Safer Seward Highway Project
Seward Highway MP 98.5 to 118,
Bird Flats to Rabbit Creek

Project No.: Z566310000/0A31034

Environmental Assessment

Appendix I: Wetland/Waterbody Preliminary Jurisdictional Determination Report

DRAFT

December 2025

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

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The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 13, 2023, and executed by FHWA and DOT&PF.

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April 2024

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Acronyms and Abbreviations

ADCM	Alaska Debit-Credit Methodology
ADF&G	Alaska Department of Fish and Game
APT	Antecedent Precipitation Tool
CWA	Clean Water Act
DOT&PF	Department of Transportation and Public Facilities – Central Region
E2EM	estuarine emergent
E2SS	estuarine scrub-shrub
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
FGDC	Federal Geographic Data Committee
ft	foot/feet
GIS	Geographic Information System
GPS	global positioning system
HDR	HDR Engineering, Inc.
HGM	hydrogeomorphic
HTL	high tide line
HUC	Hydrologic Unit Code
LiDAR	Light Detection and Ranging
MHW	mean high water
MOA	Municipality of Anchorage
MP	Milepost
N/A	not applicable
NL	Not Listed
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
PEM	palustrine emergent
PFO	palustrine forested
PJD	Preliminary Jurisdictional Determination
Project	Safer Seward Highway Project – Seward Highway MP 98.5-118 Bird Flats to Rabbit Creek
PSS	palustrine scrub-shrub
PWS	Professional Wetland Scientist
REV	Relative Ecological Value
U	upland

UPL	Upland
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Viereck	The Alaska Vegetation Classification (Viereck et al. 1992)
WebWIMP	Web-based, Water-Budget, Interactive, Modeling Program

1 Introduction and Purpose

The Alaska Department of Transportation and Public Facilities (DOT&PF) Central Region contracted HDR Engineering, Inc. (HDR) to provide environmental and engineering support for the proposed Safer Seward Highway Project – Seward Highway Milepost (MP) 98.5 to 118, Bird Flats to Rabbit Creek (Project) in Southcentral Alaska. The Project would reconstruct the segment of highway between Bird Flats and Rabbit Creek to improve safety, update the roadway to current standards, and reduce congestion.

The Project would require authorization from the U.S. Army Corps of Engineers (USACE) for work in wetlands or waterbodies. DOT&PF contracted HDR to provide wetland and waterbody mapping sufficient to inform evaluation of the Project under the National Environmental Policy Act and inform a Department of the Army permit application for impacts on wetlands and waterbodies under Section 404 of the Clean Water Act (CWA) of 1972 (as amended) and Section 10 of the Rivers and Harbors Act of 1899.

This *Preliminary Jurisdictional Determination (PJD) Report* identifies wetlands and waterbodies within the Project study area, which includes areas where Project improvements may occur. Wetlands and waterbodies identified in this report are potentially subject to USACE jurisdiction under the authority of Section 404 of the CWA and/or Section 10 of the Rivers and Harbors Act of 1899. Wetlands, waterbodies, and uplands (non-wetlands or waters), as referenced in this report, are defined below.

Wetlands: Wetlands include those “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 Code of Federal Regulations Part 328.3(c)). Note that the definition does not include unvegetated areas such as streams and ponds.

As described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (1987 *Wetlands Delineation Manual*; USACE 1987) and the 2007 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Alaska Region* (2007 *Regional Supplement*; USACE 2007), wetlands must possess the following three characteristics: (1) a vegetation community dominated by plant species that are typically adapted for life in saturated soils; (2) inundation or saturation of the soil during the growing season; and (3) soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions.

Waterbodies: Waterbodies include unvegetated areas covered by surface water, such as navigable waters, lakes, ponds, and streams, that are also potentially regulated by the USACE.

Uplands: Uplands are non-water and non-wetland areas.

2 Study Area

The 4,776-acre study area is located within the Municipality of Anchorage (MOA) and consists of an approximately 2,000-foot-wide corridor centered on an approximate 20-mile segment of the Seward Highway, beginning at MP 98.5, and heading northwestward to MP 118 (Figure 1; note, figures are included at the end of this report). The study area is located within the Cook Inlet and Pacific Coastal Mountains ecoregions (USACE 2007); and is found within the townships, ranges, and sections listed in Table 1.

Table 1. Townships, Ranges, and Sections for the Study Area

Township	Range	Section(s)[a]
10 North	1 West	4, 5, 6, 8, 9, 10, 14, 15, 23
	2 West	1, 2, 3, 4
11 North	2 West	29, 30, 31, 32, 33, 34
	3 West	4, 5, 9, 10, 14, 15, 22, 23, 24, 25, 26, 32, 33

[a] Located within the Seward Meridian

The tidal waters of Turnagain Arm occupy most of the study area west and south of the existing highway, and paralleling the Alaska Railroad Corporation rail line. Other waterbodies within the study area include Potter Marsh, Rabbit Creek, Potter Creek, McHugh Creek, Rainbow Creek, Falls Creek, Indian Creek, and Bird Creek. The study area is located within the following 10-digit Hydrologic Unit Code (HUC) watersheds, shown on Figure 2: 1902040107, Rabbit Creek – Frontal Turnagain Arm; 1902030201, Bird Creek; and 1902030207, Glacier Creek – Frontal Turnagain Arm (USGS 2023a).

3 Methods

3.1 Field Work

HDR wetland scientists conducted on-site investigations of wetlands and waterbodies within the study area on August 17, 18, 30, and 31 and September 7, 12, and 14, 2023. 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 USACE's recommended growing season for the Cook Inlet (May 8 to October 5) and Pacific Coastal Mountains ecoregions (May 29 to September 27), in which the study area is located (USACE 2007; Figure 2). Table 2 provides a summary of the field surveys.

Table 2. Summary of Wetland Field Surveys

2023 Field Dates	Wetland Scientists	Number of Wetland Determination Form Sites	Number of Observation Points	Plot Numbers
August 17	Ashley Hovis, PWS[a] Will Mans	2	27	001–029
August 18	Ashley Hovis, PWS[a] Will Mans	8	13	030–050
August 30	Ashley Hovis, PWS[a] Will Mans Valerie Watkins, PWS[a] Chris Keil	13	41	051–073, 500–530
August 31	Ashley Hovis, PWS[a] Will Mans Valerie Watkins, PWS[a] Chris Keil	19	34	074–102, 531–552
September 7	Ashley Hovis, PWS[a] Valerie Watkins, PWS	4	23	105–131
September 12	Ashley Hovis, PWS[a] Valerie Watkins, PWS Zachary Halstead, PWS[a] Mallory Allgeier	13	44	132–168, 600–620
September 14	Zachary Halstead, PWS[a] Mallory Allgeier	4	15	621–639
	Total	**63**	**197**	**–**

Note: PWS = Professional Wetland Scientist
[a] Field team lead

Wetlands were identified where wetland scientists observed indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. If any of the three requirements were not met under normal conditions, the site did not meet the USACE criteria for being classified as a wetland. Sites were characterized by completing standard USACE Wetland Determination Forms (2007 Regional Supplement; USACE 2007). Photographs and observational data were collected at additional locations (Observation Points) to document sites that exhibited characteristics similar to areas where a data form had already been completed, or to document the presence (or absence) of a waterbody or stream.

Where feasible, wetland/upland boundaries were determined in the field by completing paired data plots. This process involved completing Wetland Determination Forms near observable transition zones between wetter and drier areas. A Wetland Determination Form was completed

for the wetter area to verify its wetland status, and a second Wetland Determination Form was completed for the drier area to verify its upland status.

Wetland Determination Forms were completed at 63 sites (Appendix A). Observation Points were collected at an additional 197 locations (Appendix B). Locations of Wetland Determination Form sites and Observation Points were logged into a global positioning system (GPS)-enabled iPad. In total, field data were collected at 260 locations during the August and September 2023 field surveys.

3.2 Tide Line Estimation

The study area includes portions of the nearshore estuarine waters of Turnagain Arm. The mean sea level measured at the Anchorage tidal station (9455920) is 5.70 feet (ft; all elevations according to North American Vertical Datum of 1988). The highest astronomical tide predicted for this station is 23.01 ft, which was used to ascertain the highest high tide line (HTL) for the Project. Mean high water (MHW) is 17.66 ft at this station (NOAA 2019). Mean low water and mean lower-low water values for this station are -8.52 ft and -10.77 ft, respectively.

Tidal data collected at Bird Creek during 2022 indicated an HTL elevation of 27.8 ft (HDR 2022). Using data from the Anchorage tidal station and Bird Creek data (HDR 2022), HTL and MHW lines were generated by HDR for the length of the study area. The HTL and MHW lines are based on Project elevation contours derived from the MOA 2015 digital terrain model (MOA 2015a).

The HDR-generated HTL and MHW lines were used in the wetland and waterbody mapping feature class to delineate wetland, waterbody, and upland boundaries as well as boundaries between different water regime types (e.g., saltwater tidal, freshwater tidal, nontidal) types. All waters located between HTL and MHW elevations are considered subject to USACE jurisdiction under Section 404 of the Clean Water Act and all waters located below MHW elevation are subject to USACE jurisdiction under both Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.

3.3 Wetland Mapping and Classification

Upon returning from the 2023 field effort, wetland scientists analyzed the field-collected data and reviewed the following datasets in a Geographic Information System (GIS) to delineate and classify wetlands and waterbodies within the study area:

- Alaska Geographic Council color mosaic imagery (AGC 2020)
- ADF&G Anadromous Waters Catalog (ADF&G 2022)
- Esri World Imagery high-resolution satellite and aerial imagery at 1-meter resolution or better (Esri 2023)
- Esri World Wayback Imagery digital archive of high-resolution satellite and aerial imagery at 1-meter resolution or better (Esri 2014, 2022)
- MOA color aerial imagery, 1-ft pixel resolution (MOA 2015b)
- MOA Light Detection and Ranging (LiDAR)-derived 1- and 5-ft topographic contours (MOA 2015a)

- MOA LiDAR-derived Digital Terrain Model hillshade (MOA 2015a)
- MOA Watershed Management Hydrography Geodatabase (MOA 2023), including:
    - Anchorage Wetlands Management Plan wetland mapping feature class
    - Anchorage stream mapping feature class
- Natural Resources Conservation Service (NRCS) soil survey data (NRCS 2001, 2022)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping (USFWS 2023)
- U.S. Geological Survey (USGS) National Hydrography Dataset (USGS 2023b)
- USGS Watershed Boundary Dataset (USGS 2023a)

The USFWS NWI, MOA Wetlands Management Plan, and NRCS soil survey mapping are effective tools for large-scale planning and analysis; however, their coarse scale and limited ground-truthing are generally not suitable for site-specific projects. The USFWS NWI and MOA Wetlands Management Plan mapping for the study area, overlaid on aerial imagery, are shown on Figure 3. The NRCS soil survey mapping is only available for a small portion of the study area (i.e., the northern most 4 miles) and is shown on Figure 4.

GPS locations of field-visited sites were overlaid on the aerial photography and other data layers in GIS to identify and classify wetlands and waterbodies present within the study area. Aerial photography vegetation signatures from the field-visited sites were then extrapolated to similar locations throughout the study area; wetland/upland boundaries were digitized into GIS at a scale of approximately 1:1,200 to 1:1,500, and waterbodies were digitized into GIS at a scale of approximately 1:400. Delineating wetlands from aerial photography includes the following methods:

- **Vegetation clues:** Scientists examine aerial photographs for saturation-adapted vegetation communities, indicative canopy structure and height, and presence of hydrophytic plant species.
- **Evidence of soil saturation:** A site's proximity to streams, open water habitat, and marshes can be indicative of shallow subsurface water. Scientists therefore look for visible evidence of wetland hydrology, including surface water and darker areas of photographs that indicate surface saturation.
- **Topography:** Evidence of topographic high points and sloped surfaces that would allow soils to drain supports the classification of those areas as upland. Topographic depressions, toes of slopes, and flat topography serve as indicators of potentially poor soil drainage.

Wetlands were classified based on a review of field notes, data forms, and site photographs. Mapped polygons identifying homogeneous wetland and waterbody areas in the GIS-based mapping were attributed with NWI mapping codes based on the Federal Geographic Data Committee's (FGDC) *Classification of Wetlands and Deepwater Habitats of the United States*[1] (FGDC 2013). Mapped wetland polygons were also assigned an hydrogeomorphic (HGM) class

[1] Adapted from USFWS's *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

based on hydrologic and topographic positions (Brinson 1993). Mapped polygons were also assigned vegetation types based on *The Alaska Vegetation Classification* ([Viereck]; Viereck et al. 1992). Streams were mapped as polygons when a stream channel was visible on aerial imagery; otherwise, streams were mapped as line features.

3.4 Relative Ecological Value Categorization

Wetland scientists analyzed field data and GIS mapping to categorize wetlands and waterbodies within the study area by Relative Ecological Value (REV) using the Anchorage Debit-Credit Methodology (ADCM; Dean 2011). REV categories are a hierarchical way of indicating the "level of ecological function typically performed by a particular polygon" (Dean 2011). This wetland functional categorization is often used within the MOA to determine appropriate avoidance measures and compensatory mitigation during the Section 404/10 permitting process. Categories range from REV 1 (highest functional value) to REV 4 (lowest functional value) and are based on factors that include landform, size, hydrologic regime, plant community, fish and wildlife use, extent of degradation, and adjacency to waterbodies.

The REVs assigned to wetlands and waterbodies within the study area are presented in Section 9 of this report. Each REV was assigned based on the characteristics described in "Table 1: Polygons, and Relative Ecological Values (REVs), Grouped by Landform" found in the ADCM (Dean 2011) and provided in Appendix C.

4 Summary of Wetland Indicators

The vegetation, hydrology, and soil conditions described below are based on the 2023 field investigations described in Section 3.1. Wetland conditions were documented at 30 of the 63 Wetland Determination Form sites visited in 2023. The remaining 33 sites were determined to be upland. Several of these upland sites met one or two of the three criteria required to be considered wetlands but lacked all three. Appendix A includes the completed Wetland Determination Forms, photographs taken at each site, and tables summarizing the data collected at each site.

Wetland scientists documented a total of 197 Observation Points during the 2023 field investigations. Observational data collected at these points includes the wetland or upland status, a description of the vegetation community, and/or documentation of the presence or lack of a waterbody or stream. Appendix B includes a table summarizing the data collected at each Observation Point and photographs. Figure 5 shows locations of all sites visited in the field.

4.1 Vegetation

Vegetation within the study area consists primarily of mixed spruce-paper birch, paper birch, balsam poplar, and mixed paper birch-balsam poplar forests, as well as alder and willow-dominated scrub, wet sedge marsh, and mesic bluejoint meadows. Table 3 lists the dominant plant species observed at the 63 sites where Wetland Determination Forms were completed. The dominant plant species were identified using the “50/20 Rule” from the 2007 Regional Supplement (USACE 2007). Appendix A includes the Viereck Level IV (Viereck et al. 1992) vegetation communities documented at the Wetland Determination Form sites.

Table 3. Dominant Plant Species at Wetland Determination Form Sites

Species	Common Name	Indicator Status[a]	Species	Common Name	Indicator Status[a]
Achillea millefolium	Common Yarrow	FACU	*Myrica gale*	Sweetgale	OBL
Actaea rubra	Red Baneberry	FAC	*Oplopanax horridus*	Devil's Club	FACU
Alnus incana (Alnus tenuifolia)	Speckled Alder	FAC	*Poa palustris*	Fowl Blue Grass	FAC
Alnus viridis (Alnus sinuata, Alnus crispa)	Sitka Alder	FAC	*Picea glauca*	White Spruce	FACU
Amelanchier alnifolia	Saskatoon Service Berry	UPL	*Picea mariana*	Black Spruce	FACW
Angelica genuflexa	Kneeling Angelica	FACW	*Picea sitchensis*	Sitka Spruce	FACU
Arctostaphylos uva-ursi	Red Bearberry	UPL	*Populus balsamifera*	Balsam Poplar	FACU
Athyrium cyclosorum (Athyrium felix-femina)	Western Lady Fern	FAC	*Populus tremuloides*	Quaking Aspen	FACU
Aruncus dioicus	Bride’s Feathers	UPL	*Pyrola grandiflora*	Arctic Wintergreen	FAC
Betula neoalaskana	Alaska Paper Birch	FACU	*Pyrola asarifolia*	Pink Wintergreen	FACU
Betula nana	Swamp Birch	FAC	*Rhododendron groenlandicum (Ledum groenlandicum)*	Rusty Labrador Tea	FAC

Species	Common Name	Indicator Status[a]	Species	Common Name	Indicator Status[a]
Betula papyrifera	Paper Birch	FACU	*Rhododendron tomentosum (Ledum decumbens)*	Marsh Labrador Tea	FACW
Calamagrostis canadensis	Bluejoint	FAC	*Ribes glandulosum*	Skunk Currant	FAC
Carex aquatilis	Leafy Tussock Sedge	OBL	*Ribes laxifolium*	Trailing Black Currant	FACU
Carex lyngbyei	Lyngbye's Sedge	OBL	*Ribes triste*	Swamp Red Currant	FAC
Carex magellanica	Boreal-bog Sedge	OBL	*Rosa acicularis*	Prickly Rose	FACU
Carex microglochin	Few-seeded Bog Sedge	OBL	*Rubus chamaemorus*	Cloudberry	FACW
Chamaenerion angustifolium	Narrow-leaf Fireweed	FACU	*Rubus idaeus*	Common Red Raspberry	FACU
Cicuta maculate	Spotted Water Hemlock	OBL	*Salix alaxensis*	Felt-leaf Willow	FAC
Circaea alpina	Small Enchanter's Nightshade	FACW	*Salix bebbiana*	Gray Willow	FAC
Comarum palustre	Purple Marshlocks	OBL	*Salix glauca*	Gray-leaf Willow	FAC
Cornus canadensis	Canadian Bunchberry	FACU	*Salix lasiandra*	Pacific Willow	FACW
Dryopteris expansa	Spreading Wood Fern	FACU	*Salix pulchra*	Diamond-leaf Willow	FACW
Elymus trachycaulus	Slender Wild Rye	FACU	*Salix scouleriana*	Scouler's Willow	FAC
Empetrum nigrum	Black Crowberry	FAC	*Sambucus racemosa*	Red Elder	FACU
Equisetum arvense	Field Horsetail	FAC	*Saxifraga tricuspidata*	Prickly Saxifrage	FACU
Equisetum fluviatile	Water Horsetail	OBL	*Tsuga heterophylla*	Western Hemlock	FAC
Equisetum pratense	Meadow Horsetail	FACW	*Tsuga mertensiana*	Mountain Hemlock	FAC
Equisetum sylvaticum	Woodland Horsetail	FAC	*Typha latifolia*	Broad-leaf Cattail	OBL
Galium triflorum	Fragrant Bedstraw	FAC	*Viola palustris*	Alpine-Marsh Violet	FACW
Geocaulon lividum	False Toadflax	FACU	*Vaccinium vitis-idaea*	Northern Mountain Cranberry	FAC
Gymnocarpium dryopteris	Northern Oak Fern	FACU	*Veronica americana*	American Brooklime	OBL
Heracleum maximum	American Cow Parsnip	FACU	*Veratrum viride*	American False Hellebore	FAC
Leymus mollis	American Lyme Grass	FAC	*Viburnum edule*	Squashberry	FACU
Linnaea vulgaris	Yellow Toadflax	NL	*Vicia cracca*	Bird Vetch	NL
Menziesia ferruginea	Fool's Huckleberry	FACU	—	—	—

[a] Wetland Indicator Status (USACE 2020): *FAC (Facultative):* species equally likely to occur in wetlands and non-wetlands; *FACU (Facultative Upland)*: species usually occurs in non-wetlands; *FACW (Facultative Wetland):* species usually occurs in wetlands; *OBL (Obligate):* species almost always occurs under natural conditions in wetlands; *NL (Not Listed)*: species not listed; *UPL (Upland)*: species almost always occurs under natural conditions in non-wetlands.

A total of 33 sites where Wetland Determination Forms were completed had plant communities dominated by hydrophytes. Of these, 19 sites were determined to have hydrophytic vegetation based on both the Dominance Test and the Prevalence Index, while 14 sites were determined to be hydrophytic based on the Dominance Test alone. Three locations with hydrophytic vegetation were determined to be upland. Additionally, one location (Site 508) was determined to be upland based solely on a lack of hydrophytic vegetation.

4.2 Soils

One NRCS soil survey, the Soil Survey of Anchorage Area, Alaska, covers approximately 15 percent of the study area (NRCS 2001, 2022). The remaining portions of the study area have not been mapped by NRCS. Soils mapping within the study area is shown on Figure 4 and described in Table 4. The most common soil types mapped within the study area are Cryosaprists, 0 to 1 percent slopes (4 percent of the study area). Typic Cryaquent and Typic Cryaquept soils, 0 to 2 percent slopes; and Cryorthents and Urban land, 5 to 20 percent slopes each represent 3 percent of the study area. All other soil map units present each constitute less than 3 percent of the study area. Of the 15 soil map unit types, 5 types, constituting 10 percent of the study area, are rated as greater than or equal to 80 percent hydric.

Table 4. Summary of Soils within the Study Area

Soil Map Unit	Percent Hydric	Acres[a]
Cryosaprists, 0 to 1 percent slopes	100	181.43
Cryorthents and Urban land, 0 to 5 percent slopes	10	4.63
Cryorthents and Urban land, 5 to 20 percent slopes	10	144.30
Deception-Cryorthents complex, 45 to 90 percent slopes	0	26.02
Deception-Estelle-Kichatna complex, 12 to 20 percent slopes	6	14.75
Deception-Estelle-Kichatna complex, 20 to 45 percent slopes	0	22.49
Deception-Estelle-Kichatna complex, 45 to 85 percent slopes	0	48.16
Kashwitna-Kichatna complex, 30 to 85 percent slopes	5	1.71
Kashwitna-Kichatna complex, undulating	10	16.09
Kashwitna-Kichatna complex, undulating and hilly	5	5.24
Kashwitna-Kichatna complex, undulating and steep	8	12.20
Moose River-Niklason complex, frequently flooded, 0 to 3 percent slopes	80	2.48
Moose River-Niklason complex, occasionally flooded, 0 to 3 percent slopes	80	57.27
Talkeetna-Chugach-Deneka complex, 20 to 45 percent slopes	3	11.70
Typic Cryaquent and Typic Cryaquept soils, 0 to 2 percent slopes	100	157.32
Water	100	83.84
No data available	N/A	3,986.74
Total Area	**—**	**4,776.35**

Notes: N/A = not applicable
[a] Total acreage presented may not reflect the sum of the individual cells due to rounding.

Site-specific soil characteristics were documented at each of the 63 Wetland Determination Form sites. Hydric soil indicators were taken from the 2007 Regional Supplement and the NRCS *Field Indicators of Hydric Soils in the United States, Version 8.2* (USACE 2007, NRCS 2018). Soil profile depths were recorded starting at the ground surface[2] in accordance with the *Field Book for Describing and Sampling Soils, Version 3.0* (Schoeneberger et al. 2012); however, hydric soil indicators relevant to mineral soils (e.g., Alaska Gleyed, Alaska Redox) and hydrogen sulfide odor were evaluated starting from the top of the mineral soil surface.

Hydric soils documented during the 2023 field efforts were principally organic, and were found at 32 of the 63 sites. One location with hydric soil indicators (Site 508) was determined to be upland due to a lack of a hydrophytic vegetation community. Site 538 had hydric soil but lacked

[2] The ground surface is considered to be the top boundary of the first layer, either mineral or organic, that can support plant/root growth. For all soil profile depths, zero was recorded at the ground surface.

both hydrophytic vegetation and wetland hydrology. Appendix A summarizes hydric soil indicators observed at each site. The most common hydric soil indicator observed was the presence of hydrogen sulfide within 12 inches of the top of the mineral soil surface (18 sites), followed by the presence of a histic epipedon (11 sites) or a histosol (10 sites).

4.3 Hydrology

The USACE Antecedent Precipitation Tool (APT) was used to determine the degree to which recent climatic events (e.g., abnormally wet or dry conditions) may have influenced hydrology conditions during the time of the field investigation. The APT uses 30 years of data regarding precipitation, drought, and other climatic factors to determine “normal” conditions (Deters 2020).

Hydrologic indicators observed during each field visit would be expected to correlate with the APT output for the specific field day. The APT calculated that the hydrologic conditions were wetter than normal on August 17, 18, 30, and 31 and September 7, 12, and 14, 2023, which is consistent with field observations. Appendix D provides a detailed data set from the APT that provides the hydrologic conditions for the 7 days of the 2023 field effort.

The APT was also used to determine whether the field work had occurred during the wet or dry season. The APT uses Web-based, Water-Budget, Interactive, Modeling Program (WebWIMP), a web-based tool and historical database maintained by the University of Delaware, to provide this output (Deters 2020). The APT results indicate that the field work was performed entirely within the wet season, which is also consistent with conditions observed in the field.

Evidence of wetland hydrology (at least one primary indicator or two secondary indicators) was documented at all 30 Wetland Determination Form sites determined to be wetland and at 2 sites determined upland. All 32 sites determined to have wetland hydrology exhibited primary hydrology indicators. Appendix A shows the hydrology indicators observed at each site.

The most common primary indicators of wetland hydrology observed during the field investigations were saturation (32 sites), high water table (30 sites), surface water (21 sites), and hydrogen sulfide odor (18 sites). Common secondary indicators included geomorphic position (30 sites), a positive Facultative (FAC)-neutral test (16 sites), and presence of reduced iron (14 sites).

Specific information regarding the different indicators observed at each site (e.g., depth to saturation within the soil pit) can be found on the Wetland Determination Forms included in Appendix A. These indicators are further described in the 2007 Regional Supplement (USACE 2007).

5 Summary of Invasive Plant Species

Incidental observations of invasive plant species were recorded by field teams during the wetland field surveys. Wetland scientists documented a total of 15 different invasive plant species within the study area during the field surveys, summarized in Table 5. Locations of incidental observations are provided in GIS digital point files produced for the Project. In addition to the locations recorded during the field surveys, invasive plant species were also observed to commonly occur along the Seward Highway and the Bird-to-Gird Pathway.

Table 5. Invasive Plant Species Observed within the Study Area

Species	Common Name	Invasiveness Rank[a]	Invasiveness Category[a]	Legal Status[b]
Elymus repens	Quackgrass	59	Modestly Invasive	Prohibited
Galeopsis tetrahit	Hempnettle	40	Weakly Invasive	Prohibited
Hordeum jubatum	Fox-tail Barley	63	Moderately Invasive	None
Leucanthemum vulgare	Oxeye Daisy	61	Moderately Invasive	None
Linaria vulgaris	Yellow Toadflax	69	Moderately Invasive	Restricted
Melilotus alba	White Sweet Clover	81	Extremely Invasive	None
Phalaris arundinacea	Reed Canary Grass	83	Extremely Invasive	None
Prunus padus	European Bird Cherry	74	Highly Invasive	None
Silene vulgaris (Silene latifolia)	Bladder Campion	42	Weakly Invasive	None
Taraxicum officinale	Common Dandelion	58	Modestly Invasive	None
Trifolium hybridum	Alsike Clover	57	Modestly Invasive	None
Trifolium pratense	Red Clover	53	Modestly Invasive	None
Trifolium repens	White Clover	59	Modestly Invasive	None
Turritis glabra	Tower Rockcress	Not ranked	Not ranked	None
Vicia cracca	Bird Vetch	73	Highly Invasive	Restricted

[a] Invasiveness Ranking System for Non-Native Plants of Alaska (Carlson et al. 2008). Invasiveness category is based on invasiveness rank scores, which were developed based on total scores from 21 assessment questions used by Carlson et al. (2008). Scores >80 = ”Extremely Invasive”; 70–79 = “Highly Invasive”; 60–69 = “Moderately Invasive”; 50–59 = “Modestly Invasive”; 40–49 = “Weakly Invasive”; <40 = “Very Weakly Invasive”
[b] ADNR 2023.

6 Wetland and Waterbody Classification

The following wetland classes and waterbody types were documented within the study area:

6.1 Palustrine Forested Wetlands

Palustrine forested (PFO) wetlands totaling 34.45 acres were identified within the study area (less than 1 percent of the study area). These wetlands were documented at 14 Wetland Determination Form sites and 8 Observation Points (Table 6). PFO wetlands were generally found on flat topography north of Potter Marsh and at slope break locations as well as low-lying areas in forests at the southern end of the study area, typically abutting wetter scrub-shrub and emergent wetland sites. Documented vegetation communities included primarily open and closed broad-leaved deciduous forests dominated or co-dominated by Alaska paper birch, paper birch, Sitka alder, balsam poplar, felt-leaf willow, black spruce, and Pacific willow in the tree stratum. Dominant understory species in the shrub stratum included Sitka alder, rusty Labrador tea, marsh Labrador tea, swamp birch, willow species, fool's huckleberry, and devil's club. Common emergent vegetation in the herbaceous stratum included field horsetail, western lady fern, bluejoint, and small enchanter's nightshade. Most PFO wetlands observed had a saturated hydrologic regime with a hydric soil indicator of histic epipedon and/or hydrogen sulfide odor.

6.2 Palustrine Scrub-Shrub Wetlands

Palustrine scrub-shrub (PSS) wetlands totaling 51.59 acres were identified within the study area (1 percent of the study area). These wetlands were documented at 8 Wetland Determination Form sites and 13 Observation Points (Table 6). PSS wetlands were typically found along the fringes of Potter Marsh and along prominent slope breaks southeast of Indian Creek adjacent to the Seward Highway. Documented vegetation communities within the study area included primarily open and closed broad-leaved deciduous scrub. Trees were typically absent, or their cover was less than 30 percent. Vegetation in the shrub stratum was commonly dominated by speckled alder, Sitka alder, gray willow, diamond-leaf willow, paper birch, and sweetgale. Common emergent vegetation in the herbaceous stratum included bluejoint, field horsetail, water horsetail, broad-leaf cat-tail, and purple marshlocks. Hydrologic regimes ranged from saturated to semi-permanently flooded by fresh tidally influenced water. The most frequently documented hydric soil indicators at PSS wetland sites were histosols, histic epipedons, and hydrogen sulfide odor.

6.3 Palustrine Emergent Wetlands

Palustrine emergent (PEM) wetlands were the most common wetland type (43 percent of total wetlands) identified within the study area (128.42 acres, 3 percent of the study area). These wetlands were documented at 5 Wetland Determination Form sites and 19 Observation Points (Table 6). PEM wetlands were generally found within Potter Marsh as well as within wetland complexes located at the southern end of the study area. Trees and shrubs were generally sparse or absent. Documented vegetation in the study area was commonly dominated by bluejoint, field horsetail, water horsetail, American-brooklime, fringed willowherb, and Lyngbye's

sedge. The mapped PEM wetlands predominantly had seasonally or semi-permanently flooded hydrologic regimes caused by tidally influenced fresh water. The most documented hydric soil indicator at PEM wetland sites was the presence of hydrogen sulfide odor.

6.4 Fresh Waterbodies

Fresh waterbodies, totaling 80.73 acres (2 percent of the study area), were identified within the study area. These waterbodies included ponds and streams, as well as their active shorelines and bars. Most ponds mapped throughout the study area were characterized as permanently flooded with unconsolidated bottoms, and one pond was characterized by aquatic bed vegetation. Most were classified as being influenced by tide cycles, beavers, or as impoundments affected by the Seward Highway or railroad embankment. Most rivers and streams mapped as polygons within the study area were mapped as tidally influenced. Named fresh waterbodies within the study area include Potter Marsh, Rabbit Creek, Potter Creek, McHugh Creek, Rainbow Creek, Falls Creek, Indian Creek, and Bird Creek.

6.5 Estuarine Scrub-Shrub Wetlands

Estuarine scrub-shrub (E2SS) wetlands were the least common wetland type (6 percent of total wetlands) identified within the study area (18.45 acres, less than 1 percent of the study area). This wetland type was documented at one Wetland Determination Form site and five Observation Points. E2SS wetlands are located below the HTL and were typically found within Potter Marsh, north of tidally influenced Rabbit Creek, as well as along the shorelines of Turnagain Arm in the Rabbit Creek Shooting Park vicinity. These wetlands were also mapped along tidally influenced shorelines of Indian and Bird Creeks. Trees were typically absent, and dominant vegetation in the shrub stratum included Sitka alder and Barclay's willow. Vegetation in the herbaceous stratum was typically dominated by bluejoint and fowl blue grass. The hydrologic regime of this wetland type was irregularly flooded by tide cycles, and some wetlands were mapped as impounded by the Seward Highway or railroad embankment. The hydric soil indicator observed at the one Wetland Determination Form site (Site 543) completed within this wetland type was considered problematic due to low organic matter.

6.6 Estuarine Emergent Wetlands

Estuarine emergent (E2EM) wetlands were identified within the study area (67.98 acres, 1 percent of the study area). This wetland type was documented at two Wetland Determination Form sites and six Observation Points. E2EM wetlands are located below HTL and were typically found within the northern extent of Potter Marsh, west of the Seward Highway and railroad embankment in the Rabbit Creek Shooting Park vicinity, between the Seward Highway and the railroad embankment near the mouth of Potter Creek, and along the tidally influenced shorelines of Bird Creek. Trees and shrubs were generally sparse or absent. Vegetation in the herbaceous stratum was typically dominated by Lyngbye's sedge and American lyme grass. Hydrologic regimes included areas regularly and irregularly flooded by tide cycles, and the hydric soil indicator observed was presence of hydrogen sulfide odor.

6.7 Estuarine Waterbodies

Estuarine waterbodies, totaling 1,858.02 acres (39 percent of the study area), were the most common mapped aquatic resource within the study area (83 percent of total wetlands and waterbodies) and are typically associated with Turnagain Arm. These waterbodies are located below HTL or MHW and generally included subtidal ponds, intertidal unvegetated rocky or cobble shores, and mudflats. Hydrologic regimes ranged from subtidal to areas irregularly flooded by tide cycles, and some estuarine waterbodies were characterized as impounded by the Seward Highway or railroad embankment.

6.8 Uplands

Uplands (U) comprise the majority of the study area (2,536.70 acres, 53 percent of the study area). Mapped developed uplands included the Seward Highway and associated parking areas; the railroad embankment; and residential, commercial, and recreational developments as well as associated roadways and parking areas. Undeveloped uplands predominantly included forested vegetation types located on lower elevations of steep mountainous terrain and on nearly flat to sloping terrain. Upland shrub and herbaceous communities were also present within the study area and were located on similar terrain features. Documented upland vegetation communities within the study area included primarily open and closed mixed forests of white spruce and paper birch, and open and closed broad-leaved forests dominated or co-dominated by paper birch and balsam poplar. Upland scrub communities were typically dominated by open tall alder and mixed alder-willow stands. Disturbed upland mesic herbaceous graminoid communities were also documented within the study area, typically at lower elevations and areas; partially vegetated rocky areas were mapped along mountain sides at upper elevations. Most of the upland sites (28 of the 33 sites) documented with Wetland Determination Forms lacked positive indicators of all three wetland parameters (vegetation, soils, and hydrology). Soil textures ranged from clay loams to coarse sandy or gravelly loams.

7 Wetland and Waterbody Mapping Results

Approximately 300.89 acres of wetlands were identified within the 4,776-acre study area. Wetland types include palustrine forested, palustrine scrub-shrub, palustrine emergent, estuarine scrub-shrub, and estuarine emergent wetlands. An additional 1,938.75 acres of waterbodies were mapped, including 1,856.57 acres of estuarine waters and 10.73 acres of perennial rivers and streams. The remaining 2,536.70 acres of the study area were determined to be upland. Wetland and waterbody classes, and their acreages, found within the study area are provided by NWI classification in Table 6. Table 7 provides wetlands by HGM class within the study area. Additionally, 105,822 linear feet of streams were mapped as line features, as summarized in Table 8.

Figure 5 displays wetland, upland, and waterbody boundaries as well as the boundaries between different wetland and waterbody types identified within the study area. It also shows the locations of the Wetland Determination Form sites and Observation Points collected in 2023.

In total, 2,239.64 acres, or 47 percent, of the study area are determined to be wetlands or waterbodies potentially subject to USACE jurisdiction.

Table 6. Mapping Summary by NWI Type

NWI Code[a]	Description	Representative Wetland Determination Form Sites	Representative Observation Points	Acres[b]
Palustrine Forested Wetlands				***34.45***
PFO1/4B	Seasonally saturated, broad-leaved, deciduous/needle-leaved, evergreen forested wetland	509	—	4.82
PFO1/4R	Seasonally flooded, freshwater tidal, broad-leaved, deciduous/needle-leaved evergreen forested wetland	—	—	0.16
PFO1/4S	Temporarily tidally flooded, broad-leaved, deciduous/needle-leaved evergreen forested wetland	—	—	0.08
PFO1/EM1B	Seasonally saturated, broad-leaved, deciduous forested/persistent emergent wetland	604, 621, 74	—	4.97
PFO1/EM1R	Seasonally tidally flooded, broad-leaved, deciduous forested/persistent emergent wetland	—	—	0.15
PFO1/SS1B	Seasonally saturated, broad-leaved, deciduous forested/broad-leaved, deciduous scrub-shrub wetland	38, 46, 76, 88, 158	79	13.25
PFO1/SS1C	Seasonally flooded, broad-leaved, deciduous forested/broad-leaved, deciduous scrub-shrub wetland	—	150, 160, 161	2.27
PFO1B	Seasonally saturated, broad-leaved, deciduous forested wetland	502	85, 154	3.19
PFO1C	Seasonally flooded, broad-leaved, deciduous forested wetland	144	—	0.71
PFO1R	Seasonally tidally flooded, broad-leaved, deciduous forested wetland	105	—	0.32
PFO1S	Temporarily tidally flooded, broad-leaved, deciduous forested wetland	—	—	0.30
PFO4/SS4B	Seasonally saturated, needle-leaved, evergreen forested/needle-leaved, evergreen scrub-shrub wetland	32, 531	—	1.06
PFO4B	Seasonally saturated, needle-leaved, evergreen forested wetland	—	534	3.18
Palustrine Scrub-Shrub Wetlands				***51.59***
PSS1/4B	Seasonally saturated, broad-leaved, deciduous/needle-leaved, evergreen scrub-shrub wetland	525	—	0.55
PSS1/EM1B	Seasonally saturated, broad-leaved, deciduous scrub-shrub/persistent emergent wetland	123	—	0.10
PSS1/EM1C	Seasonally flooded, broad-leaved, deciduous scrub-shrub/persistent emergent wetland	37, 539	89, 166, 510, 553, 627	14.71
PSS1/EM1F	Semi-permanently flooded, broad-leaved, deciduous scrub-shrub/persistent emergent wetland	95	97	1.54

NWI Code[a]	Description	Representative Wetland Determination Form Sites	Representative Observation Points	Acres[b]
PSS1/EM1R	Seasonally tidally flooded, broad-leaved, deciduous scrub-shrub/persistent emergent wetland	—	100	13.47
PSS1/EM1S	Temporarily tidally flooded, broad-leaved, deciduous scrub-shrub/persistent emergent wetland	—	—	0.29
PSS1/EM1T	Semi-permanently tidally flooded, broad-leaved, deciduous scrub-shrub/persistent emergent wetland	617	—	3.02
PSS1B	Seasonally saturated, broad-leaved, deciduous scrub-shrub wetland	—	136, 138	4.43
PSS1C	Seasonally flooded, broad-leaved, deciduous scrub-shrub wetland	—	168, 608	1.83
PSS1R	Seasonally tidally flooded, broad-leaved, deciduous scrub-shrub wetland, diked/impounded	99, 102	—	1.54
PSS1S	Temporarily tidally flooded, broad-leaved, deciduous scrub-shrub wetland, diked/impounded	—	—	0.12
PSS4/1B	Seasonally saturated, needle-leaved, evergreen/broad-leaved, deciduous scrub-shrub wetland	—	515	7.91
PSS4/3B	Seasonally saturated, needle-leaved, evergreen/broad-leaved, evergreen scrub-shrub wetland	—	34	2.08
Palustrine Emergent Wetlands				***128.42***
PEM1/SS1B	Seasonally saturated, persistent emergent/broad-leaved, deciduous scrub-shrub wetland	—	—	0.17
PEM1/SS1C	Seasonally flooded, persistent emergent/broad-leaved, deciduous scrub-shrub wetland	522	—	3.27
PEM1/SS1R	Seasonally tidally flooded, persistent emergent/broad-leaved, deciduous scrub-shrub wetland	—	126, 130	2.30
PEM1/SS1T	Semi-permanently flooded, persistent emergent/broad-leaved, deciduous scrub-shrub wetland	—	128, 129	0.61
PEM1/SS3B	Seasonally saturated, persistent emergent/broad-leaved evergreen scrub-shrub wetland	—	35	1.27
PEM1B	Seasonally saturated, persistent emergent wetland	—	—	0.99
PEM1C	Seasonally flooded, persistent emergent wetland	14	540, 541	2.06
PEM1F	Semi-permanently flooded, persistent emergent wetland	113	7, 28, 36, 44, 112	1.33
PEM1R	Seasonally tidally flooded, persistent emergent wetland	66, 132	127, 605, 629	66.41
PEM1S	Temporarily tidally flooded, persistent emergent wetland	—	68	1.62

NWI Code[a]	Description	Representative Wetland Determination Form Sites	Representative Observation Points	Acres[b]
PEM1T	Semi-permanently tidally flooded, persistent emergent wetland	—	109, 110	48.03
PEM2V	Permanently tidally flooded, nonpersistent emergent wetland	—	19	0.35
Estuarine Scrub-Shrub Wetlands				***18.45***
E2SS1/EM1P	Irregularly flooded, broad-leaved deciduous shrub-scrub/persistent emergent intertidal wetland	543	91, 151, 152	14.78
E2SS1P	Irregularly flooded, broad-leaved deciduous shrub-scrub intertidal wetland	—	47, 90	3.68
Estuarine Emergent Wetlands				***67.98***
E2EM1/SS1P	Irregularly flooded, persistent emergent/broad-leaved deciduous scrub-shrub intertidal wetland	—	—	3.15
E2EM1N	Regularly flooded, persistent emergent Intertidal wetland	53	49, 153	6.99
E2EM1P	Irregularly flooded, persistent emergent intertidal wetland	619	56, 92, 93, 634	57.84
			Total Wetlands	**300.89**
Aquatic Bed Fresh Waterbodies				***0.05***
PABH	Permanently flooded, aquatic bed pond	—	96	0.05
Fresh Waterbodies				***69.95***
PUBH	Permanently flooded, unconsolidated bottom pond	—	27, 134, 135, 143, 506	1.21
PUBT	Semi-permanently tidally flooded, unconsolidated bottom pond	—	—	0.04
PUBV	Permanently tidally flooded, unconsolidated bottom pond	—	15, 22	68.30
PUS3R	Seasonally tidally flooded mud unconsolidated shore pond	—	69	0.36
PUSC	Seasonally flooded, unconsolidated shore pond	—	72	0.04
Rivers and Streams				***10.73***
R1UBT	Semi-permanently tidally flooded, stream with an unconsolidated bottom	—	—	0.21
R1UBV	Permanently tidally flooded, tidal stream with an unconsolidated bottom	—	See Table 8	7.85
R1USQ	Regularly tidally flooded, unconsolidated stream shoreline	—	—	0.04
R3UBH	Permanently flooded, upper perennial stream with an unconsolidated bottom	—	See Table 8	2.65
Aquatic Bed Estuarine Waterbodies				***1.45***
E2ABN	Regularly tidally flooded, aquatic bed pond	—	—	1.45

NWI Code[a]	Description	Representative Wetland Determination Form Sites	Representative Observation Points	Acres[b]
Estuarine Waterbodies				***1,856.57***
E1UBL	Subtidal, unconsolidated bottom pond	—	—	0.27
E2RS1N	Regularly tidally flooded, intertidal, bedrock rocky shore	—	639	3.34
E2RS1P	Irregularly tidally flooded, intertidal, bedrock rocky shore	—	638	0.98
E2US1N	Regularly tidally flooded, intertidal, cobble-gravel unconsolidated shore	—	54, 545, 615, 636	92.18
E2US1P	Irregularly tidally flooded, intertidal, cobble-gravel unconsolidated shore	—	614, 635	18.07
E2US3M	Irregularly exposed, intertidal, mud unconsolidated shore	—	—	0.76
E2US3N	Regularly tidally flooded, intertidal, mud unconsolidated shore	—	55, 616, 637	1,620.77
E2US3P	Irregularly flooded, intertidal, mud unconsolidated shore	—	—	120.18
			Total Waterbodies	**1,938.75**
			Total Wetlands and Waterbodies	**2,239.64**
Uplands				***2,536.70***
U	Upland	13, 31, 39, 42, 45, 51, 58, 63, 65, 75, 80, 86, 94, 98, 101, 120, 140, 155, 165, 503, 508, 519, 533, 538, 542, 547, 603, 609, 613, 618, 622, 624, 631	4, 16, 17, 18, 20, 23, 24, 33, 43, 52, 60, 61, 62, 70, 73, 82, 108, 121, 124, 125, 141, 157, 159, 162, 163, 164, 521, 524, 526, 530, 535, 546, 548, 549, 551, 552, 554, 601, 620, 628, 630, 632, 633	2536.70
			Total Uplands	**2,536.70**
			Total Mapped Area	**4,776.35**

[a] FGDC 2013.
[b] Total acreage presented may not reflect the sum of the individual cells due to rounding.

Table 7. Mapping Summary by HGM Class

HGM Class[a]	Description[b]	Acres[c]
Riverine	Riverine wetlands occur in floodplains and riparian corridors associated with stream channels. Dominant water sources are overbank flow from the channel or subsurface hydraulic connections between the stream channel and wetlands. Additional water sources may include interflow, return flow from adjacent uplands, overland flow from adjacent uplands, tributary inflow, or precipitation. In headwaters, riverine wetlands are commonly replaced by slope or depressional wetlands, or intergrade with flat wetlands or uplands.	140.50
Slope	Slope wetlands are typically found where a discharge of groundwater to the land surface occurs. Slope wetlands lack closed contours and tend to occur on sloping land ranging from slight slopes to steep hillsides. Predominant water sources are usually groundwater, interflow from uplands, and precipitation. Slope wetlands can also occur in nearly flat landscapes if groundwater discharge to the land surface is a dominant water source. These wetlands lose water principally by saturated subsurface and surface flows as well as evapotranspiration.	73.95
Estuarine Fringe	Estuarine fringe wetlands are found along estuaries and coasts that are under the influence of the sea level. These wetlands merge landward with riverine wetlands as the tidal influence lessens and river flow becomes the dominant water source. Estuarine fringe wetlands rarely dry for significant periods, due to frequent flooding and water table elevations controlled by sea surface elevation. These wetlands lose water by tidal exchange, by saturated overland flow to tidal creek cannels, as well as evapotranspiration.	86.44
	Total Wetlands	**300.89**

Notes: HGM classes are described for wetlands only and not waterbodies.
[a] Brinson 1993
[b] Brinson et al.1995, NRCS 2008
[c] Total acreage presented may not reflect the sum of the individual cells due to rounding.

Table 8. Stream Mapping Summary

NWI Code[a]	Description	Representative Observation Points	Linear Feet[b]
R1UBV	Permanently tidally flooded, tidal stream with an unconsolidated bottom	48, 107, 149	3,442
R3UBH[c]	Permanently flooded, perennial stream with an unconsolidated bottom	5, 6, 8, 10, 11, 12, 21, 25, 26, 30, 40, 41, 57, 59, 64, 67, 77, 78, 81, 83, 84, 106, 114, 116, 117, 118, 137, 139, 142, 145, 146, 147, 148, 156, 167, 500, 504, 505, 507, 511, 512, 513, 514, 516, 517, 518, 520, 523, 527, 528, 529, 532, 544, 550, 600, 606, 607, 610, 611, 626	62,079
R4SBC	Seasonally flooded, intermittent streambed	1, 2, 3, 9, 29, 50, 71, 87, 111, 115, 119, 122, 501, 536, 537, 602, 612	40,301
		Total Streams	**105,822**

[a] FGDC 2013.
[b] Total linear feet present may not reflect the sum of the individual cells due to rounding.
[c] Does not include lengths of streams mapped as polygons present in Table 6.

8 Vegetation Mapping Results

A total of 73 Viereck vegetation types were identified within the 4,776.35-acre study area. Forested vegetation communities were most common (35 percent of the study area), followed by herbaceous vegetation communities (7 percent of the study area). Table 9 provides a summary of Viereck vegetation types mapped within the study area.

