pile, boulder field, or similar natural feature. The term tributary includes a ditch that either relocates a tributary, is constructed in a tributary, or is constructed in an adjacent wetland as long as the ditch satisfies the flow conditions of this definition."

As shown in Figure 4, there are no tributaries emanating from or that pass through Connors Bog. Fish Creek and Campbell Creek are the closest streams but lie approximately 1.0 mile to



the north and 1.5 miles to the southeast of the center of Connors Bog, respectively. The field investigation of potential surface water connections did not find any surface inlets or outlets of Connors Lake or Connors Bog that could be considered tributaries (Figure 6).

4.2. Lakes, Ponds, and Impoundments of Jurisdictional Waters

Lakes, ponds, and impoundments of jurisdictional waters are defined under the NWPR as (33 CFR 328[c][6]):

"The term lakes and ponds, and impoundments of jurisdictional waters means standing bodies of open water that contribute surface water flow to a water identified in paragraph (a)(1) of this section in a typical year either directly or through one or more waters identified in paragraph (a)(2), (3), or (4) of this section. A lake, pond, or impoundment of a jurisdictional water does not lose its jurisdictional status if it contributes surface water flow to a downstream jurisdictional water in a typical year through a channelized non-jurisdictional surface water feature, through a culvert, dike, spillway, or similar artificial feature, or through a debris pile, boulder field, or similar natural feature. A lake or pond, or impoundment of a jurisdictional water is also jurisdictional if it is inundated by flooding from a water identified in paragraph (a)(1), (2), or (3) of this section in a typical year."

In order for Connors Lake to meet the definition of a WOUS, a surface water connection of any size and type would be required to flow from the lake to a jurisdictional water. Aerial imagery and topographic data show that there are no clear outlets from Connors Lake that would contribute surface water through any other WOUS or non-jurisdictional surface water features. As shown in Inset 4, the lake lies in a depressional area and is bounded by surface development. Field investigation of the area (Figure 6) found that there are no streams, culverts or other features that would allow surface water to flow out of Connors Lake to any WOUS.



Inset 4. 2-foot LiDAR hillshade of area around Connors Lake

4.3. Adjacent Wetlands

Adjacent wetlands are defined under the NWPR as (33 CFR 328[c][6]) wetlands that:

- Abut, meaning to touch at least at one point or side of, a water identified in paragraph (a)(1), (2), or (3) of this section;
- Are inundated by flooding from a water identified in paragraph (a)(1), (2), or (3) of this section in a typical year;
- Are physically separated from a water identified in paragraph (a)(1), (2), or (3) of this section only by a natural berm, bank, dune, or similar natural feature; or
- Are physically separated from a water identified in paragraph (a)(1), (2), or (3) of this section only by an artificial dike, barrier, or similar artificial structure so long as that structure allows for a direct hydrologic surface connection between the wetlands and the water identified in paragraph (a)(1), (2), or (3) of this section in a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature. An adjacent wetland is jurisdictional in its entirety when a road or similar artificial structure divides the wetland, as long as the structure allows for a direct hydrologic surface connection through or over that structure in a typical year."

As described in the previous discussion, Connors Lake does not have any surface water connection to downstream WOUS. Therefore, the wetlands within the study area do not abut and are not inundated by a WOUS, as defined under the NWPR. Additionally, as shown in



Section 3.2, the culvert through Raspberry Road does not provide a surface water connection through the road, an artificial berm, to Strawberry Bog. Strawberry Bog may provide a surface water connection to Campbell Creek, but that possibility has not been investigated as part of this report. The wetlands in the study area do not meet the definition of 'adjacent wetlands' under the NWPR because it does not abut a WOUS and does not have a surface water connection through Raspberry Road.

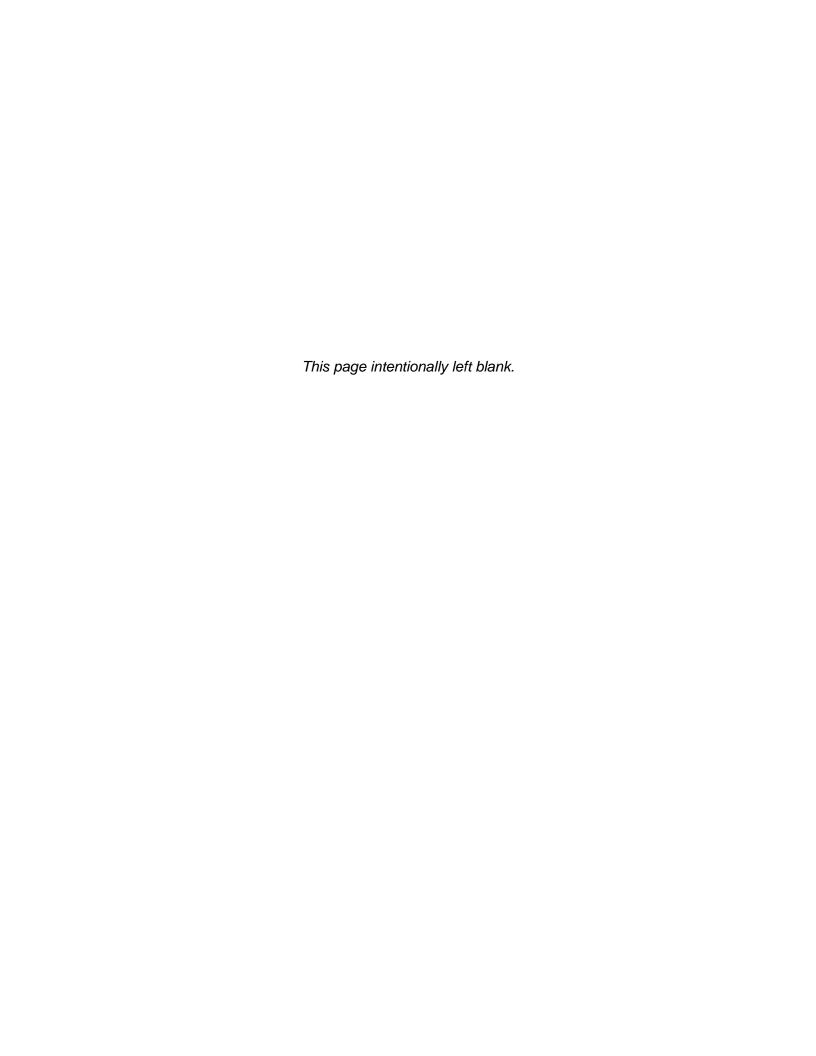
Based on the discussion provided in this section, there are no surface water connections between the wetlands within the study area and any WOUS. Therefore, the wetlands within the study area are preliminarily determined to not be within the jurisdiction of the USACE under Section 404 of the Clean Water Act, however the USACE will render a determination of jurisdictional status.



5.0 References

Deters, J. 2020. Antecedent Precipitation Tool Version 1.0. USACE Regulatory Program.

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- U.S. Fish and Wildlife Service (USFWS). 2020. National Wetlands Inventory. Wetlands Mapper digital data. Accessed at: https://www.fws.gov/wetlands/data/mapper.html on October 8, 2020.
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Figures



Snow Disposal Site Parcels

West Anchorage Snow Disposal Municipality of Anchorage

Figure 1 Study Area Vicinity Jurisdictional Determination Report

Aerial imagery provided by the Municipality of Anchorage (2015) 11/9/2020







5-foot Contours

West Anchorage Snow Disposal Municipality of Anchorage

Figure 2 Study Area Topography Jurisdictional Determination Report

Aerial imagery provided by the Municipality of Anchorage (2015) 11/9/2020







MOA Wetland Mapping (MOA 2020)



LEGEND

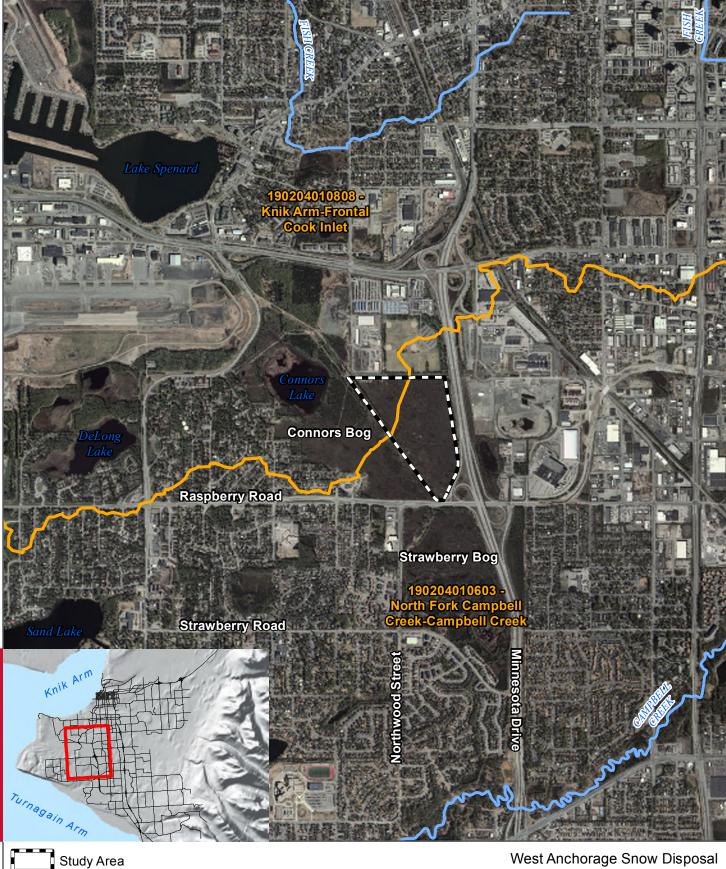
NWI Wetland Mapping (USFWS 2020)

West Anchorage Snow Disposal Municipality of Anchorage

Figure 3 Existing Wetland Mapping Jurisdictional Determination Report

Aerial imagery provided by the Municipality of Anchorage (2015) 11/9/2020









HUC-12 Watersheds (USGS 2020)

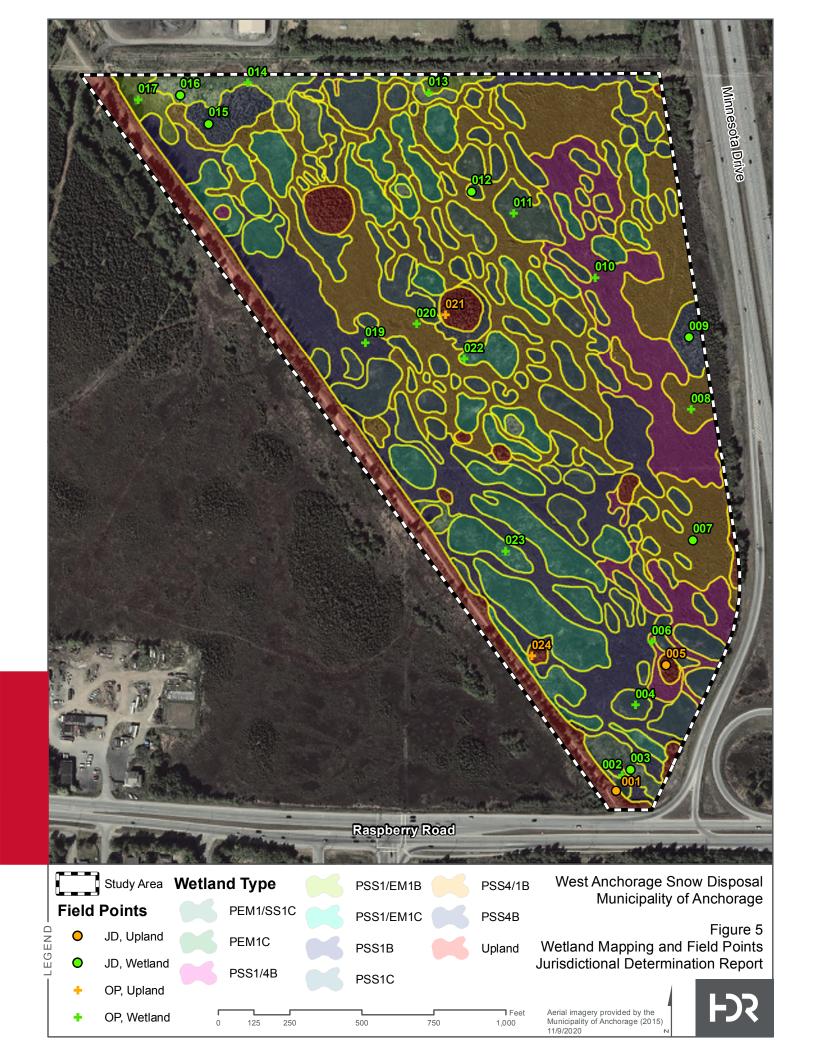
Streams

West Anchorage Snow Disposal Municipality of Anchorage

Figure 4 Watersheds Jurisdictional Determination Report

Aerial imagery provided by the Municipality of Anchorage (2015) 11/9/2020



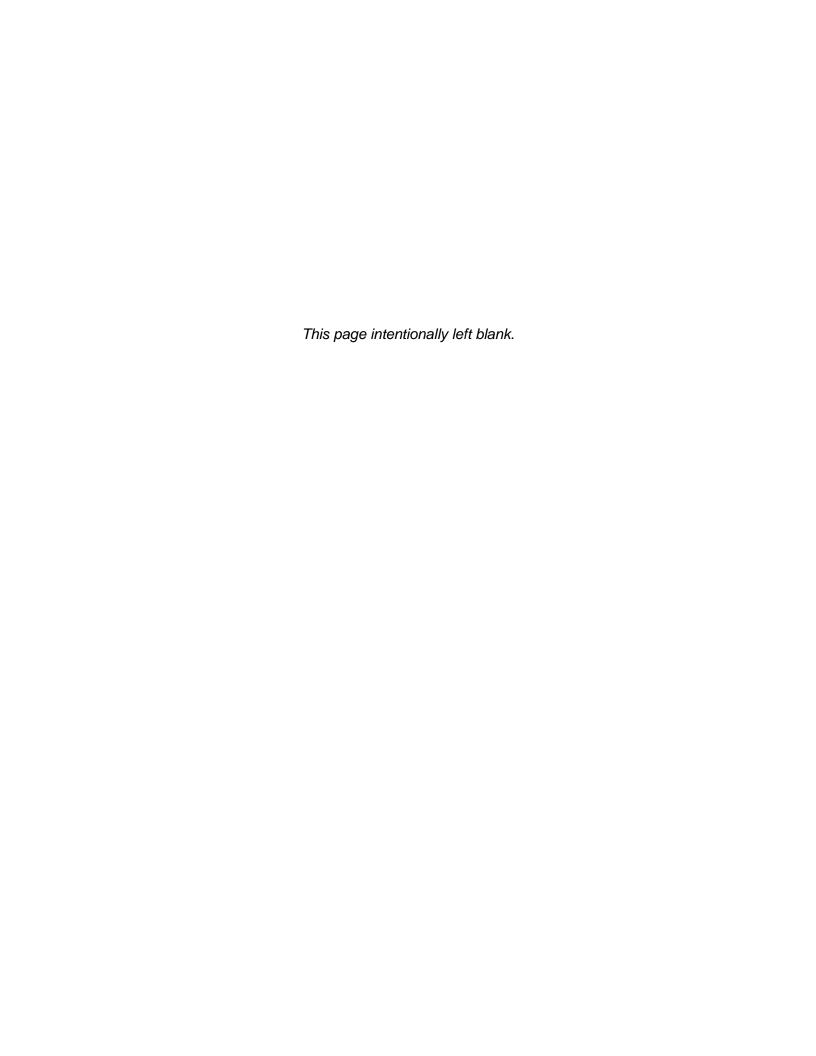




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1,000

Aerial imagery provided by the Municipality of Anchorage (2015) 11/9/2020 **FDS**



Appendix A

Wetland Determination Data Forms

October 5, 2020

WETLAND DETERMINATION DATA FORM -	- Alaska Region
Project: West Anchoray From Disposal Boroughicity: MOTA	Date: (0)/2/7020
Applicant/Owner: \(\Lambda\theta\)\(\lambda\)	Sampling Point #:_ 001
Investigator(s): A. GEREL, V. Watkins Firm: h	HDR Alaska, Inc.
Lat. (dec.") (a), 159574 Long. 149.917547 ± NAD 83 Recorded of	n GPS #: Marked on map? Field Map #:
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landfo	orm: Judied Slope (%): 10 Aspect: NE
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave	convex)/ concave NWI classification:
Photo nos./descriptions: SO VI NESW	
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: Vo:	
Are Vegetation N. Soil, or Hydrology significantly disturbed? Are "Normal Circu	imstances" present? Yes No
Are Vegetation N. Soil N. or Hydrology N naturally problematic? If needed, explain	answers here
SUMMARY OF FINDINGS	anomalo fidio.
Hydrophytic Vegetation Present? Yes No	
Hydric Soil Present? Yes No V Is the sampled are within a wetland?	
Wetland Hydrology Present? Yes No V	P Yes No _√_ Remarks (e.g., marginal?);
VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % cau	
Cover (not relative cover), % call	n total >100%. Dominance Test worksheet:
Tree Stratum (dbh≥ 3")	
Species Cov.% Dom? Ind. Species Cov.% Dom? Ind.	Number of Dominant Species That are OBL, FACW, or FAC: (A)
a fee oug	
3. P. C. gla 5 PPW 7.	Total Number of Dominant Species Across All Strata: (g
4 8	(B)
Total Tree Cover: 35	Percent of Dominant Species That are OBL, FACW, or FAC: 50 (A/B)
116	That are OBL, FACW, or FAC: 50 (A/B) Prevalence Index worksheet:
50% of total cover:	7.
Alta Carrol Daniel Lad	Total % Cover of: Multiply by:
1. Bet Pap 5 FAW 7. Abs.Cov.% Dom? Ind.	OBL species X1=
2 Sal ges 10 Y FAC 8.	FACW species 2 X2= 4
3. Picala 2 FACU 9.	FAC species 95 X3= 785
4. You ble 3 + MU10.	FACU species 50 x4= 200
5.50L pvl FMW11	UPL + NL species X5=
6 12	Column Totals: 147 (A) 499 (B)
Total Sapling/Shrub Cover: 12	17
50% of total cover:1\20% of total cover:4.4	Prevalence Index = B/A = 3,33
Herb Stratum	
Abs.Cov.% Dom? Ind. Abs. Cov.% Dom? Ind.	
7	Hydrophytic Vegetation Indicators:
2. Cha ang 5 #ACV 13	Dominance Test is>50%
4. Ach Mil I FACU 15.	Prevalence Index is ≤3.0
5 16	Mark de la contraction de la c
6	Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)
7 18	
8 19	Problematic Hydrophytic Vegetation¹ (Explain)
9	
10	Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
	be present unless distribed of problematic.
115	,
50% of total cover: 45 20% of total cover: 18	Hydrophytic Vegetation Yes No
Circular 1/10-ac plot or other plot dimension: % of bare ground: %	Present? Yes No
% Cover of Wetland Bryophytes	
Remarks:	
Plat confined to be in between trail + method	