Table 9. Mapping Summary by Vegetation Type

Viereck Code[a]	Viereck Type	Acres[b]
Forest (≥10% cover of trees over 10 ft tall)		***1,683.53***
IA1j	Closed White Spruce Forest	12.69
IA2b	Open Western Hemlock-Sitka Spruce Forest	0.35
IA2c	Open Mountain Hemlock Forest	0.14
IA2e	Open White Spruce Forest	19.11
IA2f	Open Black Spruce Forest	3.82
IA3c	White Spruce Woodland	4.92
IA3d	Black Spruce Woodland	4.67
IB1a	Closed Red Alder Forest	0.71
IB1c	Closed Balsam Poplar Forest	51.28
IB1d	Closed Paper Birch Forest	156.71
IB1-paper birch-balsam poplar[c]	Closed Paper Birch-Balsam Poplar Forest	175.04
IB2a	Open Paper Birch Forest	122.48
IB2-alder	Open Alder Forest	1.94
IB2b	Open Quaking Aspen Forest	4.94
IB2c	Open Balsam Poplar Forest	86.12
IB2-paper birch-balsam poplar[c]	Open Paper Birch-Balsam Poplar Forest	20.74
IB2-willow[c]	Open Willow Forest	2.36
IB3a	Paper Birch Woodland	39.41
IB3b	Balsam Poplar Woodland	13.39
IB3c	Paper Birch-Balsam Poplar Woodland	5.00
IB3-quaking aspen[c]	Quaking Aspen Woodland	7.29
IC1a	Closed Spruce-Paper Birch Forest	356.78
IC2a	Open Spruce-Paper Birch Forest	509.46
IC2b	Open Quaking Aspen-Spruce Forest	4.00
IC2d	Open Spruce-Balsam Poplar Forest	30.49
IC2-paper birch-hemlock[c]	Open Paper Birch-Hemlock Forest	0.49
IC3a	Spruce-Paper Birch Woodland	29.88
IC3a-burned[c]	Spruce-Paper Birch Woodland, *wildfire disturbed*	19.33
Scrub (<10% cover of trees over 10 ft tall, ≥ 25% shrub cover or ≥ 10% dwarf trees)		***287.58***
IIA2a	Open Dwarf Black Spruce Tree Scrub	4.30
IIA3a	Dwarf Black Spruce Tree Scrub Woodland	0.98
IIB1a	Closed Tall Willow Scrub	0.40
IIB1b	Closed Tall Alder Scrub	6.04
IIB1d	Closed Tall Alder-Willow Scrub	1.04
IIB2a	Open Tall Willow Scrub	11.28
IIB2b	Open Tall Alder Scrub	27.52
IIB2b-burned[c]	Open Tall Alder Scrub, *wildfire disturbed*	56.40
IIB2d	Open Tall Alder-Willow Scrub	42.57
IIB2e	Open Tall Shrub Birch-Willow Scrub	1.54
IIB2f	Open Tall Swamp Scrub	0.62
IIB2-paper birch shrub[c]	Open Tall Paper Birch Scrub	0.44
IIC1b	Closed Low Willow Scrub	2.45
IIC1d	Closed Low Ericaceous Scrub	10.54
IIC2	Open Low Scrub	52.52
IIC2a	Open Low Shrub-Sedge Tussock Tundra Scrub	1.27
IIC2f	Open Low Shrub Birch-Willow Scrub	3.78
IIC2g	Open Low Willow Scrub	17.36

Viereck Code[a]	Viereck Type	Acres[b]
IIC2j	Open Low Sweetgale-Graminoid Bog Scrub	32.47
IIC2k	Open Low Alder-Willow Scrub	1.06
IIC2l	Open Low Alder Scrub	11.67
IID2-red bearberry[c]	Red Bearberry Dwarf Scrub Tundra	1.35
Herbaceous (<10% of tree cover and <25% of shrub cover)		***351.05***
IIIA1a	Elymus	10.13
IIIA2	Mesic Graminoid Herbaceous	1.65
IIIA2a	Bluejoint Meadow	45.60
IIIA2b	Bluejoint-Herb	2.00
IIIA2c	Bluejoint-Shrub	46.10
IIIA2g	Mesic Grass-Herb Meadow Tundra	0.10
IIIA2-lawn[c]	Mesic Grass Lawn	30.95
IIIA3a	Wet Sedge Meadow Tundra	1.64
IIIA3b	Wet Sedge-Grass Meadow	0.04
IIIA3d	Fresh Sedge Marsh	103.40
IIIA3e	Fresh Grass Marsh	0.40
IIIA3g	Subarctic Lowland Sedge-Shrub Wet Meadow	<0.01
IIIA3h	Halophytic Grass Wet Meadow	4.27
IIIA3i	Halophytic Sedge Wet Meadow	63.34
IIIA3-typha[c]	Wet Typha Marsh	6.59
IIIB2	Mesic Forb Herbaceous	0.28
IIIB2a	Mixed Herbs	26.98
IIIB2b	Fireweed	0.92
IIIB2c	Large Umbel	2.88
IIIB3a	Fresh Herb Marsh	0.77
IIIB3b	Subarctic Lowland Herb Wet Meadow	1.51
IIID1g	Pondlilly	0.05
IIID2b	Brackish Pondweed	1.45
Other		***2,454.19***
PV	Partially Vegetated	80.78
BARE	Barren	941.38
WATER	Water	1,432.03
	Total Mapped Area	**4,776.35**

[a] Viereck et al. 1992
[b] Total acreage presented may not reflect the sum of the individual cells due to rounding.
[c] HDR-modified code (not in Viereck et al.1992).

9 REV Categorization

The mapped wetlands and waterbodies were classified into REV categories based on the ADCM (Dean 2011). Each REV was assigned based on the characteristics described in "Table 1: Polygons, and Relative Ecological Values (REVs), Grouped by Landform" found in the ADCM (Dean 2011) and provided in Appendix C. The following data layers were used to assign REV categories to mapped wetlands and waterbodies in GIS:

- Beluga Whale Concentration Areas (J. Seymour, National Oceanic and Atmospheric Administration [NOAA] Fisheries, pers. comm., November 2, 2023)
- Cook Inlet and Kenai Peninsula, Alaska Environmentally Sensitive Areas: Birds (NOAA 2002)
- ADF&G Anadromous Waters Catalog (ADF&G 2022)
- ADF&G Freshwater Fish Inventory (ADF&G 2020)
- Project-specific Fish Presence/Absence Sampling Results completed at select streams by HDR (HDR 2023)
- "Disturbance" attribute included in the Project's wetland and waterbody mapping attributed through aerial photography interpretation

A total of 2,239.64 acres of wetlands and waterbodies were classified into REV categories based on their landform, size, hydrologic regime, plant community, fish and wildlife use, extent of disturbance, and adjacency to waterbodies. Table 10 identifies the acreages of wetlands and waterbodies assigned to each REV category. The results of the REV classification, including applicable buffers and setbacks, are shown on Figure 6.

Table 10. Wetland and Waterbody Mapping by REV

REV Category	Wetland Area (acres) [a]	Waterbody Area (acres)[a]
REV 1	184.50	1,741.00
REV 2	112.60	197.59
REV 3	3.79	0.16
Total	**300.89**	**1,938.75**

[a] Total acreage present may not reflect the sum of the individual cells due to rounding.

An additional 105,822-linear feet of streams mapped as line features were also assigned REV categories. Table 11 identifies the total length of stream channel assigned to each REV category, and the results are shown on Figure 6.

Table 11. Stream Mapping by REV

REV Category	Linear Feet[a]
REV 1	15,306
REV 2	43,496
REV 3	36,538
REV 4	10,482
Total	**105,822**

[a] Total linear feet present may not reflect the sum of the individual cells due to rounding.

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Figures

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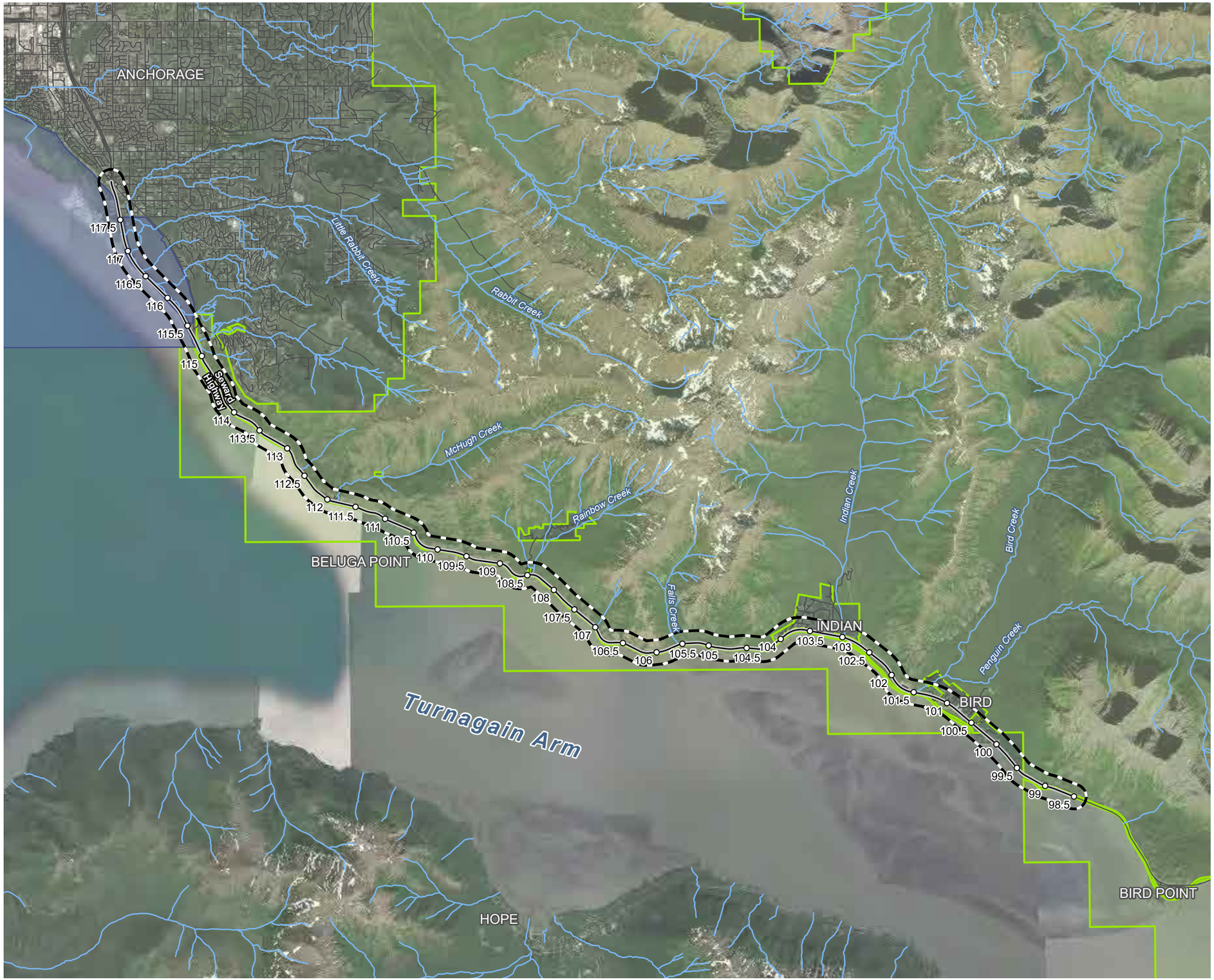
Figure 1
Study Area



- Study Area
- Anchorage Coastal Wildlife Refuge
- Chugach State Park
- Mileposts
- Seward Highway MP 98.5 - 118
- Streets
- Stream (NHD)

0 1.5 mi

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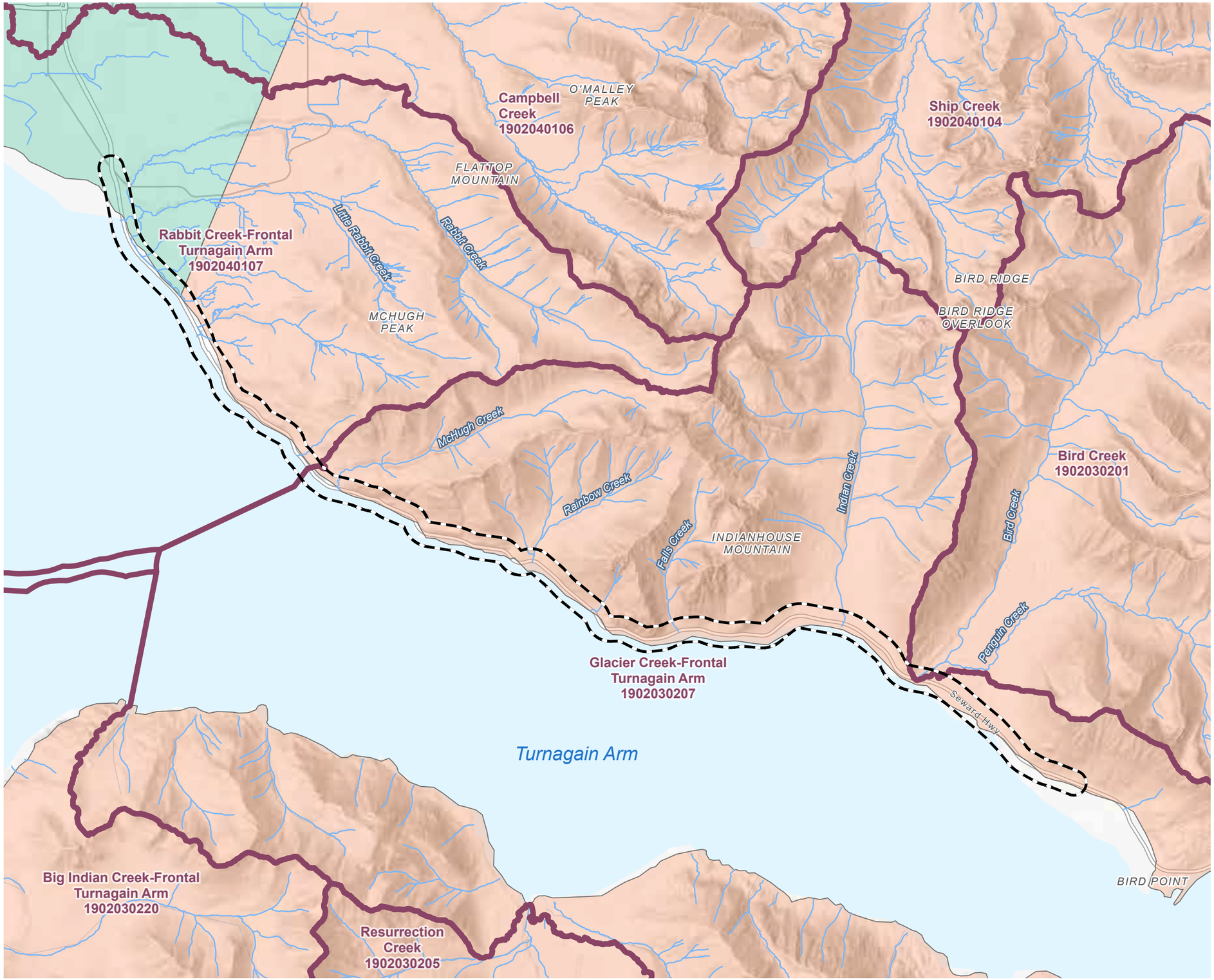
Figure 2
HUC 10 Watersheds and Ecoregions
Page 1 of 1



Study Area

10-Digit HUC Watershed (USGS 2023a)

Stream (NHD)

Ecoregions (USACE 2007)

Cook Inlet

Pacific Coastal Mountains

0 1.5 mi

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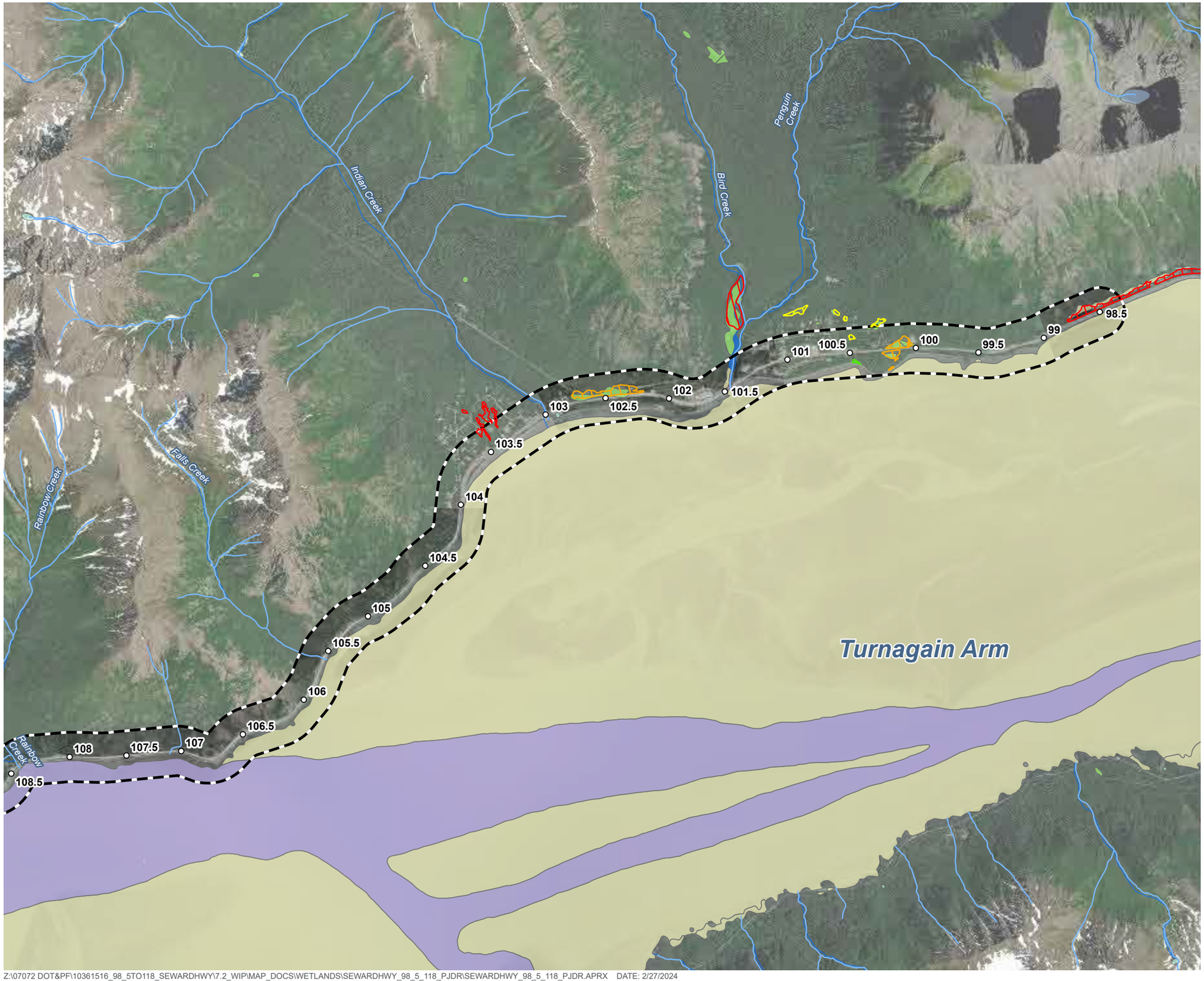
Figure 3
Existing Wetland Mapping
Page 1 of 2



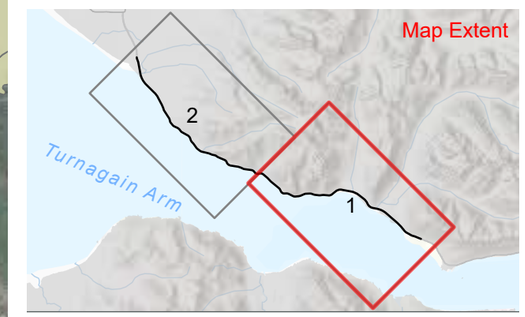
Milepost
Study Area
Stream (NHD)

NWI Wetland (USFWS 2023)

Estuarine and Marine Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Riverine
Estuarine and Marine Deepwater

MOA Designation (MOA 2023)

Class A Wetlands
Class B Wetlands
Class C Wetlands
Class D Wetlands



0 0.5 Miles

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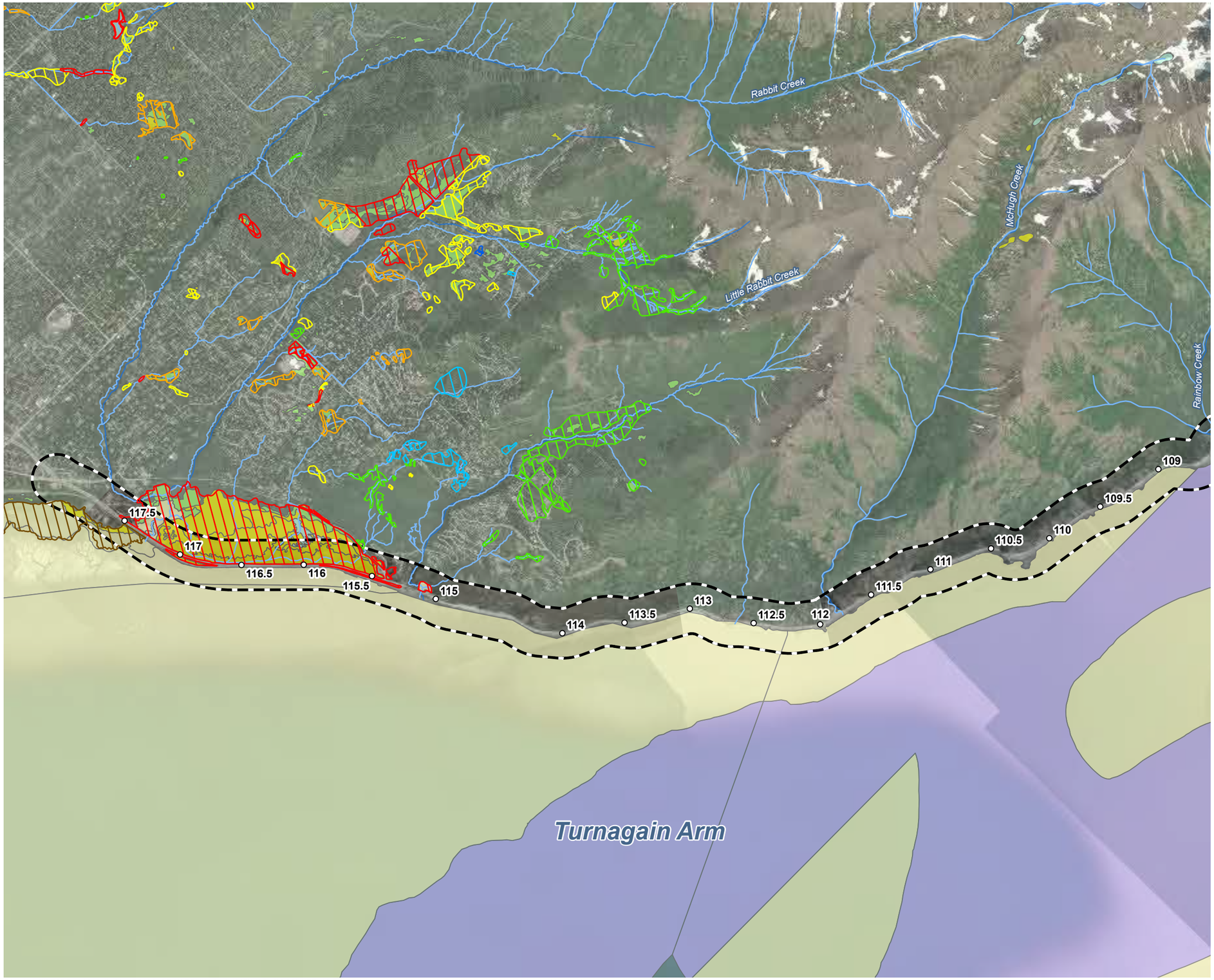
Figure 3
Existing Wetland Mapping
Page 2 of 2



- Milepost
- Study Area
- Stream (NHD)

NWI Wetland (USFWS 2023)

- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Estuarine and Marine Deepwater

MOA Designation (MOA 2023)

- Class A Wetlands
- Class B Wetlands
- Class C Wetlands
- Class D Wetlands
- Class P Wetlands
- Class U Wetlands
- NULL

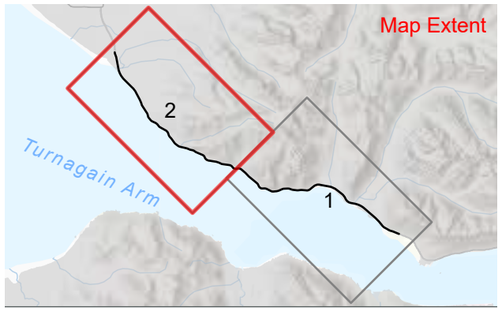


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Figure 4
NRCS Soil Survey Mapping
Page 1 of 2

- Milepost
- Stream (NHD)
- Study Area
- Anchorage Soil Survey Boundary (NRCS 2001, 2022)

NRCS Soil Survey Mapping

- ≤ 80% Hydric
- ≥ 80% Hydric

NRCS Soil Mapping Unit Name

404 - Cryosaprists, 0 to 1 percent slopes, 100% Hydric

407 - Cryorthents and Urban land, 5 to 20 percent slopes, 10% Hydric

408 - Deception-Cryorthents complex, 45 to 90 percent slopes, 0% Hydric

411 - Deception-Estelle-Kichatna complex, 12 to 20 percent slopes, 6% Hydric

412 - Deception-Estelle-Kichatna complex, 20 to 45 percent slopes, 0% Hydric

413 - Deception-Estelle-Kichatna complex, 45 to 85 percent slopes, 0% Hydric

456 - Talkeetna-Chugach-Deneka complex, 20 to 45 percent slopes, 3% Hydric

462 - Typic Cryaquent and Typic Cryaquept soils, 0 to 2 percent slopes, 100% Hydric

463 - Water, fresh, 100% Hydric

NOTCOM - No Digital Data Available

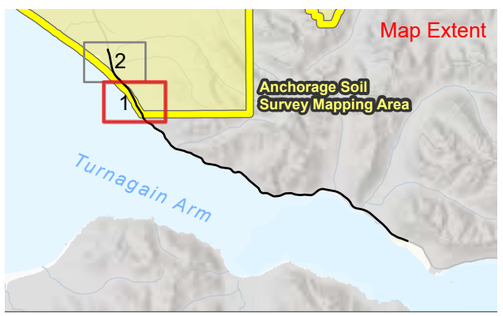

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Figure 4
NRCS Soil Survey Mapping
Page 2 of 2

Milepost

Stream (NHD)

Study Area

Anchorage Soil Survey Boundary (NRCS 2001, 2022)

NRCS Soil Survey Mapping

≤ 80% Hydric

≥ 80% Hydric

NRCS Soil Mapping Unit Name

404 - Cryosaprists, 0 to 1 percent slopes, 100% Hydric

406 - Cryorthents and Urban land, 0 to 5 percent slopes,10% Hydric

407 - Cryorthents and Urban land, 5 to 20 percent slopes, 10% Hydric

413 - Deception-Estelle-Kichatna complex, 45 to 85 percent slopes, 0% Hydric

430 - Kashwitna-Kichatna complex, 30 to 85 percent slopes, 5% Hydric

431 - Kashwitna-Kichatna complex, undulating, 10% Hydric

432 - Kashwitna-Kichatna complex, undulating and hilly, 5% Hydric

433 - Kashwitna-Kichatna complex, undulating and steep, 8% Hydric

437 - Moose River-Niklason complex, frequently flooded, 0 to 3 percent slopes, 80% Hydric

438 - Moose River-Niklason complex, occasionally flooded, 0 to 3 percent slopes, 80% Hydric

462 - Typic Cryaquent and Typic Cryaquept soils, 0 to 2 percent slopes, 100% Hydric

463 - Water, fresh, 100% Hydric

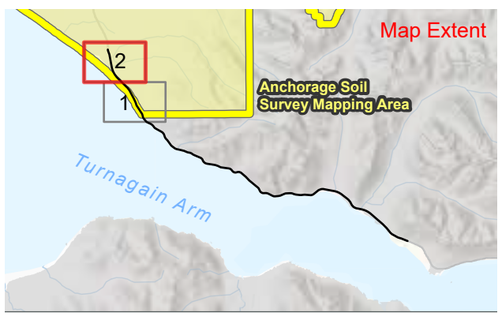

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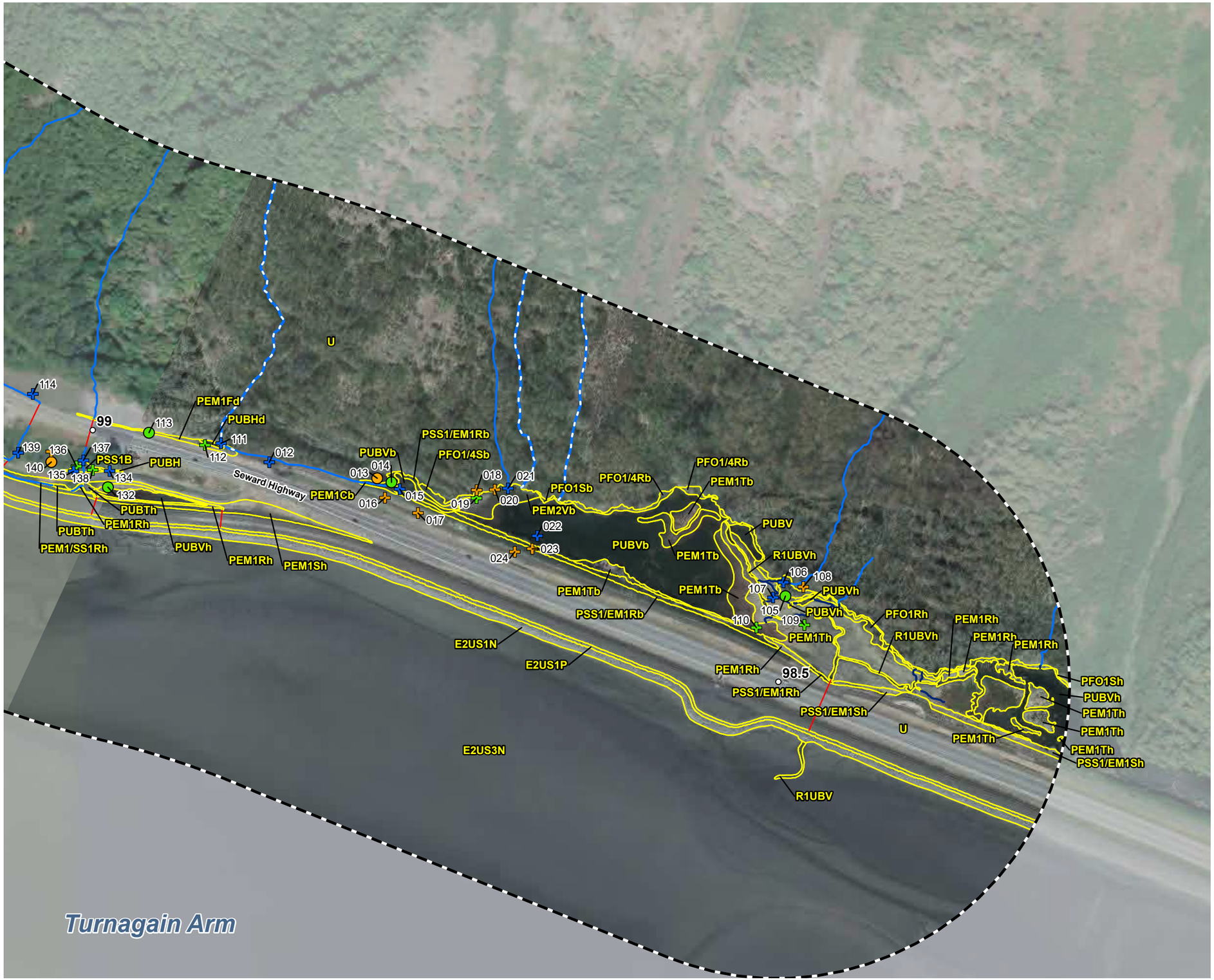
Figure 5
Wetland and Waterbody Mapping



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Tidal Stream

Perennial Stream

Intermittent Stream

Culvert

Field Points

Wetland Determination Form, Upland

Wetland Determination Form, Wetland

Observation Point, Upland

Observation Point, Wetland

Observation Point, Waterbody

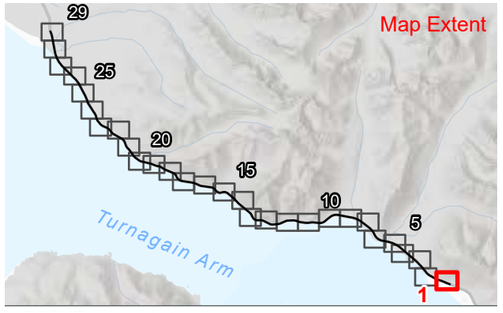


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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Intermittent Stream

Culvert

Field Points

Observation Point, Upland

Observation Point, Wetland

Observation Point, Waterbody

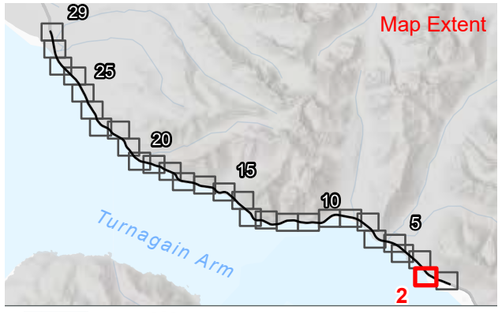

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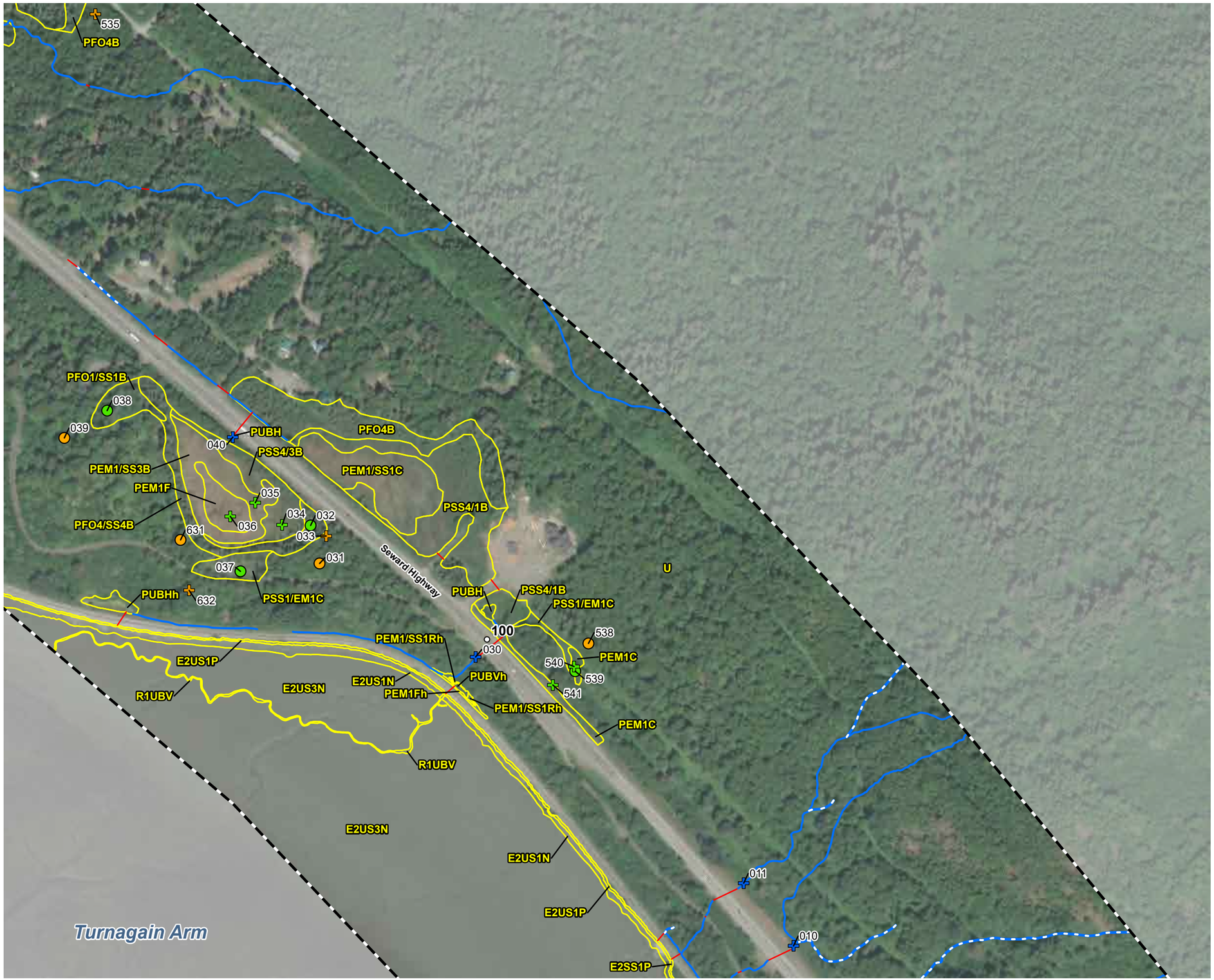
Figure 5
Wetland and Waterbody Mapping



- Milepost
- Study Area
- Wetland and Waterbody Mapping

HDR Streams

- Perennial Stream
- Intermittent Stream
- Culvert

Field Points

- Wetland Determination Form, Upland
- Wetland Determination Form, Wetland
- Observation Point, Upland
- Observation Point, Wetland
- Observation Point, Waterbody

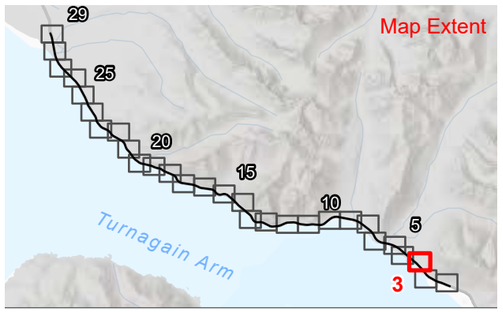


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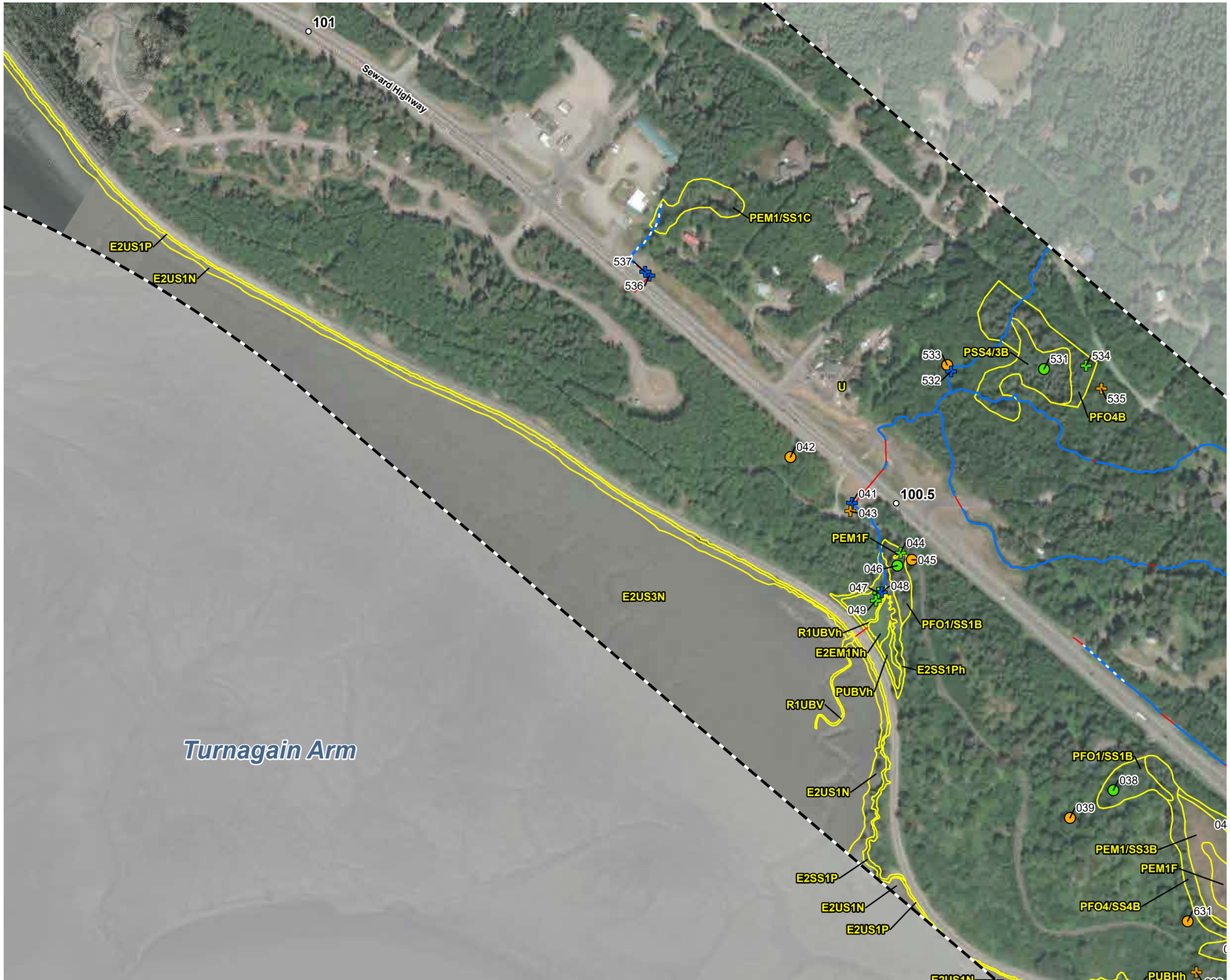
Figure 5
Wetland and Waterbody Mapping
Page 4 of 29



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Tidal Stream

Perennial Stream

Intermittent Stream

Culvert

Field Points

Wetland Determination Form, Upland

Wetland Determination Form, Wetland

Observation Point, Upland

Observation Point, Wetland

Observation Point, Waterbody

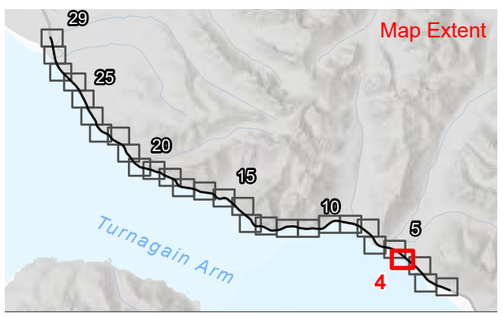


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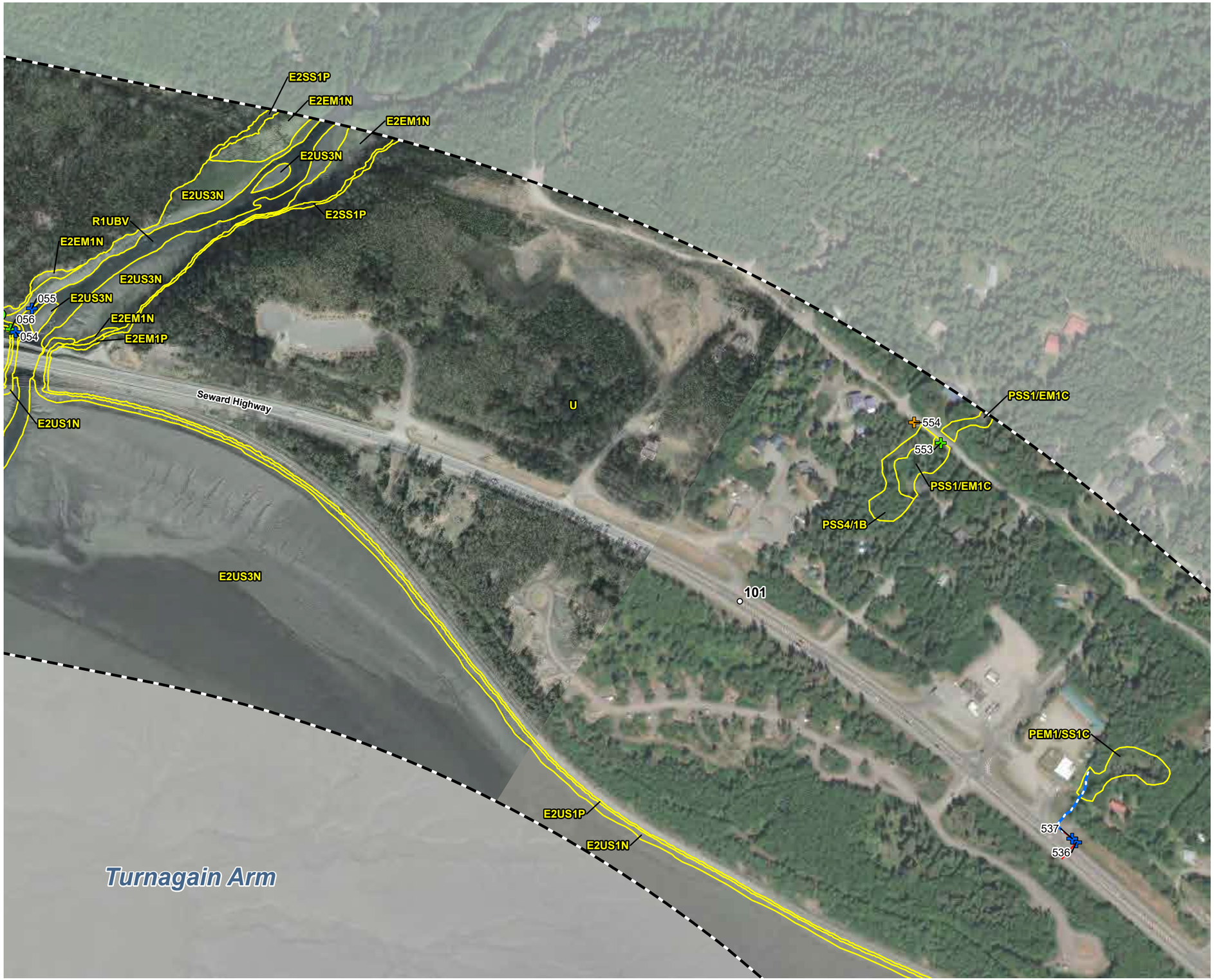
Figure 5
Wetland and Waterbody Mapping



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Intermittent Stream

Culvert

Field Points

Wetland Determination Form, Wetland

Observation Point, Upland

Observation Point, Wetland

Observation Point, Waterbody

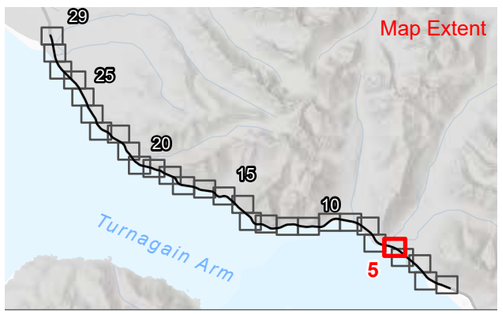


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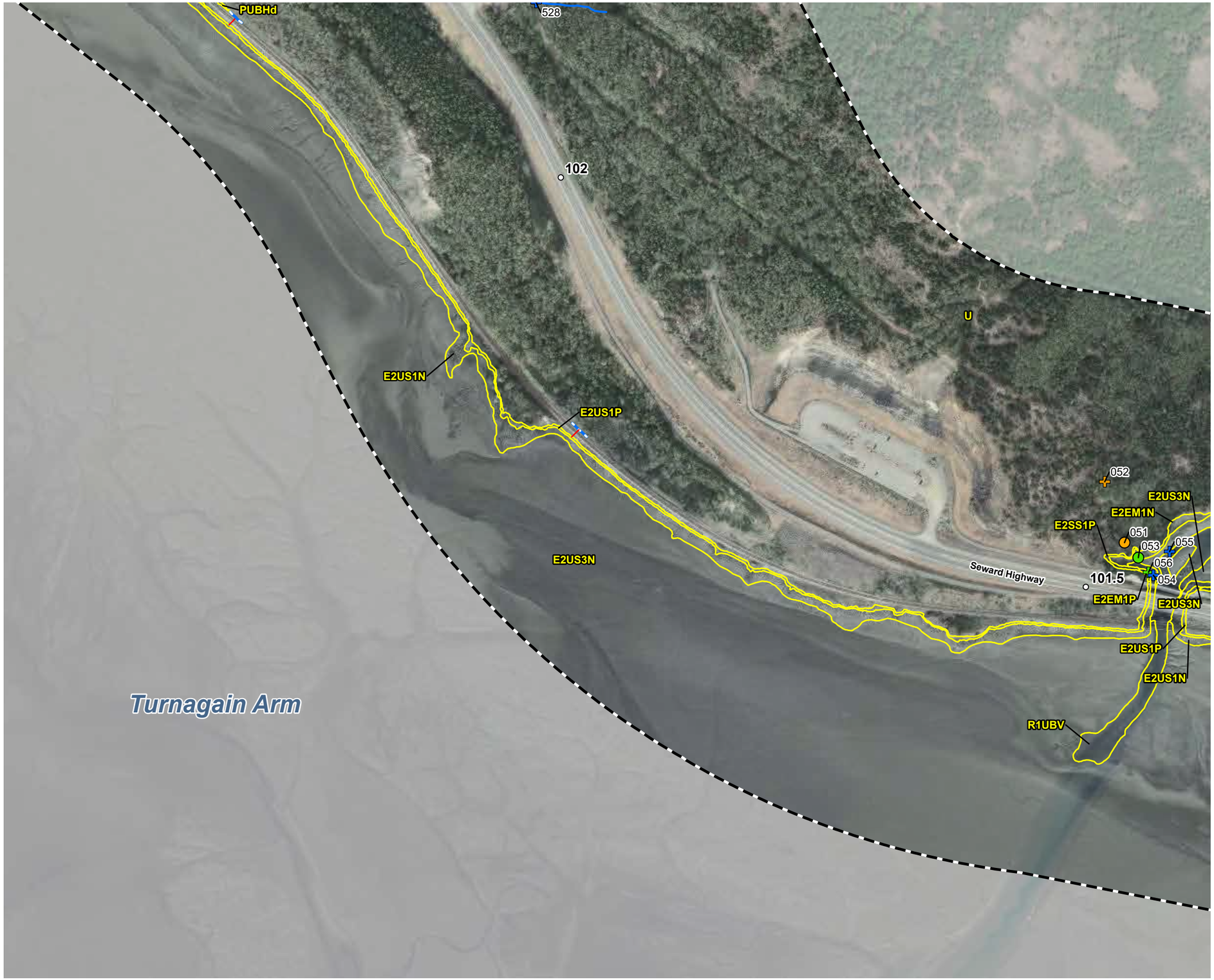
Figure 5
Wetland and Waterbody Mapping