Profile Description: (Describts to the depth needed to document the Indicator or confirm the absence of Indicators) Popth Morizon Soil Metrix Redox Features Direct Document
Internation Color (moles) % Color (moles) % Type Loc2 Texturp Internation Color (see softment underline)
Total Tota
Standard Indicators: Indicators for Problematic Hydric Soil Indicators (chock ones that apply, measure from top of mineral layers unless otherwise noted):
Signature Sign
Pype: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains *Location: PL = Pore Lining, RC = Root Channel, M = Matrix Hydric Soil Indicators (check ones that apply, measure from top of mineral layers unless otherwise noted):
*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains *Location: PL = Pore Lining, RC = Root Channel, M = Matrix Hydric Soil Indicators (check ones that apply, measure from top of mineral layers unless otherwise noted): **Indicators for Problematic Hydric Soils**: **Indicators of Hydrophytic vegetation, one primary indicator of hydrophytic vegetation, one primary indicators of hydrophytic vegetation, one primary indicators (A12) **Indicators of Hydrophytic vegetation, one primary indicators (A12) **Indicator of Hydrophytic vegetation, one primary indicator of the Hydrophytic vegetation, one primary indicator of the Hydrophytic vege
Hydric Soil Indicators (check ones that apply, measure from top of mineral layers unless otherwise noted): Standard Indicators (A) History of Histel (A1) History of Histel (A2) History of Histel (A2) History of Histel (A3) History of Histel (A3) History of Histel (A3) Hydrogen Sulfide (A4) History of Back Guiden (A2) History of Histel (A3) Hydrogen Sulfide (A4) History of Histel (A3) History of Histel (A
Hydric Soil Indicators (check ones that apply, measure from top of mineral layers unless otherwise noted): Standard Indicators (A) History of Histel (A1) History of Histel (A2) Alaska Redox with 2.5Y Hue Alaska Redox with 2.5Y Hue Alaska Redox (A14) Alaska Gleyed without Hue 5Y or Redder Underlying Layer Other (e.g. asep 81 of 2007 Suddement exclain in Remarks) Drainage Class: Hydric Soil Present? Yes No Drainage Class: No Drainage Class: Hydric Soil Present? Yes No Drainage Class: No Drainage Class: No Drainage Class: Drainage Class: Drainage Class: Drainage Class: Drainage Class: Hydric Soil Present? Yes No Drainage Class: No Drainage Class: No Drainage Class: Drainage Class: Drainage Class: Drainage Class: Hydric Soil Present? Yes No Drainage Class: Alaska Redox with 2.5Y Hue Alaska Redox with 2.5Y Hue Alaska Redox with 2.5Y Hue Alaska Redox (A14) Hydric Soil Present? Yes No Drainage Class
Hydric Soil Indicators (check ones that apply, measure from top of mineral layers unless otherwise noted): Standard Indicators (A) History of Histel (A1) History of Histel (A2) Alaska Redox with 2.5Y Hue Alaska Redox with 2.5Y Hue Alaska Redox (A14) Alaska Gleyed without Hue 5Y or Redder Underlying Layer Other (e.g. asep 81 of 2007 Suddement exclain in Remarks) Drainage Class: Hydric Soil Present? Yes No Drainage Class: No Drainage Class: Hydric Soil Present? Yes No Drainage Class: No Drainage Class: No Drainage Class: Drainage Class: Drainage Class: Drainage Class: Drainage Class: Hydric Soil Present? Yes No Drainage Class: No Drainage Class: No Drainage Class: Drainage Class: Drainage Class: Drainage Class: Hydric Soil Present? Yes No Drainage Class: Alaska Redox with 2.5Y Hue Alaska Redox with 2.5Y Hue Alaska Redox with 2.5Y Hue Alaska Redox (A14) Hydric Soil Present? Yes No Drainage Class
Hydric Soil Indicators (check ones that apply, measure from top of mineral layers unless otherwise noted): Standard Indicators (A) History of Histel (A1) History of Histel (A2) Alaska Redox with 2.5Y Hue Alaska Redox with 2.5Y Hue Alaska Redox (A14) Alaska Gleyed without Hue 5Y or Redder Underlying Layer Other (e.g. asep 81 of 2007 Suddement exclain in Remarks) Drainage Class: Hydric Soil Present? Yes No Drainage Class: No Drainage Class: Hydric Soil Present? Yes No Drainage Class: No Drainage Class: No Drainage Class: Drainage Class: Drainage Class: Drainage Class: Drainage Class: Hydric Soil Present? Yes No Drainage Class: No Drainage Class: No Drainage Class: Drainage Class: Drainage Class: Drainage Class: Hydric Soil Present? Yes No Drainage Class: Alaska Redox with 2.5Y Hue Alaska Redox with 2.5Y Hue Alaska Redox with 2.5Y Hue Alaska Redox (A14) Hydric Soil Present? Yes No Drainage Class
Indicators for Problematic Hydric Soils?
M Alaska Cotor Change (TA4) Histic Epipedon (A2) (8-16° organics, sat'd, underlain by mineral soil with chorms 42) Black Histic (A3) Hydrogen Sulfide (A4) (within 12°cl mineral surface; ed. — in this pit Underlying Layer Other (e.g. see p. 81 of 2007 Supelment: explain in Remarks) Alaska Gleyed without thue 5Y or Redder Underlying Layer Other (e.g. see p. 81 of 2007 Supelment: explain in Remarks) Alaska Gleyed (A13) Alaska Gleyed (A14) Alaska Gleyed Pores (A15) Restrictive Layer (if present) Type: Depth (inches) Corpments: Soil Map Unit Name: Drainage Class: Drainage Class: W D Soil Map Unit Name: Hydric Soil Present? Yes No Premary Indicators (at Usast 2 sie required) M Water Marks (B1) M Surface Water (A1) M Surface Soil Cracks (B6) M Hydrogen Sulfide Odor (C1) M Water Marks (B1) M Sediment Deposits (B3) M Dory-Season Water Table (C2) M Algal Mat or Crust (B4) M Cother (explain) Depth of water (in.)
Histic Epipedon (A2) (e-16' organics, sat'd, underlain by mineral soil with chroma s2) Black Histic (A3) Hydrogen Sulfide (A4) (within 12'of mineral surface): Hydrogen Sulfide (A4) (within 12'of mineral surface): Alaska Gleyed without Hue 5Y or Redder Underlying Layer Other (e.g. see p. 91 of 2007 Supplement: explain in Remarks) Alaska Gleyed (A13) Alaska Gleyed (A14) Alaska Gleyed Pores (A15) Restrictive Layer (if present) Type: Soil Map Unit Name: Bepth (Inches) Corpments: Type: Soil Map Unit Name: Bepth (Inches) Drainage Class: W D Wetland Hydrology Indicators (check ones that apply, measure from soil surface): Primary Indicators Wetland Hydrology Indicators (check ones that apply, measure from soil surface): My Surface Water (A1) My Surface Water (A1) My Surface Water (A1) My Surface Water (A2) (win 12") My Satrace Water (A3) (win 12") My Satrace Soil Cracks (B6) My Drainage Patterns (B10) My Drainage
Histo Epipedon (A2) (e.16' organics, sard, underlain by mineral soul with chroma s2) Black Histic (A3) Hydrogen Sulfide (A4) (within 12' of mineral surface; @ in this pit
Black Histic (A3) Hydrogen Sulficte (A4) (within 12'of mineral surface): In this pit In this pit In this pit In this pit Inderlying Layer Other (e.g. see p. 91 of 2007 Sundement: exclain in Remarks) Alaska Gleyed (A13) Alaska Gleyed (A13) Alaska Gleyed (A14) Alaska Gleyed Pores (A15) Restrictive Layer (if present) Type: Depth (inches) Comments: 1
Alaska Gleyed without Hue 5Y or Redder Underlying Layer Underlying Layer Other (e.g., see p. 5t of 2007 Supplied (G., see p.
Surface; Part in his pit Thick Dark Surface (A12)
Alaska Gleyed (A13) Alaska Gleyed Pores (A15) Restrictive Layer (if present) Type: Depth (inches) Comments: 1. Typo (Marcoll) Alaska Gleyed Pores (A15) Comments: 1. Typo (Marcoll) Alaska Gleyed Pores (A15) Comments: 1. Typo (Marcoll) Alaska Gleyed Pores (A15) Comments: 1. Typo: Soil Map Unit Name: Hydric Soil Present? YesNo
Alaska Gleyed (A13) Alaska Redox (A14) Alaska Redox (A15) Restrictive Layer (if present) Type: Depth (Inches) Comments: 1. To OM of O-cc 2. If United Soil Present? Wetland Hydrology Indicators (check ones that apply, measure from soil surface): Primary Indicators: Involved Financy Indicators (any one indicator is sufficient) M. Surface Water (A1) M. Surface Soil Cracks (B6) M. Sturation (A3) (wiin 12") M. Saturation (A3) (wiin 12") M. Sparsely Vegetated Concave Surface (B8) M. Sediment Deposits (B1) M. Sediment Deposits (B2) M. Algal Mat or Crust (B4) M. Other (explain) M. Other (explain) M. FAC Neutral Test (D5) (# OBL-FACW dominants > # FACU+UPL dominants) Field Observations (in. from ground surface): Surface Water Present? Depth of water (in.)
Alaska Gleyed Pores (A15) Restrictive Layer (if present) Type: Depth (inches) Comments: 1. 100 M
Drainage Class: WD Soil Map Unit Name: Hydric Soil Present? Yes No No Present? Yes No No No No No No No N
Type: Depth (inches) Comments: 1. Two What of O-a 3. I was provided by the following of O-a 4. Water-Stained Leaves (B9) 4. Water-Stained Leaves (B9) 5. Vering a Patterns (B10) 6. Vering a Patterns (B10) 7. Vering a Pa
Depth (inches) Comments: 1. To O M of O - Co. 2. If I M I M I M I M I M I M I M I M I M
Comments: 1. The dwy for 0a. 2. July I film July IIII WPROLOGY Wetland Hydrology Indicators (check ones that apply, measure from soil surface): Primary Indicators. (any one indicator is sufficient) M. Surface Soil Cracks (B6) M. Drainage Patterns (B10) M. High Water Table (A2) (w/in 12") M. Sparsely Vegetated Concave Surface (B8) M. Saturation (A3) (w/in 12") M. Sparsely Vegetated Concave Surface (B8) M. Sediment Deposits (B1) M. Mart Deposits (B15) M. Sediment Deposits (B2) M. Drift Deposits (B3) M. Dry-Season Water Table (C2) M. Algal Mat or Crust (B4) M. Other (explain) M. Other (explain) M. Other (explain) M. Shall Deposits (D4) M. Shallow Aquitard (D3) M. Win 24", can perch H2O w/in 12") M. Microlopographic Relief (D4) (caused by water) M. FAC Neutral Test (D5) M. Microlopographic Relief (D4) (caused by water) M. FAC Neutral Test (D5) M. Obert (explain) M. Obert (explain) M. Obert (explain) M. Obert (explain) M. Other (explain) M. O
NOROLOGY Wetland Hydrology Indicators (check ones that apply, measure from soil surface): Secondary Indicators (at least 2 are required)
Wetland Hydrology Indicators (check ones that apply, measure from soil surface): Primary Indicators (any one indicator is sufficient) M Surface Water (A1) M Surface Soil Cracks (B6) M Drainage Patterns (B10) M Oxid'd Rhizospheres on Living Roots (C3) (within 12") M Saturation (A3) (w/in 12") M Sparsely Vegetated Concave Surface (B8) M Water Marks (B1) M Mart Deposits (B15) M Sediment Deposits (B2) M Dry-Season Water Table (C2) M Algal Mat or Crust (B4) M Other (explain) M Other (explain) M Obert of water (in.) Depth of water (in.)
Wetland Hydrology Indicators (check ones that apply, measure from soil surface): Primary Indicators (any one indicator is sufficient) M Surface Water (A1) M Surface Soil Cracks (B6) M High Water Table (A2) (w/in 12") M Sparsely Vegetated Concave Surface (B8) M Saturation (A3) (w/in 12") M Water Marks (B1) M Water Marks (B1) M Drift Deposits (B2) M Drift Deposits (B3) M Other (explain) M Other (explain) M Other (explain) M Observations (in. from ground surface): Surface Water Present? Secondary Indicators (at least 2 are required) M Water-Stelned Leaves (B9) M Water-Stelned Leaves (B9) M Other (explain) M Other (explain) M Other (explain) Secondary Indicators (at least 2 are required) M Water-Stelned Leaves (B9) M Other (B10) M Other (B10) M Other (B10) M Other (B10) M Other (explain)
M Surface Water (A1) N Surface Soil Cracks (B6) N High Water Table (A2) (w/in 12") N Inundation Visible on Aerial Imagery (B7) N Saturation (A3) (w/in 12") N Sparsely Vegetated Concave Surface (B8) N Water Marks (B1) N Mart Deposits (B15) N Sediment Deposits (B2) N Drift Deposits (B3) N Algal Mat or Crust (B4) N Other (explain) N Other (explain) N Other (explain) N Depth of water (in.) N Depth of water (in.)
N High Water Table (A2) (w/in 12") N Inundation Visible on Aerial Imagery (B7) N Oxid'd Rhizospheres on Living Roots (C3) (within 12") N Saturation (A3) (w/in 12") N Sparsely Vegetated Concave Surface (B8) N Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12") N Water Marks (B1) N Mart Deposits (B15) N Sait Deposits (C5) N Sediment Deposits (B2) N Hydrogen Suffide Odor (C1) N Stunted or Stressed Plants (D1) N Drift Deposits (B3) N Dry-Season Water Table (C2) N Shellow Aquitard (D3) (w/in 24", can perch H2O w/in 12") N Iron Deposits (B5) N Microtopographic Relief (D4) (caused by water) N Microtopographic Relief (D4) (caused by water) N FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants) Field Observations (in. from ground surface): No Pepth of water (in.)
N High Water Table (A2) (w/in 12") N Inundation Visible on Aerial Imagery (B7) N Oxid'd Rhizospheres on Living Roots (C3) (within 12") N Saturation (A3) (w/in 12") N Sparsely Vegetated Concave Surface (B8) N Presence of Reduced Iron (C4) (pos. σ,α or soil color change w/in 12") N Water Marks (B1) N Mart Deposits (B15) N Sait Deposits (C5) N Sediment Deposits (B2) N Hydrogen Sulfide Odor (C1) N Stunted or Stressed Plants (D1) N Drift Deposits (B3) N Dry-Season Water Table (C2) N Geomorphic Position (D2) N Algal Mat or Crust (B4) N Other (explain) N Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12") N Iron Deposits (B5) M Iron Deposits (B5) Field Observations (in. from ground surface): No Depth of water (in.) Surface Water Presant? Yes No Depth of water (in.)
Sparsety Vegetated Observations (Inc. from ground surface): Substitution (Inc.) (Will 12) Sparsety Vegetated Observations (Inc. from ground surface): Substitution (Inc.) (Will 12) Sparsety Vegetated Observations (Inc. from ground surface): Note
N Water Marks (B1) N Mart Deposits (B15) N Sait Deposits (C5) N Sediment Deposits (B2) N Hydrogen Sulfide Odor (C1) N Stunted or Stressed Plants (D1) N Drift Deposits (B3) N Dry-Season Water Table (C2) N Geomorphic Position (D2) N Shallow Aquitard (D3) (w/in 24°, can perch H2O w/in 12°) N Microtopographic Relief (D4) (caused by water) N FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants)
N Algal Mat or Crust (B4) N Other (explain) N Iron Deposits (B5) N Iron Deposits (B5) N Microtopographic Relief (D4) (caused by water) N FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants) Field Observations (in. from ground surface): Surface Water Present? Yes No Depth of water (in.)
// Microtopographic Relief (D4) (caused by water) // FAC Neutral Test (D5) // FAC Neutral Test (D5) // OBL+FACW dominants > # FACU+UPL dominants) Surface Water Present? Yes No Depth of water (in.)
N Iron Deposits (B5) N Microtopographic Relief (D4) (caused by water) N FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants) Field Observations (in. from ground surface): Surface Water Present? Yes No Depth of water (in.)
OBL+FACW dominants > # FACU+UPL dominants) Field Observations (in. from ground surface): Surface Water Present? Yes No Depth of water (in.)
Field Observations (in. from ground surface): Surface Water Present? Yes No Depth of water (in.)
Surface Water Present? Yes No V Depth of water (in.)
Seeping in at that depth but not yet filled?:
Saturation Present? Yes No V Depth to sat. (in.) Wetland Hydrology Present? Yes No V
(Includes capillary frings) Epi Endo Unknown
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks:
plat is my in elev. above adjustered wetlend

WETLAND DETERMINATION DATA FORM -	- Alaska Region
Project: West Anchirage Show Disposal Borough/City: MOA	Date: [0]2[20
Applicant/Owner: MOA	Sampling Point #: 03
Investigator(s): A. Cle/UK, V. Wq.t.k.rs Firm: F	HDR Alaska, Inc.
Lat. (dec.°) (61.159776 Long. 149917763 ± NAD 83 Recorded o	n GPS #: Marked on map? Fleld Map #:
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landfo	rm: Aspect: Slope (%): Aspect: 5
Local relief: Shape across slope: (linear / convex / concave Shape up/downslope: (linear / convex / conv	onvex / concave NWI classification: 12 EM 1551 C
Photo nos./descriptions; SD; X I NGWCamers #:	Veg Type (Viereck Level 4 or other): TC2L
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: V No:	If no, explain. HGM type: 1(4)
Are Vegetation . Soil . or Hydrology . significantly disturbed? Are "Normal Circu	ımstances" present? Yes ✓ No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain	answers here.
SUMMARY OF FINDINGS	
Hydrophytic Vegetation Present? Yes V No	
Hydric Soil Present? Yes V No Is the sampled are within a wetland?	Yes V No
Wetland Hydrology Present? Yes _√ No	Remarks (e.g., marginal?):
VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % car	
Tree Stratum (dbh≥ 3")	Dominance Test worksheet:
Species Cov.% Dom? Ind. Species Cov.% Dom? Ind.	Number of Dominant Species
1	That are OBL, FACW, or FAC:(A)
2	Total Number of Dominant
3 7	Species Across All Strata: 2 (B)
4	
Total Tree Cover:	Percent of Dominant Species That are OBL, FACW, or FAC: OD (A/B)
50% of total cover: 20% of total cover:	Prevalence Index worksheet:
Sapling/Shrub Stratum (woody plants < 3" dbh)	Total % Cover of: Multiply by:
Abs.Cov.% Dom? Ind. Abs.Cov.% Dom? Ind.	OBL species
1. Cha cal 75 Y FACW 7.	FACW species 28 x2= 56
7 7 7	
3. 14T (A DE)	
5 11	_
6	UPL + NL species X5=
Total Sapling/Shrub Cover: 33	Column Totals: 133 (A) 16 (B)
50% of total cover: 16-5 20% of total cover:	Prevalence Index = B/A = 1.21
Herb Stratum	Prevalence Index = B/A =
Abs.Cov.% Dom? Ind. Abs. Cov.% Dom? Ind.	
1. Carlles 90 4 081 12	U.d. Lat W
2.00 17 9 081 13	Hydrophytic Vegetation Indicators:
3. Lin Pul 2 - 081 14.	Dominance Test is>50% Prevalence Index is ≤3.0
4	Prevalence index is \$3.0
5	Morphological Adaptations¹ (Provide supporting
7 18	data in Remarks or on a separate sheet)
8 19	Problematic Hydrophytic Vegetation ¹ (Explain)
9	
10 21	1 Indicators of hydric soil and wetland hydrology must
11	be present unless disturbed or problematic.
Total Herb Cover: 180	
50% of total cover: 50 20% of total cover: 20	Hydrophytic
Circular 1/10-ac plot or other plot dimension: % of bare ground: 5 % Cover of Wetland Bryophytes 5	Vegetation Yes No
Remarks:	
Corutr in lew spots w/ standing mater or swifer sot when	

OIL Profile Description: (Des	cribe to the der	oth needed to	document the is	dicator	or confirm	the shee	nce of Indi	catore)		Sampling Point #: 053
Depth Horizon	Soil Matrix					nie broci	nce or mas			
	olor (moist)	% !	Color (moist)	ox Feat	Type ¹	Loc²	Texture		,a dip. (pos/ nea)	Remarks for use comment numb
11-72 Oe				Ξ				_		some sile mill mide
Type: C = Concentration,	D = Depletion.		ed Matrix, CS=C	oated S	and Grain	s *Locatio	n: PL = P	ore Lini	ing, RC	= Root Channel, M = M
tydric Soil Indicators (ch	eck ones that a	apply, meas	ure from top of a	ninerai	layers un	less othe	rwise not	led):		
Histosol or Histel (A1) Histosol or Histel (A1) Histosol or Histel (A2) undertain by mineral Black Histic (A3)	(8-15" organics, soil with chroma	s 2)	Alaska F	color Ch dplne Si dedox w	ange* (TA wales (TAs ith 2.5Y He	4) 5) 10		one pri hydrolo position or prob	mary in ogy, and n must i lematic	of hydrophytic vegetatic dicator of welland f an appropriate landsca be present unless disturi If color change in Remar
Hydrogen Sulfide (A4' surface; 9 11 in the Surface (A1') Thick Dark Surface (A1') Alaska Gleyed (A13) Alaska Fledox (A14) Alaska Gleyed Pores	nis pit 12)	19:0 <u>1</u>	Under (e	lying La g. sea p	vithout Hue tyer 91 of 2007 plain in Rem		edder			
lestrictive Layer (il present)		Drainage Clas	s: P	D					
Type	_		Soil Map Unit	·		Нус	iric Soli P	resent	?	Yes No
I. YDROLOGY Vetland Hydrology Indica	tore (chack on	as that rapil	, maniha kam			***************************************		***************************************		
rimary Indicators (any or			, measure mons	son an	nacej:		ngary ingi Vater-Stal			(2 are required)
Surface Water (A1)			Soil Cracks (B6	1			Oreinage F		,	
High Water Table (A2)		N_Inundat	lion Visible on Ae	rial Ima		N		zosphe	res on L	Jvlng Roots (C3) (within
Y Saturation (A3) (w/in 12) Water Marks (B1) Y Sediment Deposits (B2)		A Mart De	ly Vegetated Cor eposits (B15) en Sulfide Odor (unace (68	N. S	(pos. a,a Salt Depos	or soil its (C5)	color ch	nange w/in 12")
2 Drift Deposits (B3)		84	ason Water Table				Stunted or Seomorph			• •
N Algal Mat or Crust (B4) N Iron Deposits (B5)				, (02)		No.	Shallow Ac (w/in 24", o /licrotopog FAC Neutr	quitard (can per graphic al Test	(D3) ch H2O Relief (i (D5)) wiin 12") D4) (caused by water)
eld Observations (in. from	ground surface	3);	***************************************				(# WHITT!	COTT UU	- 111 PE 1115	> # FACU+UPL dominants
urface Water Present? /ater Table Present?	Yes V	No	Depth of water Depth to water		<u>p</u>					
	Seepin	g in et that d	epth but not yet f	illed?: [3					
aturation Present?	Yes __	No	Depth to sat. (in.) 2		Wetla	and Hydro	ology P	resent	7 Yes No
ncludes capillary fringe) escribe Recorded Data (st	ream gauge, m	onlioring we	Epi Endo II, aerial photos,			ns), if ava	ilable			
emarks:										

WETLAND DETERMINATION DATA FORM - Alaska Region ANCH Draws Snew Missinson _____Borough/City:__M/A Date: Applicant/Owner: MUT Sampling Point #: (705) Investigator(s): A. (18 UK, 1). Watkins Firm: HDR Alaska, Inc. Lat. (dec.º) (el, 160769 Long. 149916557 ± NAD 83 Recorded on GPS #: V Marked on map? Field Map #: _ Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Application Stope (%): Aspect: Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: Photo nos./descriptions: SON X2 NEW _____Camera #: ____ Veg Type (Viereck Level 4 or other): ____ Are climatic / hydrologic conditions on the site typical for this time of year? Yes: V No: Vino, explain. Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____ Are Vegetation _____ Soil _____ , or Hydrology ____ naturally problematic? If needed, explain answers here. SUMMARY OF FINDINGS Hydrophytic Vegetation Present? Yes v No is the sampled area Hydric Soil Present? Yes within a wetland? Wetland Hydrology Present? Yes Remarks (e.g., marginal?): VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover), % can total > 100%. Dominance Test worksheet: Tree Stratum (dbh≥ 3*) Cov.% Dom? Ind Species Dom? Ind. Number of Dominant Species That are OBL, FACW, or FAC: (A) Total Number of Dominant Species Across All Strata: Percent of Dominant Species Total Tree Cover: 40 That are OBL, FACW, or FAC: (A/B) Prevalence Index worksheet: 50% of total cover: _ 20% of total cover: Sapling/Shrub Stratum (woody plants < 3" dbh) Total % Cover of: Multiply by: Abs.Cov.% Dom? Ind. OBL species FATOW 7. Cha call FACU 50 FACW species X2- 100 Kosac. FAW 8 SOY SLO FAC species FACU species UPL + NL species FAL 12. 354 Column Totals: Total Sapling/Shrub Cover: 50% of total cover: 20% of total cover: Prevalence Index = B/A = Herb Stratum Abs.Cov.% Dom? Abs. Cov.% Dom? Ind. Hydrophytic Vegetation Indicators: FA(U) 13. ✓ Dominance Test is>50% BA(1) 14. Prevalence Index is ≤3.0 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation¹ (Explain) Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. Total Herb Cover: 28.5 50% of total cover: ___ 20% of total cover: Hydrophytic Vegetation % of bare ground: Present? % Cover of Wetland Bryophytes ______ % Total Cover of Bryophytes _____ % (where applicable) Remarks: Medil

The manufacture to sie debut tigadi	ad to document the Indicator or confirm t	Sampling Point #: ///
		ne absence of indicators)
Depth Horizon Soil Matrix (in.) (opt.) Color (moist) %	Redox Features Color (moist) % Type¹	a,a dip. Loc² Texture (00s/ Remarks (or use comment number)
5-11 B 1041272 =		Silv Jim Perlanguan
Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration, D = Depletion, RM = Religion Type: C = Concentration Type: C = Concentration	educed Matrix, CS=Coated Sand Grains	² Location: PL = Pore Lining, RC = Root Channel, M = Mates otherwise noted):
Mistosol or Histel (A1) Histic Epipedon (A2) (8-16" organics, sat'd, undertain by mineral soil with chroma ≤2) Black Histic (A3) Hydrogen Sulfide (A4) (within 12"of mineral surface; in this pit Thick Dark Surface (A12) Alaska Gleyed (A13) Alaska Gleyed Pores (A15)	Alaska Color Change ⁴ (TA4) Alaska Alpine Swales (TA5) Alaska Redox with 2.5Y Hue Alaska Gleyed without Hue to Underlying Layer Other (a.g., see p.91 of 2007 Supplement: explain in Remain	3One indicator of hydrophytic vegetation one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbe or problematic. 4Give details of color change in Remarks
lestrictive Layer (if present)	Drainage Class: (NW)	
Type:	Soil Map Unit Name:	Hydric Soil Present? Yes No
i too on for a -a		
PROLOGY Vetland Hydrology Indicators (check ones that aprimary Indicators (any one Indicator is sufficient) Surface Water (A1) High Water Table (A2) (w/in 12") Saturation (A3) (w/in 12") Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5)	ace Soil Cracks (B6) dation Visible on Aerial imagery (B7) rsely Vegetated Concave Surface (B8) Deposits (B15) rogen Sulfide Odor (C1) Season Water Table (C2) or (explain)	Secondary indicators (at least 2 are required) M Water-Stained Leaves (B9) Drainage Patterns (B10) Oxid'd Rhizospheres on Living Roots (C3) (within 12" Presence of Reduced Iron (C4) (pos. α,α or soil color change win 12") Salt Deposits (C5) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12") Microtopographic Relief (D4) (caused by water) FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants)
High Water Table (A2) (w/in 12") Saturation (A3) (w/in 12") Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Ield Observations (in. from ground surface): urface Water Present? Yes No Valer Table Present? Yes No V	ace Soil Cracks (B6) dation Visible on Aerial Imagery (B7) rsely Vegetated Concave Surface (B8) Deposits (B15) rogen Sulfide Odor (C1) Season Water Table (C2) or (explain) Depth of water (in.) Depth to water (in.) t depth but not yet filled?: Depth to sat. (in.) Epl Endo Unknown	M Water-Stained Leaves (B9) 1 Drainage Patterns (B10) Oxid'd Rhizospheres on Living Roots (C3) (within Presence of Reduced Iron (C4) N Salt Deposits (C5) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) (w/in 24", can perch H2O w/in 12") Microtopographic Relief (D4) (caused by water) FAC Neutral Test (D5) (# OBL+FACW dominants > # FACU+UPL dominants) Wetland Hydrology Present? Yes No