- Milepost
- Study Area
- Wetland and Waterbody Mapping

HDR Streams

- Perennial Stream
- Intermittent Stream
- Culvert

Field Points

- Wetland Determination Form, Upland
- Wetland Determination Form, Wetland
- Observation Point, Upland
- Observation Point, Wetland
- Observation Point, Waterbody

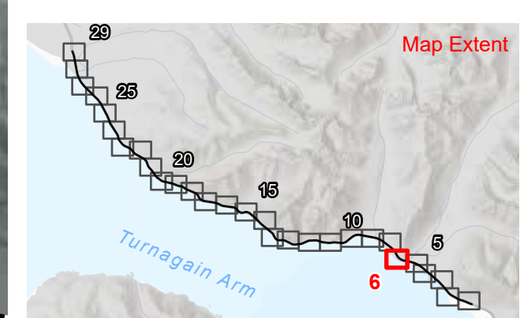


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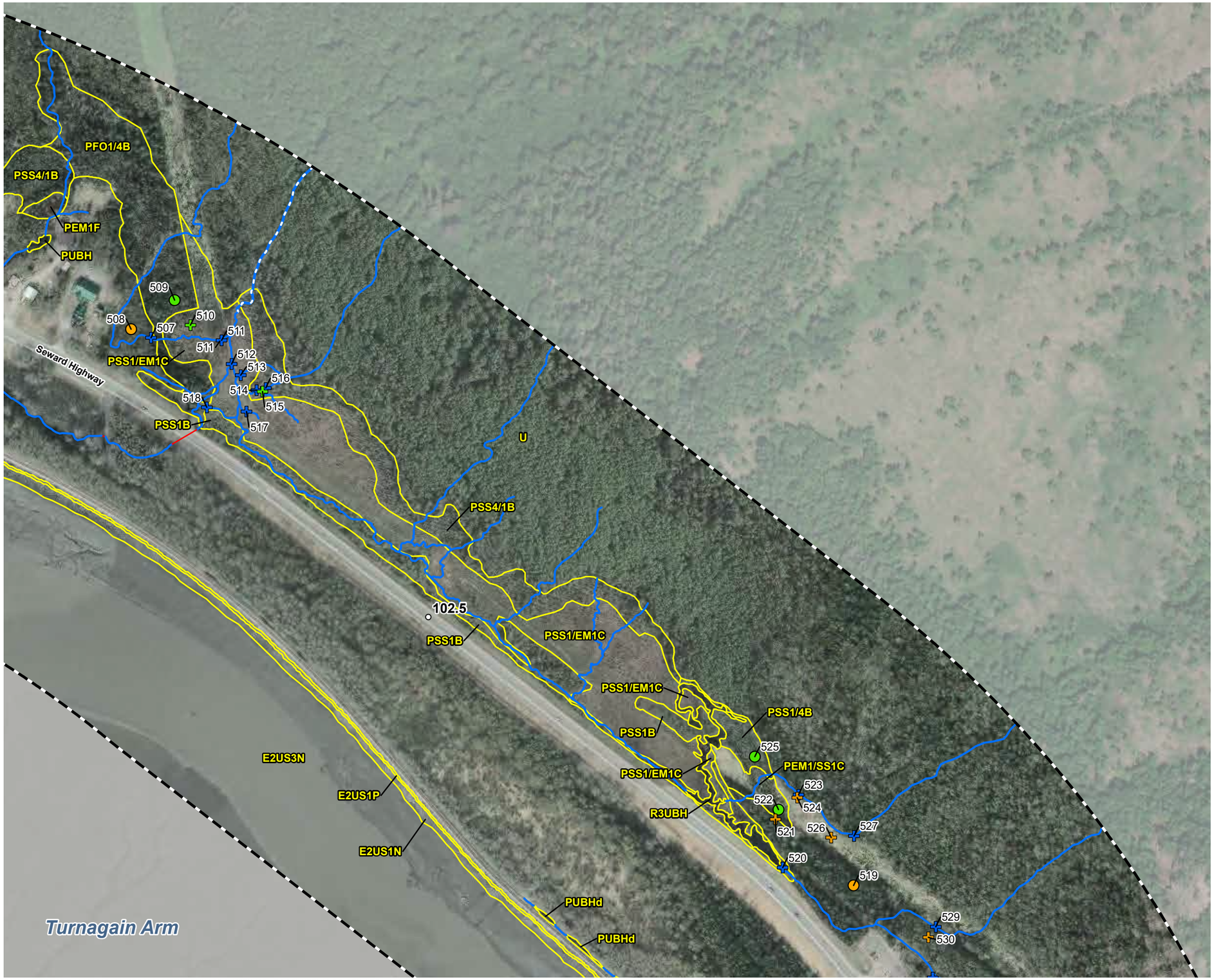
Figure 5
Wetland and Waterbody Mapping



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Intermittent Stream

Culvert

Field Points

Wetland Determination Form, Upland

Wetland Determination Form, Wetland

Observation Point, Upland

Observation Point, Wetland

Observation Point, Waterbody

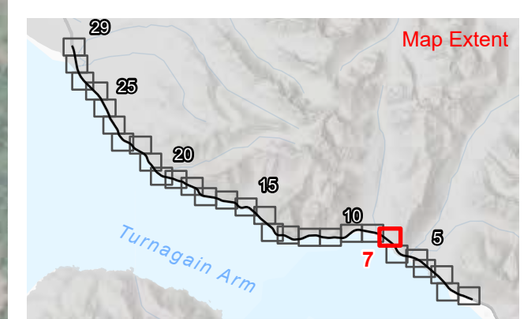


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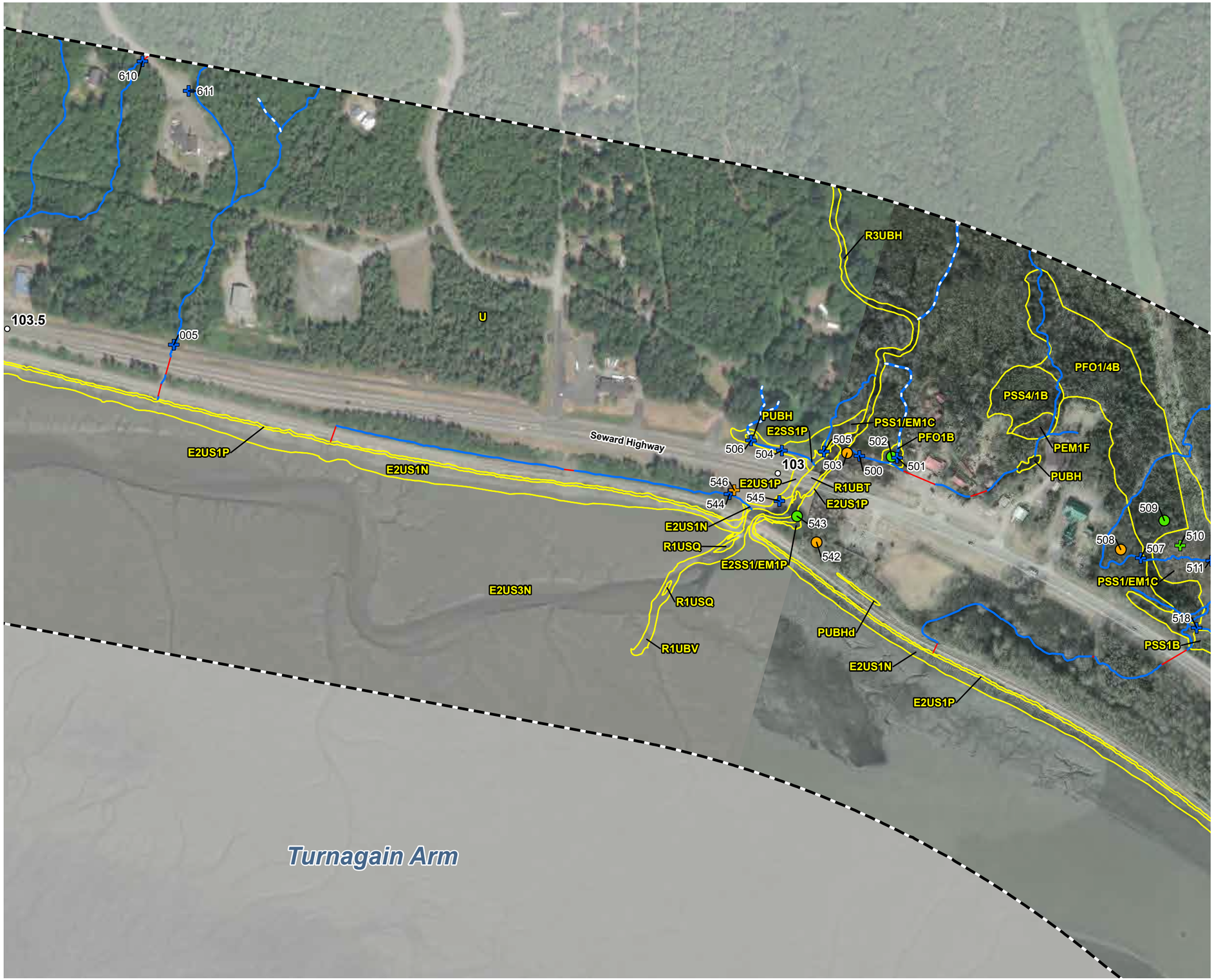
Figure 5
Wetland and Waterbody Mapping



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Intermittent Stream

Culvert

Field Points

Wetland Determination Form, Upland

Wetland Determination Form, Wetland

Observation Point, Upland

Observation Point, Wetland

Observation Point, Waterbody

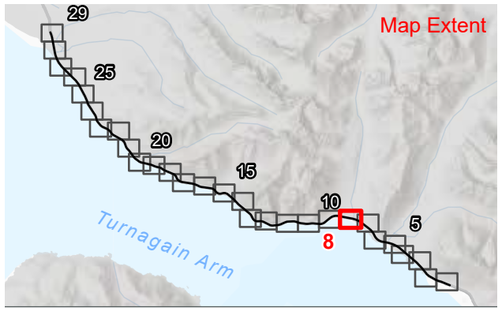


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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Intermittent Stream

Culvert

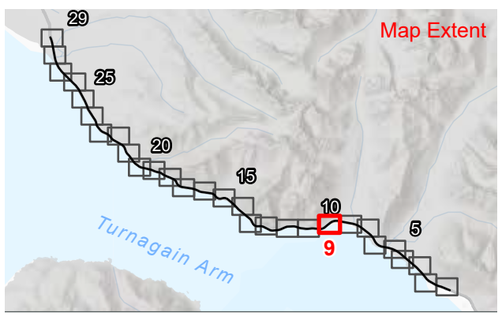

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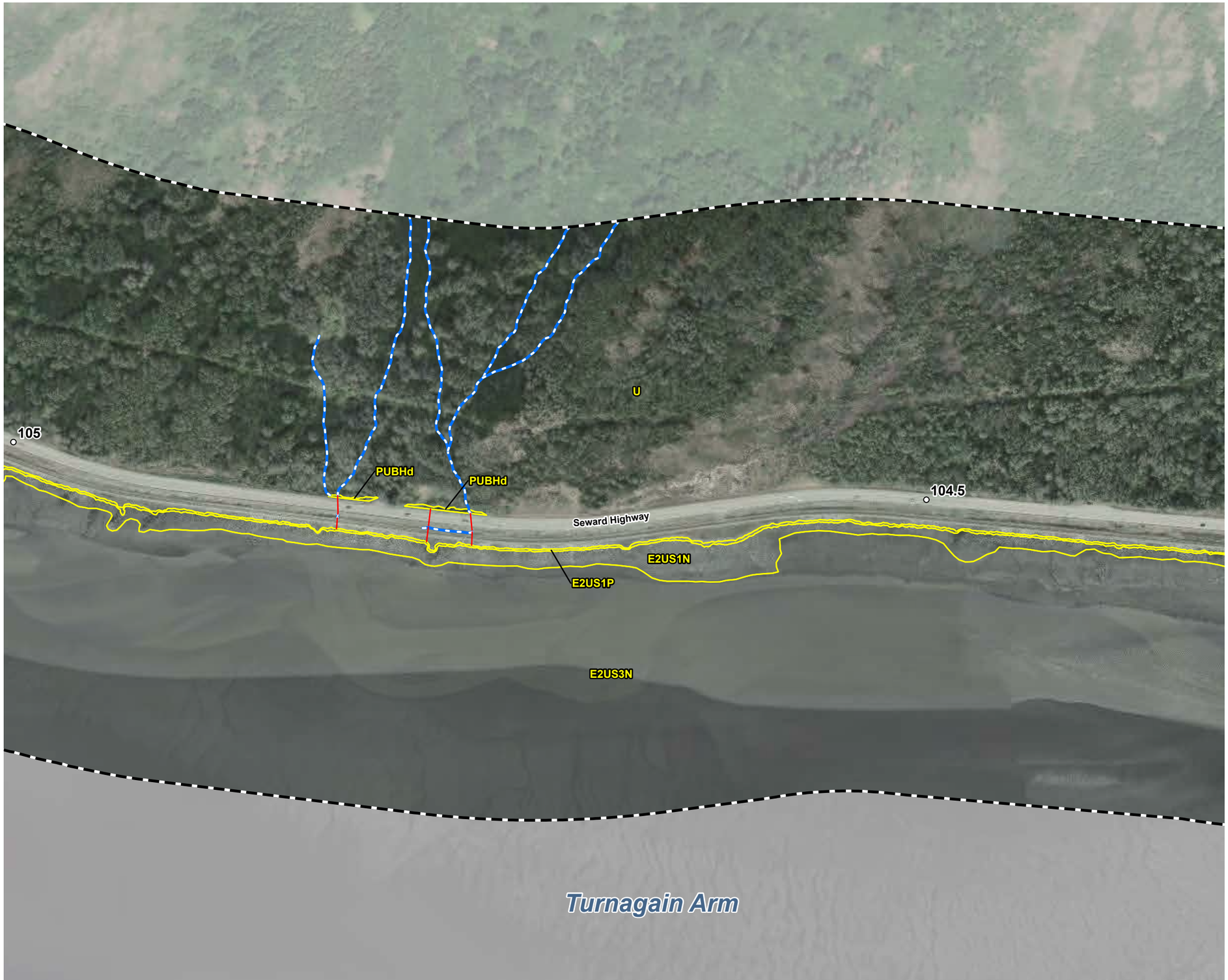
Figure 5
Wetland and Waterbody Mapping



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Intermittent Stream

Culvert

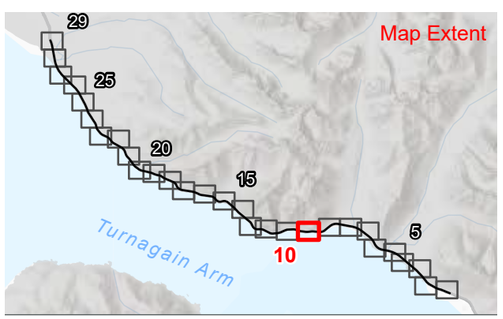


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Figure 5
Wetland and Waterbody Mapping

- Milepost
- Study Area
- Wetland and Waterbody Mapping

HDR Streams

- Perennial Stream
- Intermittent Stream
- Culvert

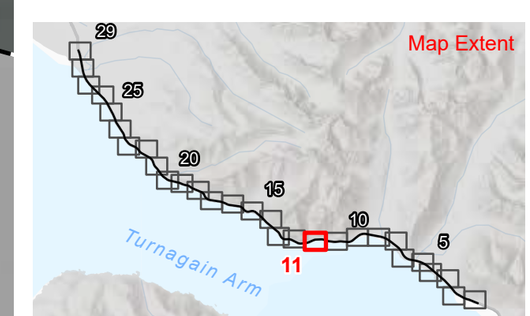

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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Intermittent Stream

Culvert

Field Points

Observation Point, Waterbody

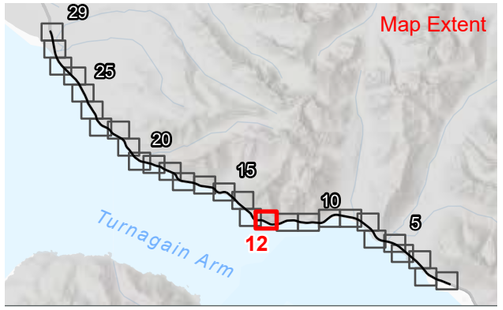

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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Intermittent Stream

Culvert

Field Points

Observation Point, Waterbody

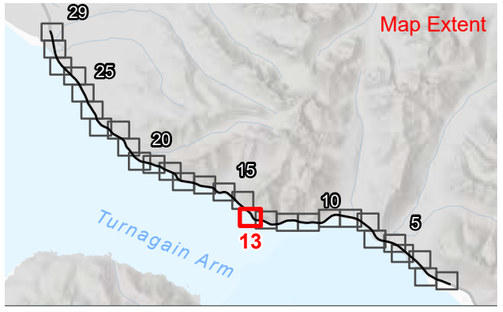

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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Intermittent Stream

Culvert

Field Points

Wetland Determination Form, Upland

Observation Point, Upland

Observation Point, Waterbody

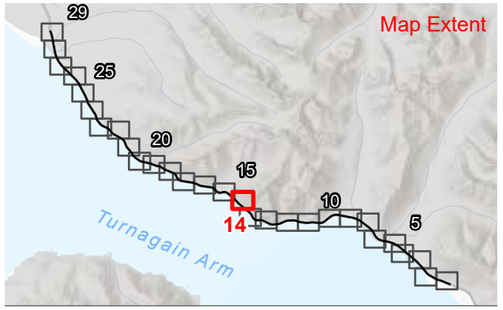

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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Intermittent Stream

Culvert

Field Points

Wetland Determination Form, Upland

Observation Point, Upland

Observation Point, Waterbody

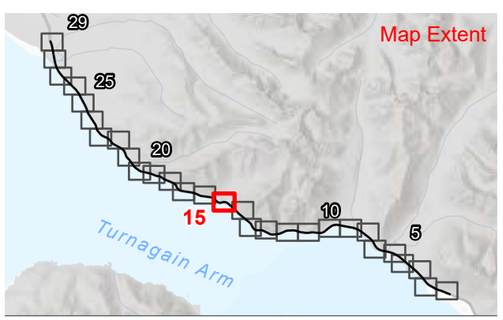

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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Culvert

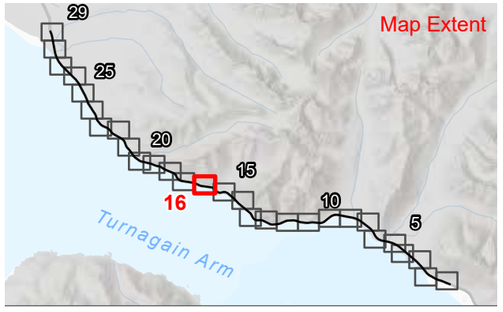

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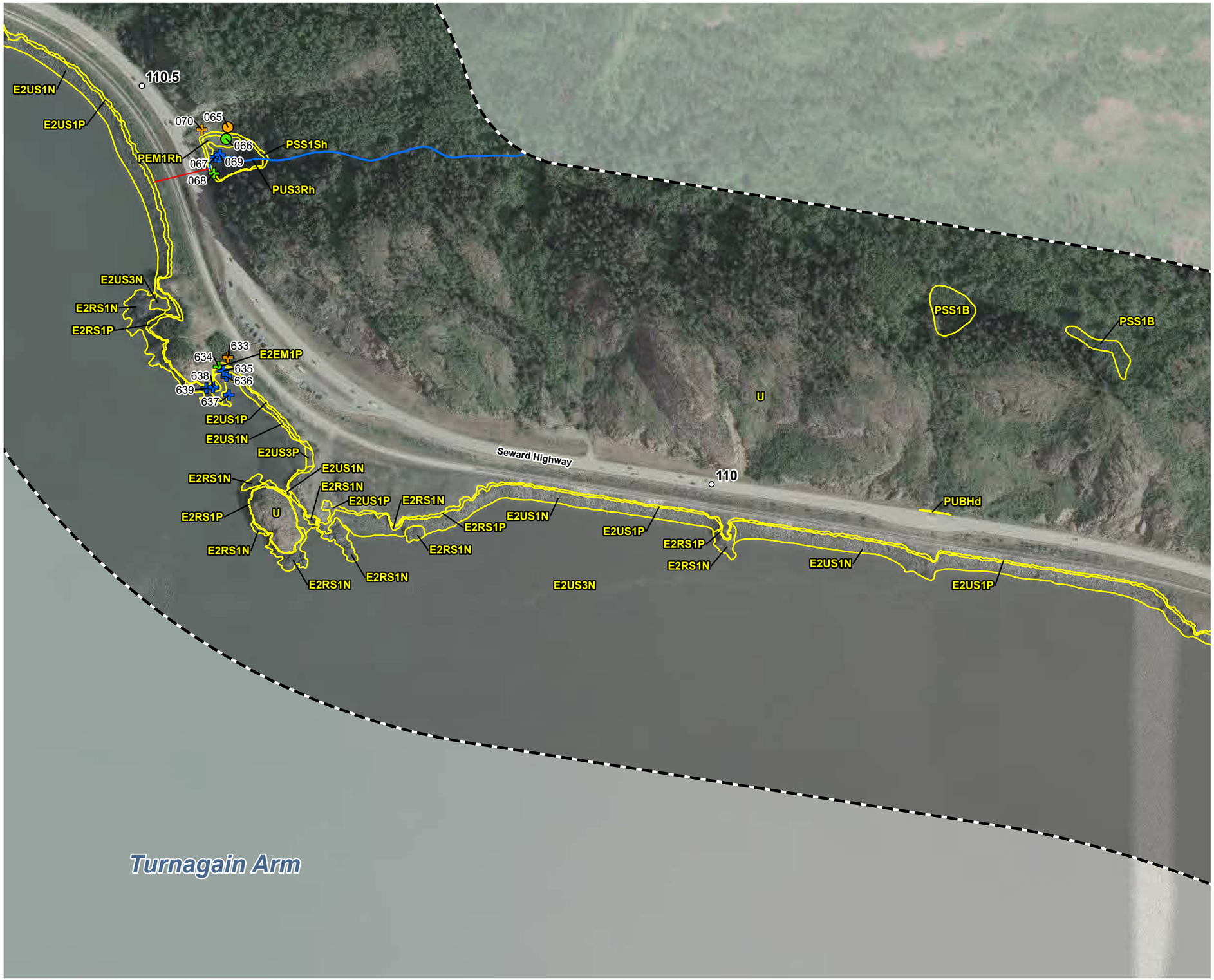
Figure 5
Wetland and Waterbody Mapping



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Culvert

Field Points

Wetland Determination Form, Upland

Wetland Determination Form, Wetland

Observation Point, Upland

Observation Point, Wetland

Observation Point, Waterbody

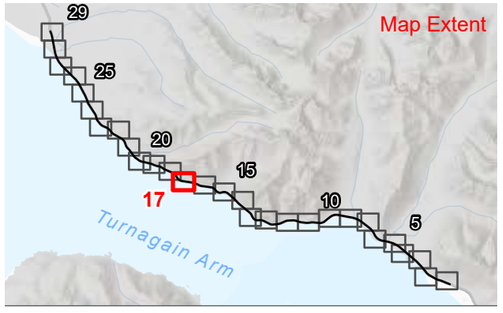


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Figure 5
Wetland and Waterbody Mapping

- Milepost
- Study Area
- Wetland and Waterbody Mapping

HDR Streams

- Perennial Stream
- Intermittent Stream
- Culvert

Field Points

- Wetland Determination Form, Upland
- Wetland Determination Form, Wetland
- Observation Point, Upland
- Observation Point, Wetland
- Observation Point, Waterbody

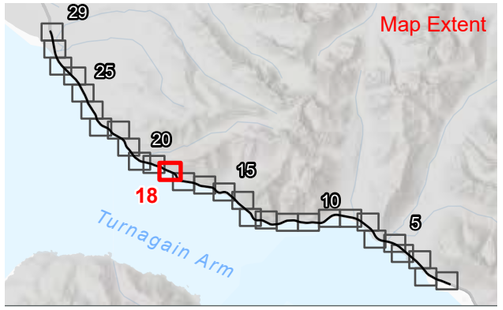

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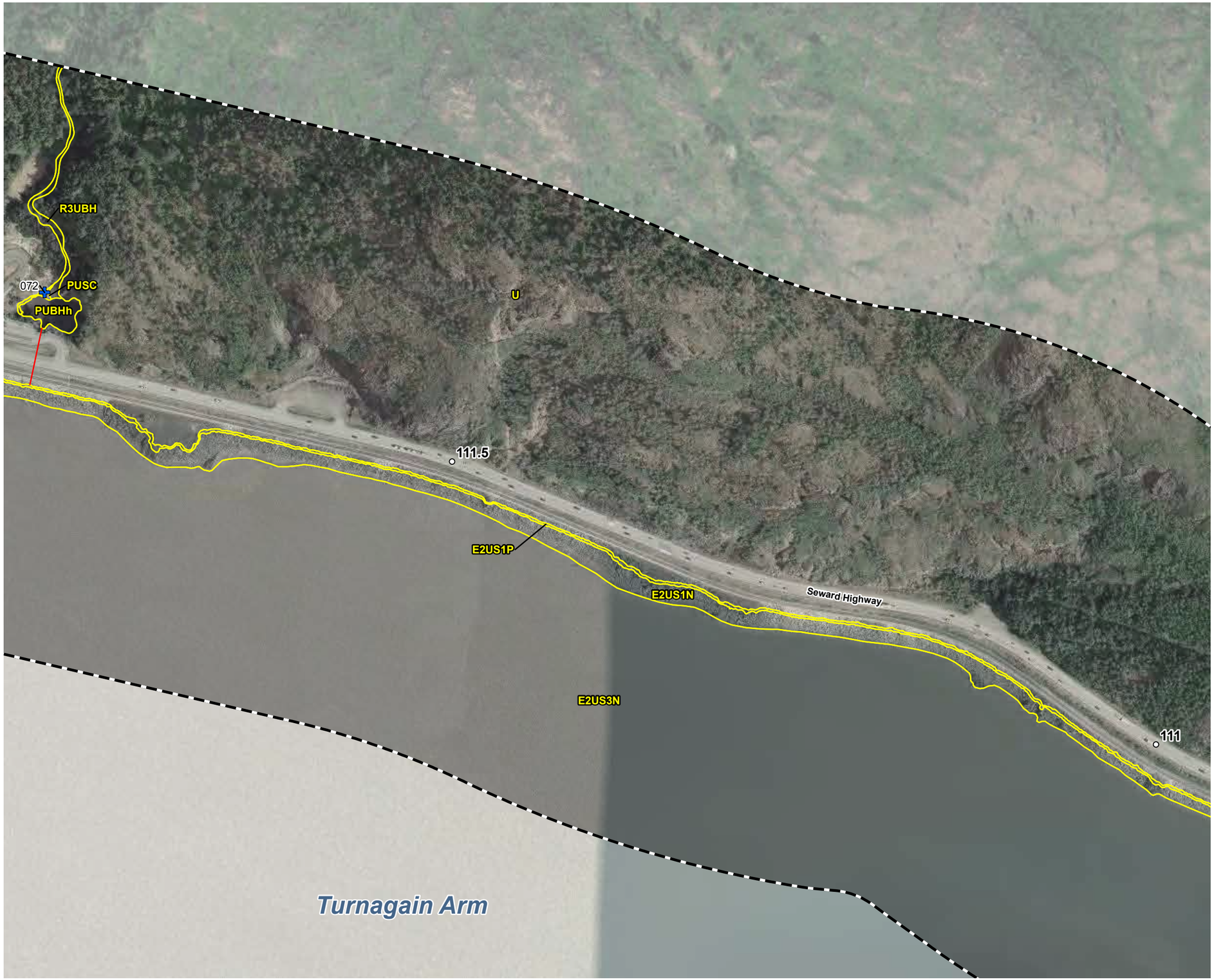
Figure 5
Wetland and Waterbody Mapping



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Culvert

Field Points

Observation Point, Waterbody

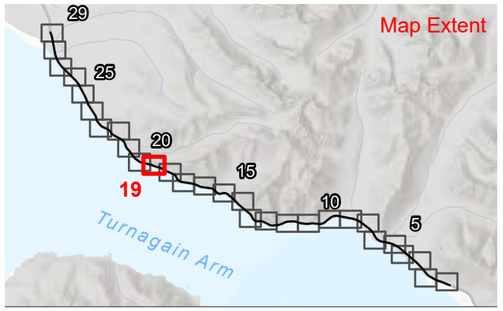


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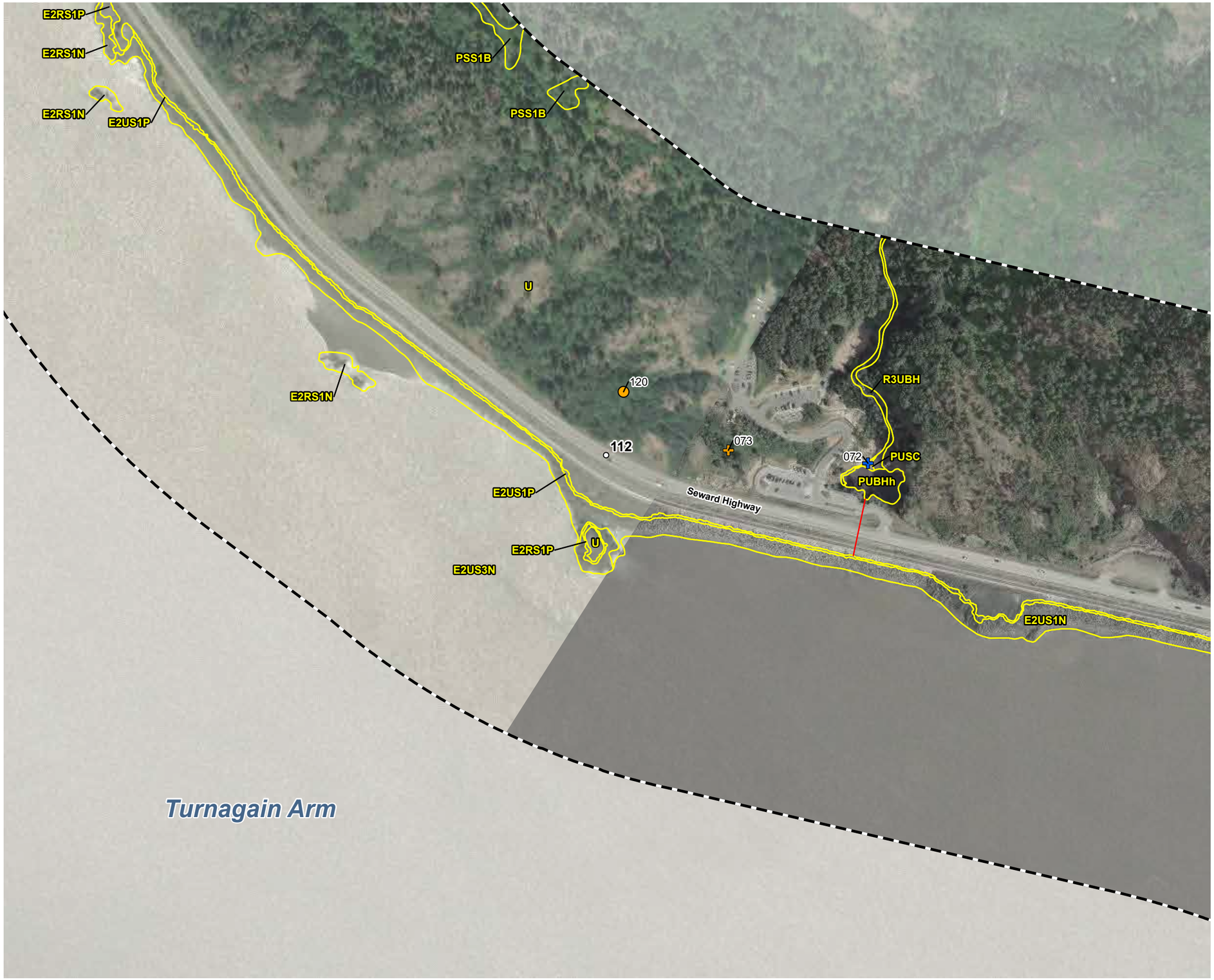
Figure 5
Wetland and Waterbody Mapping



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Culvert

Field Points

Wetland Determination Form, Upland

Observation Point, Upland

Observation Point, Waterbody

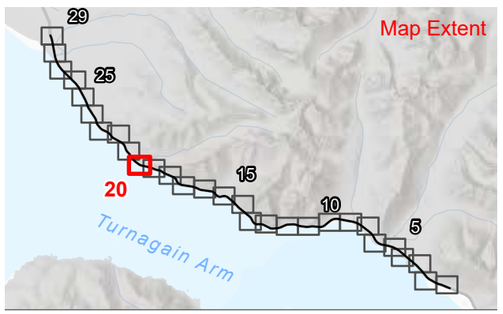


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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Intermittent Stream

Culvert

Field Points

Observation Point, Waterbody

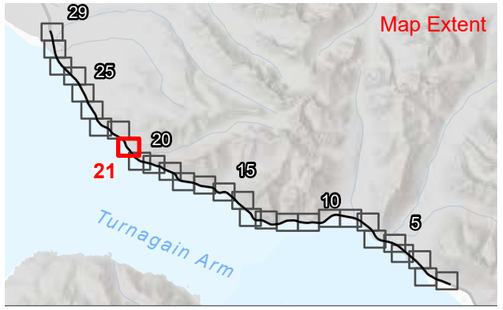

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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Intermittent Stream

Culvert

Field Points

Observation Point, Upland

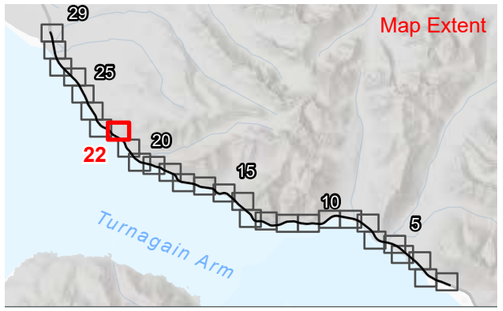

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Figure 5
Wetland and Waterbody Mapping

Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Intermittent Stream

Culvert

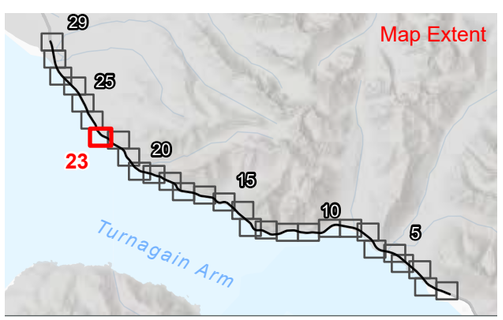

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Figure 5
Wetland and Waterbody Mapping

Study Area

Wetland and Waterbody Mapping

HDR Streams

Perennial Stream

Intermittent Stream

Field Points

Wetland Determination Form, Wetland

Observation Point, Upland

Observation Point, Waterbody

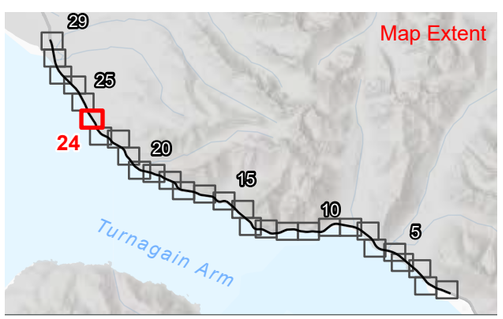

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Figure 5
Wetland and Waterbody Mapping

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- Milepost
- Study Area
- Wetland and Waterbody Mapping

HDR Streams

- Tidal Stream
- Perennial Stream
- Intermittent Stream
- Culvert

Field Points

- Wetland Determination Form, Upland
- Wetland Determination Form, Wetland
- Observation Point, Upland
- Observation Point, Wetland
- Observation Point, Waterbody

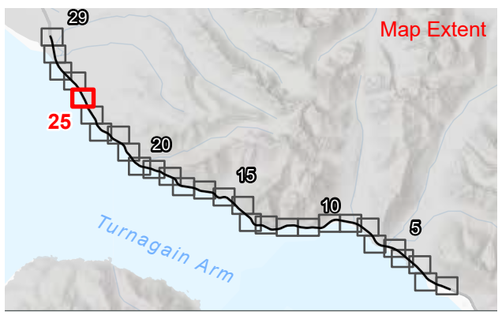

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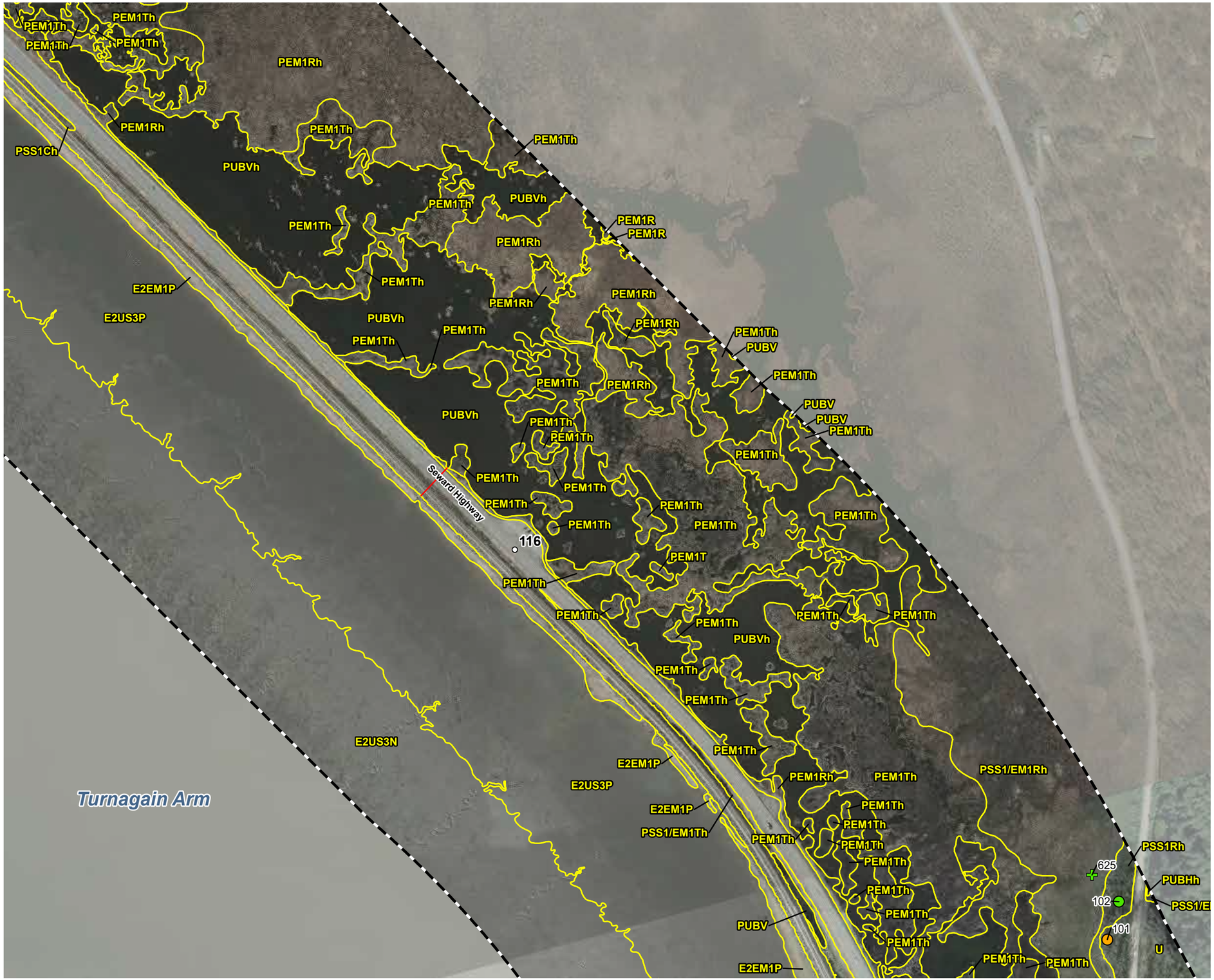
Figure 5
Wetland and Waterbody Mapping



Milepost

Study Area

Wetland and Waterbody Mapping

HDR Streams

Culvert

Field Points

Wetland Determination Form, Upland

Wetland Determination Form, Wetland

Observation Point, Wetland

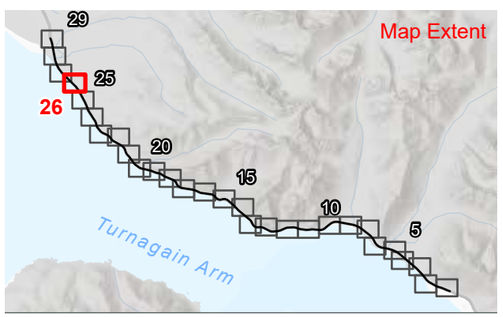


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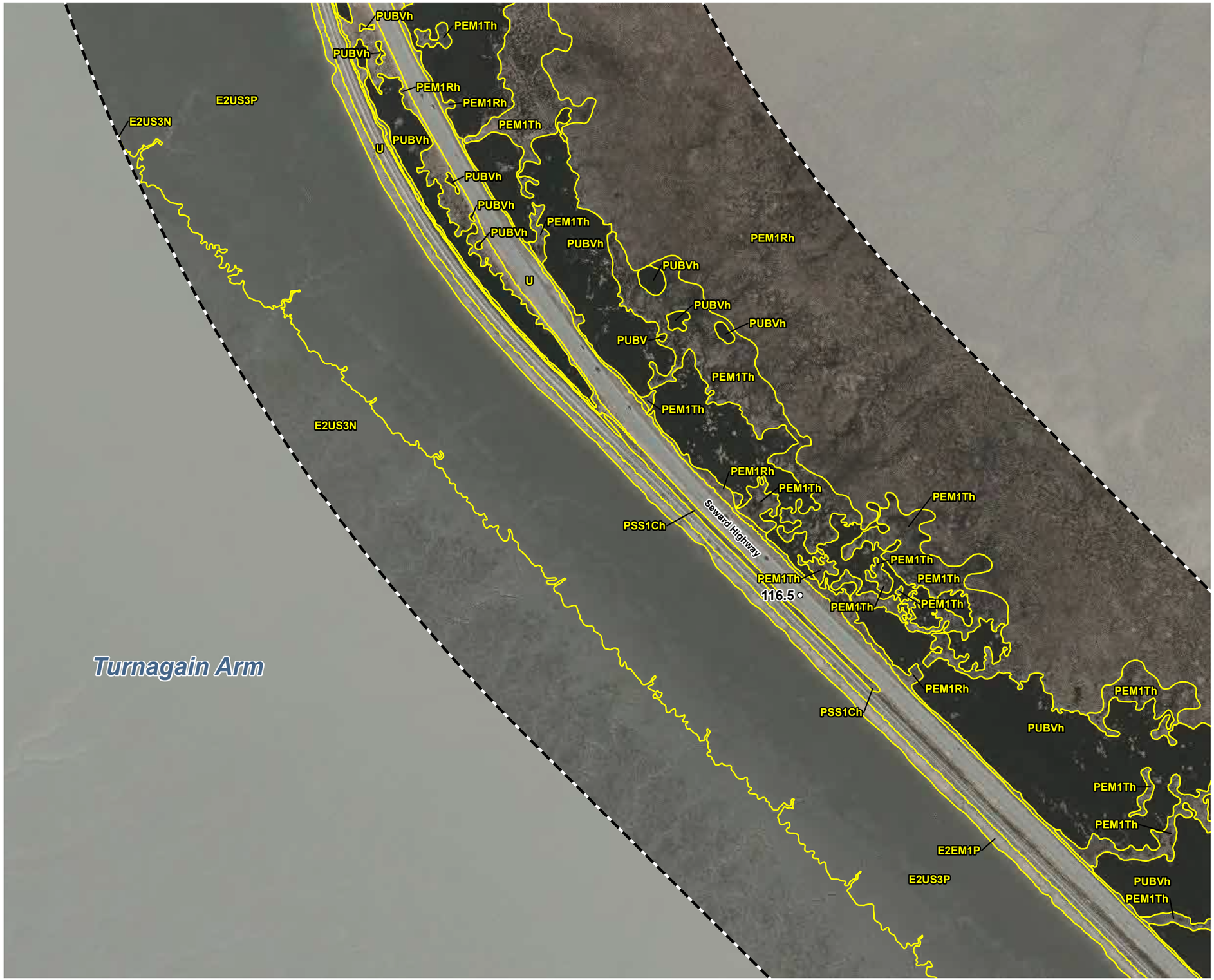
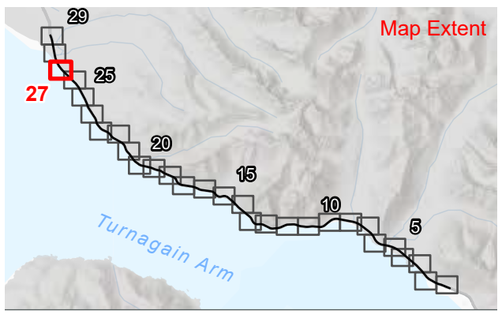
Figure 5
Wetland and Waterbody Mapping

Milepost
Study Area
Wetland and Waterbody Mapping





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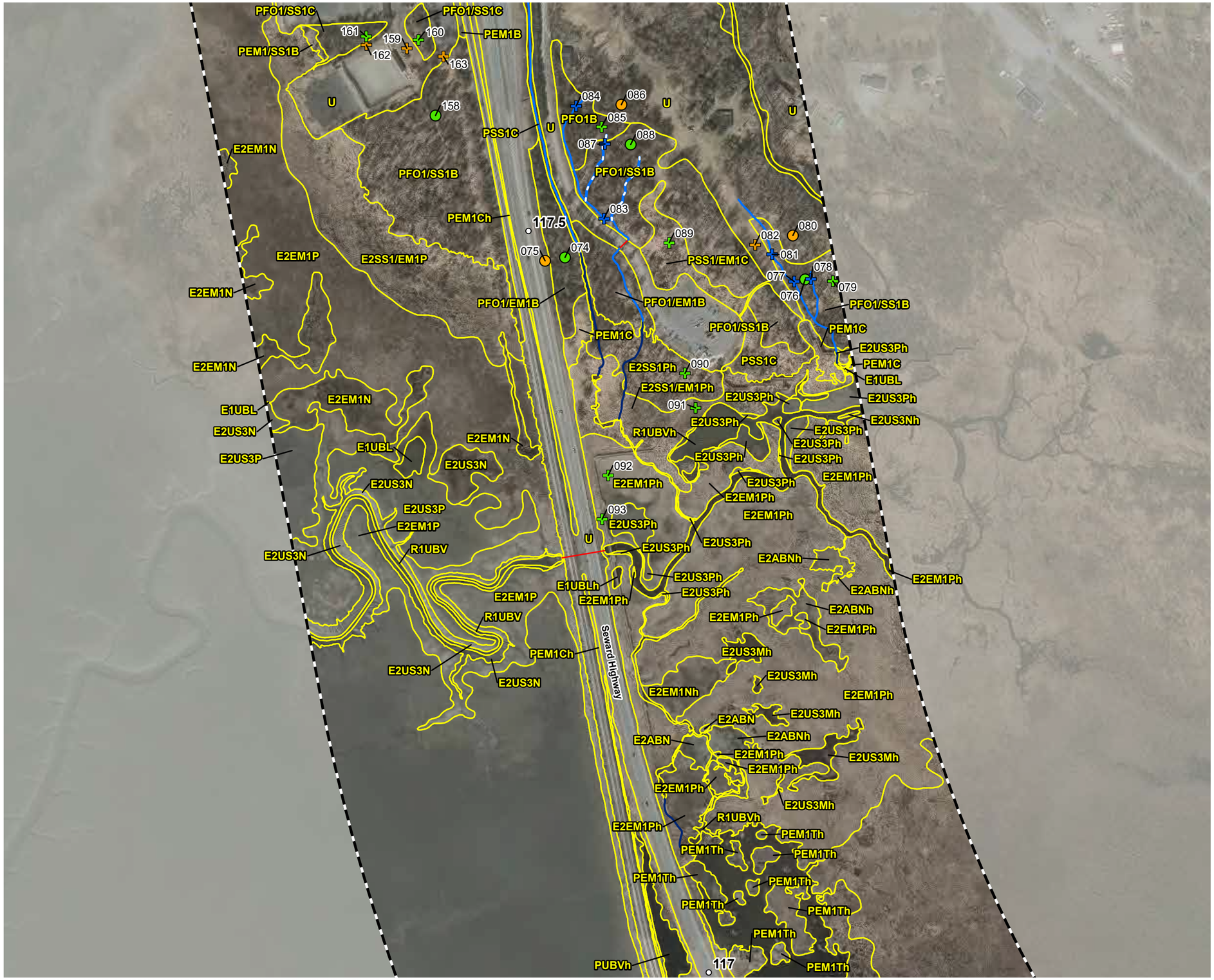
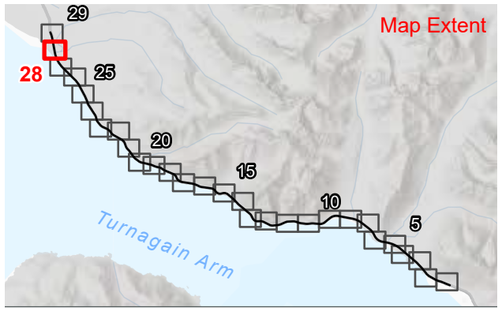
Wetland and Waterbody Mapping