WETLAND DETERMINATION DATA FORM -	Alaska Region
Project: WEST ANCHOOL SNOW DEPISAL BOROUGHYCHY: MOA	Date: 10 2 2 0
Applicant/Owner: MOA	Sampling Point #: 007
Investigator(s): A GRAVE V. WATEN	IDR Alaska, Inc.
Lat. (dec.*) 61,161957 Long. 149,916078 ± NAD 83 Recorded or	n GPS, #:, Marked on map? Field Map #:
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landfo	m: Liwland Slope (%): 2 Aspect: 5
Local relief: Shape across slope: thear / convex / concave Shape up/downslope: tinear / convex / conv	
/ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Veg Type (Viereck Level 4 or other): IFA 2-a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: No:	
Are Vegetation ¼, Soil ✓, or Hydrology ★ significantly disturbed? Are "Normal Circu	motonoce" precent? Ves No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain	answers have
SUMMARY OF FINDINGS	ariswers here.
Hydrophytic Vegetation Present? Yes V No No	
Is the sampled are	a /
with a wedain.	111
-	Remarks (e.g., marginal?):
VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % car	total >100%. Dominance Test worksheet:
Tree Stratum (dbh≥ 3")	Dominance rest worksneet:
Species Cov.% Dom? Ind. Species Cov.% Dom? Ind.	Number of Dominant Species
,	That are OBL, FACW, or FAC: (A)
2 6	Total Number of Dominant Species Across All Strata: U
4. 8	Species Across All Strata. (B)
Total Tree Cover:	Percent of Dominant Species
	That are OBL, FACW, or FAC: 160 (A/B) Prevalence Index worksheet:
50% of total cover: 20% of total cover:	
Sapling/Shrub Stratum (woody plants < 3" dbh) Abs.Cov.% Dom? Ind. Abs.Cov.% Dom? Ind.	Total % Cover of: Multiply by:
1. I'm Abs.Cov.% Dom? Ind.	OBL speciesSS
2. Bot, Am 12 FAC 8. And Od 2 FACW	FACW species (e) X2= 122
3. DIR MV 13 4 FAC 9. Chatal 5 PALW	FAC species
4. Kho from 8	FACU species X4=
5. Emp Ma 7 FAC 11.	UPL + NL species X5=
6. Vac vito 3 FAC 12	Column Totals: 116 (A) 277 (B)
Total Sapling/Shrub Cover:	
50% of total cover: 45 20% of total cover; 18	Prevalence Index = B/A = 2.39
Herb Stratum	
Abs.Cov.% Dom? Ind. Abs. Cov.% Dom? Ind.	
1. Cal Can 15 PAC 12.	Hydrophytic Vegetation Indicators:
2. Gal Milliam 3	
3677 Vay 8 4 FAW 14	Dominance Test is>50% Prevalence Index is ≤3.0
516	
6 17	Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
7 18	
8	Problematic Hydrophytic Vegetation ¹ (Explain)
9	
10	1 Indicators of hydric soil and wetland hydrology must
11	be present unless disturbed or problematic.
Total Herb Cover: 26	
50% of total cover:	Hydrophytic Vegetation Yes No
Circular 1/10-ac plot ✓ or other plot dimension: % of bare ground:	Vegetation Yes No
% Cover of Wetland Bryophytes% Total Cover of Bryophytes% (where applicable)	
Remarks:	

SOIL	-								Sampling Point #: 007
Profile Description:	(Describe to the de	oth needed	to document the in	ndicator	or confirm	the abser	nce of indical	tors)	
Depth Horizon	Soil Matrix		Rec	lox Fea	tures			a,a dip.	
(in.) (opt.)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc2	Texture	(pos/ neg)	_Remarks_ (or use comment number)
5-21 00								-	
				_					
				_					
				_				_	
				_		-		_	
1T C C				_		_			
Hyde: C = Concentra	tion, D = Depletion,	RM = Redu	uced Matrix, CS=C	oated S	Sand Grains	s ² Location	n: PL = Pore	Lining, RC =	Root Channel, M = Matrix
Hydric Soil Indicators Standard Indicators:	s (check ones that	apply, mea):	
Histosol or Histel	(A1)		Indicators for					oo indiantaa	d broader also also as a si
Mistic Epipedon (A2) (8-16" organics, neral soil with chroma	sat'd, ≤2)	Alaska A	Upine S	ange ⁴ (TA4 wales (TA5 ith 2.5Y Hu)	on hy po	e primary indi drology, and s sition must be	of hydrophytic vegetation, icator of wetland an appropriate landscape o present unless disturbed
	(A4) (within 12*of m	deep!	T		vithout Hue	-	40	problematic. ive details of	color change in Remarks.
surface; @		and on	Under	fying La	yer	OT OF THE	oder		
Thick Dark Surface	ce (A12)		Other (e.	g., see p	.91 of 2007 plain in Rema	artro)			
Alaska Gleyed (A			0000101	Truthi. uzu	CHART III I SQUITE	ainor			
Alaska Redox (A									
Alaska Gleyed Po									
Restrictive Layer (if pre	sent)		Drainage Clas		30				. /
Type:			Soil Map Unit I	Name:		Hyd	ric Soil Pres	sent?	/es No
Depth (inches)									
1. Spil Mout b	N+M+ Satur	tono	Home such	ratno vevi	soda	ist Zu	er thin	lowing seys	on, condition
HYDROLOGY					,	,-		,	
Wetland Hydrology In			ly, measure from	soil su	rface):	Secon	ndary Indicat	ors (at least 2	are required)
Primary Indicators (ar		4.						d Leaves (B9)	
/V Surface Water (A1)		4.	e Soll Cracks (B6				rainage Patt		
High Water Table (///	ation Visible on Ac			/1//	xid'd Rhizos	pheres on Liv	ring Roots (C3) (within 12")
✓ Saturation (A3) (w/ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	in 12")	47	ely Vegetated Con	icave S	urface (B8)			Reduced Iron soil color cha	(C4) inge w/in 12*)
Water Marks (B1)		2.4	Deposits (B15)				alt Deposits		The state of the s
Sediment Deposits	(B2)		gen Sulfide Odor (essed Plants	(D1)
// Drift Deposits (B3)		/// Dry-Se	eason Water Table	(C2)			eomorphic F		275
Algal Mat or Crust	(B4)	✓ Other	(explain)			A/S	hallow Aquit	ard (D3) perch H2O v	ulin 12"
√ Iron Deposits (B5)						4 M	ficrotopograp AC Neutral 1	ohic Relief (De est (D5)	4) (caused by water) \\\/\frac{1}{\pi_0}\/\frac{1}{\pi_0}
Field Observations (in.	from ground surface	9):				T	(# UBL+FAC)	v dominants >	# FACU+UPL dominants)
Surface Water Present?		No V	Depth of water	(in.)					
Water Table Present?	Yes	No V	Depth to water						
	Seeping	g in at that	depth but not yet fi						
Saturation Present?	Yes	No_V	Depth to sat. (i			Wetla	nd Hydrolo	gy Present?	Yes No
(includes capillary fringe	9)			Unknov		1.000	na rijarolo	gy r resent:	168 7 140
Describe Recorded Date	a (stream gauge, m	onitoring w				ns), if avai	lable:		
Ramarko:									
well in la	N Spots. Hyp	vology !	may be m	puck	by P!	reselac	ed Mi	meath 1	Mive-ploop (was constructed.
or whole on	rd paling	was now	CREET ON	ecru	TO OH	Wer we	Havels by	fort mac	(was constructed.

WETLAND DETERMINATION DATA FORM -	Alaska Region
Project: West Ancharage Snow Dispose Borough City: MOA	Date: 10/2/20
Applicant/Owner: MOA	Sampling Point #: 009
Investigator(s): A. GRUK, V. WOHKINS Firm: H	DR Alaska, Igc.
	GPS #: Marked on map? Field Map #:
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landfor	
Local relief: Shape across slope: near / convex / concave Shape up/downslope: finear / co	onvex / concave NWI classification:P554B
Photo nos./descriptions: SN 12 NEW Camera #:	Veg Type (Viereck Level 4 or other): I A3d
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: No:	. If no, explain. HGM type:
Are Vegetation N, Soil V, or Hydrology significantly disturbed? Are "Normal Circu	mstances" present? Yes V No
Are Vegetation M., Soil M., or Hydrology /naturally problematic? If needed, explain a	answers here.
SUMMARY OF FINDINGS	Charles Francis
Hydrophytic Vegetation Present? Yes V No Is the sampled are:	/
Hydric Soil Present? Yes No within a wetland?	
Wetland Hydrology Present? Yes No	Remarks (e.g., marginal?):
VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can	total >100%.
Tree Stratum (dbh≥ 3*)	Dominance Test worksheet:
Species Cov.% Dom? Ind. Species Cov.% Dom? Ind.	Number of Dominant Species
1. Pic mar 15 FAOW 5.	That are OBL, FACW, or FAC:(A)
2. Bl+ pap 3 _ EM 6	Total Number of Dominant
3 7	Species Across All Strata: (B)
4	Percent of Dominant Species
Total Tree Cover: 18	That are OBL, FACW, or FAC: 100 (A/B)
50% of total cover: 9 20% of total cover: 50	Prevalence Index worksheet:
Sapling/Shrub Stratum (woody plants < 3" dbh)	Total % Cover of: Multiply by:
Abs.Cov.%. Dom? Ind. Abs.Cov.% Dom? Ind. 1. P. C. Mar. 35 Y PACW 7. D. No. No. 5 PACW	OBL species 3 X1= 3
2. Alnder 8 FAC 8, Bet nan 3 FACW	FACW species 72 x2= 144
3. Choan 10 Y FAC 9.	FAC species 86 X3= 75%
4. Cha Bal 7 PACW10.	FACU species X4=
5. Vac ul: 5 PAC 11.	UPL + NL species X5=
6. VAC VIT I FAC 12.	Column Totals: 16 (A) 405 (B)
Total Sapling/Shrub Cover: 45	, , , , , , , , , , , , , , , , , , ,
50% of total cover: 37.5 20% of total cover: 15	Prevalence Index = B/A = 2.52
Herb Stratum	
Abs.Cov.% Dom? Ind. Abs. Cov.% Dom? Ind.	
1. Cal con 55 1 FAC 12.	Hydrophytic Vegetation Indicators:
2. Eq. va 10 FAW 13. 3 OBL 14.	✓ Dominance Test is>50%
3(0'm pol 3 0BL 14	Prevalence Index is ≤3.0
5 16	Manufacture Advances - 100 - 11
6 17	 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
7 18	Problematic Hydrophytic Vegetation¹ (Explain)
8	Problematic Hydrophytic vegetation (Explain)
9	
10 21 11 22	¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
Total Herb Cover: (48)	be present an east distanced or problematic.
414	
	Hydrophytic Vegetation Yes No
Circular 1/10-ac plot ✓ or other plot dimension: % of bare ground: 8	Present?
% Cover of Wetland Bryophytes 10 % Total Cover of Bryophytes 30 % (where applicable)	
Remarks	
many have sont throughout my bare ground + evidence of surface wanter	
(compal	

Profile Descripti	on: (Describe to the	depth needed	to document the in	ndicato	or confirm	the abse	nce of indicat	ors)	Sampling Point #: (201
Depth Horizon				lox Fea					
(in.) (opt.)	Color (moist)	%	Color (moist)	<u>%</u>	Type¹	Loc2	_Texture_	(pos/ neg)	_Remarks_ (or use comment number
11-21 De				_				-	
			_			_		_	
					-				
				_		_			
Type: C = Conce	entration, D = Depletio	n. BM = Redu	ned Metrix CS_C	nated S	Cond Contra		·		= Root Channel, M = Mat
Hydric Soil Indica	ators (check ones the	t apply, mear	sure from top of n	nineral	lavere uni	Locatio	n: PL = Pore	Lining, RC	= Root Channel, M = Ma
standard Indicate	ors:		Indicators for	Proble	matic Hyd	ric Soils	rwise notea) *:	12	
Black Histic (don (A2) (8-16" organic by mineral soil with chron	a ≤2)	Alaska C Alaska Al Alaska R Alaska G	olor Ch Ipine S edox w leyed v	ange ⁴ (TA4 wales (TA5 ith 2.5Y Hu rithout Hue	()) ne	Or pos	e primary inc frology, and sition must b problematic.	of hydrophytic vegetation ficator of wetland an appropriate landscap e present unless disturbe color change in Remarks
Thick Dark S	urface (A12)		Other (e.g	ying La 3., see p nent: exc	yer 91 of 2007 dain in Rems	erks)			
Alaska Redox									
	d Pores (A15)								
lestrictive Layer (il	present)		Drainage Class	: 7)			-	/
Type: Depth (inches)			Soil Map Unit N	lame:		Hyd	ric Soil Pres	ent?	Yes No
PDROLOGY	atal at 20" attin	e Offosithe	eral for at you	H 2u	145 Oliving	Jump	teren-bi	rev30d	ays dierthan no nonths normal)
	y Indicators (check o	nes that appl	v. measure from s	enil eu	fana):	Cana	den ladio d		
rimary Indicators	(any one indicator is	sufficient)			1400):	N N	ater-Stained	Leaves (B9	2 are required)
∠ Surface Water ✓ High Water Tab			s Soil Cracks (B6)			AL D	rainage Patte	ms (B10) _	
Saturation (A3)	(win 12")	√ Sparse	tion Visible on Aer ly Vegetated Conc			ALP	resence of Re	educed Iron	ving Roots (C3) (within 12' (C4) ange wiin 12")
_ Water Marks (B ↓ Sediment Depo		11/	eposits (B15)			W S	alt Deposits (C5)	
Drift Deposits (E			en Sulfide Odor (C ason Water Table				tunted or Stre		(D1)
_ Algal Mat or Ćru		./	explain)	(02)		NS	eomorphic Po hallow Aquita	rd (D3)	
↓ Iron Deposits (B						M	AC Neutral Te	nic Relief (Dest (D5)	w/in 12") 4) (caused by water) # FACU+UPL dominants)
	in. from ground surfac							John Karls 2	# FACCEOPE dominants)
rface Water Prese ater Table Present	1? Yes	No V No T	Depth of water (Depth to water (epth but not yet fill	in.)					
duration Present?	Yes	No_V	Depth to sat. (in.			Wellar	nd Hydrology	Proposic	Yes V No
cludes capillary fri	nge)		Epi Endo II	nknowa	3			y riesent?	168 ~ NO
acribe riecorded [Data (stream gauge, n	onitoring we	, aerial photos, pr	evious	inspections	s), if avail	able:		
marks:	hand .								
any microlaust	A 1 A1	,							
4000 logy lik	iely influenced	py bress	ne of road	8 dis	which	on from	n dayer i	metland	complex