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Milepost
Study Area
Wetland and Waterbody Mapping

HDR Streams

Tidal Stream
Perennial Stream
Intermittent Stream
Culvert

Field Points

Wetland Determination Form, Upland
Wetland Determination Form, Wetland
Observation Point, Upland
Observation Point, Wetland
Observation Point, Waterbody

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Figure 5
Wetland and Waterbody Mapping

Study Area

Wetland and Waterbody Mapping

HDR Streams

Tidal Stream

Perennial Stream

Intermittent Stream

Culvert

Field Points

Wetland Determination Form, Upland

Wetland Determination Form, Wetland

Observation Point, Upland

Observation Point, Wetland

Observation Point, Waterbody

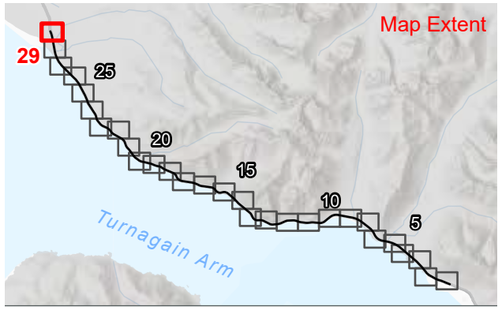

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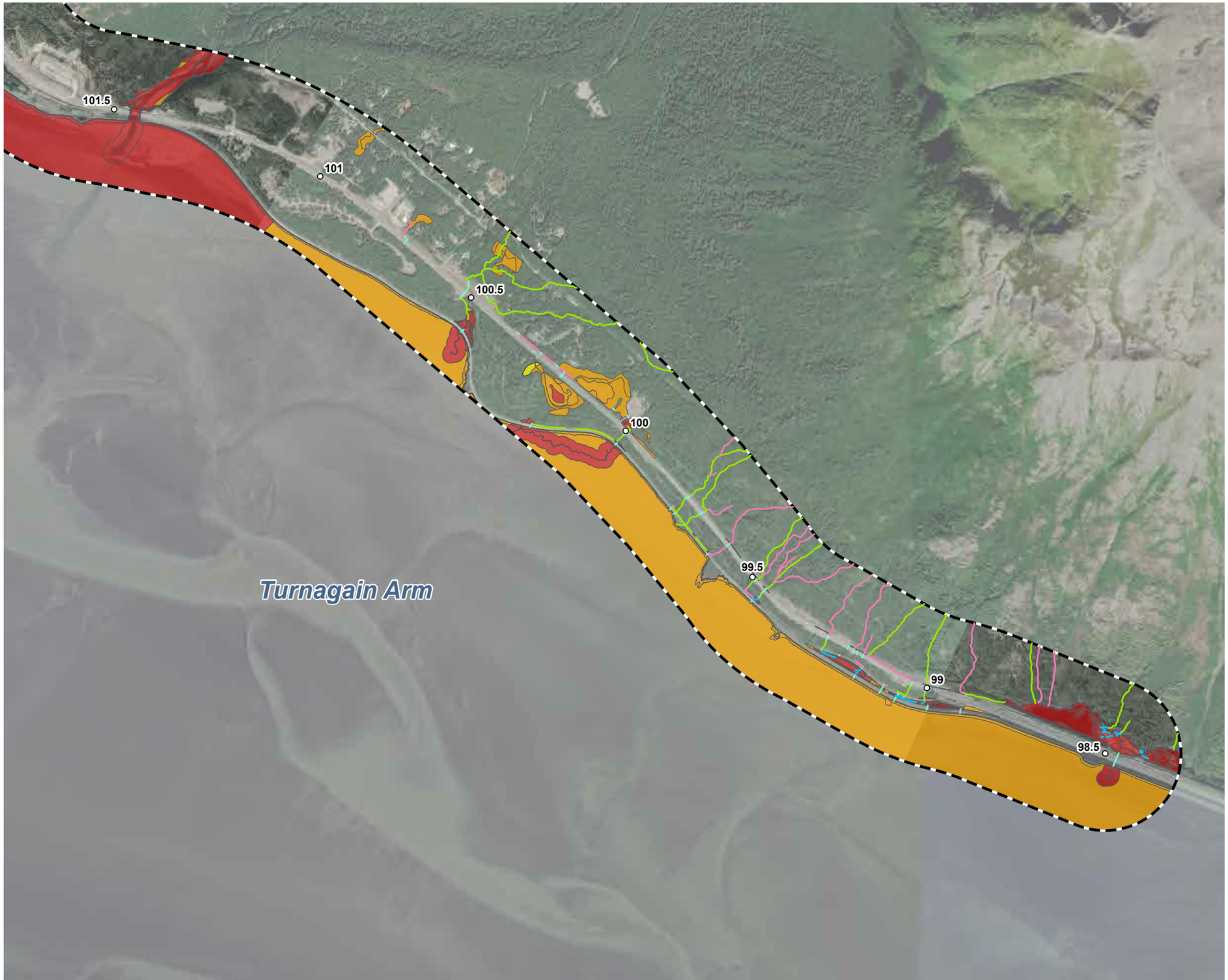
Figure 6
REV Categorization
Page 1 of 7



Milepost

Study Area

Relative Ecological Value (REV) Wetland Categorization

REV 1

REV 2

REV 3

Relative Ecological Value (REV) Stream Categorization

REV 1

REV 2

REV 3

REV 4

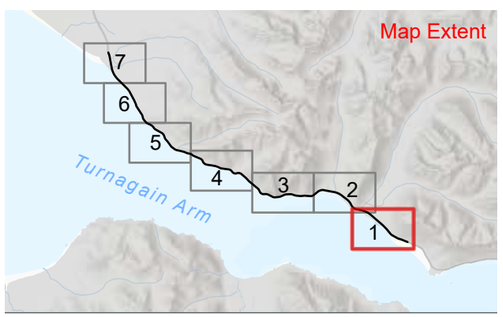


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Figure 6
REV Categorization
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Milepost

Study Area

Relative Ecological Value (REV) Wetland Categorization

REV 1

REV 2

REV 3

Relative Ecological Value (REV) Stream Categorization

REV 1

REV 2

REV 3

REV 4

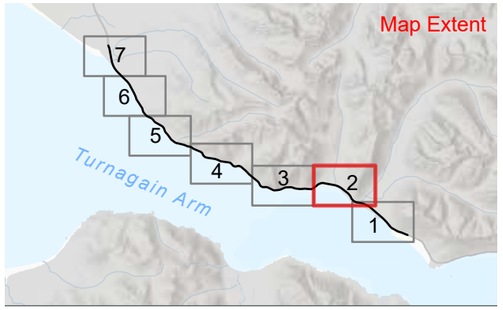

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Figure 6
REV Categorization
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Milepost

Study Area

Relative Ecological Value (REV) Wetland Categorization

REV 1

REV 2

REV 3

Relative Ecological Value (REV) Stream Categorization

REV 2

REV 3

REV 4

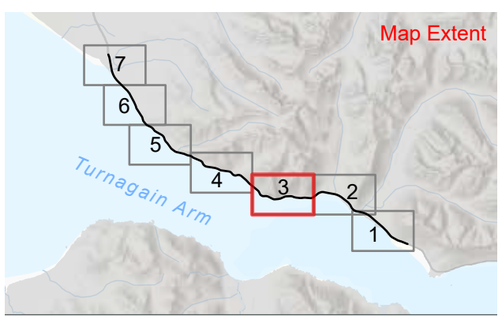

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Figure 6
REV Categorization
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Milepost

Study Area

Relative Ecological Value (REV) Wetland Categorization

REV 1

REV 2

REV 3

Relative Ecological Value (REV) Stream Categorization

REV 1

REV 2

REV 3

REV 4

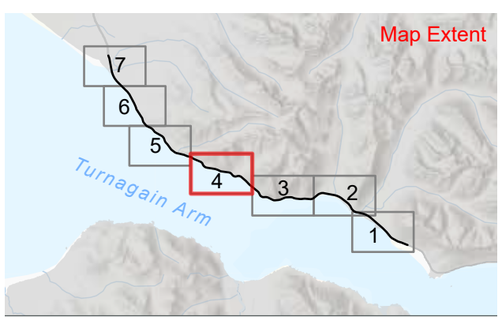

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Figure 6
REV Categorization
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Study Area

Relative Ecological Value (REV) Wetland Categorization

REV 1

REV 2

REV 3

Relative Ecological Value (REV) Stream Categorization

REV 3

REV 4

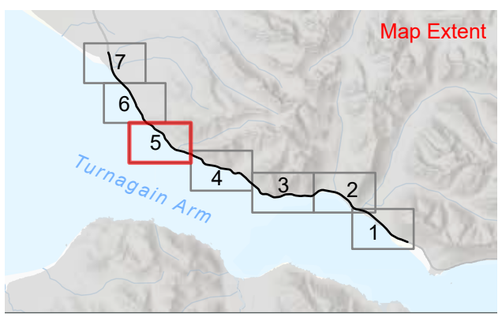

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Figure 6
REV Categorization
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Milepost

Study Area

Relative Ecological Value (REV) Wetland Categorization

REV 1

REV 2

REV 3

Relative Ecological Value (REV) Stream Categorization

REV 1

REV 3

REV 4

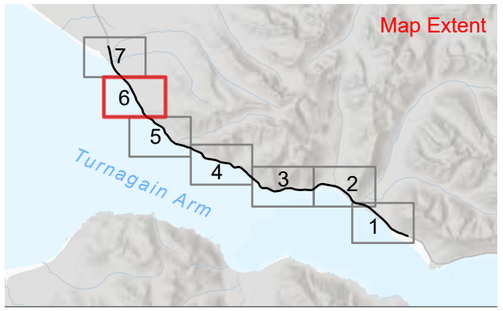

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Figure 6
REV Categorization
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Milepost

Study Area

Relative Ecological Value (REV) Wetland Categorization

REV 1

REV 2

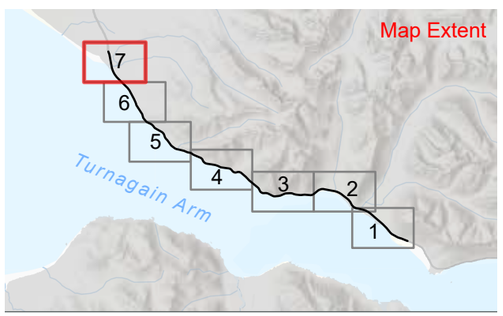
REV 3

Relative Ecological Value (REV) Stream Categorization

REV 1

REV 3

REV 4



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Appendix A. 2023 Wetland Determination Forms and Photographs

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Table 1. 2023 WDF Summary

Site	Latitude	Longitude	NWI	HGM	Viereck Level IV Code	Hydrophytic Vegetation	Hydric Soil	Wetland Hydrology
13	60.95172	-149.403485	U	N/A	IB3c			
14	60.951681	-149.403211	PEM1Cb	RIVERINE	IIIB3b	X	X	X
31	60.962249	-149.434231	U	N/A	IB2a			
32	60.962605	-149.434398	PFO4/SS4B	SLOPE	IA3d	X	X	X
37	60.962182	-149.435753	PSS1/EM1C	SLOPE	IIB2-paper birch shrub	X	X	X
38	60.963695	-149.43829	PFO1/SS1B	SLOPE	IC2-paper	X	X	X
39	60.963443	-149.439118	U	N/A	IB3a			
42	60.966795	-149.444365	U	N/A	IC2a			
45	60.965838	-149.442077	U	N/A	IB2a			
46	60.965785	-149.442352	PFO1/SS1B	SLOPE	IA2b	X	X	X
51	60.973639	-149.467884	U	N/A	IC2b			
53	60.973497	-149.467621	E2EM1N	ESTUARINE	IIIA3i	X	X	X
58	61.000109	-149.642702	U	N/A	IIB2b			
63	61.001119	-149.642403	U	N/A	IB2c			
65	61.008969	-149.695208	U	N/A	IB3-quaking aspen			
66	61.00886	-149.69524	PEM1Rh	RIVERINE	IIIA3i	X	X	X
74	61.078826	-149.830013	PFO1/EM1B	SLOPE	IB2-willow	X	X	X
75	61.078795	-149.830399	U	N/A	IIIB2c			
76	61.078615	-149.825379	PFO1/SS1B	SLOPE	IB2-willow	X	X	X
80	61.079026	-149.825614	U	N/A	IB2c			
86	61.080254	-149.828918	U	N/A	IB2a			
88	61.079881	-149.82874	PFO1/SS1B	SLOPE	IB3a	X	X	X
94	61.054417	-149.79665	U	N/A	IIB2b			
95	61.054353	-149.796875	PSS1/EM1Fh	SLOPE	IIB2b	X	X	X
98	61.055072	-149.796833	U	N/A	IB2b			
99	61.055297	-149.796725	PSS1Rh	RIVERINE	IIB2f	X	X	X
101	61.058043	-149.797746	U	N/A	IB2c			
102	61.058398	-149.797521	PSS1Rh	RIVERINE	IB3a	X	X	X
105	60.950583	-149.395658	PFO1Rh	SLOPE	IB1c	X	X	X
113	60.952164	-149.407864	PEM1Fd	RIVERINE	IIIB3a	X	X	X
120	61.017422	-149.735941	U	N/A	IB1c			
123	61.041796	-149.784255	PSS1/EM1B	SLOPE	IIB2b	X	X	X
132	60.951659	-149.408663	PEM1Rh	RIVERINE	IIIA3i	X	X	X

Site	Latitude	Longitude	NWI	HGM	Viereck Level IV Code	Hydrophytic Vegetation	Hydric Soil	Wetland Hydrology
140	60.951899	-149.409747	U	N/A	IB3a			
144	61.083856	-149.83385	PFO1C	RIVERINE	IB1a	X	X	X
155	61.085886	-149.837401	U	N/A	IB1c			
158	61.080156	-149.832505	PFO1/SS1B	SLOPE	IB2a	X	X	X
165	61.083951	-149.835409	U	N/A	IB2c	X		
502	60.985737	-149.498841	PFO1B	SLOPE	IB1d	X	X	X
503	60.985775	-149.4997	U	N/A	IB1d			
508	60.984852	-149.494447	U	N/A	IB1d		X	X
509	60.985121	-149.493606	PFO1/4B	SLOPE	IC1a	X	X	X
519	60.979598	-149.480629	U	N/A	IC1a			
522	60.980313	-149.482062	PEM1/SS1C	SLOPE	IIC2l	X	X	X
525	60.98081	-149.48251	PSS1/4B	SLOPE	IIB1b	X	X	X
531	60.967587	-149.439537	PSS4/3B	SLOPE	IA2f	X	X	X
533	60.967632	-149.441374	U	N/A	IB1d			
538	60.961479	-149.429074	U	N/A	IB1d		X	
539	60.96122	-149.429333	PSS1/EM1C	SLOPE	IIC2j	X	X	X
542	60.984942	-149.5003	U	N/A	IB1-paper birch-			
543	60.985187	-149.500672	E2SS1/EM1P	ESTUARINE	IIB2d	X	X	X
547	60.997275	-149.633541	U	N/A	IIB1b	X		X
603	61.049266	-149.792406	U	N/A	IIB1b			
604	61.049368	-149.792714	PFO1/EM1B	SLOPE	IB2-alder	X	X	X
609	61.050489	-149.79192	U	N/A	IB3-quaking aspen			
613	60.99903	-149.648347	U	N/A	IID2-red bearberry			
617	61.054353	-149.799217	PSS1/EM1Th	RIVERINE	IIC2j	X	X	X
618	61.054348	-149.799096	U	N/A	IIIA1a	X		
619	61.05422	-149.800072	E2EM1P	ESTUARINE	IIIA3i	X	X	X
621	61.051305	-149.79462	PFO1/EM1B	RIVERINE	IB2-alder	X	X	X
622	61.05147	-149.794416	U	N/A	IB1-paper birch-			
624	61.051692	-149.795182	U	N/A	IB1c			
631	60.96248	-149.436901	U	N/A	IB2a			

Table 2. 2023 Summary of Indicators at WDF Sites

Site	VEGETATION				SOIL									HYDROLOGY																			Is the Site in a Wetland?
					Standard				Problematic					Primary Indicators									Secondary Indicators										
	Hydrophytic Dominants is > 50%	Prevalence Index is ≤ 3.0	Morphological Adaptations	Hydrophytic Vegetation Present?	Histosol or Histel (A1)	Histic Epipedon (A2)	Hydrogen Sulfide (A4)	Alaska Redox (A14)	Redox Dark Surface (F6)	Alaska Redox with 2.5Y Hue	Alpha-alpha dipyridyl	Other (see form)	Hydric Soil Present?	Surface Water (A1)	High Water Table (A2)	Saturation (A3)	Water Marks (B1)	Sediment Deposits (B2)	Drift Deposits (B3)	Iron Deposits (B5)	Inundation Visible on Aerial Imagery (B7)	Hydrogen Sulfide Odor (C1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)	Oxidized Rhizospheres (C3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	Geomorphic Position (D2)	Shallow Aquitard (D3)	Microtopographic Relief (D4)	Positive FAC-Neutral Test (D5)	Wetland Hydrology Present?	
13																																	
14	X	X		X		X	X						X		X	X					X	X			X	X		X			X	X	X
31																																	
32	X	X		X	X								X		X	X															X	X	X
37	X		X	X	X								X	X	X	X											X			X		X	X
38	X		X	X	X		X						X		X	X						X					X	X				X	X
39																																	
42																																	
45																																	
46	X			X						X	X		X		X	X										X		X				X	X
51																																	
53	X	X		X			X						X	X	X	X	X	X			X	X				X		X			X	X	X
58																																	
63																																	
65																																	
66	X	X		X					X				X		X	X					X							X			X	X	X
74	X	X		X		X	X						X	X	X	X						X	X			X		X			X	X	X
75																																	
76	X	X		X			X						X		X	X						X				X	X	X			X	X	X
80																																	
86																																	
88	X	X	X	X			X						X	X	X	X						X				X	X	X			X	X	X
94																																	

Site	VEGETATION				SOIL									HYDROLOGY																			Is the Site in a Wetland?
					Standard				Problematic					Primary Indicators									Secondary Indicators										
	Hydrophytic Dominants is > 50%	Prevalence Index is ≤ 3.0	Morphological Adaptations	Hydrophytic Vegetation Present?	Histosol or Histel (A1)	Histic Epipedon (A2)	Hydrogen Sulfide (A4)	Alaska Redox (A14)	Redox Dark Surface (F6)	Alaska Redox with 2.5Y Hue	Alpha-alpha dipyridyl	Other (see form)	Hydric Soil Present?	Surface Water (A1)	High Water Table (A2)	Saturation (A3)	Water Marks (B1)	Sediment Deposits (B2)	Drift Deposits (B3)	Iron Deposits (B5)	Inundation Visible on Aerial Imagery (B7)	Hydrogen Sulfide Odor (C1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)	Oxidized Rhizospheres (C3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	Geomorphic Position (D2)	Shallow Aquitard (D3)	Microtopographic Relief (D4)	Positive FAC-Neutral Test (D5)	Wetland Hydrology Present?	
95	X	X		X		X	X						X	X	X	X						X	X			X		X		X	X	X	X
98																																	
99	X	X		X		X	X						X	X	X	X						X	X			X		X			X	X	X
101																																	
102	X	X	X	X	X		X						X	X	X	X						X	X				X	X			X	X	X
105	X			X		X	X						X		X	X						X				X		X				X	X
113	X	X		X			X						X	X	X	X						X				X		X			X	X	X
120																																	
123	X			X		X							X	X	X	X					X							X	X			X	X
132	X	X		X			X						X	X	X	X						X				X		X			X	X	X
140																																	
144	X			X		X							X	X	X	X				X			X					X				X	X
155																																	
158	X			X		X	X				X		X	X	X	X						X				X		X				X	X
165	X			X																													
502	X			X		X							X	X	X	X												X				X	X
503																																	
508						X							X	X	X	X												X				X	
509	X			X	X								X	X	X	X												X				X	X
519																																	
522	X	X		X		X	X						X	X	X	X						X				X		X				X	X
525	X			X	X		X						X	X	X	X						X		X				X				X	X
531	X	X		X	X								X		X	X												X		X	X	X	X
533																																	

Site	VEGETATION				SOIL									HYDROLOGY																				
					Standard				Problematic					Primary Indicators									Secondary Indicators											
	Hydrophytic Dominants is > 50%	Prevalence Index is ≤ 3.0	Morphological Adaptations	Hydrophytic Vegetation Present?	Histosol or Histel (A1)	Histic Epipedon (A2)	Hydrogen Sulfide (A4)	Alaska Redox (A14)	Redox Dark Surface (F6)	Alaska Redox with 2.5Y Hue	Alpha-alpha dipyridyl	Other (see form)	Hydric Soil Present?	Surface Water (A1)	High Water Table (A2)	Saturation (A3)	Water Marks (B1)	Sediment Deposits (B2)	Drift Deposits (B3)	Iron Deposits (B5)	Inundation Visible on Aerial Imagery (B7)	Hydrogen Sulfide Odor (C1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)	Oxidized Rhizospheres (C3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	Geomorphic Position (D2)	Shallow Aquitard (D3)	Microtopographic Relief (D4)	Positive FAC-Neutral Test (D5)	Wetland Hydrology Present?	Is the Site in a Wetland?
538					X								X																					
539	X	X		X	X		X						X	X	X	X						X						X			X	X	X
542																																		
543	X	X		X								X	X			X			X									X				X	X
547	X			X												X												X				X	
603																																		
604	X	X		X				X					X		X	X									X			X				X	X
609																																		
613																																		
617	X	X		X	X		X						X	X	X	X					X	X						X			X	X	X
618	X			X																														
619	X	X		X			X						X	X	X	X			X	X	X	X						X			X	X	X
621	X			X				X					X	X	X	X		X	X					X		X		X				X	X
622																																		
624																																		
631																																		
Total	**33**	**19**	**4**	**33**	**10**	**11**	**18**	**2**	**1**	**1**	**2**	**1**	**32**	**2**	**3**	**32**	**1**	**2**	**3**	**2**	**6**	**18**	**5**	**2**	**2**	**14**	**5**	**30**	**1**	**3**	**16**	**32**	**30**

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WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway PDS 118 Borough/City: MOA Date: 8/17/2023
Applicant/Owner: ADOT + PF Sampling Point #: 013
Investigator(s): Ashley Hovis, Will Mams Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.951721 Long. 149.403508 ± 4' NAD 83 Recorded on GPS?: ✓ Marked on map? X Field Map #: —
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Terrace Slope (%): 0 Aspect: —
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: —
Photo nos./descriptions: N, S, E, W, Soil x2 Camera #: Skagit 3 Veg Type (Viereck Level 4 or other): 1B3c
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X① If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet pap	5	Y	FACU	5.			
2. Poptrem	5	Y	FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 10
50% of total cover: 5 20% of total cover: 2

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aru dio	10	Y	UPL	7.			
2. Aln vir	10	Y	FAC	8.			
3. Her max	15	Y	FACU	9.			
4. Rubida	10	Y	FACU	10.			
5. Act rub	15	Y	FAC	11.			
6. Poptrem	5	—	FACU	12.			

Total Sapling/Shrub Cover: 65
50% of total cover: 32.5 20% of total cover: 13

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Equ arv	5	Y	FAC	12.			
2. Gal triff	3	Y	FAC	13.			
3. Cam dro	2	—	FACU	14.			
4. Tar off	2	—	FACU	15.			
5. Bos ros	2	—	FACU	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 14
50% of total cover: 7 20% of total cover: 2.8

Circular 1/10-ac plot — or other plot dimension: 15' radius % of bare ground: 30
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 9 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 44.4 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	33	X3= 99
FACU species	46	X4= 184
UPL + NL species	10	X5= 50
Column Totals:	89 (A)	333 (B)

Prevalence Index = B/A = 3.74

Hydrophytic Vegetation Indicators:

— Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: 10% dead fall Bet pap.
① wetter than normal antecedent precipitation

SOIL

Sampling Point #: 01 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-4	Oe	10YR 2/2	100							
4-22	B	2.5Y 3/2	100					Coarse Sand	neg	w/50% cobble/gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: WD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1. Moist enough to test alpha-alpha but not saturated. Well drained soil.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

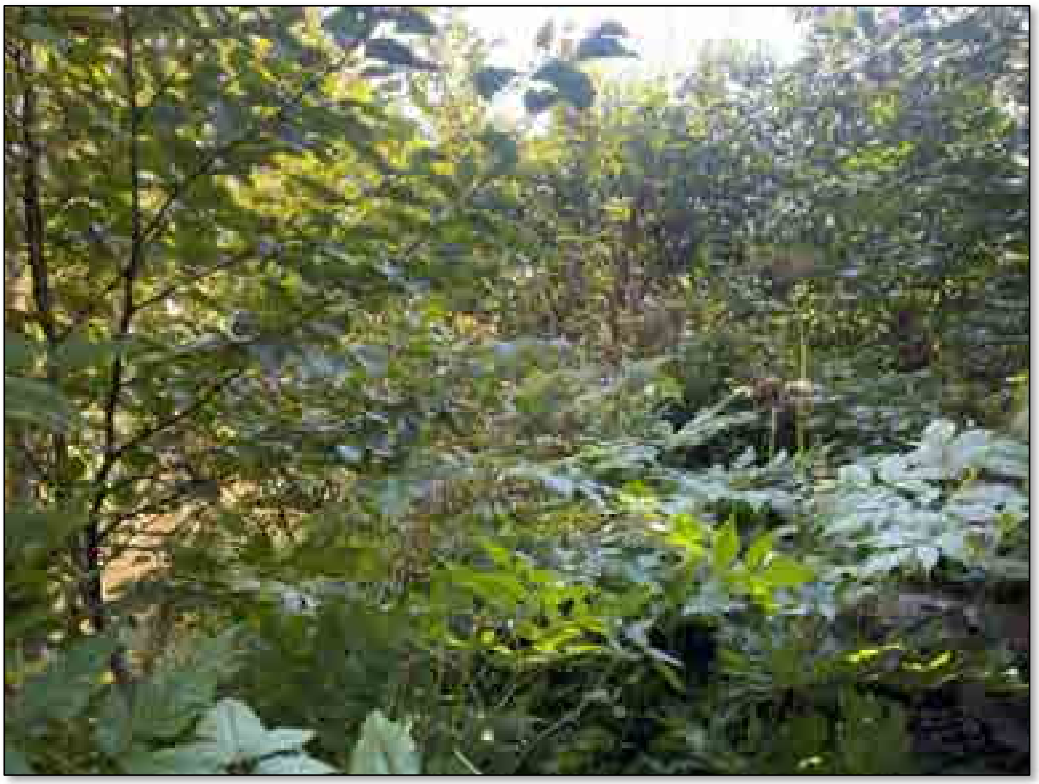
Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No ✓ Depth of water (in.) –
Water Table Present? Yes ___ No ✓ Depth to water (in.) –
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth to sat. (in.) –
Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary indicators of hydrology observed. No secondary indicators of hydrology observed.



Site 013. Vegetation, southern view. Photo taken August 17th, 2023.

Site 013. Vegetation, western view. Photo taken August 17th, 2023.

Site 013. Soil. Photo taken August 17th, 2023.

Site 013. Soil. Photo taken August 17th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 92.5 – 118 Borough/City: MOA Date: 8/17/2023
Applicant/Owner: ADOT&PF Sampling Point #: 014
Investigator(s): Ashley Davis, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.951683 Long. 149.403234 ± 5' NAD 83 Recorded on GPS?: ✓ Marked on map? X Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Toeslope Slope (%): 1 Aspect: ESE
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PEM1Cb
Photo nos./descriptions: N, S, E, W, Soil x2 Camera # Sleigt 3 Veg Type (Viereck Level 4 or other): III B3b
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: Riverine
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1.				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: –
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Cic mac	7	Y	OBL	7.			
(C) 2. Sal beb	7	Y	FAC	8.			
(C) 3. Sal sit	3	–	FAC	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 17
50% of total cover: 8.5 20% of total cover: 3.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Epl cil	30	Y	FAC	12.			
2. Rhi min	2	–	FACU	13.			
3. Ver ame	25	Y	OBL	14.			
4. Calcan	20	–	FAC	15.			
5. Equarv	3	–	FAC	16.			
6. Car aqu	10	–	OBL	17.			
(C) 7. Juncus sp.	5	–	FACW	18.			
(C) 8. Poa sp.	5	–	–	19.			
9. Mim gut	2	–	OBL	20.			
10. Ach mil	1	–	FACU	21.			
11.				22.			

Total Herb Cover: 103
50% of total cover: 51.5 20% of total cover: 20.6
Circular 1/10-ac plot – or other plot dimension: 11.10' % of bare ground: 5
% Cover of Wetland Bryophytes 2 % (where applicable) Total Cover of Bryophytes 2 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	44	X1= 44
FACW species	5	X2= 10
FAC species	63	X3= 189
FACU species	3	X4= 12
UPL + NL species	0	X5= 0
Column Totals:	115 (A)	255 (B)

Prevalence Index = B/A = 2.22

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: PEM1F on fringes (2-10ft wide) 10% dead standing alder.
*Old beaver impacts apparent from girdlegnawed alders.
PSUBH (lows into site then turns into PUBHb. (1) wetter than normal antecedent precipitation.
→(III B3a)

SOIL

Sampling Point #: 014

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-9	Oe	2.5Y 3/2	100							
9-16	B	10Y 2.5/1	80	10YR 2/2	20	C	RC+PL	SiLo	pos	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface: @ 2 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: VPD
Soil Map Unit Name: —

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) ___
- X Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Toeslope
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X* Depth of water (in.) —
Water Table Present? Yes X No ___ Depth to water (in.) 2
Seeping in at that depth but not yet filled?: 2
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0 Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: * site in between R3UBH' + PUBHb.

Site 014. Vegetation, southern view. Photo taken August 17th, 2023.

Site 014. Vegetation, easter view. Photo taken August 17th, 2023.

Site 014. Soil. Photo taken August 17th, 2023.

Site 014. Soil. Photo taken August 17th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway P.S. 118 Borough/City: MOA Date: 8/18/2022
Applicant/Owner: ADOT + PF Sampling Point #: 031
Investigator(s): Ashley Hovis Will Thomas Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.962251 Long. 149.434294 ±10' NAD 83 Recorded on GPS?: ✓ Marked on map? ✓ Field Map #: 4
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: flat terrace Slope (%): 1 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, Soil X? Camera #: Skyqit3 Veg Type (Viereck Level 4 or other): IB2a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (2) If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Betpap	40	Y	FACU	5.			
2. Pic sit	5	-	FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 45
50% of total cover: 22.5 20% of total cover: 9

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Menfer	70	Y	FACU	7.			
2. Ribgla	15	-	FAC	8.			
3. Sam Pac	2	-	FACU	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 87
50% of total cover: 43.5 20% of total cover: 17.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Dryexp	10	Y	FACU	12.			
2. Cor can	5	Y	FACU	13.			
3.				14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 15
50% of total cover: 7.5 20% of total cover: 3

Circular 1/10-ac plot ✓ or other plot dimension: – % of bare ground: 5
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 10 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	15	X3= 45
FACU species	132	X4= 528
UPL + NL species	0	X5= 0
Column Totals:	147 (A)	573 (B)

Prevalence Index = B/A = 3.89

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (2) Wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	O1	7.5YR 2.5/3	100							
3-18	A1	10YR 2/2	100					loam	neg	
18-24	B2	10YR 3/3	100					clay lo	neg	Very compacted

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: VWD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1. 8 layers just moist enough to test alpha-dipy but overall very dry.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth **of** water (in.) –
Water Table Present? Yes ___ No X Depth **to** water (in.) –
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes ___ No X Depth **to** sat. (in.) – Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary hydrology indicators observed. No secondary hydrology indicators observed.

Site 031. Vegetation, southern view. Photo taken August 18th, 2023.

Site 031. Vegetation, eastern view. Photo taken August 18th, 2023.

Site 031. Soil. Photo taken August 18th, 2023.

Site 031. Soil. Photo taken August 18th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/18/2023
Applicant/Owner: Sampling Point #: 032
Investigator(s): Ashley Hess, Wyatt Mems Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.962607 Long. 149.434421 ± ' NAD 83 Recorded on GPS?: ✓ Marked on map? ✓ Field Map #: 4
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Flat terrace Slope (%): 0 Aspect: –
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO4/SS4B
Photo nos./descriptions: N, S, E, W, Soil X2 Camera #: Skagit 3 Veg Type (Viereck Level 4 or other): 1A3d
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X① If no, explain. HGM type: Slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pic mar	15	Y	FACW	5.			
2. Tsu mer	10	Y	FAC	6.			
3.				7.			
4.				8.			

Total Tree Cover: 25
50% of total cover: 12.5 20% of total cover: 5

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Pic mar	15	Y	FACW	7. Vac vit	5	–	FAC
2. Tsu mer	7	–	FAC	8. Rho gro	3	–	FAC
3. Lon nig	20	Y	FAC	9.			
4. Rho tom	10	Y	FACW	10.			
5. Betnan	10	Y	FAC	11.			
6. Vaculi	7	–	FAC	12.			

Total Sapling/Shrub Cover: 77
50% of total cover: 38.5 20% of total cover: 15.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Geoliv	5	Y	FACW	12.			
2. Equ syl	3	Y	FAC	13.			
3. Rubchi	7	Y	FACW	14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 15
50% of total cover: 7.5 20% of total cover: 3

Circular 1/10-ac plot ___ or other plot dimension: 20' radius % of bare ground: 0
% Cover of Wetland Bryophytes 60 % Total Cover of Bryophytes 60 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 8 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 88.9 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	47	X2= 94
FAC species	65	X3= 195
FACU species	5	X4= 20
UPL + NL species	0	X5= 0
Column Totals:	117 (A)	309 (B)

Prevalence Index = B/A = 2.64

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: ① Wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 032

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oi									
2-24	Oe									

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- X Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: PD
Soil Map Unit Name: —

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth **of** water (in.) —

Water Table Present? Yes X No ___ Depth **to** water (in.) 21

Seeping in at that depth but not yet filled?: 10

Saturation Present? (includes capillary fringe) Yes X No ___ Depth **to** sat. (in.) 8 Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 032. Vegetation, eastern view. Photo taken August 18th, 2023.

Site 032. Vegetation, western view. Photo taken August 18th, 2023.

Site 032. Soil. Photo taken August 18th, 2023.

Site 032. Soil. Photo taken August 18th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 9/18/2023
Applicant/Owner: ADOT + PF Sampling Point #: 037
Investigator(s): Denny Harris, Will Morris Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.962183 Long. 149.435776 ± 6' NAD 83 Recorded on GPS?: ✓ Marked on map? ✓ Field Map #: 4
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Flat terrace Slope (%): 0 Aspect: –
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSS1/EM1C
Photo nos./descriptions: N, S, E, W, Soil x2 Camera #: Skyport 3 Veg Type (Viereck Level 4 or other): 11B2 – paper birch
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X(1) If no, explain. HGM type: Slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X** No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Betpap*	7	Y	FAC	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 7

50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Betpap	25	Y	FACU	7.			
2. Spiste	1	–	FACU	8.			
3. Menfer	2	–	FACU	9.			
4. Vacvit	2	–	FAC	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 30

50% of total cover: 15 20% of total cover: 6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Calcan	70	Y	FAC	12.			
2. Carbru	15	–	FAC	13.			
3. Corsue	1	–	FAC	14.			
4. Rubcha	3	–	FACU	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 89

50% of total cover: 44.5 20% of total cover: 17.8

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

% Cover of Wetland Bryophytes (where applicable): 20 % Total Cover of Bryophytes: 20 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	3	X2= 6
FAC species	95	X3= 285
FACU species	28	X4= 112
UPL + NL species	0	X5= 0
Column Totals:	126 (A)	403 (B)

Prevalence Index = B/A = 3.20

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
– Prevalence Index is ≤3.0

X Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: * Betpap trees are largely dead standing (10%). Also have many signs of stress: many trees bolt-top, stems exhibiting twisted trees and buttress roots, and less than 50% canopy cover. Changed Betpap tree indicator status to FAC. ** Not all conditions are present, however, the "bird to bird" rail is immediately to the north of this site and may be impacting site hydrology. (1) Wetter than normal conditions from precipitation.

SOIL

Sampling Point #: 037

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oi									
2-22	Oe									

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- X Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: VPD
Soil Map Unit Name: –

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- X Stunted or Stressed Plants (D1) birch trees + shrubs
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- X Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 6
Water Table Present? Yes X No ___ Depth to water (in.) 4
Seeping in at that depth but not yet filled?: 4
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 2
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: 6-12 inch hummocks adjacent to deep pockets of surface water.

Site 037. Vegetation, northern view. Photo taken August 18th, 2023.

Site 037. Vegetation, southern view. Photo taken August 18th, 2023.

Site 037. Soil. Photo taken August 18th, 2023.

Site 037. Soil. Photo taken August 18th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98nT-118 Borough/City: MOA Date: 8/18/2023
Applicant/Owner: ADOT + PF Sampling Point #: 038
Investigator(s): Ashley Lewis, Will Meyer Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.96697 Long 149.43833 ± 5' NAD 83 Recorded on GPS? ✓ Marked on map? ✓ Field Map #: ____
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: toe slope Slope (%): 2 Aspect: E
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1/SS1B
Photo nos./descriptions: N, S, E, W, soil x2 Camera #: 5K0173 Veg Type (Viereck Level 4 or other): 1C2 = paper birch hemlock
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Betpap*	20	Y	FAC	5.			
2. Tsu mex	10	Y	FAC	6.			
3.				7.			
4.				8.			

Total Tree Cover: 30
50% of total cover: 15 20% of total cover: 6

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Menfer*	30	Y	FAC	7.			
2. Opl her*	10	Y	FAC	8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 40
50% of total cover: 20 20% of total cover: 8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Calcan	30	Y	FAC	12.			
2. Gymdry	3	–	FACU	13.			
3. Cor sue	3	–	FAC	14.			
4. Rub ped	10	–	FAC	15.			
5. Equ arv	10	–	FAC	16.			
6. Athcyc	15	Y	FAC	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 71
50% of total cover: 35.5 20% of total cover: 14.2
Circular 1/10-ac plot – or other plot dimension: 25' radius % of bare ground: 10
% Cover of Wetland Bryophytes (where applicable): 0 % Total Cover of Bryophytes 5 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	138	X3= 414
FACU species	3	X4= 12
UPL + NL species	0	X5= 0
Column Totals:	141 (A)	426 (B)

Prevalence Index = B/A = 3.02

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
– Prevalence Index is ≤3.0
X Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: * Betpap over 50% individuals exhibiting multiple trunks and broken tops. Menfer much shorter in stature than in plot 5, as is Opl her.

Indicator status of Betpap, Menfer, Opl her changed to FAC.
(1) wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 038

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	Oi									
3-24	Oe									

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- X Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 8 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: PD
Soil Map Unit Name: –

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) toestype
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –
Water Table Present? Yes X No ___ Depth to water (in.) 22
Seeping in at that depth but not yet filled?: 8
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 5
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 038. Vegetation, northern view. Photo taken August 18th, 2023.

Site 038. Vegetation, southern view. Photo taken August 18th, 2023.

Site 038. Soil. Photo taken August 18th, 2023.

Site 038. Soil. Photo taken August 18th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway Borough/City: MOA Date: 8/18/2023
Applicant/Owner: ADOT + PF Sampling Point #: 039
Investigator(s): Ashley Hovis, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.963445 Long. 149.439141 ± ' NAD 83 Recorded on GPS?: ✓ Marked on map? ✓ Field Map #:
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Footslope Slope (%): 3 Aspect: SW
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, Soil x2 Camera #: Skagit 3 Veg Type (Viereck Level 4 or other): 1B3a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Betpap	15	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 15

50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Alnvir	60	Y	FAC	7.			
2. Sam vac	30	Y	FACU	8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 90

50% of total cover: 45 20% of total cover: 18

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Athcyc	40	Y	FAC	12.			
2. Gymdry	10	–	FACU	13.			
3. Dryexp	15	Y	FACU	14.			
4. Galtri1	5	–	FAC	15.			
5. Hermax	3	–	FACU	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 73

50% of total cover: 36.5 20% of total cover: 14.6

Circular 1/10-ac plot: – or other plot dimension: 30' radius % of bare ground: 2

% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	105	X3= 315
FACU species	73	X4= 292
UPL + NL species	0	X5= 0
Column Totals:	178 (A)	607 (B)

Prevalence Index = B/A = 3.41

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0

– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (1) Wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 039

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	oi									
3-10	B1	10YR 3/3	100					Sa Lo	neg	
10-24	B2	2.5Y 3/3	95	7.5YR 3/4	5	C	PL/M	Sa Lo	neg	50% cobbles
										redox features
										not diffuse.

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: MWD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1. Moist enough to test alpha-alpha but not saturated.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –
Water Table Present? Yes ___ No X Depth to water (in.) –
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) – Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary hydrology indicators observed.

Site 039. Vegetation, eastern view. Photo taken August 18th, 2023.

Site 039. Vegetation, western view. Photo taken August 18th, 2023.

Site 039. Soil. Photo taken August 18th, 2023.

Site 039. Soil. Photo taken August 18th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: 98.5-118 Borough/City: MOA Date: 8/18/23

Applicant/Owner: ADOT + PF Sampling Point #: 042

Investigator(s): Ashley Hovis, Will Mans Firm: HDR Alaska, Inc.

Lat. (dec.°) 60.966797 Long. 149.444388 ±15' NAD 83 Recorded on GPS?: N Marked on map? Y Field Map #: 4

Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 5 Aspect: WSW

Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U

Photo nos./descriptions: N, S, E, W, Soil X2 Camera#: Skagit 3 Veg Type (Viereck Level 4 or other): IC2a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: NA

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet pap	20	Y	FACU	5.			
2. Pop tre	5	-	FACU	6.			
3. Pic gla	15	Y	FACU	7.			
4.				8.			

Total Tree Cover: 40

50% of total cover: 20 20% of total cover: 8

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln vir	50	Y	FAC	7.			
2. Pic gla	10	-	FACU	8.			
3. Bet pap	2	-	FACU	9.			
4. Ros acei	15	-	FACU	10.			
5. Vib edu	5	-	FACU	11.			
6. Tsu mer	5	-	FAC	12.			

Total Sapling/Shrub Cover: 87

50% of total cover: 43.5 20% of total cover: 17.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Gymdry	15	Y	FACU	12.			
2. Cha ang	10	Y	FACU	13.			
3. Pyr asa	3	-	FACU	14.			
4. Tri eur	3	-	FACU	15.			
5. Ach mil	3	-	FACU	16.			
6. Gal tri	3	-	FAC	17.			
7. Calcan	7	Y	FAC	18.			
8. Tri rep	5	-	FACU	19.			
9. Tar off	2	-	FACU	20.			
10.				21.			
11.				22.			

Total Herb Cover: 51

50% of total cover: 25.5 20% of total cover: 10.2

Circular 1/10-ac plot X or other plot dimension: - % of bare ground: 0

% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 2 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	65	X3= 195
FACU species	113	X4= 452
UPL + NL species	0	X5= 0
Column Totals:	178 (A)	647 (B)

Prevalence Index = B/A = 3.63

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (1) wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 042

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	O1	7.5YR 2.5/2	100							
3-11	B1	10YR 3/3	100					Salo		
11-24	B2	2.5Y 4/4	100					loam		

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: WD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1. Dry pit; alpha-alpha not tested.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –
Water Table Present? Yes ___ No X Depth to water (in.) –
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) – Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary hydrology indicators observed. No secondary hydrology indicators observed.

Site 042. Vegetation, northern view. Photo taken August 18th, 2023.

Site 042. Vegetation, southern view. Photo taken August 18th, 2023.

Site 042. Soil. Photo taken August 18th, 2023.

Site 042. Soil. Photo taken August 18th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/18/2023
Applicant/Owner: ADOT + PF Sampling Point #: 045
Investigator(s): Ashley Harris, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.965840 Long. 149.442100 ± 5' NAD 83 Recorded on GPS?: ✓ Marked on map? ✓ Field Map #: 4
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 35 Aspect: WSW
Local relief: Shape across slope: (linear / convex / concave) Shape up/downslope: (linear / convex / concave) NWI classification: U
Photo nos./descriptions: N, S, E, W, soil x2 Camera#: Skyd 3 Veg Type (Viereck Level 4 or other): IB2a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X ① If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet pap	20	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 20
50% of total cover: 10 20% of total cover: 4

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Alnvir	40	Y	FAC	7.			
2. Sam rac	20	Y	FACU	8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 60
50% of total cover: 30 20% of total cover: 12

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Hermax	15	Y	FACU	12.			
2. Equarv	7	–	FAC	13.			
3. Equsyl	7	–	FAC	14.			
4. Gymdry	10	Y	FACU	15.			
5. Strramp	3	–	FACU	16.			
6. Actrub	5	–	FAC	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 47
50% of total cover: 23.5 20% of total cover: 9.4

Circular 1/10-ac plot – or other plot dimension: 20 x 40' % of bare ground: 0
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	59	X3= 177
FACU species	68	X4= 272
UPL + NL species	0	X5= 0
Column Totals:	127 (A)	449 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: ① Wetter than normal antecedent precipitation.

SOIL Sampling Point #: 045

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	Oe									
3-24	B	2.5Y4/4	100					Sa/o		50% cobbles

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: VWD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1. Soil too dry to test alpha alpha
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –
Water Table Present? Yes ___ No X Depth to water (in.) –
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) – Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary indicators of hydrology observed.

Site 045. Vegetation, eastern view. Photo taken August 18th, 2023.

Site 045. Vegetation, western view. Photo taken August 18th, 2023.

Site 045. Soil. Photo taken August 18th, 2023.

Site 045. Soil. Photo taken August 18th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/18/2023
Applicant/Owner: ADOT + PF Sampling Point #: 046
Investigator(s): Ashley Harris, Will Mears Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.905707 Long. 149.442375 ± 5' NAD 83 Recorded on GPS?: Y Marked on map? Y Field Map #: 4
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: low terrace Slope (%): 1-7 Aspect: WSW
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO4/SS1B
Photo nos./descriptions: N, S, E, W, Soil X2 Camera#: Skydi3 Veg Type (Viereck Level 4 or other): 1A26
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X① If no, explain. HGM type: Slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil Y, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	Is the sampled area within a wetland? Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pic sit *	15	Y	FACU	5.			
2. Tsu het	15	Y	FAC	6.			
3.				7.			
4.				8.			

Total Tree Cover: 30
50% of total cover: 15 20% of total cover: 6

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln inc	7	Y	FAC	7.			
2. Ribgla	5	Y	FAC	8.			
3. Mertfer	5	Y	FACU	9.			
4. Opl hor	5	Y	FACU	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 22
50% of total cover: 11 20% of total cover: 4.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Equ arv	10	Y	FAC	12.			
2. Gymdry	5	-	FACU	13.			
3. Ath cyc	15	Y	FAC	14.			
4. Strambp	2	-	FACU	15.			
5. Corcan	3	-	FACU	16.			
6. Ran occ	3	-	FACW	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 38
50% of total cover: 19 20% of total cover: 7.6
Circular 1/10-ac plot ✓ or other plot dimension: – % of bare ground: –
% Cover of Wetland Bryophytes 30 % Total Cover of Bryophytes 30 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 62% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	3	X2= 6
FAC species	52	X3= 156
FACU species	35	X4= 140
UPL + NL species	0	X5= 0
Column Totals:	90 (A)	302 (B)

Prevalence Index = B/A = 3.36

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
– Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: * Growing on mound s. ① Wetter than normal antecedent precipitation.

SOIL

Sampling Point #: C46

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	Oi									
3-13	B1	2.5Y 3/2	95	10YR 3/6	5	C	PL	SiLo	POS	
13-24	B2	10Y 3/1	90	7.5YR 3/2	5	C	PL	SiLo	POS	
				7.5YR 3/4	5	C	PL	SiLo	POS	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- X α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: PD
Soil Map Unit Name: —

Hydric Soil Present? Yes X No ___

Comments:
1. Almost made AK Redox.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ ~~Water-Stained Leaves (B9)~~
- ___ Drainage Patterns (B10) ___
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) low terrace
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) —

Water Table Present? Yes X No ___ Depth to water (in.) 15

Seeping in at that depth but not yet filled?: 6

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 2 Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Seep with iron flock and biogenic sheen at slope break upslope of point (OP# C44).

Site 046. Vegetation, northern view. August 18th, 2023.

Site 046. Vegetation, southern view. August 18th, 2023.

Site 046. Soil. Photo taken August 18th, 2023.

Site 046. Soil. Photo taken August 18th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/30/2023
Applicant/Owner: ADOT + PF Sampling Point #: 051
Investigator(s): Ashley Harris, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.973364 Long. 149.467907 ±11' NAD 83 Recorded on GPS?: ✓ Marked on map? ✓ Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 25 Aspect: SE
Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: (linear) / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, soil x 2 Camera #: Sky 3 Veg Type (Viereck Level 4 or other): IC2b
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X① If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	Is the sampled area within a wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet pap	10	Y	FACU	5.			
2. Pic sit	15	Y	FACU	6.			
3. Pop tre	15	Y	FACU	7.			
4.				8.			

Total Tree Cover: 40
50% of total cover: 20 20% of total cover: 8

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln vir	20	Y	FAC	7.			
2. Lin bor	3	–	FACU	8.			
ⓒ 3. Rib tri	5	–	FAC	9.			
4. Vib edu	10	Y	FACU	10.			
5. Sam rac	3	–	FACU	11.			
6. Ros aci	3	–	FACU	12.			

Total Sapling/Shrub Cover: 44
50% of total cover: 22 20% of total cover: 8.8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Geo liv	15	Y	FACU	12.			
2. Ach mil	15	Y	FACU	13.			
3. Tha occ	3	–	FACU	14.			
4. Cha aly	3	–	FACU	15.			
5. Gal trifl	3	–	FAC	16.			
6. Dry exp	3	–	FACU	17.			
7. Tar off	2	–	FACU	18.			
8. Cal can	2	–	FAC	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 46
50% of total cover: 23 20% of total cover: 9.2
Circular 1/10-ac plot X or other plot dimension: – % of bare ground: –
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 40 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 7 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 14.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	30	X3= 90
FACU species	100	X4= 400
UPL + NL species	0	X5= 0
Column Totals:	130.0 (A)	490.0 (B)

Prevalence Index = B/A = 3.77

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: ① wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 05 /

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-4	Oe	7.5YR 2.5/1	100					hemic		
4-18	B	10YR 3/2	100					loam		80% cobble
18-22	B	10YR 4/3	100					silt loam		" "

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: WD
Soil Map Unit Name: —

Hydric Soil Present? Yes ____ No X

Comments:
1. 80% cobble
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No X Depth of water (in.) —
Water Table Present? Yes ____ No X Depth to water (in.) —
Seeping in at that depth but not yet filled?: —
Saturation Present? (includes capillary fringe) Yes ____ No X Depth to sat. (in.) — Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators observed.

Site 051. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 051. Vegetation, western view. Photo taken August 30th, 2023.

Site 051. Soil. Photo taken August 30th, 2023.

Site 051. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT + PF Sampling Point #: 053
Investigator(s): Ashley Davis, Will Mains Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.973499 Long. 149.467644 ± 15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: -
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Terrace ② Slope (%): 3 Aspect: SE
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: E2EM1N
Photo nos./descriptions: N, S, E, W, Soil x2 Camera #: Stg/13 Veg Type (Viereck Level 4 or other): III A3i
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X ① If no, explain. HGM type: Estuarine
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	Is the sampled area within a wetland? Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1.				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: —
50% of total cover: — 20% of total cover: —

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1.				7.			
2.				8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: —
50% of total cover: — 20% of total cover: —

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Car lyn	80	Y	OBL	12.			
2. Pot ans	1	-	FACW	13.			
② 3. Jun bal	1	-	OBL	14.			
4. Calcan	10	-	FAC	15.			
5. Lig sco	3	-	FAC	16.			
6. Sah can	3	-	FACW	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 98
50% of total cover: 49 20% of total cover: 19.6
Circular 1/10-ac plot ___ or other plot dimension: 15'2 % of bare ground: 0
% Cover of Wetland Bryophytes (where applicable) 1 % Total Cover of Bryophytes 1 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	81	X1= 81
FACW species	4	X2= 8
FAC species	13	X3= 39
FACU species	0	X4= 0
UPL + NL species	0	X5= 0
Column Totals:	98 (A)	128 (B)

Prevalence Index = B/A = 1.31

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: ① wetter than normal antecedent precipitation,
② Terrace tidally influenced + next to Bird Creek.

SOIL

Sampling Point #: 053

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-5	B1	5Y 3/2	100					SiClyLo	pos	many organic fibers
5-16	B2	5B 4/1	95	10B 2.5/1	5	C	M	SiClyLo	pos	
16-24	B3	10B 2.5/1						SiClyLo	pos	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 9 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer (1)
- ___ α,α-dipyridyl positive (see pg. 91) (1)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: VPD
Soil Map Unit Name: —

Hydric Soil Present? Yes X No ___

Comments:
1. Soils met AK Gleyed without Hue 5Y or Redder Underlying Layer + α-α dipyridyl
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- X Water Marks (B1) (on rocks)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) ___
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) tidally influenced
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 2
Water Table Present? Yes X No ___ Depth to water (in.) 15
Seeping in at that depth but not yet filled?: 12
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 053. Vegetation, northern view. Photo taken August 30th, 2023.

Site 053. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 053. Soil. Photo taken August 30th, 2023.

Site 053. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT + PF Sampling Point #: 058
Investigator(s): Ashley Harris, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.000111 Long. 149.642725 ±15' NAD 83 Recorded on GPS?: X Marked on map? – Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: depression Slope (%): 0 Aspect: –
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, soil x2 Camera#: Skyfi 3 Veg Type (Viereck Level 4 or other): 11B2b
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Poptbal	10	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 10
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Poptbal	5	Y	FACU	7.			
2. Rubide	7	Y	FACU	8.			
3. Alnjuc	10	Y	FAC	9.			
4. Ribbra	1	–	FAC	10.			
5. Ribtri	1	–	FAC	11.			
6.	1			12.			

Total Sapling/Shrub Cover: 24
50% of total cover: 12 20% of total cover: 4.8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Chaang	40	Y	FACU	12.			
2. Hermax	3	–	FACU	13.			
3. Anggen	5	–	FACW	14.			
4. Calcan	3	–	FAC	15.			
5. Achmil	7	–	FACU	16.			
(2) 6. Poasp.	5	–	–	17.			
7. Equarv	1	–	FAC	18.			
8. Urtdio	1	–	FACU	19.			
9. Actrub	1	–	FAC	20.			
10.				21.			
11.				22.			

Total Herb Cover: 66
50% of total cover: 33 20% of total cover: 13.2
Circular 1/10-ac plot – or other plot dimension: 20x40 % of bare ground: 2
% Cover of Wetland Bryophytes 0 % (where applicable) Total Cover of Bryophytes 0 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	5	X2= 10
FAC species	17	X3= 51
FACU species	73	X4= 292
UPL + NL species	0	X5= 0
Column Totals:	95 (A)	356 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (1) wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 058

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oe							hemic	neg	
2-10	B1	10YR 3/2	100					fine sandy loam	neg	
10-20	B2	2.5Y 4/3	100					coarse sandy loam	neg	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ✓ Histosol or Histel (A1)
- ✓ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ✓ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ✓ Depleted Below Dark Surface (A11)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ✓ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)
- ✓ Red Parent Material (F21)
- ✓ Very Shallow Dark Surface (F22)
- ✓ Alaska Color Change[4] (TA4)
- ✓ Alaska Alpine Swales (TA5)
- ✓ Alaska Redox with 2.5Y Hue
- ✓ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ✓ α,α-dipyridyl positive (see pg. 91)
- ✓ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: MWD
Soil Map Unit Name: —

Hydric Soil Present? Yes ____ No ✓

Comments:
1. 25% gravel
2. Moist enough to test alpha alpha but not saturated.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ✓ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ✓ Marl Deposits (B15)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ✓ Other (explain)

Secondary Indicators (at least 2 are required)

- ✓ 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 w/in 12")
- ✓ Salt Deposits (C5)
- ✓ Stunted or Stressed Plants (D1)
- ✗ Geomorphic Position (D2) depression
- ✓ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ✓ Microtopographic Relief (D4) (caused by water)
- ✓ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No ✗ Depth of water (in.) —
Water Table Present? Yes ____ No ✗ Depth to water (in.) —
Seeping in at that depth but not yet filled?: —
Saturation Present? (includes capillary fringe) Yes ____ No ✗ Depth to sat. (in.) —
Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No ✗

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 058. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 058. Vegetation, western view. Photo taken August 30th, 2023.

Site 058. Soil. Photo taken August 30th, 2023.

Site 058. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT & PF Sampling Point #: 063
Investigator(s): Ashley Harris, Will Means Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.001124 Long. 149.6424726 ± 10' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: ____
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 8 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, Soil x2 Camera#: Stoughton Veg Type (Viereck Level 4 or other): 1B2c
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ___ No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Popbal	25	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 25
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Opl hor	50	Y	FACU	7.			
2. Poo bal	10	–	FACU	8.			
3. Aln vir	3	–	FAC	9.			
4. Rib tri	5	–	FAC	10.			
5. Sam rac	5	–	FACU	11.			
6.				12.			

Total Sapling/Shrub Cover: 73
50% of total cover: 36.5 20% of total cover: 14.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cym dry	40	Y	FACU	12.			
2. Equ syl	5	–	FAC	13.			
3. Ath cyc	7	–	FAC	14.			
4. Str amp	3	–	FACU	15.			
5. Equ arv	5	–	FAC	16.			
6. Ariu dio	2	–	UPL	17.			
7. Act rub	5	–	FAC	18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 67
50% of total cover: 33.5 20% of total cover: 13.4
Circular 1/10-ac plot X or other plot dimension: – % of bare ground: 0
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	30	X3= 90
FACU species	133	X4= 532
UPL + NL species	2	X5= 10
Column Totals:	165 (A)	632 (B)

Prevalence Index = B/A = 3.83

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (1) wetter than normal antecedent precipitation.
old 55 gallon drum + dilapitated car nearby

SOIL

Sampling Point #: 063

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	Oe									
3-6	A	7.5YR 2.5/2						loam		
6-22	B	10YR 2/2						sandy loam		

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): _____

Drainage Class: WD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1. 50% cobbles + gravels
2.
3. Moist enough to test alpha alpha but not saturated

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) low terrace next to stream
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –
Water Table Present? Yes ___ No X Depth to water (in.) –
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) – Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary hydrology indicators observed

Site 063. Vegetation, northern view. Photo taken August 30th, 2023.

Site 063. Vegetation, southern view. Photo taken August 30th, 2023.

Site 063. Soil. Photo taken August 30th, 2023.

Site 063. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT + PF Sampling Point #: C05
Investigator(s): Ashley Hicks, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.008971 Long. 149.695231 ± 15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 80 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, Soil x2 Camera#: Skylll3 Veg Type (Viereck Level 4 or other): IB3 - quaking aspen
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	Remarks (e.g., marginal?):

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop tre	10	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 10

50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Pop tre	30	Y	FACU	7.			
2. Ame aln	10	Y	UPL	8.			
3. Rub ida	1	–	FACU	9.			
4. Ros acu	5	–	FACU	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 46

50% of total cover: 23 20% of total cover: 9.2

Herb Stratum

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs. Cov.%	Dom?	Ind.
1. Ach mil	15	Y	FACU	12.			
2. Sax tri	7	Y	FACU	13.			
3. Dryfrac	2	–	NL	14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 24

50% of total cover: 12 20% of total cover: 4.8

Circular 1/10-ac plot X or other plot dimension: – % of bare ground: 30

% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	0	X3= 0
FACU species	68	X4= 272
UPL + NL species	12	X5= 60
Column Totals:	80 (A)	332 (B)

Prevalence Index = B/A = 4.15

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0

– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point #: 065

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-1	Oi									
1-12	A	7.5YR 2.5/1	100							95% gravel + cobble
12+	cobbles + gravels									refusal

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: V WD
Soil Map Unit Name: —

Hydric Soil Present? Yes ___ No X

Comments:
1. Too dry to test alpha - alpha.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) —
Water Table Present? Yes ___ No X Depth to water (in.) —
Seeping in at that depth but not yet filled?: —
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) — Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary hydrology indicators observed. No secondary hydrology indicators observed.

Site 065. Vegetation, southern view. Photo taken August 30th, 2023.

Site 065. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 065. Soil. Photo taken August 30th, 2023.

Site 065. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway MP 95-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT + PF Sampling Point #: 22C
Investigator(s): Ashley Hoats, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.008862 Long. 149.045263 ± 15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: 5
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: low terrace Slope (%): 2 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PEM1Rh
Photo nos./descriptions: N, S, E, W, Soil x2 Camera #: Stylus 3 Veg Type (Viereck Level 4 or other): III A3i
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain. HGM type: Riverine
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil Y, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1.				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___
50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Alnu inc	5	Y	FAC	7.			
2.				8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 5
50% of total cover: – 20% of total cover: –

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Car lyn	30	Y	OBL	12.			
2. Epi cil	15	–	FAC	13.			
3. Lig sco	10	–	FAC	14.			
4. Leg mol	2	–	FAC	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 107
50% of total cover: 53.5 20% of total cover: 21.4
Circular 1/10-ac plot ___ or other plot dimension: 15' ² % of bare ground: 3
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	80	X1= 80
FACW species	0	X2= 0
FAC species	32	X3= 96
FACU species	0	X4= 0
UPL + NL species	0	X5= 0
Column Totals:	112 (A)	176 (B)

Prevalence Index = B/A = 1.57

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: Greater than normal antecedent precipitation.

SOIL

Sampling Point #: Ada

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	O1									
2-20	B	10YR 3/1	85	10YR 4/6	15	C	PL	Silty	neg	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6) (1)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: PD
Soil Map Unit Name: –

Hydric Soil Present? Yes X No ___

Comments:
1. Site passed Dominance Test and P.I.; has two indicators of primary hydrology (A2, A3), and
2. has the appropriate landscape position (low terrace near tidally influenced stream) to
3. meet problematic soil indicator F6.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Tidally influenced stream
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –
Water Table Present? Yes X No ___ Depth to water (in.) 23
Seeping in at that depth but not yet filled?: 12
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 9
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: * nearby hole (6ft to west) has surface water about 6 inches below plant surface.

Site 066. Vegetation, northern view. Photo taken August 30th, 2023.

Site 066. Vegetation, southern view. Photo taken August 30th, 2023.

Site 066. Soil. Photo taken August 30th, 2023.

Site 066. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 074
Investigator(s): Ashley Harris, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.078828 Long. 149.830836 ± 15 NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: -
Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: low terrace Slope (%): 2 Aspect: SE
Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: (linear) / convex / concave NWI classification: PFO1/EMIB
Photo nos./descriptions: N, S, E, W, Soil x2 Camera#: Sky F13 Veg Type (Viereck Level 4 or other): 1 B2 - Willow
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: Slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Sal las	30	X	FACW	5.			
2. Bet pap	7	-	FACW	6.			
3.				7.			
4.				8.			

Total Tree Cover: 37
50% of total cover: 18.5 20% of total cover: 7.4

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Sal las	15	X	FACW	7.			
2. Aln inc	15	X	FAC	8.			
3. Rubida	5	-	FACW	9.			
4. Rib tri	3	-	FAC	10.			
5. [illegible]				11.			
6. [illegible]				12.			

Total Sapling/Shrub Cover: 38
50% of total cover: 19 20% of total cover: 7.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cir alp	70	X	FACW	12.			
2. Ath cyc	30	X	FAC	13.			
3. Tha dic	2	-	FACW	14.			
4. Her max	5	-	FACU	15.			
5. Calcan	10	-	FAC	16.			
6. Equ arv	10	-	FAC	17.			
7. Arg gen	3	-	FACW	18.			
8. Stramp	1	-	FACU	19.			
9. Rub ped	3	-	FAC	20.			
10.				21.			
11.				22.			

Total Herb Cover: 134
50% of total cover: 67 20% of total cover: 26.8
Circular 1/10-ac plot X or other plot dimension: - % of bare ground: 5
% Cover of Wetland Bryophytes 5 % Total Cover of Bryophytes 5 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	118	X2= 236
FAC species	71	X3= 213
FACU species	20	X4= 80
UPL + NL species	0	X5= 0
Column Totals:	209 (A)	529 (B)

Prevalence Index = B/A = 2.53

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (1) wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 074

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-7	Oe									
7-15	B1	5Y 2.5/2	100					loam	pos	
15-20	Oeb									
20-26	B2	10Y 3/1	100					loamy sand	pos	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 10 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: PD
Soil Map Unit Name: —

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- X Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) ___
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) low terrace near stream
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 2
Water Table Present? Yes X No ___ Depth to water (in.) 8
Seeping in at that depth but not yet filled?: 5
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 4
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 074. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 074. Vegetation, western view. Photo taken August 31st, 2023.

Site 074. Soil. Photo taken August 31st, 2023.

Site 074. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 075
Investigator(s): Ashley Hovis, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.078797 Long. 149.980421 ± 8' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: –
Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: hillslope/road embankment Slope (%): 10 Aspect: E
Local relief: Shape across slope: linear / (convex) / concave Shape up/downslope: linear / (convex) / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, soil x2 Camera #: Skagit 3 Veg Type (Viereck Level 4 or other): III B2c
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	Is the sampled area within a wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1.				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___

50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Salsco	5	Y	FAC	7.			
2.				8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 5

50% of total cover: – 20% of total cover: –

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Vicera	10	Y	NL	12.			
2. Achmil	10	Y	FACU	13.			
3. Rhi min	5	–	FACU	14.			
4. Cla'any	5	–	FACU	15.			
5. Equarv	5	–	FAC	16.			
6. Calcan	7	–	FAC	17.			
7. Hrvmax	30	Y	FACU	18.			
8. Taroff	7	–	FACU	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 79

50% of total cover: 39.5 20% of total cover: 15.8

Circular 1/10-ac plot – or other plot dimension: 20×40' % of bare ground: 0

% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	17	X3= 51
FACU species	57	X4= 228
UPL + NL species	10	X5= 50
Column Totals:	84 (A)	329 (B)

Prevalence Index = B/A = 3.92

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
___ Prevalence Index is ≤3.0

– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (1) Wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 075

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-7	Oi									
7-24	B1	25Y 3/1	100					loamy sand	neg	fill
7-24	B2	10YR 2/1	100					sa lo	neg	gravel + cobbles down to 13"

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: poor
Soil Map Unit Name:

Hydric Soil Present? Yes ___ No X

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) ___

Water Table Present? Yes ___ No X Depth to water (in.) ___

Seeping in at that depth but not yet filled?: ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) ___ Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary hydrology indicators observed, No secondary hydrology indicators observed.

Site 075. Vegetation, southern view. Photo taken August 31st, 2023.

Site 075. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 075. Soil. Photo taken August 31st, 2023.

Site 075. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF. Sampling Point #: 076
Investigator(s): Ashley Hovis, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.078617 Long. 149.875402 ± 15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: -
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Flats near tide lands Slope (%): 1 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1/SS1B
Photo nos./descriptions: N, S, E, W, Soil x2 Camera #: Slope 13 Veg Type (Viereck Level 4 or other): IB2 Willow
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X① If no, explain. HGM type: Slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	Is the sampled area within a wetland? Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Sal las	25	Y	FACW	5.			
2. Pop bal ②	10	Y	FAC	6.			
3.				7.			
4.				8.			

Total Tree Cover: 35
50% of total cover: 17.5 20% of total cover: 7

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Sal las	15	Y	FACW	7.			
2. Aln inc	15	Y	FAC	8.			
3. Rib tri	5	-	FAC	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 35
50% of total cover: 17.5 20% of total cover: 7

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Equ arv	30	Y	FAC	12.			
2. Cal can	50	Y	FAC	13.			
3. Equ syl	10	-	FAC	14.			
4. Ath cyc	7	-	FAC	15.			
5. Her max	2	-	FACU	16.			
6. Str alp	1	-	FACU	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 100
50% of total cover: 50 20% of total cover: 20
Circular 1/10-ac plot - or other plot dimension: 11.25' % of bare ground: -
% Cover of Wetland Bryophytes 2 % Total Cover of Bryophytes 2 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	40	X2= 80
FAC species	127	X3= 381
FACU species	3	X4= 12
UPL + NL species	0	X5= 0
Column Totals:	170 (A)	473 (B)

Prevalence Index = B/A = 2.78

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
- Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: Plot 25 ft from stream to east and west.
① wetter than normal antecedent precipitation.
② Broken top branches + stressed leaves on Poplbal changed indicator status to FAC

SOIL

Sampling Point #: 076

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oi									
2-8	B1	2.5Y 3/5/1	100					sa lo	neg	80% gravel
8-15	B2	10Y 3/1	100					sa lo	pos	80% gravel
15-22	B3	5Y 4/1	100					loam	pos	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ B " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: PD
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) ___
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) flats near tidelands
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) ___

Water Table Present? Yes X No ___ Depth to water (in.) 8

Seeping in at that depth but not yet filled?: ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 4 Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 076. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 076. Vegetation, western view. Photo taken August 31st, 2023.

Site 076. Soil. Photo taken August 31st, 2023.

Site 076. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5 - 118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 080
Investigator(s): Ashley Davis, WM Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.079027 Long. 149.875657 ±15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: old floodplain Slope (%): 2 Aspect: S
Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: (linear) / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, Soil X2 Camera#: Skagit3 Veg Type (Viereck Level 4 or other): 1B2c
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X① If no, explain. HGM type: NA
Are Vegetation N②, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	Is the sampled area within a wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop bal	50	Y	FACU	5.			
2. Bet pap	55	Y	FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 105
50% of total cover: 52.5 20% of total cover: 21

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln inc	10	Y	FAC	7.			
2. Pop bal	7	Y	FACU	8.			
3. Ros aci	7	Y	FACU	9.			
4. Rib tri	3	–	FAC	10.			
5. Sal las	1	–	FACW	11.			
6. Bet pap	1	–	FACU	12.			

Total Sapling/Shrub Cover: 29
50% of total cover: 14.5 20% of total cover: 5.8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Calcan	20	Y	FAC	12.			
2. Equarv	10	Y	FAC	13.			
3. Cir aur	7	–	FACU	14.			
4. Equ syl	5	–	FAC	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 42
50% of total cover: 21 20% of total cover: 8.4
Circular 1/10-ac plot X or other plot dimension: – % of bare ground: 15
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 7 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 42.9 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	1	X2= 2
FAC species	48	X3= 144
FACU species	127	X4= 508
UPL + NL species	0	X5= 0
Column Totals:	176 (A)	654 (B)

Prevalence Index = B/A = 3.72

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: site is located within old colobly floodplain.
① wetter than normal antecedent precipitation.
② several trees within plot cut down and left on forest floor.

SOIL

Sampling Point #: 080

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	O C									
2-7	B1	10YR 3/1	100					loamy	neg	
7-23	B2	10Y 2/1	100					Coarse Sand	neg	90% cobbles/gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: WD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1. Soil pit dug in low spot on old flood plain
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –

Water Table Present? Yes X No ___ Depth to water (in.) 23

Seeping in at that depth but not yet filled?: 22

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 22 Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Water table observed likely due to wetter than normal antecedent precipitation.

Site 080. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 080. Vegetation, western view. Photo taken August 31st, 2023.

Site 080. Soil. Photo taken August 31st, 2023.

Site 080. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 086
Investigator(s): Ashley Harris, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.080255 Long. 149.828941 ±15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 5 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, soil X2 Camera #: Skyit 3 Veg Type (Viereck Level 4 or other): IB2a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	Is the sampled area within a wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet pap (2)	30	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 30
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Opl hor	15	Y	FACU	7.			
2. Rib tri	3	–	FAC	8.			
3. Bet pap	5	–	FACU	9.			
4. Ros aci	3	–	FACU	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 26
50% of total cover: 13 20% of total cover: 5.2

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Ath cyc	5	–	FAC	12.			
2. Dry exp	5	–	FACU	13.			
3. Her max	7	–	FACU	14.			
4. Equ arv	20	Y	FAC	15.			
5. Gym dry	10	–	FACU	16.			
6. Calcan	20	Y	FAC	17.			
7. Ros cos	1	–	FACU	18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 68
50% of total cover: 34 20% of total cover: 13.6
Circular 1/10-ac plot X or other plot dimension: – % of bare ground: 5
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	48	X3= 144
FACU species	76	X4= 304
UPL + NL species	0	X5= 0
Column Totals:	124 (A)	448 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

- – Dominance Test is >50%
- – Prevalence Index is ≤3.0
- – Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- – Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (2) Bet pap appear healthy – no signs of stress.
(1) wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 086

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-1	Oi									
1-17	B1	10YR 3/3	100					fi sa lo		60% cobbles/gravels
17-24	B2	2.5Y 3/1	100					med sand		10% gravels

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: WD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1. Not moist enough to test alpha-alpha.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –
Water Table Present? Yes ___ No X Depth to water (in.) –
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) – Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary hydrology observed. No secondary hydrology indicators observed.

Site 086. Vegetation, northern view. Photo taken August 31st, 2023.

Site 086. Vegetation, western view. Photo taken August 31st, 2023.

Site 086. Soil. Photo taken August 31st, 2023.

Site 086. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 088
Investigator(s): Ashley Harris, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.079883 Long. 149.828763 ±12' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: -
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: toeslope Slope (%): 1 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1/SS1B
Photo nos./descriptions: N, S, E, W, Soil x2 Camera #: Skagit 3 Veg Type (Viereck Level 4 or other): 1B3a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X① If no, explain. HGM type: Slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Betpap ②	20	Y	FAC	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 20

50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Opthor ②	40	Y	FAC	7.			
2. Pin inc	15	Y	FAC	8.			
3. Pos aoi	2	-	FACU	9.			
4. Rib tri	7	-	FAC	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 64

50% of total cover: 32 20% of total cover: 12.8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Athcyc	15	-	FAC	12.			
2. Cir alp	30	Y	FACW	13.			
3. Equarv	30	Y	FAC	14.			
4. Calcan	40	Y	FAC	15.			
5. Gymdry	3	-	FACU	16.			
6. Dry exp	3	-	FACU	17.			
7. Hermax	10	-	FACU	18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 131

50% of total cover: 65.5 20% of total cover: 26.2

Circular 1/10-ac plot X or other plot dimension: - % of bare ground: 0

% Cover of Wetland Bryophytes 1 % Total Cover of Bryophytes 1 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	30	X2= 60
FAC species	167	X3= 501
FACU species	18	X4= 72
UPL + NL species	0	X5= 0
Column Totals:	215 (A)	633 (B)

Prevalence Index = B/A = 2.94

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0

X Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: ① Wetter than normal antecedent precipitation.
② over 50% Betpap trees have top branches breaking off and multiple trunks. Opthor stunted in comparison to Opthor in uplands. Changed indicator status to FAC

SOIL

Sampling Point #: 080

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oe									
2-8	B1	2.5Y 3/1	85	2.5Y 3/6	15	C	M/PL	loam	pos	
8-25	B2	10Y 3/1	100					silt	pos	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 9 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue (1)
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91) (1)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: PD
Soil Map Unit Name: —

Hydric Soil Present? Yes X No ___

Comments:
1. Meets these problem indicators but not needed because standard indicators met.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) ___
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) - low slope
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 1
Water Table Present? Yes X No ___ Depth to water (in.) 14
Seeping in at that depth but not yet filled?: 8
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 7
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 088. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 088. Vegetation, western view. Photo taken August 31st, 2023.

Site 088. Soil. Photo taken August 31st, 2023.

Site 088. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 094
Investigator(s): Ashley Harris, Will Mains Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.054419 Long. 149.796673 ± 10' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: footslope Slope (%): 10 Aspect: W
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, Soil x2 Camera#: Skaji13 Veg Type (Viereck Level 4 or other): 11B2b
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Aln vir	10	Y	FAC	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 10
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Aln vir	60	Y	FAC	7.			
2. Sam rac	30	Y	FACU	8.			
3. Opl bor	30	Y	FACU	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 120
50% of total cover: 60 20% of total cover: 24

Herb Stratum

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs. Cov.%	Dom?	Ind.
1. Dry exp	5	Y	FACU	12.			
2. Ver mar	10	Y	FACU	13.			
3. Imp noli tan	1	–	FACW	14.			
4. Act rub	3	–	FAC	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 19
50% of total cover: 9.5 20% of total cover: 3.8
Circular 1/10-ac plot X or other plot dimension: – % of bare ground: 40
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	1	X2= 2
FAC species	73	X3= 219
FACU species	75	X4= 300
UPL + NL species	0	X5= 0
Column Totals:	149 (A)	521 (B)

Prevalence Index = B/A = 3.50

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (1) Wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 094

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oe									
2-5	B1	7.5YR 3/1	100					loamy sand	neg	
5-25	B2	2.5Y 4/2	100					sandy lo	neg	Seem of Oats

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd. underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: SPD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –
Water Table Present? Yes ___ No X Depth to water (in.) –
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) – Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary hydrology indicators observed. No secondary hydrology indicators observed.

Site 094. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 094. Vegetation, western view. Photo taken August 31st, 2023.

Site 094. Soil. Photo taken August 31st, 2023.

Site 094. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 095
Investigator(s): Ashley Hovis, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.054354 Long. 149.796898 ± 15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: toe slope / flat Slope (%): 0 Aspect: –
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSS1/EM1Fh
Photo nos./descriptions: N, S, E, W, Soil V2 Camera#: Skyrit 3 Veg Type (Viereck Level 4 or other): 11B7b
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: Slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	Remarks (e.g., marginal?):

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1.				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: –
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln sin	25	Y	FAC	7.			
2. Opl hor	3	–	FACU	8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 28
50% of total cover: 14 20% of total cover: 5.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Impnolitan	5	–	FACW	12.			
2. Vio epi	7	–	NL	13.			
3. Com pal	30	Y	OBL	14.			
4. Cal can	60	Y	FAC	15.			
5. Typha lat	1	–	OBL	16.			
6. Epi ciL	2	–	FAC	17.			
7. Gal trifi	3	–	FACW	18.			
8. Calli het	3	–	OBL	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 111
50% of total cover: 55.5 20% of total cover: 22.2
Circular 1/10-ac plot – or other plot dimension: π 25'² % of bare ground: 10
% Cover of Wetland Bryophytes 15 % Total Cover of Bryophytes 15 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	34	X1= 34
FACW species	8	X2= 16
FAC species	87	X3= 261
FACU species	3	X4= 12
UPL + NL species	7	X5= 35
Column Totals:	139 (A)	358 (B)

Prevalence Index = B/A = 2.58

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: * Blue when near wet/up boundary (approx 20 ft from boundary)
** Calli het growing on surface of water
(1) wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 095

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-4	B1	5Y4/1	100						pos	small gravels throughout
4-18	Op6									
18-20	B2	10Y 3/1	100						pos	small gravels throughout

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 4 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: VPD
Soil Map Unit Name: –

Hydric Soil Present? Yes X No ___

Comments:
1. Soil pit dug on edge of plot near wet/up boundary
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- X Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) ___
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) toe slope/flat
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- X Microtopographic Relief (D4) (caused by water)*
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 1
Water Table Present? Yes X No ___ Depth to water (in.) 9
Seeping in at that depth but not yet filled?: 0
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: *Alder growing on mounds above ponded water. Ponded water with duckweed with plot.

Site 095. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 095. Vegetation, western view. Photo taken August 31st, 2023.

Site 095. Soil. Photo taken August 31st, 2023.

Site 095. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 098
Investigator(s): Ashley Hovis, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.055074 Long. 149.796856 ± 15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 30 Aspect: NW
Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: (linear) / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, soil x2 Camera #: Skagit 3 Veg Type (Viereck Level 4 or other): 1B2b
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X① If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop tre	25	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 25
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Aln vir	20	Y	FAC	7.			
2. Pop tre	5	–	FACU	8.			
3. Ros aci	5	–	FACU	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 30
50% of total cover: 15 20% of total cover: 6

Herb Stratum

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Her max	40	Y	FACU	12.			
2. Equarv	10	–	FAC	13.			
3. Stramp	3	–	FACU	14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 53
50% of total cover: 26.5 20% of total cover: 10.6
Circular 1/10-ac plot – or other plot dimension: 15 X 30' % of bare ground: 0
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	30	X3= 90
FACU species	78	X4= 312
UPL + NL species	0	X5= 0
Column Totals:	108 (A)	402 (B)

Prevalence Index = B/A = 3.72

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: ① wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 098

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oe									
2-8	B1	7.5YR 2.5/3						sa lo		50% cobbles/gravel
8-19	B2	2.5Y 3/3						sa lo		" "
19+	Cobbles									refusal

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: VWD
Soil Map Unit Name: —

Hydric Soil Present? Yes ___ No X

Comments:
1. Too dry to test alpha-alpha. Very dry pit.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) ___

Water Table Present? Yes ___ No X Depth to water (in.) ___

Seeping in at that depth but not yet filled?: ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) ___ Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary hydrology indicators observed. No secondary hydrology indicators observed.

Site 098. Vegetation, northern view. Photo taken August 31st, 2023.

Site 098. Vegetation, southern view. Photo taken August 31st, 2023.

Site 098. Soil. Photo taken August 31st, 2023.

Site 098. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 099
Investigator(s): Ashley Harris, Will Mears Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.655299 Long. 149.776748 ± 15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: —
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: depression Slope (%): 0 Aspect: —
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSS1Rh
Photo nos./descriptions: N, S, E, W, Sil x2 Camera #: Skyjit 3 Veg Type (Viereck Level 4 or other): 11B2F
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: Riverine
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	Is the sampled area within a wetland? Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
(C) 1. Salbeb *	7	Y	FAC	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 7
50% of total cover: — 20% of total cover: —

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Alnvir *	10	Y	FAC	7.			
2. Salbeb *	20	Y	FAC	8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 30
50% of total cover: 15 20% of total cover: 6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Calcan *	25	Y	FAC	12.			
2. Compal *	10	Y	OBL	13.			
3. Equsyl *	5	-	FAC	14.			
4. Callhet *	5	-	OBL	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 45
50% of total cover: 22.5 20% of total cover: 9
Circular 1/10-ac plot — or other plot dimension: π10'² % of bare ground: 0
% Cover of Wetland Bryophytes 15 % Total Cover of Bryophytes 15 % (where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	15	X1= 15
FACW species	0	X2= 0
FAC species	67	X3= 201
FACU species	0	X4= 0
UPL + NL species	0	X5= 0
Column Totals:	82 (A)	216 (B)

Prevalence Index = B/A = 2.63

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: *Flooded. Callhet floating on surface of water. Alder + willows growing out of upland bank and putting limbs + some roots into water. Herbs growing on mounds.

SOIL

Sampling Point #: 099

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip (pos/neg)	Remarks (or use comment number)
0-11	Oe									
11-23	B	5Y 2.5/2	100					loam	pos	30% gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd. underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 3 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: VPD
Soil Map Unit Name: —

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- X Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) ___
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) (d-depression)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 3
Water Table Present? Yes X No ___ Depth to water (in.) 1
Seeping in at that depth but not yet filled?: 1
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0 Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 099. Vegetation, northern view. Photo taken August 31st, 2023.

Site 099. Vegetation, southern view. Photo taken August 31st, 2023.

Site 099. Soil. Photo taken August 31st, 2023.

Site 099. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 101
Investigator(s): Ashley Hovis, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.058645 Long. 149.79776 ± 15 NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: –
Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: bench Slope (%): 3 Aspect: W
Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: (linear) / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W, Soil x2 Camera#: Skagit 3 Veg Type (Viereck Level 4 or other): 1B2C
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. HGM type: NA
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop bal	30	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 30
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln vir	10	Y	FAC	7. Pop tre	2	–	FACU
2. Sor sit	3	–	FACU	8.			
3. Vib edu	5	–	FACU	9.			
4. Ros aci	10	Y	FACU	10.			
5. Opl hor	15	Y	FACU	11.			
6. Rib tri	3	–	FAC	12.			

Total Sapling/Shrub Cover: 48
50% of total cover: 24 20% of total cover: 9.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Her max	5	–	FACU	12.			
2. Equ arv	20	Y	FAC	13.			
3. Orth sec	5	–	FACU	14.			
4. Bos ros	1	–	FACU	15.			
5. Ach mil	3	–	FACU	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 34
50% of total cover: 17 20% of total cover: 6.8
Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: ___
% Cover of Wetland Bryophytes 0 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	33	X3= 99
FACU species	79	X4= 316
UPL + NL species	0	X5= 0
Column Totals:	112 (A)	415 (B)

Prevalence Index = B/A = 3.71

Hydrophytic Vegetation Indicators:

– Dominance Test is >50%
– Prevalence Index is ≤3.0
– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (1) Wetter than normal antecedant precipitation.

SOIL

Sampling Point #: 101

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oi									
~~1-2~~	~~A~~									
2-20	B	2.5Y 5/2	100					Sandy loam		

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: WD
Soil Map Unit Name: –

Hydric Soil Present? Yes ___ No X

Comments:
1. too dry for alpha alpha
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) –
Water Table Present? Yes ___ No X Depth to water (in.) –
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) – Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 101. Vegetation, northern view. Photo taken August 31st, 2023.

Site 101. Vegetation, southern view. Photo taken August 31st, 2023.

Site 101. Soil. Photo taken August 31st, 2023.

Site 101. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Highway 98.5-118 Borough/City: MOA Date: 8/31/2023
Applicant/Owner: ADOT + PF Sampling Point #: 102
Investigator(s): Ashley Harris, Will Mans Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.0584100 Long. 149.7975414 ±15' NAD 83 Recorded on GPS?: X Marked on map? X Field Map #: –
Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: Flats – fresh tidal Slope (%): 0 Aspect: –
Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: (linear) / convex / concave NWI classification: PSS1Rh
Photo nos./descriptions: N, S, E, W, Soil X2 Camera#: Skagit Veg Type (Viereck Level 4 or other): 1B3a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X ① If no, explain. HGM type: Riverine
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Betpap ②	10	X	FAC	5.			
2. Pic gla	3	X	FAC	6.			
3.				7.			
4.				8.			

Total Tree Cover: 13
50% of total cover: 6.5 20% of total cover: 2.6

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Betpap ②	10	X	FAC	7.			
2. Aln vir	20	X	FAC	8.			
3. Rib tri	5	–	FAC	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 35
50% of total cover: 17.5 20% of total cover: 7

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Calcan	50	X	FAC	12.			
2. Equ arv	15	–	FAC	13.			
3. Com pal	30	X	OBL	14.			
4. Vio epi	10	–	NL	15.			
5. Rub ped	3	–	FAC	16.			
6. Equ sylv	10	–	OBL	17.			
7. Siv sua	7	–	OBL	18.			
8. Carcan	1	–	FACU	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 126
50% of total cover: 63 20% of total cover: 25.2
Circular 1/10-ac plot – or other plot dimension: 20' radius % of bare ground: 0
% Cover of Wetland Bryophytes 3 % Total Cover of Bryophytes 3 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	47	X1= 47
FACW species	0	X2= 0
FAC species	116	X3= 348
FACU species	1	X4= 4
UPL + NL species	10	X5= 50
Column Totals:	174 (A)	449 (B)

Prevalence Index = B/A = 2.58

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
X Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: ① wetter than normal antecedent precipitation.
② Bet pap growing on mounds; reduced size; multiple trunks; leaves appear stressed. Showing signs of stress on > 50% individuals.

Pic gla growing on mound w/ Betpap + appear stressed. changed indicator status to FAC.

SOIL

Sampling Point #: 102

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-33	Oi									

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- X Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface: @ 4 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: PD
Soil Map Unit Name: —

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- X 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 w/in 12")
- ___ Salt Deposits (C5)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 3-8

Water Table Present? Yes X No ___ Depth to water (in.) 2

Seeping in at that depth but not yet filled?: 1

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0 Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: standing water all over plot.

Site 102. Vegetation, northern view. Photo taken August 31st, 2023.

Site 102. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 102. Soil. Photo taken August 31st, 2023.

Site 102. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 92.5-11X Borough/City: MOA Date: 9/7/23
Applicant/Owner: ADOT+PF Sampling Point #: 105
Investigator(s): VW, AH Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.950585 Long. 149.395681 ± 16' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Toeslope Slope (%): 1-3 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1Rh
Photo nos./descriptions: N,S,E,W veg, soil x2 Camera#: — Veg Type (Viereck Level 4 or other): IB1c
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter HGM type: Slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet neo	20	Y	FACU	5.			
2. Pop tremls	45	Y	FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 65
50% of total cover: 32.5 20% of total cover: 13

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Pop tremls	3		FACU	7.			
2. Sal sco	15	Y	FAC	8.			
3. Rosa acu	1		FACU	9.			
4. Ribgla	2		FAC	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 21
50% of total cover: 10.5 20% of total cover: 4.2

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cin ang	12		FACU	12.			
2. Equ arv	45	Y	FAC	13.			
3. Cal can	18	Y	FAC	14.			
4. Her max	2		FACU	15.			
5. Tar ofi	1		FACU	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 78
50% of total cover: 39 20% of total cover: 15.6
Circular 1/10-ac plot — or other plot dimension: 10x20 % of bare ground: ___
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes — %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	80	X3= 240
FACU species	84	X4= 336
UPL + NL species	0	X5= 0
Column Totals:	164 (A)	576 (B)

Prevalence Index = B/A = 3.51

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point #: 105

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-4	O1		100						–	
4-9	O2		100						–	
9-18	B	10YR 4/1	100					Silt	pos	50% cobble + gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 5 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): NA

Drainage Class: VPD
Soil Map Unit Name: –

Hydric Soil Present? Yes X No ___

Comments:
1. Also meet indicator for positive alpha-alpha.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) ___
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) toe slope
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) ___

Water Table Present? Yes X No ___ Depth to water (in.) 2

Seeping in at that depth but not yet filled?: 2

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0 Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 105. Vegetation, southern view. Photo taken September 7th, 2023.

Site 105. Vegetation, western view. Photo taken September 7th, 2023.

Site 105. Soil. Photo taken September 7th, 2023.

Site 105. Soil. Photo taken September 7th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 94.5-118 Borough/City: MOA Date: 9/7/23
Applicant/Owner: ADOT&PF Sampling Point #: 113
Investigator(s): VW, AH Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.952146 Long. 149.407887 ±15' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: swale/ditch Slope (%): 1-3 Aspect: E
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PEM1Fd
Photo nos./descriptions: N, S, E, W Soil x 2 Camera #: — Veg Type (Viereck Level 4 or other): III B3a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter HGM type: riverine
Are Vegetation N, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. —				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___
50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln ten	3		FAC	7.			
2. Pop bals	1		FACU	8.			
3. Sal pul	8	Y	FACW	9.			
4. Sal gla	5	Y	FAC	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 17
50% of total cover: 8.5 20% of total cover: 3.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Equ fluv	75	Y	OBL	12.			
2. Car aqu	10		OBL	13.			
3. Jun art	8		OBL	14.			
4. Equ arv	8		FAC	15.			
5. Prun ara	1		OBL	16.			
6. Typh lat	1		OBL	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 103
50% of total cover: 51.5 20% of total cover: 20.6
Circular 1/10-ac plot — or other plot dimension: 4×40 % of bare ground: —
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 105 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	95	X1= 95
FACW species	8	X2= 16
FAC species	16	X3= 48
FACU species	1	X4= 4
UPL + NL species	0	X5= 0
Column Totals:	120 (A)	163 (B)

Prevalence Index = B/A = 1.36

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

SOIL

Sampling Point #: 113

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	Oe		100	–					–	
3-11	B	10YR 3/1	100					SaLo	pos	70% cobbles & gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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):

Standard Indicators:

- – Histosol or Histel (A1)
- – Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- – Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 4 " in this pit
- – Thick Dark Surface (A12)
- – Alaska Gleyed (A13)
- – Alaska Redox (A14)
- – Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- – Depleted Below Dark Surface (A11)
- – Depleted Matrix (F3)
- – Redox Dark Surface (F6)
- – Depleted Dark Surface (F7)
- – Redox Depressions (F8)
- – Red Parent Material (F21)
- – Very Shallow Dark Surface (F22)
- – Alaska Color Change[4] (TA4)
- – Alaska Alpine Swales (TA5)
- – Alaska Redox with 2.5Y Hue
- – AK Gleyed without Hue 5Y or Redder Underlying Layer
- – α,α-dipyridyl positive (see pg. 91) ①
- – Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: –
Depth (inches):

Drainage Class: PD
Soil Map Unit Name:

Hydric Soil Present? Yes X No ____

Comments:
1. Soils are disturbed + adjacent to road berm + rock fill
2. ① would meet positive α,α but standard indicator present.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- – Water Marks (B1)
- – Sediment Deposits (B2)
- – Drift Deposits (B3)
- – Algal Mat or Crust (B4)
- – Iron Deposits (B5)
- – Surface Soil Cracks (B6)
- – Inundation Visible on Aerial Imagery (B7)
- – Sparsely Vegetated Concave Surface (B8)
- – Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- – Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- – Other (explain)

Secondary Indicators (at least 2 are required)

- – Water-Stained Leaves (B9)
- – Drainage Patterns (B10)
- – Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- – Salt Deposits (C5)
- – Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Swale
- – Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- – Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ____ Depth of water (in.) 2"
Water Table Present? Yes X No ____ Depth to water (in.) 0
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes X No ____ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 113. Vegetation, southern view. Photo taken September 7th, 2023.

Site 113. Vegetation, western view. Photo taken September 7th, 2023.

Site 113. Soil. Photo taken September 7th, 2023.

Site 113. Soil. Photo taken September 7th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 9/7/23
Applicant/Owner: ADOT&PF Sampling Point #: 120
Investigator(s): VW, AU Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.017423 Long. 149.735964 ±15' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Bench Slope (%): 1-3 Aspect: W
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W veg soil 32 Camera#: — Veg Type (Viereck Level 4 or other): I B1c
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter HGM type: n/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	Is the sampled area within a wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop bals	65	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 65
50% of total cover: 32.5 20% of total cover: 13

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Opl hor	70	Y	FACU	7.			
2. Vib edu	10		FACU	8.			
3. Sorb sit	1		FACU	9.			
4. Rib glan	3		FAC	10.			
5. Pop bals	10		FACU	11.			
6.				12.			

Total Sapling/Shrub Cover: 94
50% of total cover: 47 20% of total cover: 18.8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	50	Y	FAC	12.			
2. Strp amp	8		FACU	13.			
3. Gal trif	8		FAC	14.			
4. Car can	5		FACU	15.			
5. Ath mil	1		FACU	16.			
6. Act rub	3		FAC	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 75
50% of total cover: 37.5 20% of total cover: 15

Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes — %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	64	X3= 192
FACU species	170	X4= 680
UPL + NL species	0	X5= 0
Column Totals:	234 (A)	872 (B)

Prevalence Index = B/A = 3.73

Hydrophytic Vegetation Indicators:

— Dominance Test is >50%
— Prevalence Index is ≤3.0

— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point #: 120

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-4	Oe		100						–	
4-8	A	7.5YR 2.5/1	100					Loam	–	
8-11	E	2.5Y 4/1	100					SiLo	–	
11-23	B	7.5YR 3/4	100					FiSaLo	–	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): _____

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes ___ No X

Comments:
1. Too dry to test for α,α
2. no hydric soil indicators observed.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Bench
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) _____
Water Table Present? Yes ___ No X Depth to water (in.) _____
Seeping in at that depth but not yet filled?: ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: no primary hydrology & only 1 secondary indicator observed.

Site 120. Vegetation, northern view. Photo taken September 7th, 2023.

Site 120. Vegetation, western view. Photo taken September 7th, 2023.

Site 120. Soil. Photo taken September 7th, 2023.