WETLAND DETERMINATION DATA FORM - Alaska Region Stage Show Disposal Borough/City: MOA Applicant/Owner: AAA Investigator(s): A (0) (UK) Firm: HDR Alaska, Inc. Long. 149.97.037(± NAD 83 Recorded on GPS #: V Marked on map? Field Map #: Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform; / Succession Slope (%): -Local relief: Shape across slope: finear/ convex / concave Shape up/downslope: finear/ convex / concave NWI classification: P58 Photo nos./descriptions: SDT XZ NEW Carners #: ____ Veg Type (Viereck Level 4 or other): I Are climatic / hydrologic conditions on the site typical for this time of year? Yes: V No: ____ If no, explain. Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes N No _ Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain answers here. SUMMARY OF FINDINGS Hydrophytic Vegetation Present? Yes ~ is the sampled area Hydric Soil Present? Yes 1 within a wetland? Wetland Hydrology Present? Yes Remarks (e.g., marginal?): VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover), % can total >100% Dominance Test worksheet: Tree Stratum (dbh≥ 3") Species Cov.% Dom? Ind. Number of Dominant Species Dom? Ind That are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata: Percent of Dominant Species Total Tree Cover: That are OBL, FACW, or FAC: 100 (A/B) Prevalence Index worksheet: 50% of total cover: _ 20% of total cover: Sapling/Shrub Stratum (woody plants < 3" dbh) Total % Cover of: Multiply by: Abs.Cov.% Dom? Abs.Cov.% Dom? Ind. OBL species FACW species FAC species FACU species UPL + NL species 12. Column Totals: Total Sapling/Shrub Cover: 50% of total cover: 1.08 20% of total cover: Prevalence Index = B/A = Herb Stratum Abs.Cov.% Dom? Dom? Ind. PBL 12. Hydrophytic Vegetation Indicators: Dominance Test is>50% Prevalence Index is ≤3.0 Morphological Adaptations1 (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation¹ (Explain) Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. Total Herb Cover: 20% of total cover: Hydrophytic Vegetation Circular 1/10-ac plot ___ or other plot dimension: _15 1/5 ___ % of bare ground: Present? % Cover of Wetland Bryophytes .% Total Cover of Bryophytes _5 (where applicable) Remarks: constrained to Myrgal clearing, excluding Pic mar of surrounding ASS 4/18

WETLAND DETERMINATION DATA FORM - Alaska Region What her Snow Disposal Borought City: Date: Applicant/Owner: , Sampling Point #: 015 Gellk, V. Warker Investigator(s): A Firm: HDR Alaska, Inc. Long. 149.925546 ± NAD 83 Recorded on GPS #: V Marked on map? Field Map #: Lat. (dec.º) (cl.165970 Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Laudico Slope (%): ____ Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: Photo nos./descriptions: SOTT X2 NEW Camera #: ____ Veg Type (Viereck Level 4 or other): II-A Z-c Are climatic / hydrologic conditions on the site typical for this time of year? Yes: V No: ____ If no, explain. HGM type: Are Vegetation N. Soil V. or Hydrology Significantly disturbed? Are "Normal Circumstances" present? Yes V. No. Are Vegetation N. Soil N. or Hydrology N naturally problematic? If needed, explain answers here. SUMMARY OF FINDINGS Hydrophytic Vegetation Present? is the sampled area Hydric Soil Present? Yes within a wetland? No Yes V Wetland Hydrology Present? Yes No. Remarks (e.g., marginal?): VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%. Dominance Test worksheet: Tree Stratum (dbh≥ 3") Cov.% Dom? Ind. Species Number of Dominant Species That are OBL, FACW, or FAC: (A) Total Number of Dominant Species Across All Strata: (B) Percent of Dominant Species Total Tree Cover: (69) That are OBL, FACW, or FAC: (AVB) Prevalence Index worksheet: 50% of total cover: 20% of total cover: Sapling/Shrub Stratum (woody plants < 3° dbh) Total % Cover of: Multiply by: Abs.Cov.% Dom? Ind. Abs.Cov.% Dom? Ind. OBL species FMW7 FACW species 37 FAC species FACU species UPL + NL species Column Totals: Total Sapling/Shrub Cover: 50% of total cover: 20% of total cover: Prevalence Index = B/A = Herb Stratum Ahs Cov % Dom? Abs. Cov.% Dom? Ind. Hydrophytic Vegetation Indicators: Dominance Test is>50% Prevalence Index is ≤3,0 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation1 (Explain) 1 Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. Total Herb Cover: 50% of total cover: 20% of total cover: Hydrophytic Vegetation Circular 1/10-ac plot V or other plot dimension: ___ _____ % of bare ground: 5 Present? (where applicable) Remarks: Chamadaphine growing in Low Spiss

SOIL										Samalina Daine Alt			
Profile D	Description:	(Describe to the de	pth needed	to document the in	oficator	or confirm	the abse	nce of indicat	ors)	Sampling Point #: 0/5			
Depth	Horizon	Soil Matrix			ox Fea								
(in.)	(opt.)	Color (moist)	<u>%</u>	Color (moist)	%	Type¹	Loc2	Texture	a,a dip. (pas/ neg)	_Remarks_ (or use comment number)			
	<u>De</u>		_ =		_		=			pockets of Salo			
					_								
					_		_						
						_			-				
ITyme: C	Consessed	For D. Donton											
Hydric Sc	oil Indicators	ion, D = Depletion,	RM = Redu	ced Matrix, CS=Co	oated S	and Grains	s ² Locatio	n: PL = Pore	Lining, RC	= Root Channel, M = Matri			
Standard	Indicators:	(check ones that	арріу, шеаз	Indicators for	Droble	layers un	less othe	rwise noted)	:				
4_ Hist	osol or Histel	(A1)							an landlandar.				
Histi	ic Epipedon (, underlain by mir sk Histic (A3)	A2) (8-16" organics, neral soil with chroma	£2)	Alaska R	lpine Sv edox wi	wales (TA5 ith 2.5Y Hu) ie	one hyd pos or r	primary inc frology, and sition must b problematic.				
surfa	k Dark Surfac		Inerel	Underly Other (e.g	ying La	fthout Hue yer 91 of 2007	5Y or Re	dder	VB GBIBIIS OF	color change in Remarks.			
	ka Gleyed (A			Supplem	ent: exp	lain in Rema	arks)						
Alasi	ka Redox (A1	4)											
	ka Gleyed Po												
	Layer (if pres	sent)		Drainage Class		D				/			
Type: Depth	(inches)	-		Soil Map Unit N	lame:		Hyd	Hydric Soil Present? Yes No					
Comments 1. 5011 2. Prod 3.	Most but V. 3 manth	not saturated -	effer.	e cytosofwata 30 days dier	then	ZWKSO	fgrow	olly densar	. =	- Cower			
YDROLO													
Wetland H	lydrology Ind	dicators (check one	s that apply	, measure from s	oil sur	face):				2 are required)			
// Surfac	e Water (A1)	y one indicator is su	4.7	Soil Cracks (B6)				/ater-Stained)			
	Vater Table (A			ion Visible on Aeri	al Imac	ion/(B7)		rainage Patte					
N Satura	tion (A3) (w/ir	12")	N Sparse	y Vegetated Conc			ZVP	resence of Re	educed Iron	ving Roots (C3) (within 12") (C4) inge wiin 12")			
A Sedimo	Marks (B1) ent Deposits ((B9)		posits (B15)			/V S	alt Deposits (C5)				
	aposits (B3)			en Sulfide Odor (C ason Water Table (tunted or Stre		(D1)			
	fat or Crust (E	-			(C2)			eomorphic Po hallow Aquita					
∬ Iron De	eposits (B5)		Other (e	oopiain)			Y M	win 24", can icrotopograph AC Neutral Te	perch H2O v nic Relief (D- est (D5)	win 12") 4) (caused by water) # FACU+UPL dominants)			
	vations (in. fr ter Present?	om ground surface) Yes	/	Don't d									
Vater Table			No _√	Depth of water (Depth to water (
		Seeping	in at that de	opth but not yet fille						/			
aturation P		Yes	No _V	Depth to sat. (in.)		Wetlar	nd Hydrology	Present?	Yes No			
escribe Re	pillary fringe) ecorded Data	(stream gauge, mor	nitorina well	Epi Endo U	nknowr	leee	1						
la manadana								able;					
Remarks:	likely (disturbed by	longe ar	want of gi	new	e fill:	6N.						
-2'm	der hi	ghu then o	16	- 0		4							

WETLAND DETERMINATION DATA FORM - Alaska Region Project: West Ancharage Snow Disposel Borough/City: MDA Date: 1012 Applicant/Owner: MOA Sampling Point #: Investigator(s): A. MICHEL WOOTKING Firm: HDR Alaska, Inc. Long. 149.926/05 ± NAD 83 Recorded on GPS #: V Marked on map? Field Map #: Lat. (dec.º) 61-166-195 Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: [hwwfirt] Slope (%): ____ Aspect: Local relief: Shape across slope: (near / convex / concave Shape up/downslope: Ilinear / convex / concave NWI classification: PEMIC Photo nos /descriptions: 501 12 NGW ____Camera #: ____ Veg Type (Viereck Level 4 or other): ________ Are climatic / hydrologic conditions on the site typical for this time of year? Yes: V No: ____ If no, explain. HGM type: Are Vegetation N., Soil N., or Hydrology Newscard Significantly disturbed? Are "Normal Circumstances" present? Yes V. No Are Vegetation N, Soil N, or Hydrology N naturally problematic? If needed, explain answers here. SUMMARY OF FINDINGS Hydrophytic Vegetation Present? Is the sampled area Hydric Soil Present? Yes ~ within a wetland? Wetland Hydrology Present? Yes V Remarks (e.g., marginal?): VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100% Dominance Test worksheet: Tree Stratum (dbh≥ 3") Cov.% Dom? Species Ind. Species Dom? Ind. Number of Dominant Species That are OBL, FACW, or FAC: (A) FALW 6. Total Number of Dominant Species Across All Strata: (B) Percent of Dominant Species Total Tree Cover: 60 That are OBL, FACW, or FAC: (A/B) Prevalence Index worksheet: 50% of total cover: 20% of total cover: Sapling/Shrub Stratum (woody plants < 3" dbh) Total % Cover of: Multiply by: Abs.Cov.% Dom? Abs.Cov.% Dom? Ind. OBL species X1= PKU 7. FACW species PACW 8. 300 100 FAC species FACU a FACU species 5. KASA QC UPL + NL species 370 Column Totals: (B) Total Sapling/Shrub Cover: 50% of total cover: 20% of total cover: Prevalence Index = B/A = Herb Stratum Abs.Cov.% Dom? Dom? Ind Hydrophytic Vegetation Indicators: Dominance Test is>50% Prevalence Index is ≤3.0 Morphological Adaptations1 (Provide supporting data in Remarks or on a separate sheet) Problematic Hydrophytic Vegetation¹ (Explain) 1 Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. 22. Total Herb Cover: 103 515 50% of total cover: _ 20% of total cover: __ 20.6 Hydrophytic No

(where applicable)

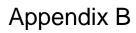
Standing alled Pic mer 10%.