Site 120. Soil. Photo taken September 7th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 9/7/23
Applicant/Owner: ADOT&PF Sampling Point #: 123
Investigator(s): VW, AH Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.041798 Long. 149.784278 ± 15' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: toeslope Slope (%): 0-1 Aspect: ___
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSS1/EM1B
Photo nos./descriptions: N,S,E,W veg soil x2 Camera#: — Veg Type (Viereck Level 4 or other): IIB2b
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain. Wetter HGM type: slope
Are Vegetation N, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. —				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___

50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln ten	55	Y	FAC	7.			
2. Pop bals	10		FACU	8.			
3. Sal ala	10		FAC	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 75

50% of total cover: 37.5 20% of total cover: 15

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Calcan	60	Y	FAC	12.			
2. Epi cil	3		FAC	13.			
3. Ach mil	3		FACU	14.			
4. Tara of	2		FACU	15.			
5. Equ arv	5		FAC	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 73

50% of total cover: 36.5 20% of total cover: 14.6

Circular 1/10-ac plot — or other plot dimension: 10' radius % of bare ground: —

% Cover of Wetland Bryophytes — % Total Cover of Bryophytes — %
(where applicable):

Remarks: ~60' x 30' area

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	133	X3= 399
FACU species	15	X4= 60
UPL + NL species	0	X5= 0
Column Totals:	148 (A)	459 (B)

Prevalence Index = B/A = 3.10

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
— Prevalence Index is ≤3.0

— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

SOIL

Sampling Point #: 123

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-8	Oe		100						neg	
8+	C									refusal on cobbles

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2) ①
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4) (within 12" of mineral surface: @ _____" in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: cobbles *
Depth (inches): 8

Drainage Class: poor
Soil Map Unit Name: –

Hydric Soil Present? Yes X No ___

Comments:
1. Soil seems disturbed from road. Appears to be a recently developed wetland on top
2. of an old gravel road that is now blocked from traffic, soil (cobble) below
3. Oe layer has low organic carbon content due to recent formation.

HYDROLOGY

* compacted old road bed.

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7) ①
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) floodplain
- X Shallow Aquitard (D3) ② (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 2'3"
Water Table Present? Yes X No ___ Depth to water (in.) 0
Seeping in at that depth but not yet filled?: ___
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: surface water in stream
① Inundation visible on aerial imagery for multiple years.
② Compacted old road bed perches water

Site 123. Vegetation, northern view. Photo taken September 7th, 2023.

Site 123. Vegetation, southern view. Photo taken September 7th, 2023.

Site 123. Soil. Photo taken September 7th, 2023.

Site 123. Soil. Photo taken September 7th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MA Date: 9/12/23

Applicant/Owner: ADOT+PF Sampling Point #: 132

Investigator(s): VW, AH Firm: HDR Alaska, Inc.

Lat. (dec.°) 60.951660 Long 149.409686 ± 15' NAD 83 Recorded on GPS?: Y Marked on map? – Field Map #: –

Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: swale Slope (%): 0 Aspect: –

Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PEM1Rh

Photo nos./descriptions: N, S, E, W, veg, soil x2 Camera #: – Veg Type (Viereck Level 4 or other): III A3i

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter HGM type: Riverine

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. –				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___

50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. –				7.			
2.				8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: ___

50% of total cover: ___ 20% of total cover: ___

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	5		FAC	12.			
2. Car aqu	10		OBL	13.			
3. Car lyn	75	Y	OBL	14.			
4. Junc balt	10		OBL	15.			
5. Des cesp	5		FAC	16.			
6. Hord jub	1		FACW	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 106

50% of total cover: 53 20% of total cover: 21.2

Circular 1/10-ac plot – or other plot dimension: 15' radius % of bare ground: 20

% Cover of Wetland Bryophytes – % (where applicable) Total Cover of Bryophytes – %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	95	X1= 95
FACW species	0	X2= 0
FAC species	10	X3= 30
FACU species	1	X4= 4
UPL + NL species	0	X5= 0
Column Totals:	106 (A)	129 (B)

Prevalence Index = B/A = 1.22

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0

– Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

– Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: open with ~20% ① Site is between railroad berm + bike path. Hydrology of site disturbed from presence of bike path and rail road.

SOIL

Sampling Point #: 132

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-1	Oe		100						–	
1-10	B	10Y 3/1	100					SaLo	pos	
10+	C		100						–	cobbles + gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd. underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 2 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: cobbles + gravel
Depth (inches): 10+

Drainage Class: PO
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10)
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Swale
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 1"
Water Table Present? Yes X No ___ Depth to water (in.) 0
Seeping in at that depth but not yet filled?: –
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 132. Vegetation, northern view. Photo taken September 12th, 2023.

Site 132. Vegetation, southern view. September 12th, 2023.

Site 132. Soil. Photo taken September 12th, 2023.

Site 132. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5 - 118 Borough/City: MOA Date: 9/12/23

Applicant/Owner: ADOT&PF Sampling Point #: 140

Investigator(s): VW + AH Firm: HDR Alaska, Inc.

Lat. (dec.°) 60.951961 Long. 149.409770 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___

Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillside Slope (%): 3-5 Aspect: W

Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U

Photo nos./descriptions: N,S,E,W veg soil ✓ Camera #: — Veg Type (Viereck Level 4 or other): IB3a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X* If no, explain: wetter HGM type: N/A

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No ✓	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No ✓	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet neo	12	Y	FACU	5.			
2. Aln sin	10	Y	FAC	6.			
3.				7.			
4.				8.			

Total Tree Cover: 22

50% of total cover: 11 20% of total cover: 4.4

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln sin	50	Y	FAC	7.			
2. Rub ida	15		FACU	8.			
3. Rib gla	30	Y	FAC	9.			
4. Sorb sit	5		FACU	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 100

50% of total cover: 50 20% of total cover: 20

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Her max	10	Y	FACU	12.			
2. Arn dio	10	Y	UPL	13.			
3. Act rub	3		FAC	14.			
4. Osm cin	2		FACU	15.			
5. Cal can	5		FAC	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 30

50% of total cover: 15 20% of total cover: 6

Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —

% Cover of Wetland Bryophytes — % Total Cover of Bryophytes — %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	98	X3= 294
FACU species	44	X4= 176
UPL + NL species	10	X5= 50
Column Totals:	152 (A)	520 (B)

Prevalence Index = B/A = 3.42

Hydrophytic Vegetation Indicators:

— Dominance Test is >50%
— Prevalence Index is ≤3.0

— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: ✓ wetter than normal antecedent precipitation

SOIL

Sampling Point #: 1170

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oe		100						—	
2-20	B	10YR 3/4	100					FiSaLo	—	50% cobbles
20+										cobbles

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): _____

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes ___ No ✓

Comments:
1. Too dry to test α α, very dry soil.
2. no hydric soil indicators
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No ✓ Depth of water (in.) _____

Water Table Present? Yes ___ No ✓ Depth to water (in.) _____

Seeping in at that depth but not yet filled?: ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: no hydrology indicators observed.

Site 140. Vegetation, northern view. Photo taken September 12th, 2023.

Site 140. Vegetation, western view. Photo taken September 12th, 2023.

Site 140. Soil. Photo taken September 12th, 2023.

Site 140. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 9/12/23
Applicant/Owner: ADOT&PF Sampling Point #: 144
Investigator(s): VW, AH Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.083358 Long. 149.833873±15' NAD83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Swale Slope (%): 0-3 Aspect: NW
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1C
Photo nos./descriptions: N,S,E,W veg, soil x2 Camera#: — Veg Type (Viereck Level 4 or other): IBla
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain. wetter HGM type: Riverine
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	Remarks (e.g., marginal?):

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Aln sin	40	Y	FAC	5.			
2. Sal ala	15	Y	FAC	6.			
3. Pop bals	10		FACU	7.			
4.				8.			

Total Tree Cover: 65

50% of total cover: 32.5 20% of total cover: 13

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Sal ala	15	Y	FAC	7.			
2. Aln sin	25	Y	FAC	8.			
3. Rub ida	3		FACU	9.			
4. Rib tri	8		FAC	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 51

50% of total cover: 25.5 20% of total cover: 10.2

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Equ arv	35	Y	FAC	12.			
2. Cal can	15	Y	FAC	13.			
3. Her max	2		FACU	14.			
4. Ath cyc	5		FAC	15.			
5. Dry exp	2		FACU	16.			
6. Epi cil	1		FAC	17.			
7. Tar ofi	1		FACU	18.			
8. Strp amp	1		FACU	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 62

50% of total cover: 31 20% of total cover: 12.4

Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —

% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 15 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	159	X3= 477
FACU species	19	X4= 76
UPL + NL species	0	X5= 0
Column Totals:	178 (A)	553 (B)

Prevalence Index = B/A = 3.11

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: * wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 144

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-9	Oe		100						—	
9-20	B	2.5Y 3/1	90	2.5YR 3/6	10	C	PL/M	SiLo	neg	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd. underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: ___
Depth (inches): ___

Drainage Class: VPD
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- X 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Swale
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 144

Water Table Present? Yes X No ___ Depth to water (in.) 6

Seeping in at that depth but not yet filled?: ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0

Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Iron sheen in standing water

Site 144. Vegetation, northern view. Photo taken September 12th, 2023.

Site 144. Vegetation, southern view. Photo taken September 12th, 2023.

Site 144. Soil. Photo taken September 12th, 2023.

Site 144. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MSB Date: 9/12/23

Applicant/Owner: ADOT&P Sampling Point #: 155

Investigator(s): VW, AH Firm: HDR Alaska, Inc.

Lat. (dec.°) 61.085888 Long. 149.837424 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___

Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: lowlying Slope (%): 0-1 Aspect: W

Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U

Photo nos./descriptions: N, S, E, W veg soil 2 Camera#: — Veg Type (Viereck Level 4 or other): IB1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain. wetter HGM type: N/A

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop bals	60	Y	FACU	5.			
2. Pic gla	3		FACU	6.			
3. Bet NO	2		FACU	7.			
4.				8.			

Total Tree Cover: 65

50% of total cover: 32.5 20% of total cover: 13

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Rub idaea	10		FACU	7.			
2. Sorb sitc	8		FACU	8.			
3. Aln sin	30	Y	FAC	9.			
4. Pop bals	10		FACU	10.			
5. Ros aci	15	Y	FACU	11.			
6.				12.			

Total Sapling/Shrub Cover: 73

50% of total cover: 36.5 20% of total cover: 14.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	30	Y	FAC	12.			
2. Equ arv	10		FAC	13.			
3. Ach mil	5		FACU	14.			
4. Tar off	2		FACU	15.			
5. Her max	3		FACU	16.			
6. Cha ang	5		FACU	17.			
7. Gal trifo	2		FAC	18.			
8. Pyr asar	40	Y	FACU	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 97

50% of total cover: 48.5 20% of total cover: 19.4

Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —

% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 5 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	72	X3= 216
FACU species	163	X4= 652
UPL + NL species	0	X5= 0
Column Totals:	235 (A)	868 (B)

Prevalence Index = B/A = 3.69

Hydrophytic Vegetation Indicators:

— Dominance Test is >50%
___ Prevalence Index is ≤3.0

— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: * wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 155

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oi		100						–	
2-3	Oe		100						–	
3-9	B_1	2.5Y 3/2	100					LoSa	neg	50% cobble + gravel
9-20	B_2	2.5Y 3/1	100					LoSa	neg	50% cobble + gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: ___
Depth (inches): ___

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes ___ No X

Comments:
1. B layers just moist enough to test α,α but not saturated.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Terrace or Shoulder
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) ___

Water Table Present? Yes ___ No X Depth to water (in.) ___

Seeping in at that depth but not yet filled?: ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) ___ Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: only 1 secondary indicator.

Site 155. Vegetation, northern view. Photo taken September 12th, 2023.

Site 155. Vegetation, southern view. Photo taken September 12th, 2023.

Site 155. Soil. Photo taken September 12th, 2023.

Site 155. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 9/12/23
Applicant/Owner: ADOT&PF Sampling Point #: 158
Investigator(s): VW, AH Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.0808158 Long. 149.832528 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Flats Slope (%): 0-1 Aspect: SW
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1/SS1B
Photo nos./descriptions: NSEW veg soil x2 Camera#: — Veg Type (Viereck Level 4 or other): IBa2a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain. HGM type: Eldor
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	Is the sampled area within a wetland? Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet neo	40	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 40
50% of total cover: 20 20% of total cover: 8

Sapling/Shrub Stratum (woody plants < 3" dbh)

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Rib tri	20	Y	FAC	7.			
2. Opl hor	15	Y	FACU	8.			
3. Ros aci	2		FACU	9.			
4. Aln sin	20	Y	FAC	10.			
5. Sor sit	3		FACU	11.			
6. Vib edu	1		FACU	12.			

Total Sapling/Shrub Cover: 61
50% of total cover: 30.5 20% of total cover: 12.2

Herb Stratum

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs. Cov.%	Dom?	Ind.
1. Cal can	60	Y	FAC	12.			
2. Ath cyc	2		FAC	13.			
3. Equ arv	15		FAC	14.			
4. Dry exp	2		FACU	15.			
5. Cot can	1		FACU	16.			
6. Rub arc	2		FAC	17.			
7. Cir alp	40	Y	FACW	18.			
8. Geum mac	5		FAC	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 133
50% of total cover: 66.5 20% of total cover: 26.6

Circular 1/10-ac plot 1 or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 10 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 66.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	40	X2= 80
FAC species	130	X3= 390
FACU species	64	X4= 256
UPL + NL species	0	X5= 0
Column Totals:	234 (A)	726 (B)

Prevalence Index = B/A = 3.10

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: Bet neo has multiple trunks on slow slope. Weather was normal antecedent precipitation, Flats close to tidal flats

SOIL

Sampling Point #: 158

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-9	Oe		100						—	
9-20	B	10Y 3/1	95	7.5YR 3/4	5	C	PL/M	SaLo	pos	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- — Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- — Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 5 " in this pit
- — Thick Dark Surface (A12)
- — Alaska Gleyed (A13)
- — Alaska Redox (A14)
- — Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- — Depleted Below Dark Surface (A11)
- — Depleted Matrix (F3)
- — Redox Dark Surface (F6)
- — Depleted Dark Surface (F7)
- — Redox Depressions (F8)
- — Red Parent Material (F21)
- — Very Shallow Dark Surface (F22)
- — Alaska Color Change[4] (TA4)
- — Alaska Alpine Swales (TA5)
- — Alaska Redox with 2.5Y Hue
- — AK Gleyed without Hue 5Y or Redder Underlying Layer
- X α,α-dipyridyl positive (see pg. 91)
- — Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): _____

Drainage Class: VPD
Soil Map Unit Name:

Hydric Soil Present? Yes X No ____

Comments:
1. Would meet problematic indicator of positive α,α but standard indicators met.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- — Water Marks (B1)
- — Sediment Deposits (B2)
- — Drift Deposits (B3)
- — Algal Mat or Crust (B4)
- — Iron Deposits (B5)
- — Surface Soil Cracks (B6)
- — Inundation Visible on Aerial Imagery (B7)
- — Sparsely Vegetated Concave Surface (B8)
- — Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- — Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- — Other (explain)

Secondary Indicators (at least 2 are required)

- — Water-Stained Leaves (B9)
- — Drainage Patterns (B10) _____
- — Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- — Salt Deposits (C5)
- — Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) (flat)
- — Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- — Microtopographic Relief (D4) (caused by water)
- — FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ____ Depth of water (in.) 1-4"
Water Table Present? Yes X No ____ Depth to water (in.) 10
Seeping in at that depth but not yet filled?: 7
Saturation Present? (Includes capillary fringe) Yes X No ____ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: surface water in pockets 1-4"

Site 158. Vegetation, northern view. Photo taken September 12th, 2023.

Site 158. Vegetation, southern view. Photo taken September 12th, 2023.

Site 158. Soil. Photo taken September 12th, 2023.

Site 158. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 9/12/23
Applicant/Owner: ADOT&PF Sampling Point #: 1165
Investigator(s): VLW, AH Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.083953 Long. 149.835432 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 3-5 Aspect: NW
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: MSFW wet soil x2 Camera#: — Veg Type (Viereck Level 4 or other): IB2C
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X * If no, explain. wetter HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	Is the sampled area within a wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop bals	45	Y	FACU	5.			
2. Aln ten	10		FAC	6.			
3.				7.			
4.				8.			

Total Tree Cover: 55
50% of total cover: 27.5 20% of total cover: 11

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Prunus pad	15		FACU	7.			
2. Aln ten	45	Y	FAC	8.			
3. Opl hor	10		FACU	9.			
4. Rub idae	12		FACU	10.			
5. Pop bals	5		FACU	11.			
6.				12.			

Total Sapling/Shrub Cover: 87
50% of total cover: 43.5 20% of total cover: 17.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Equ arv	40	Y	FAC	12.			
2. Gym dry	5		FACU	13.			
3. Strp amp	3		FACU	14.			
4. Cal can	5		FAC	15.			
5. Her man	3		FACU	16.			
6. Equ syl	5		FAC	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 101
50% of total cover: 50.5 20% of total cover: 12.2
Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 10 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	105	X3= 315
FACU species	98	X4= 392
UPL + NL species	0	X5= 0
Column Totals:	203 (A)	707 (B)

Prevalence Index = B/A = 3.48

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: * wetter than normal antecedent precipitation,

SOIL

Sampling Point #: 1105

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	Oe		100						—	
3-22	B	7.5YR 3/3	100					Fi Sa Lo	—	50% cobbles

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): _____

Drainage Class: Poor
Soil Map Unit Name:

Hydric Soil Present? Yes ___ No X

Comments:
1. Too dry to test soil
2. no hydric soil indicators observed,
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) _____

Water Table Present? Yes ___ No X Depth to water (in.) _____

Seeping in at that depth but not yet filled?: ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: no hydrology indicators observed,

Site 165. Vegetation, northern view. Photo taken September 12th, 2023.

Site 165. Vegetation, western view. Photo taken September 12th, 2023.

Site 165. Soil. Photo taken September 12th, 2023.

Site 165. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5 - 118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT&PF Sampling Point #: 502
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.985739 Long. 149.498864 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: swale Slope (%): 0-3 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1B
Photo nos./descriptions: N, S, E, W, pit, plug Camera#: — Veg Type (Viereck Level 4 or other): IB1d
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X (1) If no, explain. Wetter HGM type: slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Aln sin	20	Y	FAC	5.			
2. Bet neo	50	Y	FACU	6.			
3. Pop bals	10		FACU	7.			
4.				8.			

Total Tree Cover: 80
50% of total cover: 40 20% of total cover: 16

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Opl nor	20	Y	FACU	7.			
2. Sal sco	15	Y	FAC	8.			
3. Rib gla	5		FAC	9.			
4. Pop bals	5		FACU	10.			
5. Aln sin	30	Y	FAC	11.			
6.				12.			

Total Sapling/Shrub Cover: 75
50% of total cover: 37.5 20% of total cover: 15

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	40	Y	FAC	12.			
2. Ath cyc	12		FAC	13.			
3. Her max	15		FACU	14.			
4. Strep amp	2		FACW	15.			
5. Eqn arv	20	Y	FAC	16.			
6. Gym dry	8		FACU	17.			
7. Epi ciL	3		FAC	18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 100
50% of total cover: 50 20% of total cover: 20

Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes — % (where applicable) Total Cover of Bryophytes 10 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 7 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 71.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	145	X3= 435
FACU species	110	X4= 440
UPL + NL species	0	X5= 0
Column Totals:	255 (A)	875 (B)

Prevalence Index = B/A = 3.43

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (1) Wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 502

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-5	Oi		100						—	
5-9	Oe		100						—	
9-24	B	5Y 2.5/2	100					Coarse Sand	neg	50% gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p. 91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): _____

Drainage Class: SPD
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Swale
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 3"

Water Table Present? Yes X No ___ Depth to water (in.) 9

Seeping in at that depth but not yet filled?: —

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: RMSBC is in pit. Surface water is only in RMSBC.

Site 502. Vegetation, southern view. Photo taken August 30th, 2023.

Site 502. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 502. Soil. Photo taken August 30th, 2023.

Site 502. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98-118 Borough/City: MOA Date: 8/30/21
Applicant/Owner: AK DOP+PF Sampling Point #: 503
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.985776 Long. 149.499723 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillside Slope (%): 5-7 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: N
Photo nos./descriptions: N, S, E, W, Veg, Pit/Plug Camera#: — Veg Type (Viereck Level 4 or other): IB1d
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X* If no, explain: wetter HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pic sit	20	Y	FACW	5.			
2. Bet neo	75	Y	FACW	6.			
3.				7.			
4.				8.			

Total Tree Cover: 95
50% of total cover: 47.5 20% of total cover: 19

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Rosacl	20	Y	FACW	7.			
2. Opl hor	30	Y	FACW	8.			
3. Rib oxy	3		FAC	9.			
4. Lin bor	8		FACW	10.			
5. Vac ovis	1.5		FAC	11.			
6. Rib tri	2		FAC	12.			

Total Sapling/Shrub Cover: 78
50% of total cover: 39 20% of total cover: 15.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	35	Y	FAC	12.			
2. Cor can	30	Y	FACW	13.			
3. Cal trif	1		FAC	14.			
4. Cra ang	5		FACW	15.			
5. Dry exp	10		FACW	16.			
6. Gym dry	15		FACW	17.			
7. Ath mn	2		FACW	18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 98
50% of total cover: 49 20% of total cover: 19.6
Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes — %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 16.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	56	X3= 168
FACU species	215	X4= 860
UPL + NL species	0	X5= 0
Column Totals:	271 (A)	1028 (B)

Prevalence Index = B/A = 3.79

Hydrophytic Vegetation Indicators:

— Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: * wetter than normal antecedent precipitation

SOIL

Sampling Point #: 503

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oi		100						–	
2-4	A	10YR 2/1	100					SiLo	–	
4-5	E	10YR 3/1	100					SiLo	–	
5-10	B1	7.5YR 3/3	100					SiLo	–	
10-25	B2	10YR 2/2	100					Coarse Sand	–	40% gravels

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- – Histosol or Histel (A1)
- – Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- – Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- – Depleted Below Dark Surface (A11)
- – Depleted Matrix (F3)
- – Redox Dark Surface (F6)
- – Depleted Dark Surface (F7)
- – Redox Depressions (F8)
- – Red Parent Material (F21)
- – Very Shallow Dark Surface (F22)
- – Alaska Color Change[4] (TA4)
- – Alaska Alpine Swales (TA5)
- – Alaska Redox with 2.5Y Hue
- – AK Gleyed without Hue 5Y or Redder Underlying Layer
- – α,α-dipyridyl positive (see pg. 91)
- – Other (Low organic matter, low iron, high pH, recently developed., see p. 91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: –
Depth (inches): _____

Drainage Class: WO
Soil Map Unit Name:

Hydric Soil Present? Yes ____ No X

Comments:
1. To dry to test for alpha alpha
2. No hydric soil indicators observed
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- – Surface Soil Cracks (B6)
- – Inundation Visible on Aerial Imagery (B7)
- – Sparsely Vegetated Concave Surface (B8)
- – Marl Deposits (B15)
- – Hydrogen Sulfide Odor (C1)
- – Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- – Other (explain)

Secondary Indicators (at least 2 are required)

- – 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 w/in 12")
- – Salt Deposits (C5)
- – Stunted or Stressed Plants (D1)
- – Geomorphic Position (D2)
- – Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- – Microtopographic Relief (D4) (caused by water)
- – FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No X Depth of water (in.) _____
Water Table Present? Yes ____ No X Depth to water (in.) _____
Seeping in at that depth but not yet filled?: ____
Saturation Present? (includes capillary fringe) Yes ____ No X Depth to sat. (in.) _____
Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: no hydrology indicators observed.

Site 503. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 503. Vegetation, western view. Photo taken August 30th, 2023.

Site 503. Soil. Photo taken August 30th, 2023.

Site 503. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT+PF Sampling Point #: 508
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.984854 Long. 149.494470 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Toe Slope Slope (%): 0-3 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, S, E, W veg, pit, plug Camera#: — Veg Type (Viereck Level 4 or other): IB1d
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet neo	85	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 85
50% of total cover: 42.5 20% of total cover: 17

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Rub rda	30	Y	FACU	7.			
2. Ros acic	20	Y	FACU	8.			
3. Opl hor	5		FACU	9.			
4. Rib gla	8		FAC	10.			
5. Vib edu	8		FACU	11.			
6. Sorb sit	3		FACU	12.			

Total Sapling/Shrub Cover: 74
50% of total cover: 37 20% of total cover: 14.8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Dry dxp	20	Y	FACU	12.			
2. Equ arv	25	Y	FAC	13.			
3. Cor can	10		FACU	14.			
4. Gym dry	5		FACU	15.			
5. Cal can	25	Y	FAC	16.			
6. Viola sp	2		—	17.			
7. Agu form	1		FACU	18.			
8. Act rubra	1		FAC	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 89
50% of total cover: 44.5 20% of total cover: 17.8
Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes — % (where applicable) Total Cover of Bryophytes 5 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	59	X3= 177
FACU species	187	X4= 748
UPL + NL species	0	X5= 0
Column Totals:	246 (A)	925 (B)

Prevalence Index = B/A = 3.76

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: Some buttressed trunks of Bet neo ~ 30-40% (not 50%). Site would still not pass dominant test on P.I if Bet neo indicator status changed to FAC.
* wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 508

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-6	Oi		100						Neg	
6-9	Oe		100						Neg	
9-24	B	10YR 2/1	100					Silt	Neg	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: ___
Depth (inches): ___

Drainage Class: PD
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) - toe Slope
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 3
Water Table Present? Yes X No ___ Depth to water (in.) 4
Seeping in at that depth but not yet filled?: ___
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Surface water in pockets of side channel

10YR 2/1

Site 508. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 508. Vegetation, western view. Photo taken August 30th, 2023.

Site 508. Soil. Photo taken August 30th, 2023.

Site 508. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT&PF Sampling Point #: 509
Investigator(s): Vue, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.985123 Long. 149.493629 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: toe slope Slope (%): 0-3 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1/4B
Photo nos./descriptions: N, E, S, wetland, pit, plug Camera#: — Veg Type (Viereck Level 4 or other): IC1a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X* If no, explain. wetter HGM type: slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Aln sin	20	Y	FAC	5.			
2. Bet ned	30	Y	FACU	6.			
3. Pic gla	10		FACU	7.			
4. Pic mar	8		FACW	8.			

Total Tree Cover: 68
50% of total cover: 34 20% of total cover: 13.6

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln sin	30	Y	FAC	7. Myr gal	2		OBL
2. Ros aci	15	Y	FACU	8. Pic mar	10		FACW
3. Rhn ala	15	Y	FAC	9.			
4. Vac vit	12		FAC	10.			
5. Sal bar	10		FAC	11.			
6. Sal hoo	12		FACW	12.			

Total Sapling/Shrub Cover: 96
50% of total cover: 48 20% of total cover: 19.2

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	15	Y	FAC	12.			
2. Equ pra	15	Y	FACW	13.			
3. Cor can	10		FACU	14.			
4. Rub cha	2		FACW	15.			
5. Equ arv	20	Y	FAC	16.			
6. Sang can	12		FACW	17.			
7. Iris set	1		FAC	18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 75
50% of total cover: 37.5 20% of total cover: 15

Circular 1/10-ac plot 4 or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes 20 % Total Cover of Bryophytes 20 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	2	X1= 2
FACW species	47	X2= 94
FAC species	123	X3= 369
FACU species	67	X4= 268
UPL + NL species	0	X5= 0
Column Totals:	239 (A)	733 (B)

Prevalence Index = B/A = 3.07

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: some dead standing spruce
* wetter than normal antecedent precipitation

SOIL

Sampling Point #: 509

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-6	Oi		100							
6-28	Oe		100							

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- X Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): _____

Drainage Class: PO
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) toe slope
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 2-3"

Water Table Present? Yes X No ___ Depth to water (in.) 10

Seeping in at that depth but not yet filled?: Y

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface water in pockets

Site 509. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 509. Vegetation, western view. Photo taken August 30th, 2023.

Site 509. Soil. Photo taken August 30th, 2023.

Site 509. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT+PF Sampling Point #: 519
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.979600 Long. 149.480652 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 5-7 Aspect: W
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, E, S, W veg, pit, plug Camera#: — Veg Type (Viereck Level 4 or other): IC1a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter* HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Betnea	45	Y	FACU	5.			
2. Pic sit	40	Y	FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 85
50% of total cover: 42.5 20% of total cover: 17

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln sin	25	Y	FAC	7.			
2. Pic sit	5		FACU	8.			
3. Men fer	15	Y	FACW	9.			
4. Opl hor	5		FACU	10.			
5. Sal peb	2		FAC	11.			
6.				12.			

Total Sapling/Shrub Cover: 52
50% of total cover: 26 20% of total cover: 10.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Equ arv	12	Y	FAC	12.			
2. Cym dry	30	Y	FACU	13.			
3. Gal tri	5		FAC	14.			
4. Pyr sec	8		NL	15.			
5. Strep amp	1		FACU	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 56
50% of total cover: 28 20% of total cover: 11.2

Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: 3
% Cover of Wetland Bryophytes — % (where applicable) Total Cover of Bryophytes 30 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	44	X3= 132
FACU species	141	X4= 564
UPL + NL species	8	X5= 40
Column Totals:	193 (A)	736 (B)

Prevalence Index = B/A = 3.81

Hydrophytic Vegetation Indicators:

— Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:
* wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 519

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-6	O1		100						–	
6-7	A	10YR 2/2	100					SiLo	–	
7-17	B1	2.5Y 6/1	100					SiLo	–	Ash w/ 10% cobble / 20% gravel
17-24	B2	10YR 3/4	100					FiSaLo	–	50% gravels

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophylic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: ___
Depth (inches): ___

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes ___ No X

Comments:
1. no hydric soil indicators observed.
2. too dry to test for α,α
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) ___
Water Table Present? Yes ___ No X Depth to water (in.) ___
Seeping in at that depth but not yet filled?: ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) ___ Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: no hydrology indicators observed.

Site 519. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 519. Vegetation, western view. Photo taken August 30th, 2023.

Site 519. Soil. Photo taken August 30th, 2023.

Site 519. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT&PF Sampling Point #: 5D
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.980315 Long. 149.482085 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: footslope Slope (%): 0-3 Aspect: W
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PEM1/SS1C
Photo nos./descriptions: N, E, S, W, pit, plug Camera#: — Veg Type (Viereck Level 4 or other): IIC21
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X* If no, explain. *wetter HGM type: slope
Are Vegetation Y, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. —				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___
50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln sin	30	Y	FAC	7.			
2. Bet neo	1		FACW	8.			
3. Pic sit	1		FAC	9.			
4. Rub ida	1		FACU	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 33
50% of total cover: 16.5 20% of total cover: 6.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Cal can	60	Y	FAC	12.			
2. Equ arv	20	Y	FAC	13.			
3. Epi cil	3		FAC	14.			
4. Dry exp	1		FACU	15.			
5. Car aqu	8		OBL	16.			
6. Viola sp.	3		—	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 105
50% of total cover: 52.5 20% of total cover: 21
Circular 1/10-ac plot — or other plot dimension: 16 x 20 % of bare ground: —
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 10 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	8	x1= 8
FACW species	0	x2= 0
FAC species	123	x3= 369
FACU species	4	x4= 16
UPL + NL species	0	x5= 0
Column Totals:	135 (A)	393 (B)

Prevalence Index = B/A = 2.91

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: site is on edge of utility corridor. wood chips within site covering ground on a portion of site. current construction within utility corridor.

SOIL

Sampling Point #: 522

Profile Description:[1] (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-8	O1		100						pos	
8-16	B1	10YR 2/2	100					SaLo	pos	60% gravel
16-21	B2	2.5Y 4/1	100					SaLo	pos	80% gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- X Histic Epipedon (A2) (8-16" organics, sat'd. underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 9 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91) (1)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p. 91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): ___

Drainage Class: PD
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1. (1). would meet positive dox problematic indicator
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ Water-Stained Leaves (B9)
- ___ Drainage Patterns (B10) ___
- ___ Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- X Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Toeslope
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 5"
Water Table Present? Yes X No ___ Depth to water (in.) 4
Seeping in at that depth but not yet filled?: 3
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface water on edge of plot

Site 522. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 522. Vegetation, western view. Photo taken August 30th, 2023.

Site 522. Soil. Photo taken August 30th, 2023.

Site 522. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/30/23
Applicant/Owner: ADOT&PF Sampling Point #: 525
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.980811 Long. 149.482533 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: toeslope Slope (%): 0-3 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSS1/4B
Photo nos./descriptions: N, E, S, W, pit plug veg Camera#: — Veg Type (Viereck Level 4 or other): IIB1b
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X * If no, explain. wetter HGM type: slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?**	Yes X No ___
Hydric Soil Present?	Yes X	No ___		Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___		

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Aln sin	15	Y	FAC	5.			
2. Pic sit	3		FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 18
50% of total cover: 9 20% of total cover: 3.6

Sapling/Shrub Stratum (woody plants < 3" dbh)

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Aln sin	65	Y	FAC	7. Bet neo	3		FACU
2. Pic sit	20		FACU	8.			
3. Abi lar	3		FACU	9.			
4. Rib lac	10		FAC	10.			
5. Sal pul	5		FACW	11.			
6. Rib gla	5		FAC	12.			

Total Sapling/Shrub Cover: 111
50% of total cover: 55.5 20% of total cover: 22.2

Herb Stratum

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs. Cov.%	Dom?	Ind.
1. Equ arv	40	Y	FAC	12.			
2. Viola sp.	12		—	13.			
3. Gym dry	3		FACU	14.			
4. Cal can	15	Y	FAC	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 70
50% of total cover: 35 20% of total cover: 14
Circular 1/10-ac plot — or other plot dimension: 10 x 20 % of bare ground: —
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 30 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	5	X2= 10
FAC species	150	X3= 450
FACU species	32	X4= 128
UPL + NL species	0	X5= 0
Column Totals:	187 (A)	588 (B)

Prevalence Index = B/A = 3.14

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: * wetter than normal antecedent precipitation.

SOIL

Sampling Point #: 525

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-9	Oi		100						–	
9-28	Oe		100						–	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- X Histosol or Histel (A1)
- — Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- — Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12" of mineral surface: @ 7 " in this pit
- — Thick Dark Surface (A12)
- — Alaska Gleyed (A13)
- — Alaska Redox (A14)
- — Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- — Depleted Below Dark Surface (A11)
- — Depleted Matrix (F3)
- — Redox Dark Surface (F6)
- — Depleted Dark Surface (F7)
- — Redox Depressions (F8)
- — Red Parent Material (F21)
- — Very Shallow Dark Surface (F22)
- — Alaska Color Change[4] (TA4)
- — Alaska Alpine Swales (TA5)
- — Alaska Redox with 2.5Y Hue
- — AK Gleyed without Hue 5Y or Redder Underlying Layer
- — α,α-dipyridyl positive (see pg. 91)
- — Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): _____

Drainage Class: PO
Soil Map Unit Name:

Hydric Soil Present? Yes X No ____

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- — Water Marks (B1)
- — Sediment Deposits (B2)
- — Drift Deposits (B3)
- — Algal Mat or Crust (B4)
- — Iron Deposits (B5)
- — Surface Soil Cracks (B6)
- — Inundation Visible on Aerial Imagery (B7)
- — Sparsely Vegetated Concave Surface (B8)
- — Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- — Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- — Other (explain)

Secondary Indicators (at least 2 are required)

- — Water-Stained Leaves (B9)
- X Drainage Patterns (B10) _____
- — Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- — Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- — Salt Deposits (C5)
- — Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Toe slope
- — Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- — Microtopographic Relief (D4) (caused by water)
- — FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ____ Depth of water (in.) 3-5"

Water Table Present? Yes X No ____ Depth to water (in.) 9

Seeping in at that depth but not yet filled?: 8

Saturation Present? (includes capillary fringe) Yes X No ____ Depth to sat. (in.) 0

Epi Endo Unknown

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: surface water in drainage, water is in pockets + is not flowing,

Site 525. Vegetation, northern view. Photo taken August 30th, 2023.

Site 525. Vegetation, eastern view. Photo taken August 30th, 2023.

Site 525. Soil. Photo taken August 30th, 2023.

Site 525. Soil. Photo taken August 30th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/31/23
Applicant/Owner: ADOT&PF. Sampling Point #: 531
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.967589 Long. 149.439560 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 0-3 Aspect: W
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSS4/3B
Photo nos./descriptions: N, E, S, W, pit, plot Camera #: ___ Veg Type (Viereck Level 4 or other): IA2f
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X* If no, explain. WTW HGM type: slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	Is the sampled area within a wetland?	Yes X No ___
Hydric Soil Present?	Yes X	No ___		Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___		

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pic mar	15	Y	FACW	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 15
50% of total cover: 7.5 20% of total cover: 3

Sapling/Shrub Stratum (woody plants < 3" dbh)

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Pic mar	30	Y	FACW	7. Vac oxy	2		OBL
2. Vac vit	35	Y	FAC	8. Rho aro	5		FAC
3. Emp nig	45	Y	FAC	9. Bet nig	10		FACW
4. Rho tom	25		FAC	10. Tsu mer	4		FAC
5. Bet nan	10		FAC	11.			
6. Vac uli	3		FAC	12.			

Total Sapling/Shrub Cover: 169
50% of total cover: 84.5 20% of total cover: 33.8

Herb Stratum

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs. Cov.%	Dom?	Ind.
1. Equ syl	35	Y	FAC	12.			
2. Cor mar	30	Y	OBL	13.			
3.				14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 65
50% of total cover: 32.5 20% of total cover: 13

Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes 40 % (where applicable) Total Cover of Bryophytes 70 %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	32	X1= 32
FACW species	70	X2= 140
FAC species	137	X3= 411
FACU species	10	X4= 40
UPL + NL species	0	X5= 0
Column Totals:	249 (A)	623 (B)

Prevalence Index = B/A = 2.50

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: wetter than normal antecedent precipitation

SOIL

Sampling Point #: 53

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-12	Oi		100						—	
12-16	Oe		100						—	
16-24	B	10YR 3/2	100					SiLO	—	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- X Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p. 91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: ___
Depth (inches): ___

Drainage Class: SPD
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2) toeslope
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- X Microtopographic Relief (D4) (caused by water) hummocks
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) —
Water Table Present? Yes X No ___ Depth to water (in.) 12
Seeping in at that depth but not yet filled?: 6
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: water seeping into pit @ 6" = high water table

Site 531. Vegetation, northern view. Photo taken August 31st, 2023.

Site 531. Vegetation, southern view. Photo taken August 31st, 2023.

Site 531. Soil. Photo taken August 31st, 2023.

Site 531. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/31/23

Applicant/Owner: ADOT&PF Sampling Point #: 533

Investigator(s): VW CK Firm: HDR Alaska, Inc.

Lat. (dec.°) 60.967634 Long. 149.441397 ± ' NAD 83 Recorded on GPS #: Y Marked on map? ___ Field Map #: ___

Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 8 Aspect: SE

Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U

Photo nos./descriptions: N, E, S, W, orig, Pit, plug Camera #: — Veg Type (Viereck Level 4 or other): IB1d

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain. wetter HGM type: N/A

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet neo	80	Y	FACU	5.			
2. Pic sit	10		FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 90

50% of total cover: 45 20% of total cover: 18

Sapling/Shrub Stratum (woody plants < 3" dbh)

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Ros cac	10		FACU	7.			
2. Vib edu	8		FACU	8.			
3. Men fir	30	Y	FACU	9.			
4. Ain sin	2		FAC	10.			
5. Pic sit	3		FACU	11.			
6. Opl hor	3		FACU	12.			

Total Sapling/Shrub Cover: 56

50% of total cover: 28 20% of total cover: 11.2

Herb Stratum

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs. Cov.%	Dom?	Ind.
1. Cor can	55	Y	FACU	12.			
2. Equ arv	25	Y	FAC	13.			
3. Cal can	10		FAC	14.			
4. Ath cyc	12		FAC	15.			
5. Dry exp	8		FACU	16.			
6. Rub pub	10		FAC	17.			
7. Cha ang	5		FACU	18.			
8. Strp amp	2		FACU	19.			
9. Phel con	5		FACU	20.			
10.				21.			
11.				22.			

Total Herb Cover: 132

50% of total cover: 66 20% of total cover: 26.4

Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —

% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 10 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	59	X3= 177
FACU species	219	X4= 876
UPL + NL species	0	X5= 0
Column Totals:	278 (A)	1053 (B)

Prevalence Index = B/A = 3.79

Hydrophytic Vegetation Indicators:

— Dominance Test is >50%
— Prevalence Index is ≤3.0

— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: * wetter than normal antecedent precipitation.

SOIL Sampling Point # 533

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-2	Oi									
2-3	A	10YR 2/1	100							
3-10	B1	10YR 4/1	92	5YR 3/4	8	C	PL	SiLo	-	w/roots
10-24	B2	5Y 4/1	75	7.5YR 4/6	5	C	PL	SiLo	-	
				10YR 4/6	20	C	M	SiLo	-	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks

Restrictive Layer (if present)
Type: —
Depth (inches): ___

Drainage Class: Well
Soil Map Unit Name:

Hydric Soil Present? Yes ___ No X

Comments:
1. too dry to test for one
2. no hydric soil indicators observed. Does not meet problematic indicators since no hydrophytic veg or hydrology + not in an appropriate landscape position
3. close to meeting F6 redox but 210% of matrix color as per Timing!

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth **of** water (in.) ___
Water Table Present? Yes ___ No X Depth **to** water (in.) ___
Seeping in at that depth but not yet filled?: ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth **to** sat. (in.) ___ Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators observed.

Site 533. Vegetation, northern view. Photo taken August 31st, 2023.

Site 533. Vegetation, southern view. Photo taken August 31st, 2023.

Site 533. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 533. Vegetation, western view. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 9/31/23
Applicant/Owner: ADOT+PF Sampling Point #: 536
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.961481 Long. 149.429097 ± ' NAD 83 Recorded on GPS #: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: hillslope Slope (%): 5 Aspect: SE
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, E, S, W veg, pit, plug Camera #: — Veg Type (Viereck Level 4 or other): IB1d
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet neo	75	Y	FACU	5.			
2. Pic sit	5		FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 80
50% of total cover: 40 20% of total cover: 16

Sapling/Shrub Stratum (woody plants < 3" dbh)

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs.Cov.%	Dom?	Ind.
1. Ment fer	45	Y	FACU	7. Ang gen	10		FACW
2. Vib edu	30	Y	FACU	8.			
3. Opl nor	10		FACU	9.			
4. Ros acu	8		FAC	10.			
5. Sorb sit	2		FACU	11.			
6. Aln sin	5		FAC	12.			

Total Sapling/Shrub Cover: 100
50% of total cover: 50 20% of total cover: 20

Herb Stratum

Species	Abs.Cov.%	Dom?	Ind.	Species	Abs. Cov.%	Dom?	Ind.
1. Equ arv	15	Y	FAC	12.			
2. Cor can	20	Y	FACU	13.			
3. Cym dry	20	Y	FACU	14.			
4. Cal cal	5		FAC	15.			
5. Dry rup	5		FACU	16.			
6. Rub arc	12		FAC	17.			
7. Rub ped	5		FAC	18.			
8. Ang gen	10		FACW	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 92
50% of total cover: 46 20% of total cover: 18.4
Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 15 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 16.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	10	X2= 20
FAC species	42	X3= 126
FACU species	220	X4= 880
UPL + NL species	0	X5= 0
Column Totals:	272 (A)	1026 (B)

Prevalence Index = B/A = 3.77

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: * wetter than normal antecedent precipitation, strong upland vegetation community.

SOIL

Sampling Point #: 538

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	Oi		100						neg	
3-5	A	10YR 2/1	100					SiLo	neg	
5-20	Oe		100						neg	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- X Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: ___
Depth (inches): ___

Drainage Class: Poo
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) ___

Water Table Present? Yes ___ No X Depth to water (in.) 17

Seeping in at that depth but not yet filled?: No

Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) 13

Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation but not within 12 inches, no hydrology indicators observed, during wetter than normal conditions.

Site 538. Vegetation, northern view. Photo taken August 31st, 2023.

Site 538. Vegetation, southern view. Photo taken August 31st, 2023.

Site 538. Soil. Photo taken August 31st, 2023.

Site 538. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/31/23
Applicant/Owner: ADOT+PF Sampling Point #: 539
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.961222 Long. 149.429356 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: toeslope Slope (%): 0-3 Aspect: SE
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PSS1/EM1C
Photo nos./descriptions: N, E, S, W, pit, plug Camera#: — Veg Type (Viereck Level 4 or other): IIC2j
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter HGM type: slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. —				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___
50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Myr gal	45	Y	OBL	7.			
2. Ros acu	5		FACW	8.			
3. Sal pul	15	Y	FACW	9.			
4. Bet neo	1		FACU	10.			
5. Sal bebb	5		FAC	11.			
6.				12.			

Total Sapling/Shrub Cover: 71
50% of total cover: 35.5 20% of total cover: 14.2

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Equ fluv	45	Y	OBL	12. Car aqu	20	Y	OBL
2. Sang can	10		FACW	13.			
3. Viola sp.	3		—	14.			
4. Equ arv	8		FAC	15.			
5. Cal can	10		FAC	16.			
6. Phal aru	3		OBL	17.			
7. Epi cil	2		FAC	18.			
8. Car vitri	15		OBL	19.			
9. Ang gen	5		FACW	20.			
10. Ger rib	1		FACU	21.			
11. Plat dil	1		FACW	22.			

Total Herb Cover: 123
50% of total cover: 61.5 20% of total cover: 24.6
Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: —
% Cover of Wetland Bryophytes 20 % Total Cover of Bryophytes 20 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	128	X1= 128
FACW species	31	X2= 62
FAC species	25	X3= 75
FACU species	7	X4= 28
UPL + NL species	0	X5= 0
Column Totals:	191 (A)	293 (B)

Prevalence Index = B/A = 1.53

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: * wetter than normal antecedent precipitation,

SOIL

Sampling Point #: 539

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-7	Oi		100							
7-16	Oe		100							

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- X Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4) (within 12"of mineral surface; @ 10 " in this pit
- ___ Thick Dark Surface (A12)
- ___ Alaska Gleyed (A13)
- ___ Alaska Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed, see p. 91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): ___

Drainage Class: PD
Soil Map Unit Name:

Hydric Soil Present? Yes X No ___

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Toeslope
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- X FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes X No ___ Depth of water (in.) 2

Water Table Present? Yes X No ___ Depth to water (in.) 3

Seeping in at that depth but not yet filled?: 2

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 0 Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface water in many pockets around site

Site 539. Vegetation, southern view. Photo taken August 31st, 2023.

Site 539. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 539. Soil. Photo taken August 31st, 2023.

Site 539. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/31/23
Applicant/Owner: ADOT+PF Sampling Point #: 542
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.984944 Long. 149.500323 ± ___' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: mound Slope (%): 10-15 Aspect: SW
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, E, S, W veg, pit, plug Camera#: — Veg Type (Viereck Level 4 or other): IB1-cd
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X* If no, explain: wetter HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop bals	40	Y	FACU	5.			
2. Bet nel	35	Y	FACU	6.			
3. Pic sit	5		FACU	7.			
4.				8.			

Total Tree Cover: 80
50% of total cover: 40 20% of total cover: 16

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln sin	40	Y	FAC	7.			
2. Opl vir	15	Y	FACU	8.			
3. Pop bals	20	Y	FACU	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 75
50% of total cover: 37.5 20% of total cover: 15

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cyn cang	8		FACU	12.			
2. Cal can	40	Y	FAC	13.			
3. Tyr ofi	5		FACU	14.			
4. Gal tri	2		FAC	15.			
5. Ach mil	2		FACU	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 57
50% of total cover: 28.5 20% of total cover: 11.4

Circular 1/10-ac plot — or other plot dimension: 10x10 % of bare ground: 5
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes 5 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	82	X3= 246
FACU species	130	X4= 520
UPL + NL species	0	X5= 0
Column Totals:	212 (A)	766 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

— Dominance Test is >50%
— Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: * wetter than normal antecedent precipitation. - site is adjacent to trail between railroad + road + near parking lot + fenced area + was been disturbed, but not recently + not significantly enough to prevent observation of wetland indicators.

SOIL

Sampling Point #: 542

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-1	Oi		100							
1-3	A	10YR 2/1	100					Silt		
3-9	B	10YR 3/3	100					Silt		
9-24	C	2.5Y 3/1	100					Coarse Sand		40% cobble 40% gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: ___
Depth (inches): ___

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes ___ No X

Comments:
1. Too dry to test for hydric soil indicators observed.
2. No hydric soil indicators observed.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary 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)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) ___

Water Table Present? Yes ___ No X Depth to water (in.) ___

Seeping in at that depth but not yet filled?: ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth to sat. (in.) ___ Epi Endo Unknown

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No hydrology indicators observed.

Site 542. Vegetation, northern view. Photo taken August 31st, 2023.

Site 542. Vegetation, southern view. Photo taken August 31st, 2023.

Site 542. Soil. Photo taken August 31st, 2023.

Site 542. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-11K Borough/City: MOA Date: 8/31/23
Applicant/Owner: ADOT&PF Sampling Point #: 543
Investigator(s): VW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.985189 Long. 149.500695 ± ° NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Floodplain Slope (%): 0-3 Aspect: W
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: E2SS1/FM1P
Photo nos./descriptions: N, E, S, W view, PA, plan Camera #: — Veg Type (Viereck Level 4 or other): IIB2d
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter HGM type: Estuarine
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. —				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___
50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln sin	15	Y	FAC	7.			
2. Sal pul	10		FACW	8.			
3. Sal gla	3		FAC	9.			
4. Pop bals	10		FACU	10.			
5. Sal bebb	15	Y	FAC	11.			
6. Rot rep	5		FACU	12.			

Total Sapling/Shrub Cover: 54
50% of total cover: 27 20% of total cover: 10.8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	35	Y	FAC	12.			
2. Ath cyc	5		FAC	13.			
3. Tar obi	5		FACU	14.			
4. Equ arv	5		FAC	15.			
5. Conio poc	12		FACU	16.			
6. Liqust scot	10		FAC	17.			
7. Poa palus	15	Y	FAC	18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 77
50% of total cover: 38.5 20% of total cover: 15.4
Circular 1/10-ac plot — or other plot dimension: 5×20 % of bare ground: —
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes — %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	22	X2= 44
FAC species	93	X3= 279
FACU species	16	X4= 64
UPL + NL species	0	X5= 0
Column Totals:	131 (A)	387 (B)

Prevalence Index = B/A = 2.95

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
— Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
— Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: * wetter than normal antecedent precipitation,

SOIL

Sampling Point #: 543

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-4	O		100						—	
4-7	B	2.5Y 3/2	100					Fi Sand	neg	
7-24	C	2.5Y 3/2	100					Coarse Sand	neg	90% gravel 5% cobble

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- X Other (Low organic matter, low iron, high pH, recently developed, see p. 91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: _____
Depth (inches): _____

Drainage Class: SWD
Soil Map Unit Name: *gravelly soils.

Hydric Soil Present? Yes X No ___

Comments:
1. Site has low organic matter & site is in a floodplain, has primary hydrology & meets hyd
2. indicator requirements.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Floodplain
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) _____
Water Table Present? Yes X No ___ Depth to water (in.) 18
Seeping in at that depth but not yet filled?: 15
Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 9
Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Site is in a floodplain, adjacent to river & below high tide line.

Site 543. Vegetation, southern view. Photo taken August 31st, 2023.

Site 543. Vegetation, eastern view. Photo taken August 31st, 2023.

Site 543. Soil. Photo taken August 31st, 2023.

Site 543. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: MOA Date: 8/31/23
Applicant/Owner: ADOT&PF Sampling Point #: 547
Investigator(s): RW, CK Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.997277 Long. 149.633564 ± ' NAD 83 Recorded on GPS?: Y Marked on map? ___ Field Map #: ___
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: toeslope Slope (%): 0-3 Aspect: SW
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N, E, S, W veg, pit, plug Camera#: — Veg Type (Viereck Level 4 or other): TTBSD
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wetter HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the sampled area within a wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes X	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Aln sin	15	Y	FAC	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 15
50% of total cover: 7.5 20% of total cover: 3

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln sin	70	Y	FAC	7.			
2. Rub ida	5		FACU	8.			
3. Sor sit	3		FACU	9.			
4. Rib gla	5		FAC	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 83
50% of total cover: 41.5 20% of total cover: 16.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Her mac	75	Y	FACU	12.			
2. Gal trifl	40	Y	FAC	13.			
3. Tar off	5		FACU	14.			
4. Gal tet	5		NL	15.			
5. Cal can	8		FAC	16.			
6. Tri rep	3		FACU	17.			
7. Cha ang	5		FACU	18.			
8. Ach mil	3		FACU	19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 144
50% of total cover: 72 20% of total cover: 28.8
Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: 5
% Cover of Wetland Bryophytes ___ % Total Cover of Bryophytes ___ %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	138	X3= 414
FACU species	99	X4= 396
UPL + NL species	5	X5= 25
Column Totals:	242 (A)	835 (B)

Prevalence Index = B/A = 3.45

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
___ Prevalence Index is ≤3.0
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: wetter than normal antecedent precipitation

SOIL

Sampling Point # 547

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-1	Oi		100						—	
1-3	A	10YR2/2	100					SiLo	neg	
3-5	B	10YR3/3	100					SaLo	neg	25% gravel
5-24	C	10YR4/1	100					Coarse Sand	neg	10% cobble
										75% gravel

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- ___ Histosol or Histel (A1)
- ___ Histic Epipedon (A2) (8-16" organics, sat'd, underlain 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 Redox (A14)
- ___ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- ___ Depleted Below Dark Surface (A11)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Alaska Color Change[4] (TA4)
- ___ Alaska Alpine Swales (TA5)
- ___ Alaska Redox with 2.5Y Hue
- ___ AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- ___ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: —
Depth (inches): _____

Drainage Class: SPO
Soil Map Unit Name:

Hydric Soil Present? Yes ___ No X

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2) (w/in 12")
- X Saturation (A3) (w/in 12")
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- ___ Other (explain)

Secondary Indicators (at least 2 are required)

- ___ 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 w/in 12")
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2) Toe Slope
- ___ Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- ___ Microtopographic Relief (D4) (caused by water)
- ___ FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ___ No X Depth of water (in.) _____

Water Table Present? Yes X No ___ Depth to water (in.) 14

Seeping in at that depth but not yet filled?: —

Saturation Present? (includes capillary fringe) Yes X No ___ Depth to sat. (in.) 11 Epi Endo Unknown

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturation likely due to wetter than normal conditions.

Site 547. Vegetation, northern view. Photo taken August 31st, 2023.

Site 547. Vegetation, southern view. Photo taken August 31st, 2023.

Site 547. Soil. Photo taken August 31st, 2023.

Site 547. Soil. Photo taken August 31st, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward 98.5-118 Borough/City: Anc/MOA Date: 9-12-23

Applicant/Owner: DOT and PF Sampling Point #: 603

Investigator(s): Z.H, M.A Firm: HDR Alaska, Inc.

Lat. (dec.°) 61.049268 Long. 149.792429 ± ' NAD 83 Recorded on GPS?: ✓ Marked on map? – Field Map #: –

Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: Hillside Slope (%): 25 Aspect: N

Local relief: Shape across slope: (linear) / convex / concave Shape up/downslope: (linear) / convex / concave NWI classification: U

Photo nos./descriptions: N, S, E, W soil x2 Camera#: iPAD Veg Type (Viereck Level 4 or other): II B1b

Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: ✓ If no, explain. Weather HGM type: N/A

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation No, Soil No, or Hydrology No naturally problematic? In Dry Season? Yes ___ No ✓ If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No ✓	**Is the sampled area within a wetland?**	**Yes** ___ **No** ✓
Hydric Soil Present?	Yes ___	No ✓		Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No ✓		

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet. pap.	15	Y	FACU	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 15

50% of total cover: 7.5 20% of total cover: 3

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln. sin	80	Y	FAC	7.			
2. Opl. hor	60	Y	FACU	8.			
3. Rib. lax	15		FACU	9.			
4. Sam. rac	3		FACU	10.			
5. Sor. sit	2		FACU	11.			
6.				12.			

Total Sapling/Shrub Cover: 160

50% of total cover: 80 20% of total cover: 32

Herb Stratum

	Abs.Cov.%	Dom?	Ind		Abs. Cov.%	Dom?	Ind.
1. Ath. cyc.	30	Y	FAC	12.			
2. Vio Sp.	1		–	13.			
3. Gym. dry	10	Y	FACU	14.			
4. Act. rub.	2		FAC	15.			
5. Cal can	2		FAC	16.			
6. Equi arv	5		FAC	17.			
7.				18.			
8.				19.			
9.				20.			
10.	1			21.			
11.				22.			

Total Herb Cover: 50

50% of total cover: 25 20% of total cover: 10

Circular 1/10-ac plot ✓ or other plot dimension: 40* % of bare ground: ___

% Cover of Wetland Bryophytes ___ % Total Cover of Bryophytes ___ %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	119	X3= 357
FACU species	95	X4= 380
UPL + NL species	0	X5= 0
Column Totals:	224 (A)	737 (B)

Prevalence Index = B/A = 3.29

Hydrophytic Vegetation Indicators:

N Dominance Test is >50%
N Prevalence Index is ≤3.0

N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: Steeply sloped hillside.
* 40% litter

SOIL

Sampling Point #: 603

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-4	Ok									
4-15	A	7.5YR 2.5/2	100	—	—	—	—	SiLo	neg	10% gravel
15-20	B/C	7.5YR 2.5/3	100	—	—	—	—	GrLo	NT	20% cobble

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- N Hydrogen Sulfide (A4) (within 12"of mineral surface; @ _____" in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- N α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: NONE
Depth (inches): N/A

Drainage Class: MWD
Soil Map Unit Name:

Hydric Soil Present? Yes ____ No ✓

Comments:
1. Profile moist but not saturated.
2.
3. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- N Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10) _____
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- N Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- N FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No ✓ Depth of water (in.) —
Water Table Present? Yes ____ No ✓ Depth to water (in.) —
Seeping in at that depth but not yet filled?: —
Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth to sat. (in.) —
Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary or secondary indicators observed.

Site 603. Vegetation, northern view. Photo taken September 12th, 2023.

Site 603. Vegetation, eastern view. Photo taken September 12th, 2023.

Site 603. Soil. Photo taken September 12th, 2023.

Site 603. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward 98.5-11.8 Borough/City: Anc/MOA Date: 9/12/23
Applicant/Owner: DOT&PF Sampling Point #: 604
Investigator(s): Z.H. & MH Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.040370 Long. 149.792737 ± ___ ' NAD 83 Recorded on GPS?: ✓ Marked on map? – Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Depression / Toeslope Slope (%): 3 Aspect: N
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1/EM1B
Photo nos./descriptions: N S E W Soil x 2 Camera #: PAD Veg Type (Viereck Level 4 or other): 1B2 - alder
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: ✓ If no, explain. Wetter HGM type: Slope
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No ✓ If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the sampled area within a wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	
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")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Aln. ten.	50	Y	FAC	5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: 50
50% of total cover: 25 20% of total cover: 10

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln. ten	40	Y	FAC	7.			
2. Opl. hor	6	Y	FACU	8.			
3. Rib. lac	1		FACU	9.			
4. Vib edu	5	Y	FACU	10.			
5. Pru. pad.	1		FACU	11.			
6.				12.			

Total Sapling/Shrub Cover: 23
50% of total cover: 11.5 20% of total cover: 4.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Cal can	15	Y	FAC	12. Vio Lan	5		FACW
2. Vio pal	10	Y	FACW	13.			
3. Equi arv	20	Y	FAC	14.			
4. Ath fil	3		FAC	15.			
5. Gym dry	3		FACU	16.			
6. Ang lut	5		FACU	17.			
7. Ang gen	10	Y	FACW	18.			
8. Tha spa	3		FACU	19.			
9. Tri cur	1		FACU	20.			
10. San can	1		FACW	21.			
(11) Agr aeq	7		OBL	22.			

Total Herb Cover: 83
50% of total cover: 41.5 20% of total cover: 16.6

Circular 1/10-ac plot – or other plot dimension: 20x20 % of bare ground: 15
% Cover of Wetland Bryophytes ___ % Total Cover of Bryophytes 20 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	7	X1= 7
FACW species	26	X2= 52
FAC species	98	X3= 294
FACU species	25	X4= 100
UPL + NL species	0	X5= 0
Column Totals:	156 (A)	453 (B)

Prevalence Index = B/A = 2.90

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%
Y Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:
(11) = Podagrostis aequivalvis (syn.)

SOIL

Sampling Point #: 604

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	Op									
3-5	B/C	10YR 2/2	100	—	—	—	—	Lo Gra	NT	
5-13	B/C	5Y 3/1	70	7.5YR 4/4	20	con.	m,rc	Gra Lo	NT	
				7.5YR 3/4	10	con	m,rc		NT	
13-18	B/C	5Y 3/1	80	7.5YR 3/2	20	con	m,pl	Fi sand Lo	NT	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- N Hydrogen Sulfide (A4) (within 12" of mineral surface; @ _____" in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- Y Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- N α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: Pd
Soil Map Unit Name:

Hydric Soil Present? Yes ✓ No ____

Comments:
1.
2.
3.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- Y High Water Table (A2) (w/in 12")
- Y Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10) _____
- Y Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- NT Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- Y Geomorphic Position (D2) - Toeslope/Depression
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- N FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No ✓ Depth of water (in.) ____

Water Table Present? Yes ✓ No ____ Depth to water (in.) 5"

Seeping in at that depth but not yet filled?: —

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth to sat. (in.) 3

Epi (Endo) Unknown

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Depressional area w/slopes to the east & highway embankment to the west.
Hydro source likely GW discharge & surface flow from multiple streams.

Site 604. Vegetation, northern view. Photo taken September 12th, 2023.

Site 604. Vegetation, western view. Photo taken September 12th, 2023.

Site 604. Vegetation, southern view. Photo taken September 12th, 2023.

Site 604. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward 98.5-118 Borough/City: Anc/MOA Date: 9/12/23
Applicant/Owner: DOT&PF Sampling Point #: 609
Investigator(s): ZH & MA Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.050490 Long. 149.791943 ± ' NAD 83 Recorded on GPS?: ✓ Marked on map? – Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Hillside Slope (%): 15 Aspect: W
Local relief: Shape across slope: linear / convex / (concave) Shape up/downslope: (linear) / convex / concave NWI classification: –
Photo nos./descriptions: N S E W Soil x2 Camera#: PAD Veg Type (Viereck Level 4 or other): 1B3 - quaking aspen
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: ✓ If no, explain. Wetter HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No ✓ If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No ✓	**Is the sampled area within a wetland?** Yes ___ No ✓
Hydric Soil Present?	Yes ___	No ✓	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No ✓	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop. tre	10	Y	FACU	5.			
2. Pop. bal	3	Y	FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 13
50% of total cover: 6.5 20% of total cover: 2.6

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln. sin	60	Y	FAC	7.			
2. Opl. nor	80	Y	FACU	8.			
3. Sam rac	5		FACU	9.			
4. Pop tre	3		FACU	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 148
50% of total cover: 74 20% of total cover: 29.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Ath cyc	3	Y	FAC	12.			
2. Gym dry	1		FACU	13.			
3. Equ arv	1		FAC	14.			
4. Act rub	3	Y	FAC	15.			
5. Val cap	1		FAC	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 9
50% of total cover: 4.5 20% of total cover: 1.8

Circular 1/10-ac plot ✓ or other plot dimension: ___ % of bare ground: 50 litter
% Cover of Wetland Bryophytes 5 % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	68	X3= 204
FACU species	102	X4= 408
UPL + NL species	0	X5= 0
Column Totals:	170 (A)	612 (B)

Prevalence Index = B/A = 3.60

Hydrophytic Vegetation Indicators:

N Dominance Test is >50%
N Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: Recent tree fall

SOIL

Sampling Point #: 609

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-1	Oi									
1-5	A	10YR2/1	100	—	—	—	—	SiLo	NT	
5-20	A/B	10YR2/2	100	—	—	—	—	SiLo	NT	10% cobble

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- N Hydrogen Sulfide (A4) (within 12" of mineral surface; @ _____" in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- N α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: N/A
Depth (inches): —

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes ____ No ✓

Comments:
1. Profile too dry for α,α.
2.
3. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- N Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10) _____
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- N Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- N FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No ✓ Depth of water (in.) _____

Water Table Present? Yes ____ No ✓ Depth to water (in.) _____

Seeping in at that depth but not yet filled?: ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Slight depression on hillside but site does not retain water. Dry soil pit.
No primary or secondary hydro indicators observed.

Site 609. Vegetation, northern view. Photo taken September 12th, 2023.

Site 609. Vegetation, southern view. Photo taken September 12th, 2023.

Site 609. Soil. Photo taken September 12th, 2023.

Site 609. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward 98.5 – 118 Borough/City: Anc / MOA Date: 9/12/23
Applicant/Owner: DOT & PF Sampling Point #: 613
Investigator(s): ZH & MA Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.999032 Long. 149.648370 ± ' NAD 83 Recorded on GPS?: X Marked on map? – Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Coastal Terrace Slope (%): 2 Aspect: W
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: –
Photo nos./descriptions: N S E W Soil x2 Camera#: PAD Veg Type (Viereck Level 4 or other): II D 2 – red bearberry
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: Y If no, explain: wetter HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No ✓	**Is the sampled area within a wetland?** Yes ___ No ✓
Hydric Soil Present?	Yes ___	No ✓	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No ✓	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. None.				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: –
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Arc. uva	40	Y	UPL	7.			
2.				8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 40
50% of total cover: 20 20% of total cover: 8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Ach. mil.	10		FACU	12.			
2. Ast. alp.	7		FAC	13.			
3. Lin. vul.	20	Y	NL	14.			
4. Ely. tra.	20	Y	FACU	15.			
5. Poa. pal.	25	Y	FAC	16.			
6. Tri. pra.	5		FACU	17.			
7. Mel. alba.	7		NL	18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 94
50% of total cover: 47 20% of total cover: 18.8

Circular 1/10-ac plot ___ or other plot dimension: 10x10 % of bare ground: 0
% Cover of Wetland Bryophytes ___ % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	32	X3= 96
FACU species	35	X4= 140
UPL + NL species	67	X5= 335
Column Totals:	134 (A)	571 (B)

Prevalence Index = B/A = 4.26

Hydrophytic Vegetation Indicators:

N Dominance Test is >50%
N Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: Rocky coastal terrace above Turnagain Arm.

SOIL

Sampling Point #: 613

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-1	O/L									
1-16	B/C	2.5Y 4/2	100	–		–	–	Sand Lo	N/T	25% gravel / 15% cobble

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- N Hydrogen Sulfide (A4) (within 12" of mineral surface; @ _____" in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- N α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: ~~N/A~~ NONE
Depth (inches): N/A

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes ____ No ✓

Comments:
1. Refusal on boulders/cobble @16".
2.
3. Too dry for α,α tests. No hydric soil indicators observed. Well drained.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- N Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10) _____
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- N Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- N FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No ✓ Depth of water (in.) _____
Water Table Present? Yes ____ No ✓ Depth to water (in.) _____
Seeping in at that depth but not yet filled?: ____
Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary or secondary indicators observed. Dry pit.

Site 613. Vegetation, western view. Photo taken September 12th, 2023.

Site 613. Vegetation, southern view. Photo taken September 12th, 2023.

Site 613. Soil. Photo taken September 12th, 2023.

Site 613. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward 98.5-118 Borough/City: Anc Date: 12 Sept 2023
Applicant/Owner: DOT+PF Sampling Point #: 617
Investigator(s): ZH + MA Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.054355 Long. 149.799239± ' NAD 83 Recorded on GPS?: ✓ Marked on map? – Field Map #: –
Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: Swale Slope (%): 1 Aspect: W
Local relief: Shape across slope: linear / convex / (concave) Shape up/downslope: (linear) / convex / concave NWI classification: PSS1/EM1Th
Photo nos./descriptions: N S E W Soil x2 Camera #: iPAD Veg Type (Viereck Level 4 or other): II C2j
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: ✓ If no, explain: Wet tcy HGM type: Riverine
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No ✓ If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the sampled area within a wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ✓	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. None				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: –
50% of total cover: – 20% of total cover: –

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Myr gale	40	Y	OBL	7.			
2.				8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 40
50% of total cover: 20 20% of total cover: 8

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Com pal	10		OBL	12.			
2. Vic cra	3		NL	13.			
3. Typha Lat	35	Y	OBL	14.			
4. Cal can	20	Y	FAC	15.			
5. Equ arv	1		FAC	16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 69
50% of total cover: 34.5 20% of total cover: 13.8

Circular 1/10-ac plot ___ or other plot dimension: 20x10 % of bare ground: 0
% Cover of Wetland Bryophytes – % Total Cover of Bryophytes 0 %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	85	X1= 85
FACW species	0	X2= 0
FAC species	21	X3= 63
FACU species	0	X4= 0
UPL + NL species	3	X5= 15
Column Totals:	109 (A)	163 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%
Y Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:
← Road Prism → Wet Swale b/t highway and RR tracks. Impounded.
point

SOIL

Sampling Point #: 617

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-16	Oe	–	–	–	–	–	–	–	NT	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- Y Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- Y Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 5 " in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- N α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): –

Drainage Class: VPD
Soil Map Unit Name:

Hydric Soil Present? Yes ✓ No ____

Comments:
1.
2.
3. Strong soil indicators.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- Y Surface Water (A1)
- Y High Water Table (A2) (w/in 12")
- Y Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- Y Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- Y Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- NT Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- Y Geomorphic Position (D2) – Swale
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- Y FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ✓ No ____ Depth of water (in.) 2

Water Table Present? Yes ✓ No ____ Depth to water (in.) surface

Seeping in at that depth but not yet filled?: –

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth to sat. (in.) Surface
Epi Endo Unknown

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Strong hydro indicators.

Site 617. Vegetation, northern view. Photo taken September 12th, 2023.

Site 617. Vegetation, southern view. Photo taken September 12th, 2023.

Site 617. Soil. Photo taken September 12th, 2023.

Site 617. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-115 Borough/City: Anc Date: 9/12/2023
Applicant/Owner: DOT: PF Sampling Point #: 1018
Investigator(s): ZH : MA Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.054350 Long. 149.799119 ± ' NAD 83 Recorded on GPS?: ✓ Marked on map? – Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Road Prism Slope (%): 15 Aspect: W
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: –
Photo nos./descriptions: N S E W Soil #2 Camera#: iPAD Veg Type (Viereck Level 4 or other): III A2a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: ✓ If no, explain. Wetter HGM type: —
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No ✓ If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No ___	Is the sampled area within a wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___	No ✓	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No ✓	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. None				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: —
50% of total cover: — 20% of total cover: —

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. None				7.			
2.				8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: —
50% of total cover: — 20% of total cover: —

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Ley. mol.	30	Y	FAC	12.			
2. Equ arv	40	Y	FAC	13.			
3. Vic cac	7		NL	14.			
4. Cha ang	3		FACU	15.			
5. Ach mil	1		FACU	16.			
6. Cal can	15		FAC	17.			
(7) Unk. grac	15		FAC	18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 111
50% of total cover: 55.5 20% of total cover: 22.2
Circular 1/10-ac plot ___ or other plot dimension: 5 x 10 % of bare ground: ___
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes — %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:
OBL species	0	X1=	0
FACW species	0	X2=	0
FAC species	100	X3=	300
FACU species	4	X4=	16
UPL + NL species	7	X5=	35
Column Totals:	111 (A)		351 (B)

Prevalence Index = B/A = 3.16

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%
N Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: Plot located on side of road prism fill embankment.
(7) = Unknown graminoid, no stems or panicles present. Narrow blades. Assume FAC.

SOIL

Sampling Point #: 6/8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-5	Fill	2.5Y 3/1	100	–	–	–	–	Sandy Lo	N/T	
5-8	Fill	10YR 2/2	100	–	–	–	–	Si Lo	N/T	
8-16	Fill	2.5Y 3/2	100	–	–	–	–	Grav Sandy Lo	N/T	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- N Hydrogen Sulfide (A4) (within 12" of mineral surface; @ _____" in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- N α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes _____ No ✓

Comments:
1. Dry pit ~~fill~~ road prism fill material, well drained.
2.
3. Too dry for α,α test. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- N Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10) _____
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- N Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- N FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No ✓ Depth of water (in.) _____

Water Table Present? Yes ____ No ✓ Depth to water (in.) _____

Seeping in at that depth but not yet filled?: ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary or secondary indicators observed.

Site 618. Vegetation, southern view. Photo taken September 12th, 2023.

Site 618. Vegetation, eastern view. Photo taken September 12th, 2023.

Site 618. Soil. Photo taken September 12th, 2023.

Site 618. Soil. Photo taken September 12th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward Hwy 98.5-118 Borough/City: Anc Date: 9/12/23
Applicant/Owner: DOT & PF Sampling Point #: 6019
Investigator(s): ZH & MA Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.054221 Long. 149.800095 ± ' NAD 83 Recorded on GPS?: ✓ Marked on map? – Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Coastal fringe/flat Slope (%): 1 Aspect: W
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: E2EM1P
Photo nos./descriptions: N S E W Soil x2 Camera #: PAD Veg Type (Viereck Level 4 or other): III A3i
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: ✓ If no, explain. Wetter HGM type: Estuarine Fringe
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No ✓ If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the sampled area within a wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	
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")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. None				5.			
2.				6.			
3.				7.			
4.				8.			

Total Tree Cover: ___
50% of total cover: ___ 20% of total cover: ___

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. None				7.			
2.				8.			
3.				9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: ___
50% of total cover: ___ 20% of total cover: ___

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Carex lyn	90	X	OBL	12.			
2.				13.			
3.				14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 90
50% of total cover: 45 20% of total cover: 18
Circular 1/10-ac plot ___ or other plot dimension: 10X10 % of bare ground: 10
% Cover of Wetland Bryophytes – % Total Cover of Bryophytes – %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:
OBL species	90	X1=	90
FACW species	–	X2=	–
FAC species	–	X3=	–
FACU species	–	X4=	–
UPL + NL species	–	X5=	–
Column Totals:	90 (A)		90 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point #: 619

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-15		N4/	100	—	—	—	—	silt	NT	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- Y Hydrogen Sulfide (A4) (within 12" of mineral surface; @ 1" in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- N α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: VPD
Soil Map Unit Name:

Hydric Soil Present? Yes ✓ No ____

Comments:
1. Strong H_2S.
2.
3. Would meet AK Gley w/out 5Y Hue but not problematic.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- Y Surface Water (A1)
- Y High Water Table (A2) (w/in 12")
- Y Saturation (A3) (w/in 12")
- N Water Marks (B1)
- Y Sediment Deposits (B2)
- Y Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- Y Iron Deposits (B5) → on soil surface in low areas.
- N Surface Soil Cracks (B6)
- Y Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- Y Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- NT Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- Y Geomorphic Position (D2) - tidal zone
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- Y FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ✓ No ____ Depth of water (in.) 1" few pockets.

Water Table Present? Yes ✓ No ____ Depth to water (in.) 7"

Seeping in at that depth but not yet filled?: 4"

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth to sat. (in.) Surface

Epi Endo Unknown

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site 619. Vegetation, southern view. Photo taken September 12th, 2023.

Site 619. Vegetation, northern view. Photo taken September 12th, 2023.

Site 619. Soil. Photo taken September 12th, 2023.

Site 619. Soil. Photo taken September 12th, 2023.

SOIL

Sampling Point #: 621

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-4	C	10YR 2/2	100	—	—	—	—	Lo Grav	NT	
4-11	A	5Y 3/1	90	7.5YR 4/4	10	con	M/PL	Loam	pos	20% gravel
11-14	B/C	N2.5/0	100	—	—	—	—	GrSaLo	NT	
14-17		5Y 2/1	90	7.5YR 4/4	10	con	mat/PL	SaLo	pos	
				7.5YR 3/4	10	con	mat/PL			

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- N Hydrogen Sulfide (A4) (within 12" of mineral surface; @ _____" in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- Y Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- N α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: NONE
Depth (inches): N/A

Drainage Class: SPD
Soil Map Unit Name:

Hydric Soil Present? Yes ✓ No ____

Comments:
1.
2.
3. AK redox; Positive dd present but not problematic.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- Y Surface Water (A1)
- Y High Water Table (A2) (w/in 12")
- Y Saturation (A3) (w/in 12")
- N Water Marks (B1)
- Y Sediment Deposits (B2)
- Y Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- Y Drainage Patterns (B10) multiple braids
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- Y Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- Y Geomorphic Position (D2) Flood plain
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- N FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes Y No ____ Depth of water (in.) 2" in lower areas

Water Table Present? Yes Y No ____ Depth to water (in.) 1"

Seeping in at that depth but not yet filled?: —

Saturation Present? (includes capillary fringe) Yes Y No ____ Depth to sat. (in.) Surface

Epi Endo Unknown

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Flood plain - stream gravels located on soil surface throughout area. Stream is in flood stage and multiple braids w/ flowing water located throughout wetland area.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: SH 98-118 Borough/City: MOA Date: 9/14/2023
Applicant/Owner: DOT & PF Sampling Point #: 621
Investigator(s): ZH / MA Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.051307 Long. 149.794644 ± ' NAD 83 Recorded on GPS?: ✓ Marked on map? – Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Toe Slope / Floodplain Slope (%): 3 Aspect: SW
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: PFO1 / EM1B
Photo nos./descriptions: N, S, E, W, soil x 2 Camera #: iPAD Veg Type (Viereck Level 4 or other): IB2 - alder
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: wet HGM type: Riverine
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No ✓ If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the sampled area within a wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ✓	No ___	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Aln. ten.	50	Y	FAC	5.			
2. Pop. bal	10	Y	FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 60
50% of total cover: 30 20% of total cover: 12

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Aln. ten.	10	Y	FAC	7.			
2. Rib. lax	7	Y	FACU	8.			
3. Pop bal	3	Y	FACU	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 20
50% of total cover: 10 20% of total cover: 4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Ang. gen.	10		FACW	12.			
2. Equ. arv	50	Y	FAC	13.			
3. Cal can	3		FAC	14.			
4. Ver ame	1		OBL	15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 64
50% of total cover: 32 20% of total cover: 12.8
Circular 1/10-ac plot ✓ or other plot dimension: ___ % of bare ground: 40
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes — %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	1	X1= 1
FACW species	10	X2= 20
FAC species	113	X3= 339
FACU species	20	X4= 80
UPL + NL species	0	X5= 0
Column Totals:	144 (A)	439 (B)

Prevalence Index = B/A = 3.05

Hydrophytic Vegetation Indicators:

Y Dominance Test is >50%
N Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: Bare ground + litter

Site 621. Vegetation, western view. Photo taken September 14th, 2023.

Site 621. Vegetation, southern view. Photo taken September 14th, 2023.

Site 621. Soil. Photo taken September 14th, 2023.

Site 621. Soil. Photo taken September 14th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: SH 98-118 Borough/City: ANC/MOA Date: 9/14/2023
Applicant/Owner: DOT&PF Sampling Point #: 622
Investigator(s): ZH/MA Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.051471 Long. 149.794439 ± ' NAD 83 Recorded on GPS?: ✓ Marked on map? – Field Map #: –
Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: Hillside Slope (%): 30 Aspect: SW
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: NSEW Soil X2 Camera#: iPAD Veg Type (Viereck Level 4 or other): IB1cd
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: Wetter HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	Is the sampled area within a wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop. bal	55	Y	FACU	5.			
2. Bet. pap.	10	Y	FACU	6.			
3.				7.			
4.				8.			

Total Tree Cover: 65
50% of total cover: 32.5 20% of total cover: 13

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Ros. aci.	35	Y	FACU	7.			
2. Vib. edu.	25	Y	FACU	8.			
3. Pop. bal	5		FACU	9.			
4. She. can.	10		FACU	10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 75
50% of total cover: 37.5 20% of total cover: 15

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Ach. mil.	1		FACU	12.			
2. Pyr. gra.	3	Y	FAC	13.			
3. Cha. ang.	3	Y	FACU	14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 7
50% of total cover: 3.5 20% of total cover: 1.4

Circular 1/10-ac plot ___ or other plot dimension: 20X20 % of bare ground: ___
% Cover of Wetland Bryophytes – % Total Cover of Bryophytes – %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	3	X3= 9
FACU species	144	X4= 576
UPL + NL species	0	X5= 0
Column Totals:	147 (A)	585 (B)

Prevalence Index = B/A = 3.98

Hydrophytic Vegetation Indicators:

N Dominance Test is >50%
N Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point #: 6 2 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-1	A	10YR 2/2	100	-	-	-	-	SALD	N	
1-3	A/B	10YR 3/4	100	-	-	-	-	GRSALO	N	
3-20	B/C	2.5Y 4/4	100%	-	-	-	-	LOAM	N	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- N Hydrogen Sulfide (A4) (within 12"of mineral surface; @ _____" in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- ___ α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: WW
Soil Map Unit Name: -

Hydric Soil Present? Yes ____ No X

Comments:
1. Too dry for d.d.
2.
3. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- N Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10) _____
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- N Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- N FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No X Depth of water (in.) _____
Water Table Present? Yes ____ No X Depth to water (in.) _____
Seeping in at that depth but not yet filled?: ____
Saturation Present? (includes capillary fringe) Yes ____ No X Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No primary or secondary indicators observed.

Site 622. Vegetation, western view. Photo taken September 14th, 2023.

Site 622. Vegetation, eastern view. Photo taken September 14th, 2023.

Site 622. Soil. Photo taken September 14th, 2023.

Site 622. Soil. Photo taken September 14th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: Seward 98.5-118 Borough/City: Anc Date: 9/14/2023
Applicant/Owner: DOT PF Sampling Point #: 624
Investigator(s): ZM and Ma Firm: HDR Alaska, Inc.
Lat. (dec.°) 61.051694 Long. 149.795205 ± ' NAD 83 Recorded on GPS?: ✓ Marked on map? – Field Map #: –
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landform: Terrace Slope (%): 5-7 Aspect: S
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear / convex / concave NWI classification: U
Photo nos./descriptions: N S E W Sun x 2 Camera#: iPAD Veg Type (Viereck Level 4 or other): I.B1C
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: ✓ If no, explain: Wetter HGM type: —
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No ✓ If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No ✓	Is the sampled area within a wetland? Yes ___ No ✓
Hydric Soil Present?	Yes ___	No ✓	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No ✓	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh ≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Pop. bal	60	Y	FACU	5.			
2. Aln. ten	20	Y	FAC	6.			
3. Sal las	7		FACW	7.			
4.				8.			

Total Tree Cover: 87
50% of total cover: 43.5 20% of total cover: 17.4

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Pop. bal	15	Y	FACU	7.			
2. Aln. ten	5	Y	FAC	8.			
3. Rub ida	3		FACU	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 23
50% of total cover: 11.5 20% of total cover: 4.6

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Her lam	3	Y	FACU	12.			
2. Dry exp	1		FACU	13.			
3. Equ arv	3	Y	FAC	14.			
4. Pyr gran	1		FAC	15.			
5. Taraxc	1		FACU	16.			
6. Cha ang	1		FACU	17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 10
50% of total cover: 5 20% of total cover: 2

Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: ___
% Cover of Wetland Bryophytes (where applicable) – % Total Cover of Bryophytes – %

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	7	X2= 14
FAC species	29	X3= 87
FACU species	84	X4= 336
UPL + NL species	0	X5= 0
Column Totals:	120 (A)	437 (B)

Prevalence Index = B/A = 3.64

Hydrophytic Vegetation Indicators:

N Dominance Test is >50%
N Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:
No hydrophytic vegetation indicators observed.

SOIL

Sampling Point #: 624

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-19	C	2.5Y 3/1	100	—	—	—	—	Lo Sa		40% cobble

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- N Hydrogen Sulfide (A4) (within 12"of mineral surface; @ _____" in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Red Parent Material (F21)
- Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- Alaska Alpine Swales (TA5)
- Alaska Redox with 2.5Y Hue
- AK Gleyed without Hue 5Y or Redder Underlying Layer
- α,α-dipyridyl positive (see pg. 91)
- ✓ Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes ____ No ✓

Comments:
1.
2.
3. Soils are old alluvial deposits from stream.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- N Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- ✓ Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10)
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- N Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- Y Geomorphic Position (D2)*
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- N FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No ✓ Depth of water (in.) _____

Water Table Present? Yes ____ No ✓ Depth to water (in.) _____

Seeping in at that depth but not yet filled?: ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
*Plot located in old meander of nearby stream. No evidence of recent flooding observed. Interpreted to flood during extreme events only. Only one secondary indicator observed.

Site 624. Vegetation, western view. Photo taken September 14th, 2023.

Site 624. Vegetation, southern view. Photo taken September 14th, 2023.

Site 624. Soil. Photo taken September 14th, 2023.

Site 624. Soil. Photo taken September 14th, 2023.

WETLAND DETERMINATION DATA FORM – Alaska Region

Project: SH 98-118 Borough/City: MOA Date: 9/14/2023
Applicant/Owner: DOT EPF Sampling Point #: 6031
Investigator(s): ZH / MA Firm: HDR Alaska, Inc.
Lat. (dec.°) 60.962482 Long. 149.436924 ± ' NAD 83 Recorded on GPS?: X Marked on map? — Field Map #: —
Subregion (circle one): SE (Southcentral) Western Aleutian Interior Northern Landform: Coastal Terrace Slope (%): 3 Aspect: E
Local relief: Shape across slope: linear / convex / (concave) Shape up/downslope: (linear) / convex / concave NWI classification: —
Photo nos./descriptions: N S E W Soil x2 Camera #: iPAD Veg Type (Viereck Level 4 or other): 1B2a
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: ___ No: X If no, explain: weather HGM type: N/A
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation N, Soil N, or Hydrology N naturally problematic? In Dry Season? Yes ___ No X If needed, explain answers here.

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes ___	No X	Is the sampled area within a wetland? Yes ___ No X
Hydric Soil Present?	Yes ___	No X	Remarks (e.g., marginal?):
Wetland Hydrology Present?	Yes ___	No X	

VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % can total >100%.

Tree Stratum (dbh≥ 3")

Species	Cov.%	Dom?	Ind.	Species	Cov.%	Dom?	Ind.
1. Bet. pap.	45	Y	FACU	5.			
2. Tsu. mer.	15	Y	FACU	6.			
3. Sal. beb.	5		FAC	7.			
4.				8.			

Total Tree Cover: 65
50% of total cover: 32.5 20% of total cover: 13

Sapling/Shrub Stratum (woody plants < 3" dbh)

	Abs.Cov.%	Dom?	Ind.		Abs.Cov.%	Dom?	Ind.
1. Men. fer.	60	Y	FACU	7.			
2. Aln. sin.	10		FAC	8.			
3. Opl. hor.	7		FACU	9.			
4.				10.			
5.				11.			
6.				12.			

Total Sapling/Shrub Cover: 77
50% of total cover: 38.5 20% of total cover: 15.4

Herb Stratum

	Abs.Cov.%	Dom?	Ind.		Abs. Cov.%	Dom?	Ind.
1. Dry. exp.	7	Y	FACU	12.			
2. Gym. dr.	3	Y	FACU	13.			
3.				14.			
4.				15.			
5.				16.			
6.				17.			
7.				18.			
8.				19.			
9.				20.			
10.				21.			
11.				22.			

Total Herb Cover: 10
50% of total cover: 5 20% of total cover: 2
Circular 1/10-ac plot X or other plot dimension: ___ % of bare ground: ___
% Cover of Wetland Bryophytes — % Total Cover of Bryophytes — %
(where applicable)

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	X1= 0
FACW species	0	X2= 0
FAC species	15	X3= 45
FACU species	137	X4= 548
UPL + NL species	0	X5= 0
Column Totals:	152 (A)	593 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:

N Dominance Test is >50%
N Prevalence Index is ≤3.0
N Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
N Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:
No hydrophytic vegetation indicators observed.

SOIL

Sampling Point #: 621

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (in.)	Horizon (opt.)	Soil Matrix Color (moist)	Soil Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	α,α dip. (pos/neg)	Remarks (or use comment number)
0-3	A	10YR 2/1	100	–	–	–	–	SILO	NT	
3-6	B1	10YR 4/1	80	–	–	–	–	SILO		
		5YR 2.5/2	20	–	–	–	–	SILO		
6-11	B2	10YR 4/1	50	–	–	–	–	SILO		Few cobbles
		5YR 2.5/2	50	–	–	–	–	SILO		
11-16	B3	2.5YR 2.5/3	100	–	–	–	–	SILO		
16-20	B4	10YR 3/4	80	–	–	–	–	SILO		
		5YR 3/4	20	–	–	–	–	SILO		

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS=Coated Sand Grains [2]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**):

Standard Indicators:

- N Histosol or Histel (A1)
- N Histic Epipedon (A2) (8-16" organics, sat'd, underlain by mineral soil with chroma ≤2)
- N Black Histic (A3)
- N Hydrogen Sulfide (A4) (within 12" of mineral surface; @ _____ " in this pit
- N Thick Dark Surface (A12)
- N Alaska Gleyed (A13)
- N Alaska Redox (A14)
- N Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils[3]:

- N Depleted Below Dark Surface (A11)
- N Depleted Matrix (F3)
- N Redox Dark Surface (F6)
- N Depleted Dark Surface (F7)
- N Redox Depressions (F8)
- N Red Parent Material (F21)
- N Very Shallow Dark Surface (F22)
- N Alaska Color Change[4] (TA4)
- N Alaska Alpine Swales (TA5)
- N Alaska Redox with 2.5Y Hue
- N AK Gleyed without Hue 5Y or Redder Underlying Layer
- N α,α-dipyridyl positive (see pg. 91)
- N Other (Low organic matter, low iron, high pH, recently developed., see p.91 of Supplement; explain in Remarks)

[3]One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must be present unless disturbed or problematic.
[4]Give details of color change in Remarks.

Restrictive Layer (if present)
Type: None
Depth (inches): N/A

Drainage Class: WD
Soil Map Unit Name:

Hydric Soil Present? Yes ____ No X

Comments:
1. Too dry for ad.
2.
3. Soil profile dry throughout. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators (check ones that apply, **measure from soil surface**):

Primary Indicators (any one indicator is sufficient)

- N Surface Water (A1)
- N High Water Table (A2) (w/in 12")
- N Saturation (A3) (w/in 12")
- N Water Marks (B1)
- N Sediment Deposits (B2)
- N Drift Deposits (B3)
- N Algal Mat or Crust (B4)
- N Iron Deposits (B5)
- N Surface Soil Cracks (B6)
- N Inundation Visible on Aerial Imagery (B7)
- N Sparsely Vegetated Concave Surface (B8)
- N Marl Deposits (B15)
- N Hydrogen Sulfide Odor (C1)
- N Dry-Season Water Table (C2) (w/in 12"-24" mineral, 12"-40" organic)
- N Other (explain)

Secondary Indicators (at least 2 are required)

- N Water-Stained Leaves (B9)
- N Drainage Patterns (B10) _____
- N Oxid'd Rhizospheres on Living Roots (C3) (within 12")
- NT Presence of Reduced Iron (C4) (pos. α,α or soil color change w/in 12")
- N Salt Deposits (C5)
- N Stunted or Stressed Plants (D1)
- N Geomorphic Position (D2)
- N Shallow Aquitard (D3) (w/in 24", can perch H_2O w/in 12")
- N Microtopographic Relief (D4) (caused by water)
- N FAC Neutral Test (D5)

Field Observations (in. from ground surface):

Surface Water Present? Yes ____ No X Depth of water (in.) _____

Water Table Present? Yes ____ No X Depth to water (in.) _____

Seeping in at that depth but not yet filled?: ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth to sat. (in.) _____ Epi Endo Unknown

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No primary or secondary hydro indicators observed. Dry pit.

Site 631. Vegetation, western view. Photo taken September 14th, 2023.

Site 631. Vegetation, southern view. Photo taken September 14th, 2023.

Site 631. Soil. Photo taken September 14th, 2023.

Site 631. Soil. Photo taken September 14th, 2023.