Remarks:

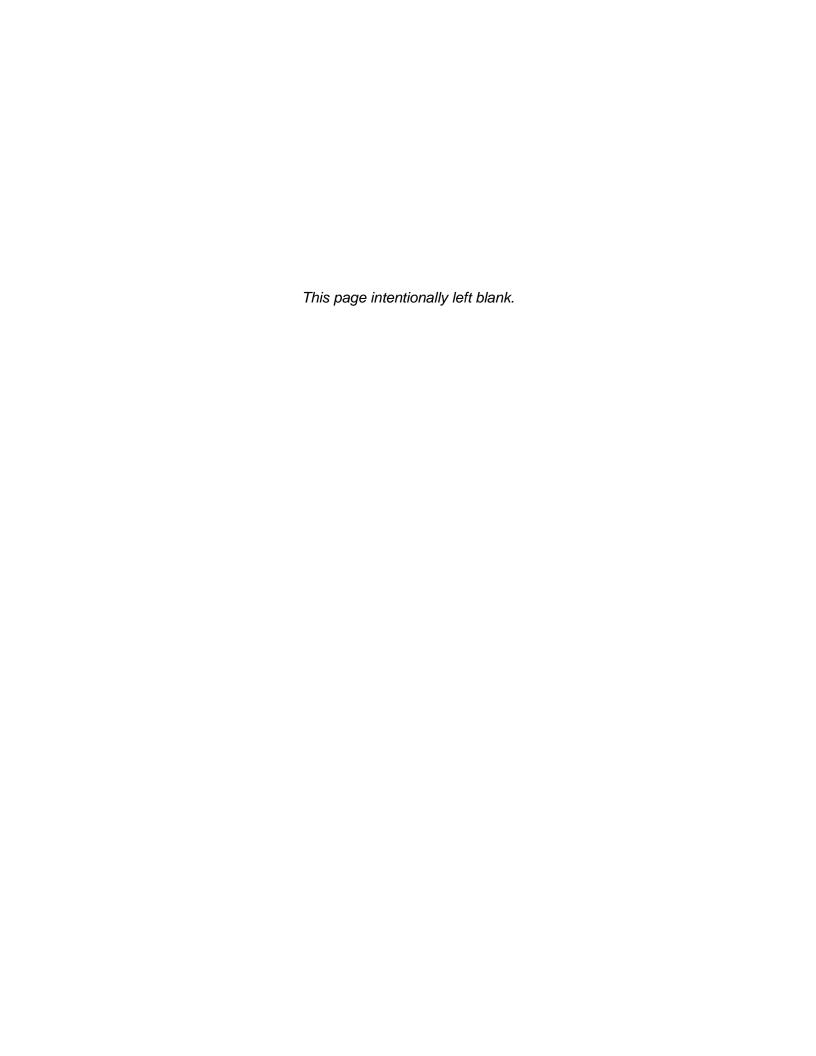
Circular 1/10-ac plot ✓ or other plot dimension: _____ % of bare ground: ○

% Cover of Wetland Bryophytes _____ % Total Cover of Bryophytes _____

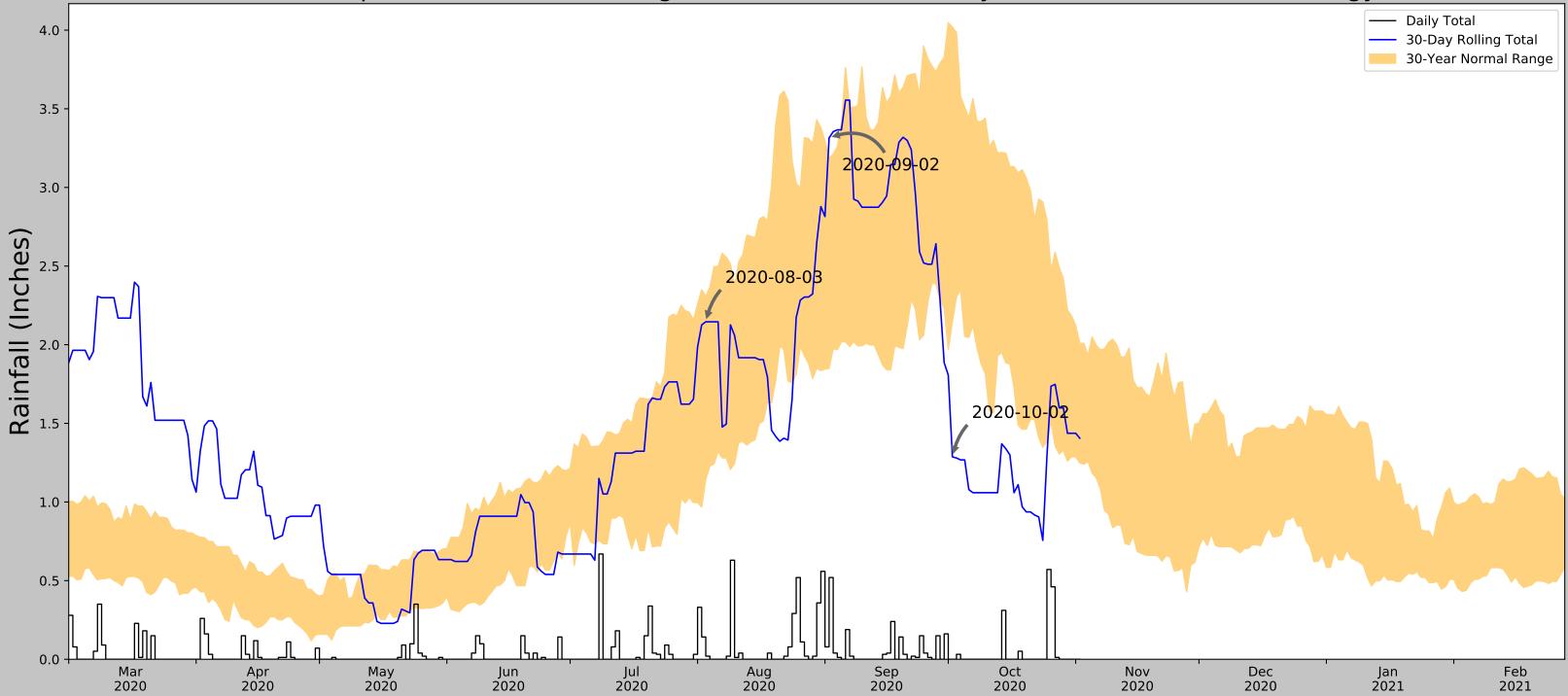
Vegetation Present?



Antecedent Precipitation Tool Results

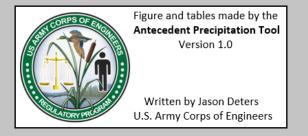


Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



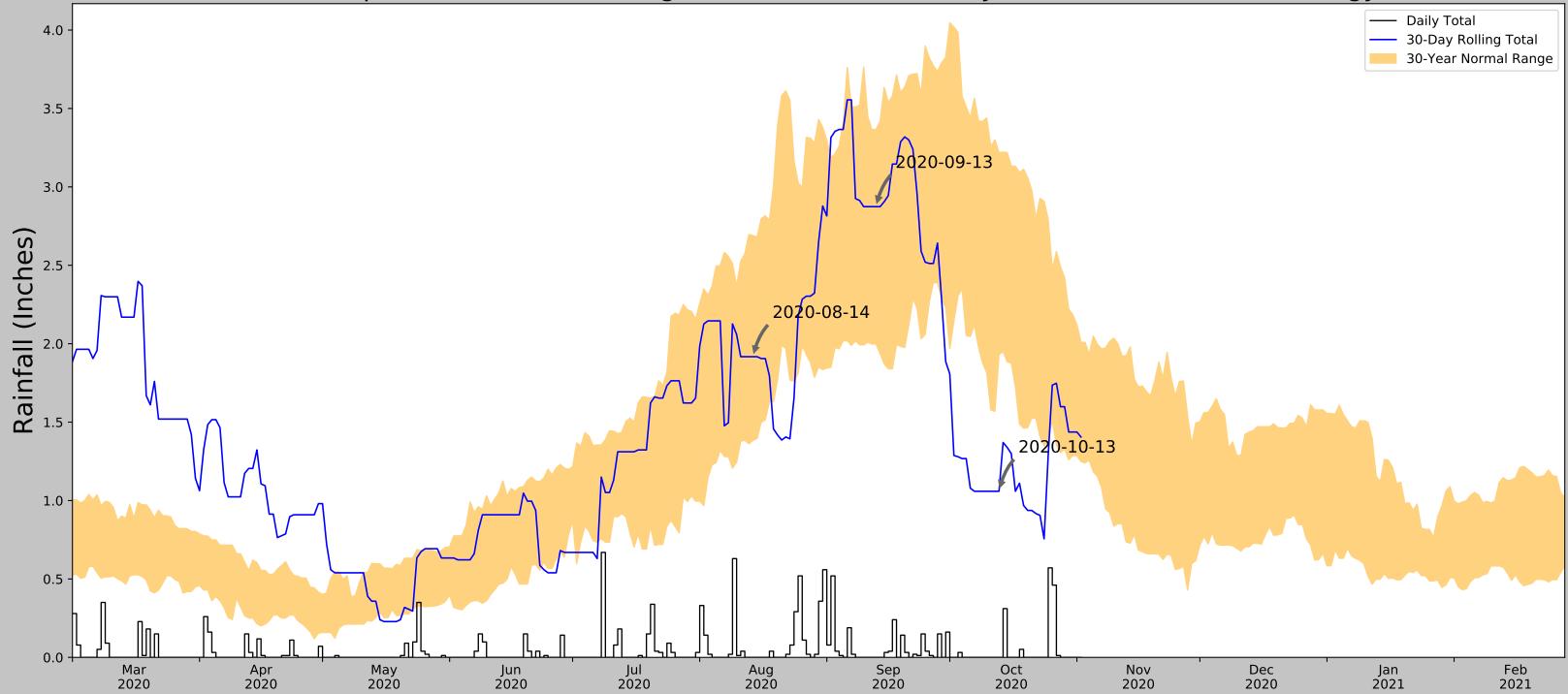
Coordinates	61.165434, -149.922287
Observation Date	2020-10-02
Elevation (ft)	80.98
Drought Index (PDSI)	Not available
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2020-10-02	2.145276	4.020079	1.287402	Dry	1	3	3
2020-09-02	1.848819	3.186614	3.314961	Wet	3	2	6
2020-08-03	1.144488	2.307874	2.145669	Normal	2	1	2
Result							Normal Conditions - 11



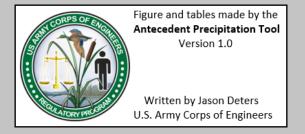
Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
ANCHORAGE INTL AP	61.1689, -150.0278	120.079	3.524	39.099	1.724	11353	90

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	61.165434, -149.922287
Observation Date	2020-10-13
Elevation (ft)	80.98
Drought Index (PDSI)	Not available
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2020-10-13	1.930315	3.218504	1.059055	Dry	1	3	3
2020-09-13	1.998032	3.365748	2.874016	Normal	2	2	4
2020-08-14	1.383858	2.688976	1.917323	Normal	2	1	2
Result							Drier than Normal - 9

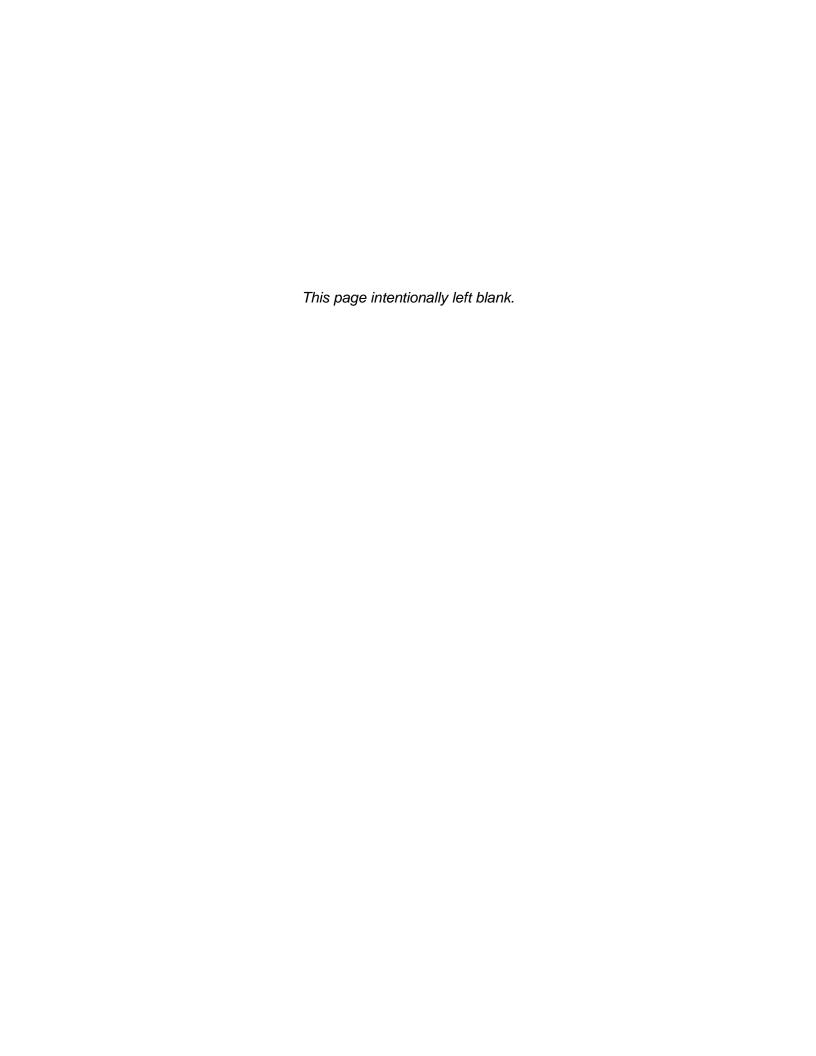


Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
ANCHORAGE INTL AP	61.1689, -150.0278	120.079	3.524	39.099	1.724	11353	89
ANCHORAGE 4.7 SSW	61.1529, -149.9346	116.142	0.958	35.162	0.465	0	1

Appendix C

Photographs at Potential Surface Water Connection Investigation Points

October 13, 2020





SW1. South end of culvert under Raspberry Road



SW1. Looking east at ditch on north end of buried culvert under Raspberry Road embankment



SW2. South End of Culvert under Raspberry Road



SW3. South End of Culvert under Raspberry Road



SW4. West end of culvert between Connors Bog and Minnesota offramp catch basin



SW5. View on top of east end of culvert into Minnesota Drive offramp catch basin



SW6. East view of culvert through Minnesota Drive



SW6. West view on top of culvert through Minnesota Drive



SW7. At northern boundary of Connors Bog wetlands looking north toward parking lot



SW8. At edge of Jewel Lake Road embankment looking south



SW9. At edge of Connors Bog Dog Park parking lot looking south toward northern extent of wetlands



SW10. In ditch along Jewel Lake Road at north end of Connors Bog Dog Park parking lot looking southeast



SW11. Looking northwest at culvert under Frontage Road looking northwest along Jewel Lake Road



SW12. Looking southwest at small culvert under Jewel Lake Road



SW13. Looking north at culvert under bike path along International Airport Road onramp



SW14. Looking northeast at culvert under Collins Way



SW15. Looking northeast toward Connors Lake from point where storm drain outfall is located



SW16. Looking northeast at west end of culvert through sewer line trail in Connors Bog



SW17. Looking north at Connors Lake from trail leading to the lake

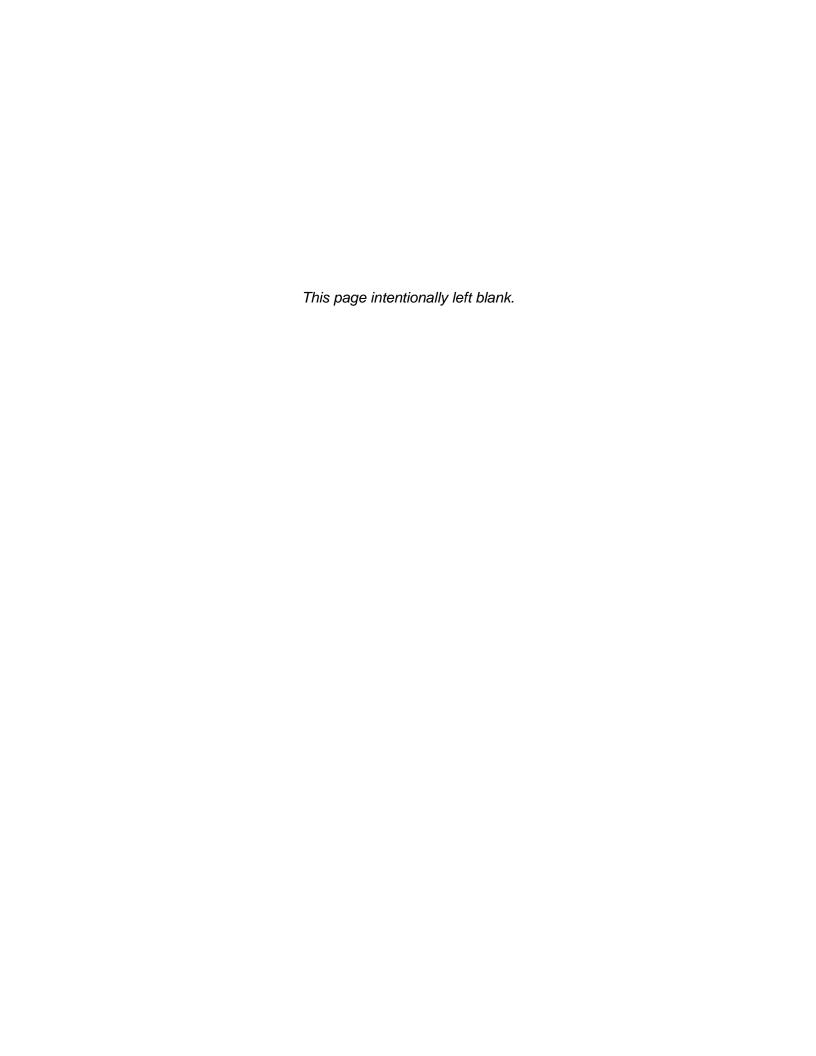


SW17. Looking west at wetlands bordering Connors Lake

Appendix D

Culvert Inspection Report

October 14, 2020







Main Inspections Pipe Run with Images

Project name:

Mainline ID:

2128

Raspberry unknown

City:

Address: Anchorage

Rasberry east of Northwood drive

Surface condition:

Start date/time:

10/14/2020 1:07 PM

Pipe shape:

Circular

Direction:

Against the flow

Pipe material:

Corrugated

Weather: Dry

Pipe height:

24.0 in.

Asphalt Pipe width:

♦ At 139.7 ft. 0.0 ft. Debns-Stopped at 139.6 ft. against flow Severity: >30% Category: O&M on 10/14/2020 1:30:24 PM Comments: Pipe completely obstructed At 132.8 ft. 6/. 37.5 ft. Mainline length: 150.0 ft. Surveyed length: 139.7 ft. Severity: <=10% Category: O&M At 83.0 ft. Water Mark 75.0 ft. Severity: >=50% Category: Inventory 112.5 ft. At 10.0 ft. Water Mark Started at 6.0 ft. against flow Severity: >=50% on 10/14/2020 1:07:50 PM Category: Inventory 150.0 ft. At 6.4 ft. 6/. Water Level - Water Level in the pipe Severity: <25% Category: Miscellaneous





Main Inspections Flat Images

Project name:

Mainline ID:

City:

Address:

2128

Raspberry unknown

Anchorage

Rasberry east of Northwood drive

Start date/time:

Pipe width: Pipe height: Pipe material:

Surface condition:

Direction:

Surveyed distance: Weather:

Media label:

10/14/2020 1:07 PM

24.0 in.

Corrugated

Asphalt

Against the flow

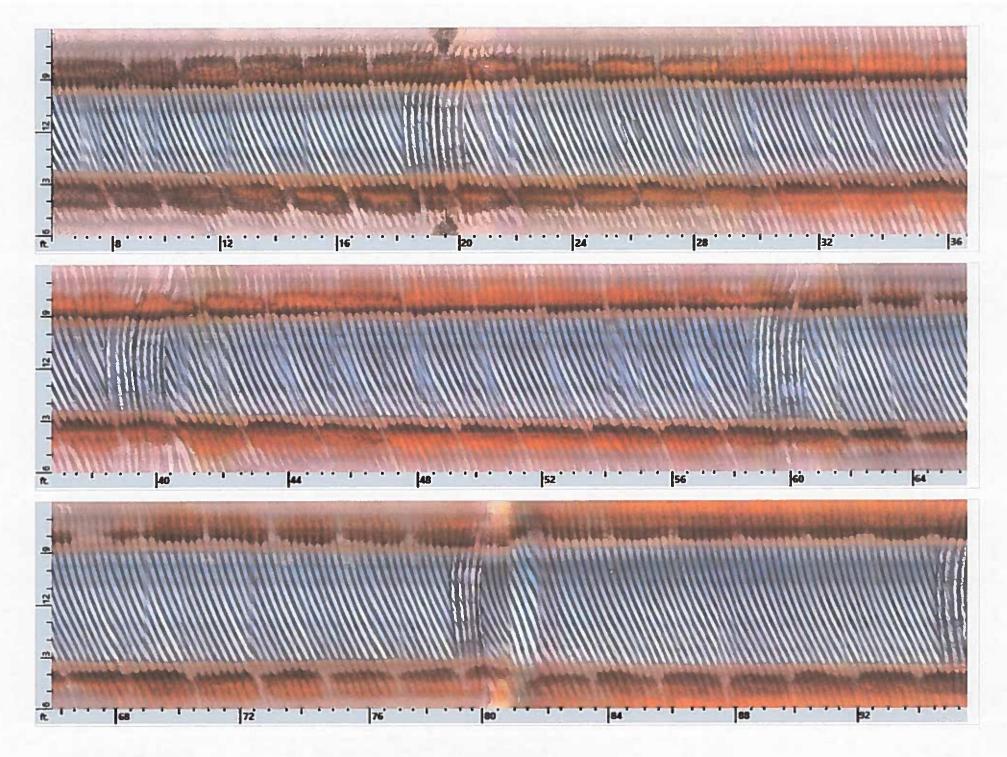
139.7 ft.

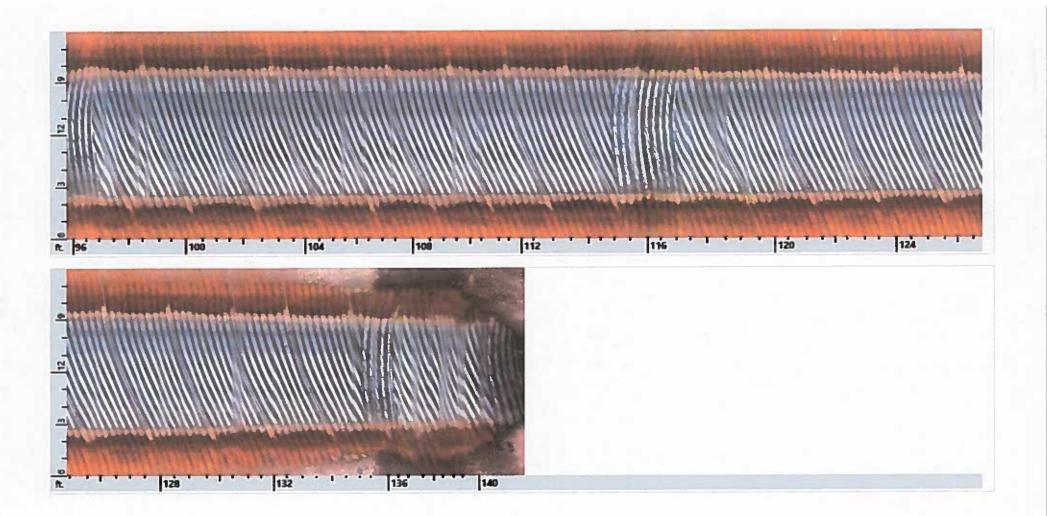
Dry

Observations

Distance	Dir. Length	From/To	Code	Modifier/Severity	Rating Comments
6.4 ft.	U	6/	Water Level	<25%	
10.0 ft.	U	1	Water Mark	>=50%	
83.0 ft.	U	1	Water Mark	>=50%	
132.8 ft.	U	6/	Debris	<=10%	
139.7 ft.	U	1	Debris	>30%	Pipe completely obstructed

Main Inspections Flat Images Page 1 of 3





Main Inspections Flat Images
Page 3 of 3