Appendix B. 2023 Observation Point Photographs

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Table 1. 2023 Observation Point Summary

Site	Latitude	Longitude	NWI	HGM	Viereck Code
1	61.010721	-149.701562	R4SBC	RIVERINE_CHANNEL	Water
2	60.991270	-149.621144	R4SBC	RIVERINE_CHANNEL	Water
3	60.992190	-149.623461	R4SBCd	RIVERINE_CHANNEL	Water
4	60.991719	-149.622397	U - CULVERT	N/A	IIIA2b
5	60.986834	-149.512642	R3UBH	RIVERINE_CHANNEL	IC2d
6	60.955819	-149.420743	R3UBH	RIVERINE_CHANNEL	Water
7	60.955718	-149.420587	PEM1Fd	SLOPE	IIIB3b
8	60.956192	-149.421333	R3UBH	RIVERINE_CHANNEL	IIB2b
9	60.957513	-149.423336	R4SBC	RIVERINE_CHANNEL	IIB2b
10	60.958635	-149.425181	R3UBH	RIVERINE_CHANNEL	IIB2b
11	60.959225	-149.426129	R3UBH	RIVERINE_CHANNEL	Water
12	60.951879	-149.405555	R3UBH	RIVERINE_CHANNEL	IIC2k
15	60.951616	-149.403053	PUBVb	RIVERINE	Water
16	60.951537	-149.403339	U	N/A	IIIB2
17	60.951391	-149.402707	U	N/A	IIIA2
18	60.951601	-149.401574	U	N/A	IIIB2b
19	60.951525	-149.401579	PEM2Vb	SLOPE	IIIB3a
20	60.951603	-149.401225	U	N/A	IB2c
21	60.951614	-149.400973	R3UBH	RIVERINE_CHANNEL	IB2c
22	60.951168	-149.400416	PUBVb	SLOPE	Water
23	60.951047	-149.400516	U	N/A	IIB2b
24	60.951021	-149.400852	U	N/A	IIIA2
25	60.953302	-149.412958	R3UBHd	RIVERINE_CHANNEL	Water
26	60.953390	-149.413164	R3UBH	RIVERINE_CHANNEL	Water
27	60.953469	-149.413538	PUBHd	RIVERINE	Water
28	60.953576	-149.413943	PEM1Fd	RIVERINE	IIIB3b
29	60.954191	-149.416075	R4SBC	RIVERINE_CHANNEL	Water
30	60.961362	-149.431245	R3UBH	RIVERINE_CHANNEL	Water
33	60.962504	-149.434098	U	N/A	IA2c
34	60.962612	-149.434945	PSS4/3B	SLOPE	IIA3a
35	60.962822	-149.435457	PEM1/SS3B	SLOPE	IIC2a
36	60.962696	-149.435941	PEM1F	SLOPE	IIIA3a
40	60.963437	-149.435878	R3UBH	RIVERINE_CHANNEL	Water
41	60.966368	-149.443205	R3UBH	RIVERINE_CHANNEL	Water
43	60.966293	-149.443237	U	N/A	IIIA2-lawn
44	60.965903	-149.44229	PEM1F	SLOPE	IA2b
47	60.965536	-149.44272	E2SS1Ph	ESTUARINE	IIB2d
48	60.965541	-149.442653	R1UBVh	RIVERINE_CHANNEL	Water

Site	Latitude	Longitude	NWI	HGM	Viereck Code
49	60.965463	-149.442769	E2EM1Nh	ESTUARINE	IIIA3i
50	61.022299	-149.746729	R4SBC	RIVERINE_CHANNEL	Water
52	60.974209	-149.468254	U	N/A	IC2a
54	60.973331	-149.467335	E2US1N	ESTUARINE	Bare
55	60.973552	-149.467018	E2US3N	ESTUARINE	Bare
56	60.973359	-149.467427	E2EM1P	ESTUARINE	IIIA1a
57	61.000127	-149.642496	R3UBH	RIVERINE_CHANNEL	Water
59	61.001572	-149.644203	R3UBH	RIVERINE_CHANNEL	IB2a
60	61.001107	-149.645873	U	N/A	IB2a
61	61.001022	-149.646172	U	N/A	IIIB2
62	61.000873	-149.64647	U	N/A	IIIB2a
64	61.000875	-149.642741	R3UBH	RIVERINE_CHANNEL	IB2c
67	61.008693	-149.695449	R3UBH	RIVERINE_CHANNEL	Bare
68	61.008538	-149.69548	PEM1Sh	RIVERINE	PV
69	61.008714	-149.695364	PUS3Rh	RIVERINE	PV
70	61.008948	-149.695711	U	N/A	IIIB2
71	61.027896	-149.753111	R4SBC	RIVERINE_CHANNEL	Water
72	61.016745	-149.731239	PUSC	RIVERINE	Bare
73	61.016871	-149.733926	U	N/A	IC2b
77	61.078595	-149.825591	R3UBH	RIVERINE_CHANNEL	IB2-willow
78	61.078617	-149.825268	R3UBH	RIVERINE_CHANNEL	IB2-willow
79	61.078598	-149.824844	PFO1/SS1B	SLOPE	IB2-willow
81	61.078850	-149.826016	R3UBH	RIVERINE_CHANNEL	Water
82	61.078939	-149.826343	U	N/A	IIIA2c
83	61.079188	-149.829257	R3UBH	RIVERINE_CHANNEL	Water
84	61.080241	-149.82979	R3UBH	RIVERINE_CHANNEL	Water
85	61.080046	-149.8293	PFO1B	SLOPE	IB3a
87	61.079886	-149.829237	R4SBC	RIVERINE_CHANNEL	Water
89	61.078960	-149.828001	PSS1/EM1C	SLOPE	IIB2b
90	61.077740	-149.827703	E2SS1Ph	ESTUARINE	IIB2a
91	61.077416	-149.827501	E2SS1/EM1Ph	ESTUARINE	IIC2j
92	61.076787	-149.829191	E2EM1Ph	ESTUARINE	IIIA3i
93	61.076377	-149.829309	E2EM1Ph	ESTUARINE	IIIA3h
96	61.054144	-149.797123	PABHh	SLOPE	IIID1g
97	61.054194	-149.797586	PSS1/EM1Fh	SLOPE	IIB2b
100	61.055539	-149.797014	PSS1/EM1Rh	RIVERINE	IIC2j
106	60.950713	-149.395694	R3UBH	RIVERINE_CHANNEL	IB1c
107	60.950572	-149.395896	R1UBVh	RIVERINE_CHANNEL	IIIA3i
108	60.950668	-149.395312	U	N/A	IB1-paper birch-balsam poplar

Site	Latitude	Longitude	NWI	HGM	Viereck Code
109	60.950312	-149.395299	PEM1Th	SLOPE	IIIA3i
110	60.950292	-149.396222	PEM1Tb	SLOPE	IIIA2
111	60.952060	-149.406482	R4SBC	RIVERINE_CHANNEL	IB2-paper birch-balsam poplar
112	60.952044	-149.40679	PEM1Fd	RIVERINE	IIIB3a
114	60.952537	-149.410088	R3UBHd	RIVERINE_CHANNEL	Water
115	60.986812	-149.611616	R4SBC	RIVERINE_CHANNEL	Water
116	60.989674	-149.617232	R3UBHd	RIVERINE_CHANNEL	Water
117	60.989483	-149.616605	R3UBH	RIVERINE_CHANNEL	Water
118	60.989191	-149.616061	R3UBHd	RIVERINE_CHANNEL	Water
119	60.989394	-149.616261	R4SBC	RIVERINE_CHANNEL	Water
121	61.030962	-149.763889	U	N/A	IIIA1a
122	61.041763	-149.784127	R4SBC	RIVERINE_CHANNEL	Water
124	61.041768	-149.784494	U	N/A	IIIA1a
125	61.041445	-149.783883	U	N/A	IB1c
126	61.054808	-149.798545	PEM1/SS1Rh	RIVERINE	IIC2j
127	61.055154	-149.798693	PEM1Rh	RIVERINE	IIIA3-typha
128	61.055011	-149.79896	PEM1/SS1Th	RIVERINE	IIC2j
129	61.055356	-149.799416	PEM1/SS1Th	RIVERINE	IIC2j
130	61.056063	-149.797555	PEM1/SS1Rh	RIVERINE	IIC2j
131	61.055774	-149.797884	PFO1/EM1Rh	RIVERINE	IB3a
134	60.951811	-149.408627	PUBH	DEPRESSIONAL	Water
135	60.951811	-149.409319	PUBH	DEPRESSIONAL	Water
136	60.951857	-149.409264	PSS1B	SLOPE	IIB1b
137	60.951912	-149.409129	R3UBH	RIVERINE_CHANNEL	Water
138	60.951821	-149.408952	PSS1B	SLOPE	IIB1b
139	60.951989	-149.410381	R3UBH	RIVERINE_CHANNEL	Water
141	60.951996	-149.409746	U	N/A	IIIB2
142	61.084527	-149.834555	R3UBH	RIVERINE_CHANNEL	Water
143	61.084214	-149.834161	PUBH	RIVERINE	Water
145	61.083699	-149.833718	R3UBH/PUBH	RIVERINE_CHANNEL	Water
146	61.085570	-149.836757	R3UBH	RIVERINE_CHANNEL	Water
147	61.085502	-149.83661	R3UBH	RIVERINE_CHANNEL	Water
148	61.085702	-149.836929	R3UBH	RIVERINE_CHANNEL	Water
149	61.085433	-149.837237	R1UBV	RIVERINE_CHANNEL	Water
150	61.085084	-149.837004	PFO1/SS1C	SLOPE	IB3a
151	61.084974	-149.83774	E2SS1/EM1P	ESTUARINE	IIC2j
152	61.084855	-149.837202	E2SS1/EM1P	ESTUARINE	IIC2j
153	61.085335	-149.837663	E2EM1N	ESTUARINE	IIIB3b
154	61.085899	-149.838197	PFO1B	SLOPE	IB2a

Site	Latitude	Longitude	NWI	HGM	Viereck Code
156	61.085893	-149.837132	R3UBH	RIVERINE_CHANNEL	Water
157	61.085249	-149.836005	U	N/A	IB1c
159	61.080785	-149.833057	U	N/A	IIIA2-lawn
160	61.080864	-149.832831	PFO1/SS1C	SLOPE	IB2a
161	61.080898	-149.833839	PFO1/SS1C	SLOPE	IB2a
162	61.080819	-149.833836	U	N/A	IB3b
163	61.080708	-149.832349	U	N/A	IIIB2a
164	61.082058	-149.83315	U	N/A	IB1c
166	61.084083	-149.835563	PSS1/EM1C	SLOPE	IB2b
167	61.081453	-149.830769	R3UBH	RIVERINE_CHANNEL	Water
168	61.081334	-149.830786	PSS1C	RIVERINE	IIB1d
500	60.985746	-149.499463	R3UBH	RIVERINE_CHANNEL	Water
501	60.985726	-149.498739	R4SBC	RIVERINE_CHANNEL	Water
504	60.985802	-149.500955	R3UBH	RIVERINE_CHANNEL	Water
505	60.98579	-149.500145	R3UBH	RIVERINE_CHANNEL	Water
506	60.985899	-149.501547	PUBH	RIVERINE	Water
507	60.984771	-149.494065	R3UBH	RIVERINE_CHANNEL	Water
510	60.984886	-149.493303	PSS1/EM1C	SLOPE	IIC1d
511	60.984741	-149.492707	R3UBH	RIVERINE_CHANNEL	Water
512	60.984519	-149.492517	R3UBH	RIVERINE_CHANNEL	Water
513	60.984414	-149.492344	R3UBH	RIVERINE_CHANNEL	Water
514	60.984273	-149.492041	R3UBH	RIVERINE_CHANNEL	Water
515	60.984260	-149.491927	PSS4/1B	SLOPE	IA3d
516	60.984292	-149.491865	R3UBH	RIVERINE_CHANNEL	Water
517	60.984074	-149.492239	R3UBH	RIVERINE_CHANNEL	Water
518	60.984116	-149.493001	R3UBH	RIVERINE_CHANNEL	Water
520	60.979771	-149.481991	R3UBH	RIVERINE_CHANNEL	Water
521	60.980222	-149.482123	U	N/A	IC1a
523	60.98045	-149.481674	R3UBH	RIVERINE_CHANNEL	Water
524	60.980423	-149.481699	U	N/A	IC1a
526	60.980048	-149.481053	U	N/A	Bare
527	60.980060	-149.480613	R3UBH	RIVERINE_CHANNEL	Water
528	60.978731	-149.47912	R3UBH	RIVERINE_CHANNEL	Water
529	60.979205	-149.479053	R3UBH	RIVERINE_CHANNEL	Water
530	60.979108	-149.479198	U	N/A	IC1a
532	60.967573	-149.441303	R3UBH	RIVERINE_CHANNEL	Water
534	60.967615	-149.438739	PFO4B	SLOPE	IC1a
535	60.967403	-149.438452	U	N/A	IB1d
536	60.968481	-149.447014	R4SBC	RIVERINE_CHANNEL	Water

Site	Latitude	Longitude	NWI	HGM	Viereck Code
537	60.968516	-149.447093	R4SBC	RIVERINE_CHANNEL	Water
540	60.961264	-149.429354	PEM1C	SLOPE	IIIA3e
541	60.961093	-149.429766	PEM1C	SLOPE	IIIA3e
544	60.985399	-149.50197	R3UBHd	RIVERINE_CHANNEL	Water
545	60.985331	-149.501011	E2US1N	ESTUARINE	Bare
546	60.985435	-149.501877	U	N/A	IIIA2
548	60.997093	-149.633082	U	N/A	IB1-paper birch-balsam poplar
549	60.997155	-149.633549	U	N/A	IIC2l
550	61.011964	-149.705348	R3UBH	RIVERINE_CHANNEL	Water
551	61.011975	-149.705329	U	N/A	IB1-paper birch-balsam poplar
552	61.012014	-149.706769	U	N/A	IIIA2-lawn
553	60.972264	-149.449475	PSS1/EM1C	SLOPE	IIB2b
554	60.972486	-149.449941	U	NA	IC1a
600	61.048940	-149.792849	R3UBH	RIVERINE_CHANNEL	IB1-paper birch-balsam poplar
601	61.048888	-149.792578	U	N/A	IB1-paper birch-balsam poplar
602	61.049056	-149.792538	R4SBC	RIVERINE_CHANNEL	IB1-paper birch-balsam poplar
605	61.049596	-149.792977	PEM1Rh	RIVERINE	IIIA2a
606	61.049681	-149.792112	R3UBH	RIVERINE_CHANNEL	IB2-paper birch-balsam poplar
607	61.050503	-149.792175	R3UBH	RIVERINE_CHANNEL	IIB2b
608	61.050487	-149.792161	PSS1C	SLOPE	IIB1b
610	60.989485	-149.513203	R3UBH	RIVERINE_CHANNEL	IC2a
611	60.989205	-149.51232	R3UBH	RIVERINE_CHANNEL	IIIA2b
612	60.983749	-149.597215	R4SBC	RIVERINE_CHANNEL	Water
614	60.998981	-149.647773	E2US1P	ESTUARINE	Bare
615	60.999001	-149.647158	E2US1N	ESTUARINE	Bare
616	60.999049	-149.645815	E2US3N	ESTUARINE	Bare
620	61.054250	-149.799859	U	N/A	Bare
623	61.051613	-149.794884	R3UBH	RIVERINE_CHANNEL	Water
625	61.058649	-149.798038	PSS1/EM1Rh	RIVERINE	IIC2j
626	60.953628	-149.416708	R3UBH	RIVERINE_CHANNEL	IIB1b
627	60.953432	-149.415361	PSS1/EM1Cx	SLOPE	IIB1d
628	60.953354	-149.415032	U	N/A	IIC2l
629	60.95322	-149.415163	PEM1Rh	RIVERINE	IIIA3d
630	60.953299	-149.41509	U	N/A	IIIB2a
632	60.962008	-149.436743	U	N/A	IB3a
633	61.006819	-149.69523	U	N/A	IC2d
634	61.006731	-149.695408	E2EM1P	ESTUARINE	IIIA1a
635	61.006693	-149.695316	E2US1P	ESTUARINE	Bare
636	61.006641	-149.695259	E2US1N	ESTUARINE	Bare

Site	Latitude	Longitude	NWI	HGM	Viereck Code
637	61.006466	-149.695214	E2US3N	ESTUARINE	Bare
638	61.006539	-149.695513	E2RS1P	ESTUARINE	Bare
639	61.006530	-149.695645	E2RS1N	ESTUARINE	Bare

Site 001. Culvert and vegetation, western view. Photo taken August 17, 2023.

Site 001. Culvert and vegetation, southern view. Photo taken August 17, 2023.

Site 002. Culvert and vegetation, western view. Photo taken August 17, 2023.

Site 002. Culvert and vegetation, southern view. Photo taken August 17, 2023.

Site 003. Culvert and vegetation, southern view. Photo taken August 17, 2023.

Site 003. Culvert and vegetation, western view. Photo taken August 17, 2023.

Site 004. Culvert and vegetation, southern view. Photo taken August 17, 2023.

Site 004. Vegetation, western view. Photo taken August 17, 2023.

Site 005. Culvert and vegetation, southern view. Photo taken August 17, 2023.

Site 005. Culvert and vegetation, western view. Photo taken August 17, 2023.

Site 006. Culvert and vegetation, eastern view. Photo taken August 17, 2023.

Site 006. Culvert and vegetation, southern view. Photo taken August 17, 2023.

Site 007. Culvert and vegetation, northern view. Photo taken August 17, 2023.

Site 007. Culvert and vegetation, western view. Photo taken August 17, 2023.

Site 008. Culvert and vegetation, northern view. Photo taken August 17, 2023.

Site 008. Culvert and vegetation, southern view. Photo taken August 17, 2023.

Site 009. Culvert and vegetation, northern view. Photo taken August 17, 2023.

Site 009. Culvert and vegetation, southern view. Photo taken August 17, 2023.

Site 010. Culvert and vegetation, southern view. Photo taken August 17, 2023.

Site 010. Culvert and vegetation, western view. Photo taken August 17, 2023.

Site 011. Culvert and vegetation, northern view. Photo taken August 17, 2023.

Site 011. Culvert and vegetation, eastern view. Photo taken August 17, 2023.

Site 012. Culvert and vegetation, western view. Photo taken August 17, 2023.

Site 012. Culvert and vegetation, northern view. Photo taken August 17, 2023.

Site 015. Pond and vegetation, northern view. Photo taken August 17, 2023.

Site 015. Pond and vegetation, southern view. Photo taken August 17, 2023.

Site 016. *Viccia cracca*, northern view. Photo taken August 17, 2023.

Site 016. *Viccia cracca*, southern view. Photo taken August 17, 2023.

Site 017. *Phalaris arundinacea*, northern view. Photo taken August 17, 2023.

Site 018. Vegetation, western view. Photo taken August 17, 2023.

Site 018. Vegetation, eastern view. Photo taken August 17, 2023.

Site 018. Soil. Photo taken August 17, 2023.

Site 019. Vegetation, eastern view. Photo taken August 17, 2023.

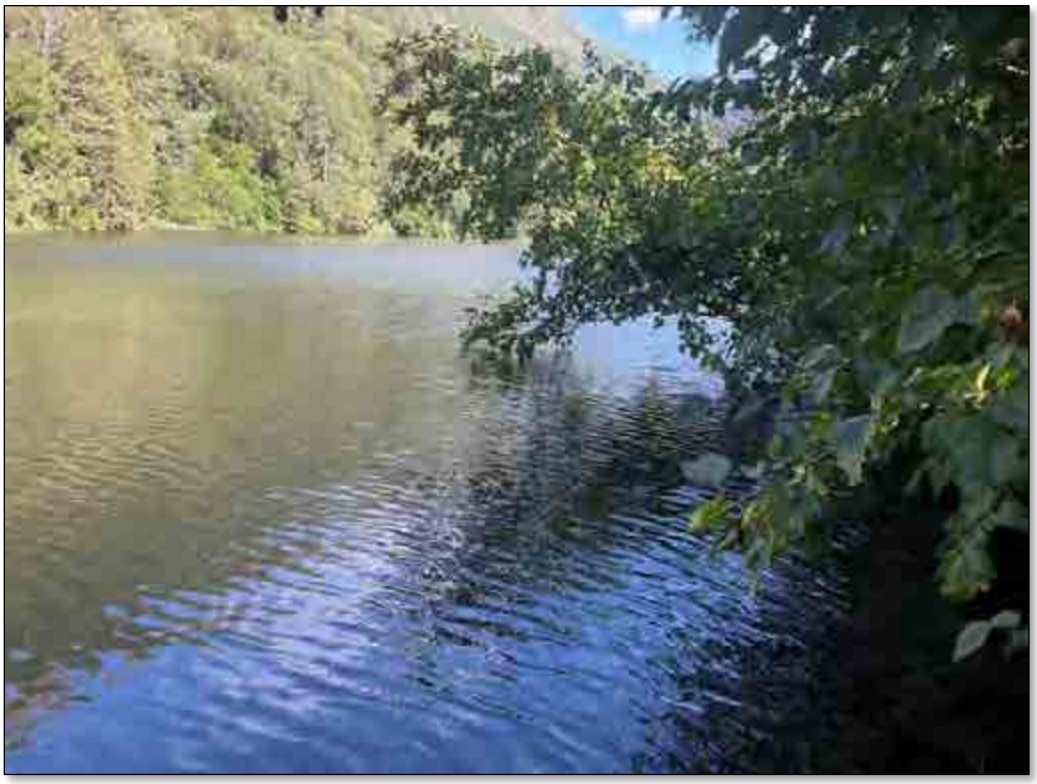
Site 019. Ground. Photo taken August 17, 2023.

Site 020. Vegetation, northern view. Photo taken August 17, 2023.

Site 020. Soil. Photo taken August 17, 2023.

Site 021. Upstream, northern view. Photo taken August 17, 2023.

Site 021. Downstream, southern view. Photo taken August 17, 2023.



Site 022. Pond, eastern view. Photo taken August 17, 2023.

Site 022. Pond, western view. Photo taken August 17, 2023.

Site 023. Vegetation, southern view. Photo taken August 17, 2023.

Site 023. Soil. Photo taken August 17, 2023.

Site 024. *Phalaris arundinacea*, northern view. Photo taken August 17, 2023.

Site 025. Ditch and vegetation, western view. Photo taken August 17, 2023.

Site 025. Ditch and vegetation, eastern view. Photo taken August 17, 2023.

Site 025. Ground. Photo taken August 17, 2023.

Site 026. Upstream, northern view. Photo taken August 17, 2023.

Site 026. Downstream, southern view. Photo taken August 17, 2023.

Site 027. Ditch, eastern view. Photo taken August 17, 2023.

Site 027. Culvert. Photo taken August 17, 2023.

Site 028. Ditch, eastern view. Photo taken August 17, 2023.

Site 028. Culvert. Photo taken August 17, 2023.

Site 029. Upstream, northern view. Photo taken August 17, 2023.

Site 029. Downstream, southern. Photo taken August 17, 2023.

Site 030. Downstream, southern view. Photo taken August 18, 2023.

Site 030. Culvert. Photo taken August 18, 2023.

Site 033. Vegetation, northern view. Photo taken August 18, 2023.

Site 033. Soil. Photo taken August 18, 2023.

Site 034. Vegetation, western view. Photo taken August 18, 2023.

Site 034. Soil. Photo taken August 18, 2023.

Site 035. Vegetation, western view. Photo taken August 18, 2023.

Site 035. Soil. Photo taken August 18, 2023.

Site 036. Vegetation, eastern view. Photo taken August 18, 2023.

Site 036. Soil. Photo taken August 18, 2023.

Site 040. Culvert, northern view. Photo taken August 18, 2023.

Site 040. Culvert. Photo taken August 18, 2023.

Site 041. Culvert, southern view. Photo taken August 18, 2023.

Site 041. Culvert. Photo taken August 18, 2023.

Site 043. Vegetation, western view. Photo taken August 18, 2023.

Site 043. Ground. Photo taken August 18, 2023.

Site 044. Seep, downstream view. Photo taken August 18, 2023.

Site 044. Seep, western view. Photo taken August 18, 2023.

Site 047. Vegetation, southern view. Photo taken August 18, 2023.

Site 047. Soil. Photo taken August 18, 2023.

Site 048. Stream, northern view. Photo taken August 18, 2023.

Site 048. Stream, southern view. Photo taken August 18, 2023.

Site 049. Vegetation, southern view. Photo taken August 18, 2023.

Site 049. Ground. Photo taken August 18, 2023.

Site 050. Streambed, southern view. Photo taken August 18, 2023.

Site 050. Streambed, eastern view. Photo taken August 18, 2023.

Site 052. Vegetation, northern view. Photo taken August 30, 2023.

Site 052. Ground. Photo taken August 30, 2023.

Site 054. Riverbank, northern view. Photo taken August 30, 2023.

Site 054. Riverbank, southern view. Photo taken August 30, 2023.

Site 055. Riverbank, northern view. Photo taken August 30, 2023.

Site 055. Ground. Photo taken August 30, 2023.

Site 056. Vegetation, northern view. Photo taken August 30, 2023.

Site 056. Ground. Photo taken August 30, 2023.

Site 057. Stream, upstream view. Photo taken August 30, 2023.

Site 057. Stream, downstream view. Photo taken August 30, 2023.

Site 059. Culvert, upstream view. Photo taken August 30, 2023.

Site 059. Culvert, downstream view. Photo taken August 30, 2023.

Site 060. Vegetation, eastern view. Photo taken August 30, 2023.

Site 060. Soil. Photo taken August 30, 2023.

Site 061. *Leucanthemum vulgare*. Photo taken August 30, 2023.

Site 062. Vegetation, northern view. Photo taken August 30, 2023.

Site 062. Vegetation, southern view. Photo taken August 30, 2023.

Site 062. Ground. Photo taken August 30, 2023.

Site 064. Stream, downstream view. Photo taken August 30, 2023.

Site 064. Culvert. Photo taken August 30, 2023.

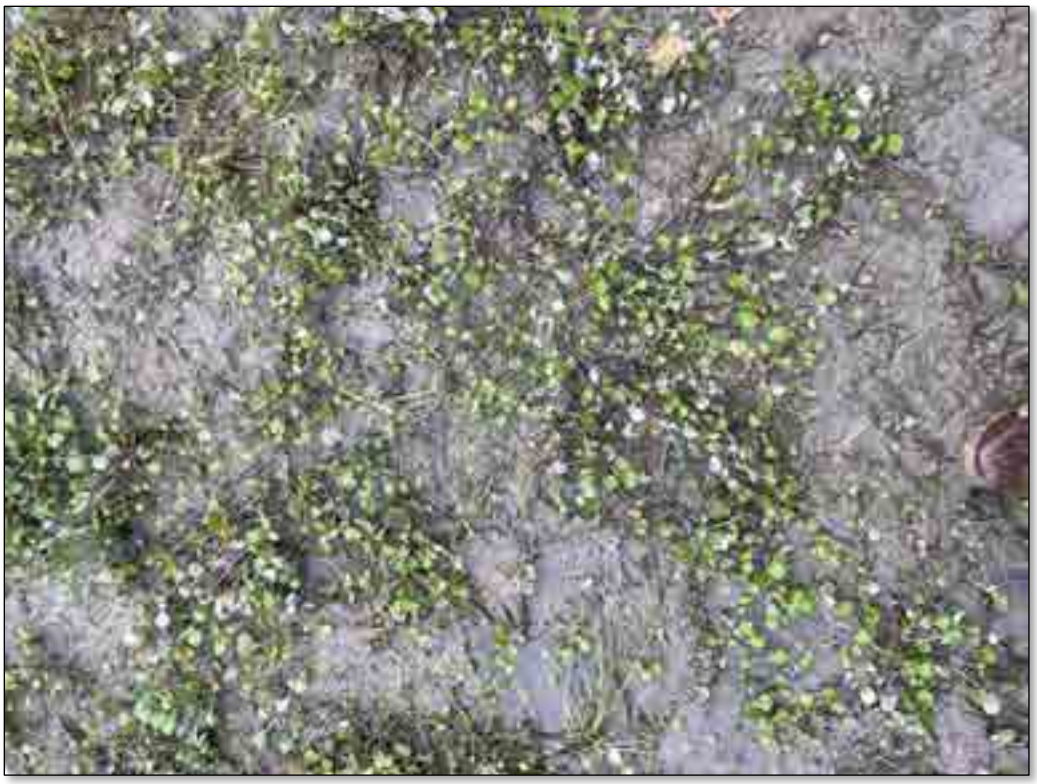
Site 067. Stream, downstream view. Photo taken August 30, 2023.

Site 067. Stream, upstream view. Photo taken August 30, 2023.

Site 068. Vegetation, eastern view. Photo taken August 30, 2023.

Site 068. Ground. Photo taken August 30, 2023.

Site 069. Vegetation, eastern view. Photo taken August 30, 2023.



Site 069. Ground. Photo taken August 30, 2023.

Site 070. Invasive plants, northern view. Photo taken August 30, 2023.

Site 071. Stream, downstream view. Photo taken August 30, 2023.

Site 071. Stream, upstream view. Photo taken August 30, 2023.

Site 071. Ground. Photo taken August 30, 2023.

Site 072. Waterbody, eastern view. Photo taken August 30, 2023.

Site 072. Waterbody, southern view. Photo taken August 30, 2023.

Site 073. Vegetation, eastern view. Photo taken August 30, 2023.

Site 073. Ground. Photo taken August 30, 2023.

Site 077. Stream, downstream view. Photo taken August 31, 2023.

Site 077. Stream, upstream view. Photo taken August 31, 2023.

Site 078. Stream, downstream view. Photo taken August 31, 2023.

Site 078. Stream, upstream view. Photo taken August 31, 2023.

Site 079. Vegetation, western view. Photo taken August 31, 2023.

Site 079. Soil. Photo taken August 31, 2023.

Site 081. Stream, downstream view. Photo taken August 31, 2023.

Site 081. Stream, upstream view. Photo taken August 31, 2023.

Site 082. Vegetation, northern view. Photo taken August 31, 2023.

Site 082. Soil. Photo taken August 31, 2023.

Site 083. Stream, downstream view. Photo taken August 31, 2023.

Site 083. Stream, upstream view. Photo taken August 31, 2023.

Site 084. Stream, downstream view. Photo taken August 31, 2023.

Site 084. Stream, upstream view. Photo taken August 31, 2023.

Site 085. Vegetation, northern view. Photo taken August 31, 2023.

Site 085. Soil. Photo taken August 31, 2023.

Site 087. Stream, downstream view. Photo taken August 31, 2023.

Site 087. Stream, upstream view. Photo taken August 31, 2023.

Site 089. Vegetation, northern view. Photo taken August 31, 2023.

Site 089. Ground. Photo taken August 31, 2023.

Site 090. Vegetation, western view. Photo taken August 31, 2023.

Site 090. Ground. Photo taken August 31, 2023.

Site 091. Vegetation, southern view. Photo taken August 31, 2023.

Site 091. Ground. Photo taken August 31, 2023.

Site 092. Vegetation, southern view. Photo taken August 31, 2023.

Site 092. Ground. Photo taken August 31, 2023.

Site 093. Vegetation, northern view. Photo taken August 31, 2023.

Site 093. Vegetation, eastern view. Photo taken August 31, 2023.

Site 096. Vegetation, northern view. Photo taken August 31, 2023.

Site 096. Vegetation, western view. Photo taken August 31, 2023.

Site 097. Vegetation, western view. Photo taken August 31, 2023.

Site 097. Ground. Photo taken August 31, 2023.

Site 100. Vegetation, northern view. Photo taken August 31, 2023.

Site 100. Ground. Photo taken August 31, 2023.

Site 106. Stream, downstream view. Photo taken September 7, 2023.

Site 106. Stream, upstream view. Photo taken September 7, 2023.

Site 107. Stream, downstream view. Photo taken September 7, 2023.

Site 107. Stream, upstream view. Photo taken September 7, 2023.

Site 108. Vegetation, southern view. Photo taken September 7, 2023.

Site 108. Soil. Photo taken September 7, 2023.

Site 109. Vegetation, northern view. Photo taken September 7, 2023.

Site 109. Soil. Photo taken September 7, 2023.

Site 110. *Phalaris arundinacea*, western view. Photo taken September 7, 2023.

Site 109. *Phalaris arundinacea*, southern view. Photo taken September 7, 2023.

Site 111. Stream, downstream view. Photo taken September 7, 2023.

Site 111. Stream, upstream view. Photo taken September 7, 2023.

Site 112. Vegetation, northern view. Photo taken September 7, 2023.

Site 112. Ground. Photo taken September 7, 2023.

Site 114. Stream, downstream view. Photo taken September 7, 2023.

Site 114. Stream, upstream view. Photo taken September 7, 2023.

Site 115. Stream, downstream view. Photo taken September 7, 2023.

Site 115. Stream, upstream view. Photo taken September 7, 2023.

Site 116. Stream, downstream view. Photo taken September 7, 2023.

Site 116. Stream, upstream view. Photo taken September 7, 2023.

Site 117. Stream, downstream view. Photo taken September 7, 2023.

Site 117. Stream, upstream view. Photo taken September 7, 2023.

Site 118. Stream, downstream view. Photo taken September 7, 2023.

Site 118. Stream, upstream view. Photo taken September 7, 2023.

Site 119. Stream, downstream view. Photo taken September 7, 2023.

Site 119. Stream, upstream view. Photo taken September 7, 2023.

Site 121. Vegetation, northern view. Photo taken September 7, 2023.

Site 121. Soil. Photo taken September 7, 2023.

Site 122. Stream, downstream view. Photo taken September 7, 2023.

Site 122. Stream, upstream view. Photo taken September 7, 2023.

Site 124. Vegetation, northern view. Photo taken September 7, 2023.

Site 124. Soil. Photo taken September 7, 2023.

Site 125. Vegetation, southern view. Photo taken September 7, 2023.

Site 125. Soil. Photo taken September 7, 2023.

Site 126. Vegetation, southern view. Photo taken September 7, 2023.

Site 126. Ground. Photo taken September 7, 2023.

Site 127. Vegetation, southern view. Photo taken September 7, 2023.

Site 127. Ground. Photo taken September 7, 2023.

Site 128. Vegetation, northern view. Photo taken September 7, 2023.

Site 128. Ground. Photo taken September 7, 2023.

Site 129. Vegetation, northern view. Photo taken September 7, 2023.

Site 129. Ground. Photo taken September 7, 2023.

Site 130. Vegetation, northern view. Photo taken September 7, 2023.

Site 130. Ground. Photo taken September 7, 2023.

Site 131. Vegetation, northern view. Photo taken September 7, 2023.

Site 131. Soil. Photo taken September 7, 2023.

Site 134. Waterbody, northern view. Photo taken September 12, 2023.

Site 134. Waterbody, southern view. Photo taken September 12, 2023.

Site 135. Waterbody, northern view. Photo taken September 12, 2023.

Site 135. Waterbody, southern view. Photo taken September 12, 2023.

Site 136. Vegetation, southern view. Photo taken September 12, 2023.

Site 136. Soil. Photo taken September 12, 2023.

Site 137. Stream, upstream view. Photo taken September 12, 2023.

Site 137. Stream, downstream view. Photo taken September 12, 2023.

Site 138. Vegetation, northern view. Photo taken September 12, 2023.

Site 138. Soil. Photo taken September 12, 2023.

Site 139. Stream, upstream view. Photo taken September 12, 2023.

Site 139. Stream, downstream view. Photo taken September 12, 2023.

Site 141. Invasive plants, eastern view. Photo taken September 12, 2023.

Site 141. Invasive plants, southern view. Photo taken September 12, 2023.

Site 142. Stream, upstream view. Photo taken September 12, 2023.

Site 142. Stream, downstream view. Photo taken September 12, 2023.

Site 143. Waterbody, northern view. Photo taken September 12, 2023.

Site 143. Waterbody, eastern view. Photo taken September 12, 2023.

Site 145. Stream, upstream view. Photo taken September 12, 2023.

Site 145. Stream, downstream view. Photo taken September 12, 2023.

Site 146. Stream, upstream view. Photo taken September 12, 2023.

Site 146. Stream, downstream view. Photo taken September 12, 2023.

Site 147. Stream, upstream view. Photo taken September 12, 2023.

Site 147. Stream, downstream view. Photo taken September 12, 2023.

Site 148. Stream, upstream view. Photo taken September 12, 2023.

Site 148. Stream, downstream view. Photo taken September 12, 2023.

Site 149. Stream, upstream view. Photo taken September 12, 2023.

Site 149. Stream, downstream view. Photo taken September 12, 2023.

Site 150. Vegetation, northern view. Photo taken September 12, 2023.

Site 150. Soil. Photo taken September 12, 2023.

Site 151. Vegetation, northern view. Photo taken September 12, 2023.

Site 151. Ground. Photo taken September 12, 2023.

Site 152. Vegetation, northern view. Photo taken September 12, 2023.

Site 152. Ground. Photo taken September 12, 2023.

Site 153. Vegetation, northern view. Photo taken September 12, 2023.

Site 153. Ground. Photo taken September 12, 2023.

Site 154. Vegetation, northern view. Photo taken September 12, 2023.

Site 154. Ground. Photo taken September 12, 2023.

Site 156. Stream, upstream view. Photo taken September 12, 2023.

Site 156. Stream, downstream view. Photo taken September 12, 2023.

Site 157. Vegetation, northern view. Photo taken September 12, 2023.

Site 157. Soil. Photo taken September 12, 2023.

Site 159. Vegetation, northern view. Photo taken September 12, 2023.

Site 159. Ground. Photo taken September 12, 2023.

Site 160. Vegetation, northern view. Photo taken September 12, 2023.

Site 160. Ground. Photo taken September 12, 2023.

Site 161. Vegetation, northern view. Photo taken September 12, 2023.

Site 161. Ground. Photo taken September 12, 2023.

Site 162. Vegetation, northern view. Photo taken September 12, 2023.

Site 162. Soil. Photo taken September 12, 2023.

Site 163. Vegetation, northern view. Photo taken September 12, 2023.

Site 163. Ground. Photo taken September 12, 2023.

Site 164. Vegetation, northern view. Photo taken September 12, 2023.

Site 164. Ground. Photo taken September 12, 2023.

Site 166. Vegetation, northern view. Photo taken September 12, 2023.

Site 166. Soil. Photo taken September 12, 2023.

Site 167. Stream, upstream view. Photo taken September 12, 2023.

Site 167. Stream, downstream view. Photo taken September 12, 2023.

Site 168. Vegetation, northern view. Photo taken September 12, 2023.

Site 168. Soil. Photo taken September 12, 2023.

Site 500. Stream, downstream view. Photo taken August 30, 2023.

Site 500. Stream, upstream view. Photo taken August 30, 2023.

Site 501. Stream, downstream view. Photo taken August 30, 2023.

Site 501. Stream, upstream view. Photo taken August 30, 2023.

Site 504. Stream, downstream view. Photo taken August 30, 2023.

Site 504. Stream, upstream view. Photo taken August 30, 2023.

Site 505. Stream, downstream view. Photo taken August 30, 2023.

Site 505. Stream, upstream view. Photo taken August 30, 2023.

Site 506. Stream, downstream view. Photo taken August 30, 2023.

Site 506. Stream, upstream view. Photo taken August 30, 2023.

Site 507. Stream, downstream view. Photo taken August 30, 2023.

Site 507. Stream, upstream view. Photo taken August 30, 2023.

Site 510. Vegetation, eastern view. Photo taken August 30, 2023.

Site 510. Soil. Photo taken August 30, 2023.

Site 511. Stream, downstream view. Photo taken August 30, 2023.

Site 511. Stream, upstream view. Photo taken August 30, 2023.

Site 512. Waterbody, northern view. Photo taken August 30, 2023.

Site 512. Ground, southern view. Photo taken August 30, 2023.

Site 513. Stream, downstream view. Photo taken August 30, 2023.

Site 513. Stream, upstream view. Photo taken August 30, 2023.

Site 514. Stream, downstream view. Photo taken August 30, 2023.

Site 514. Stream, upstream view. Photo taken August 30, 2023.

Site 515. Vegetation, eastern view. Photo taken August 30, 2023.

Site 515. Soil. Photo taken August 30, 2023.

Site 516. Stream, downstream view. Photo taken August 30, 2023.

Site 516. Stream, upstream view. Photo taken August 30, 2023.

Site 517. Stream, downstream view. Photo taken August 30, 2023.

Site 517. Stream, upstream view. Photo taken August 30, 2023.

Site 518. Stream, downstream view. Photo taken August 30, 2023.

Site 518. Stream, upstream view. Photo taken August 30, 2023.

Site 520. Stream, downstream view. Photo taken August 30, 2023.

Site 520. Stream, upstream view. Photo taken August 30, 2023.

Site 521. Vegetation, western view. Photo taken August 30, 2023.

Site 521. Soil. Photo taken August 30, 2023.

Site 523. Stream, downstream view. Photo taken August 30, 2023.

Site 523. Stream, upstream view. Photo taken August 30, 2023.

Site 524. Vegetation, western view. Photo taken August 30, 2023.

Site 524. Soil. Photo taken August 30, 2023.

Site 526. Vegetation, northern view. Photo taken August 30, 2023.

Site 526. Vegetation, western view. Photo taken August 30, 2023.

Site 527. Stream, downstream view. Photo taken August 30, 2023.

Site 527. Stream, upstream view. Photo taken August 30, 2023.

Site 528. Stream, downstream view. Photo taken August 30, 2023.

Site 528. Stream, upstream view. Photo taken August 30, 2023.

Site 529. Stream, downstream view. Photo taken August 30, 2023.

Site 529. Stream, upstream view. Photo taken August 30, 2023.

Site 530. Vegetation, northern view. Photo taken August 30, 2023.

Site 530. Vegetation, southern view. Photo taken August 30, 2023.

Site 532. Stream, downstream view. Photo taken August 31, 2023.

Site 532. Stream, upstream view. Photo taken August 31, 2023.

Site 534. Vegetation, western view. Photo taken August 31, 2023.

Site 534. Soil. Photo taken August 31, 2023.

Site 535. Vegetation, western view. Photo taken August 31, 2023.

Site 535. Vegetation, eastern view. Photo taken August 31, 2023.

Site 536. Stream, downstream view. Photo taken August 31, 2023.

Site 536. Stream, upstream view. Photo taken August 31, 2023.

Site 537. Stream, downstream view. Photo taken August 31, 2023.

Site 537. Stream, upstream view. Photo taken August 31, 2023.

Site 540. *Phalaris arundinacea*, northern view. Photo taken August 31, 2023.

Site 541. Vegetation, northern view. Photo taken August 31, 2023.

Site 541. Vegetation, southern view. Photo taken August 31, 2023.

Site 541. Soil. Photo taken August 31, 2023.

Site 544. Stream, downstream view. Photo taken August 31, 2023.

Site 544. Stream, upstream view. Photo taken August 31, 2023.

Site 545. Stream, downstream view. Photo taken August 31, 2023.

Site 545. Stream, upstream view. Photo taken August 31, 2023.

Site 546. Vegetation, eastern view. Photo taken August 31, 2023.

Site 546. Vegetation, western view. Photo taken August 31, 2023.

Site 548. Vegetation, eastern view. Photo taken August 31, 2023.

Site 548. Vegetation, western view. Photo taken August 31, 2023.

Site 549. Vegetation, eastern view. Photo taken August 31, 2023.

Site 549. Vegetation, western view. Photo taken August 31, 2023.

Site 549. Soil. Photo taken August 31, 2023.

Site 550. Seep, upstream view. Photo taken August 31, 2023.

Site 551. Vegetation, eastern view. Photo taken August 31, 2023.

Site 551. Vegetation, western view. Photo taken August 31, 2023.

Site 552. Vegetation, western view. Photo taken August 31, 2023.

Site 552. Vegetation, southern view. Photo taken August 31, 2023.

Site 553. Vegetation, southwestern view. Photo taken August 31, 2023.

Site 554. Vegetation, southwestern view. Photo taken August 31, 2023.

Site 600. Stream, upstream view. Photo taken September 12, 2023.

Site 600. Stream, downstream view. Photo taken September 12, 2023.

Site 601. Vegetation, northern view. Photo taken September 12, 2023.

Site 601. Soil. Photo taken September 12, 2023.

Site 602. Stream, upstream view. Photo taken September 12, 2023.

Site 602. Stream, downstream view. Photo taken September 12, 2023.

Site 605. Vegetation, northern view. Photo taken September 12, 2023.

Site 605. Soil. Photo taken September 12, 2023.

Site 606. Stream, upstream view. Photo taken September 12, 2023.

Site 606. Stream, downstream view. Photo taken September 12, 2023.

Site 607. Stream, upstream view. Photo taken September 12, 2023.

Site 607. Stream, downstream view. Photo taken September 12, 2023.

Site 608. Vegetation, northern view. Photo taken September 12, 2023.

Site 608. Soil. Photo taken September 12, 2023.

Site 610. Stream, upstream view. Photo taken September 12, 2023.

Site 611. Stream, upstream view. Photo taken September 12, 2023.

Site 611. Stream, downstream view. Photo taken September 12, 2023.

Site 612. Stream, upstream view. Photo taken September 12, 2023.

Site 614. Waterbody, eastern view. Photo taken September 12, 2023.

Site 614. Waterbody, southern view. Photo taken September 12, 2023.

Site 615. Waterbody, northern view. Photo taken September 12, 2023.

Site 615. Waterbody, southern view. Photo taken September 12, 2023.

Site 616. Waterbody, western view. Photo taken September 12, 2023.

Site 616. Waterbody, eastern view. Photo taken September 12, 2023.

Site 620. Vegetation, eastern view. Photo taken September 12, 2023.

Site 620. Vegetation, western view. Photo taken September 12, 2023.

Site 623. Stream, upstream view. Photo taken September 14, 2023.

Site 623. Stream, downstream view. Photo taken September 14, 2023.

Site 625. Vegetation, northern view. Photo taken September 14, 2023.

Site 625. Ground. Photo taken September 14, 2023.

Site 626. Stream, upstream view. Photo taken September 14, 2023.

Site 626. Stream, downstream view. Photo taken September 14, 2023.

Site 627. Vegetation, northern view. Photo taken September 14, 2023.

Site 627. Ground. Photo taken September 14, 2023.

Site 628. Vegetation, northern view. Photo taken September 14, 2023.

Site 628. Vegetation, southern view. Photo taken September 14, 2023.

Site 629. Vegetation, northern view. Photo taken September 14, 2023.

Site 629. Ground. Photo taken September 14, 2023.

Site 630. Vegetation, northern view. Photo taken September 14, 2023.

Site 630. Vegetation, southern view. Photo taken September 14, 2023.

Site 632. Vegetation, northern view. Photo taken September 14, 2023.

Site 632. Ground. Photo taken September 14, 2023.

Site 633. Vegetation, northern view. Photo taken September 14, 2023.

Site 633. Vegetation, southern view. Photo taken September 14, 2023.

Site 634. Vegetation, northern view. Photo taken September 14, 2023.

Site 634. Ground. Photo taken September 14, 2023.

Site 635. Vegetation, northern view. Photo taken September 14, 2023.

Site 635. Ground. Photo taken September 14, 2023.

Site 636. Vegetation, northern view. Photo taken September 14, 2023.

Site 636. Ground. Photo taken September 14, 2023.

Site 637. Vegetation, northern view. Photo taken September 14, 2023.

Site 637. Ground. Photo taken September 14, 2023.

Site 638. Vegetation, northern view. Photo taken September 14, 2023.

Site 638. Ground. Photo taken September 14, 2023.

Site 639. Vegetation, northern view. Photo taken September 14, 2023.

Site 639. Ground. Photo taken September 14, 2023.

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Appendix C. ADCM Table 1: Polygons, and Relative Ecological Values (REVs), Grouped by Landforms

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Table 1: *Polygons,* and *Relative Ecological Values (REVs),* Grouped by *Landform*

Landform	*Polygon* Characteristics					*REV*
Subtidal Zone	shallow					2
	deep					3
Intertidal Zone	*vegetated*					1
	unvegetated	*beluga whale concentration area*				
		water bird concentration area				
		other				2
Waterway	open channel	*stream*	*perennial*	*natural* or *naturalized*	supports *salmonids*	1
					does not support *salmonids*	2
				non-naturalized [1]	supports *salmonids*	
					does not support *salmonids*	3
			intermittent or *ephemeral*	*natural* or *naturalized*		
				non-naturalized [1]		4
			inactive channel	connected to active channel at bankfull discharge or less		same as active channel
				disconnected from active channel at bankfull discharge or less		as indicated by other applicable *landform* and *polygon* characteristics[2]
		drainageway	*natural* or *naturalized*			3
			non-naturalized [1]			4
		ditch	supports *salmonids*			2
			does not support *salmonids*		*naturalized*	3
					non-naturalized [1]	4
	piped					
Waterbody	*persistent*	*natural* or *naturalized*	>2500 sf or part of *mosaic* [4]			1
			very small and *remote*			2
		non-naturalized [1]	>2500 sf or part of *mosaic* [4]		remnant *natural* or *naturalized* shoreline	1
					remainder of *waterbody*	2
			very small and *remote*		remnant *natural* or *naturalized* shoreline	
					remainder of *waterbody*	3
	seasonal	*natural* or *naturalized*	>2500 sf or part of *mosaic* [4]			2
			very small and *remote*			3
		non-naturalized [1]	>2500 sf or part of *mosaic* [4]		remnant *natural* or *naturalized* shoreline	2
					remainder of *waterbody*	3
			very small and *remote*		remnant *natural* or *naturalized* shoreline	
					remainder of *waterbody*	4
Wetlands	*inundated*	from break-up through the end of June	>2500 sf or part of *mosaic* [4]	*natural* or *naturalized*		1
				non-naturalized [1]		2
			very small and *remote*	*natural* or *naturalized*		
				non-naturalized [1]		3
		for at least two consecutive weeks in spring and/or autumn	>2500 sf or part of *mosaic* [4]	*natural* or *naturalized*		2
				non-naturalized [1]		3
			very small and *remote*	*natural* or *naturalized*		
				non-naturalized [1]		4
	rarely or never *inundated*	*quaking bog*				1
		inclusion [3]				same as surrounding area
		setback for *waterway* or *waterbody* [3]				same as *waterway /waterbody*
		300' *buffer* for *REV* 1 or 2 aquatic area[3]				2
		other		*natural* or *naturalized*		3
				non-naturalized [1]		4
	mosaic of *inundated* & non-*inundated wetlands*					same as *inundated wetlands* [4]
Uplands	not *developed*	*inclusion* [3]				same as surrounding area
		setback for *waterway* or *waterbody* [3]				same as *waterway /waterbody*
		300 ft buffer for REV 1 or 2 aquatic area3				2
		other		*natural* or *naturalized*		3
				non-naturalized [1]		4
	developed					
Mosaic	mix of *wetlands* & *uplands*					same as *wetlands* [4]
	mix of *wetlands* & *waterbodies*					same as *waterbodies* [4]

[1] For *restoration*, *enhancement*, or *establishment* projects, existing *polygons* that are *non-naturalized* will have a pre-project *REV* of 4, regardless of *landform* and position. The post-project *REV(s)* should reflect both the anticipated physical condition of the *polygon(s)* and its position (e.g., whether it is part of a *setback*).

[2] In the spreadsheets, disconnected *inactive channels* may be combined with other *polygons* with which they share the necessary commonality of attributes. Mapping, however, should still identify the channel as a separate feature, to facilitate the evaluation of mitigation opportunities.

[3] For *restoration, enhancement*, *or establishment* projects involving *inclusions*, *setbacks*, or *buffers*, assign the pre-project *REV* according to the existing physical condition of the *polygon* (i.e., whether it is *natural*, *naturalized*, or *non-naturalized wetland* or *upland*), without regard to its position. The post-project *REV(s)* should reflect both the projected physical condition of the *polygon(s)* and its position.

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Appendix D. Antecedent Precipitation Tool Data

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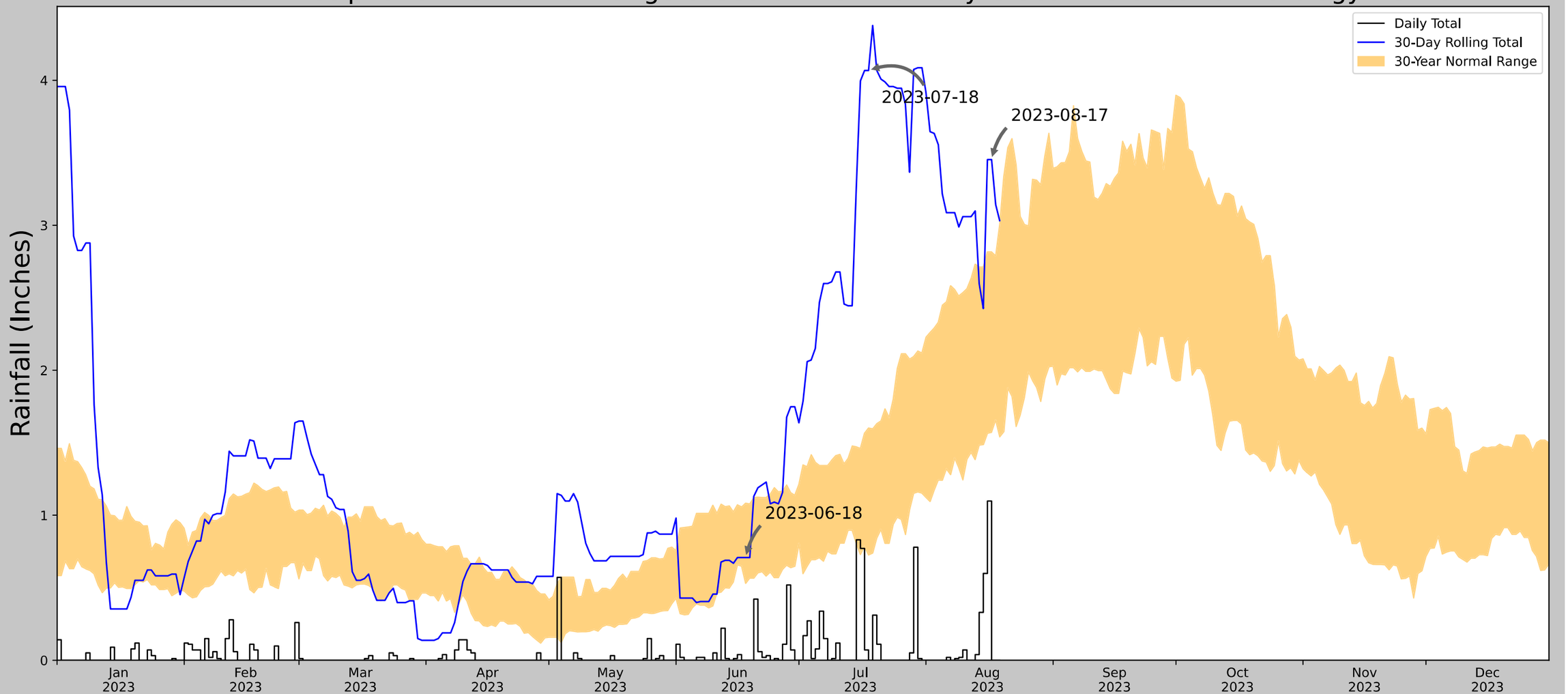


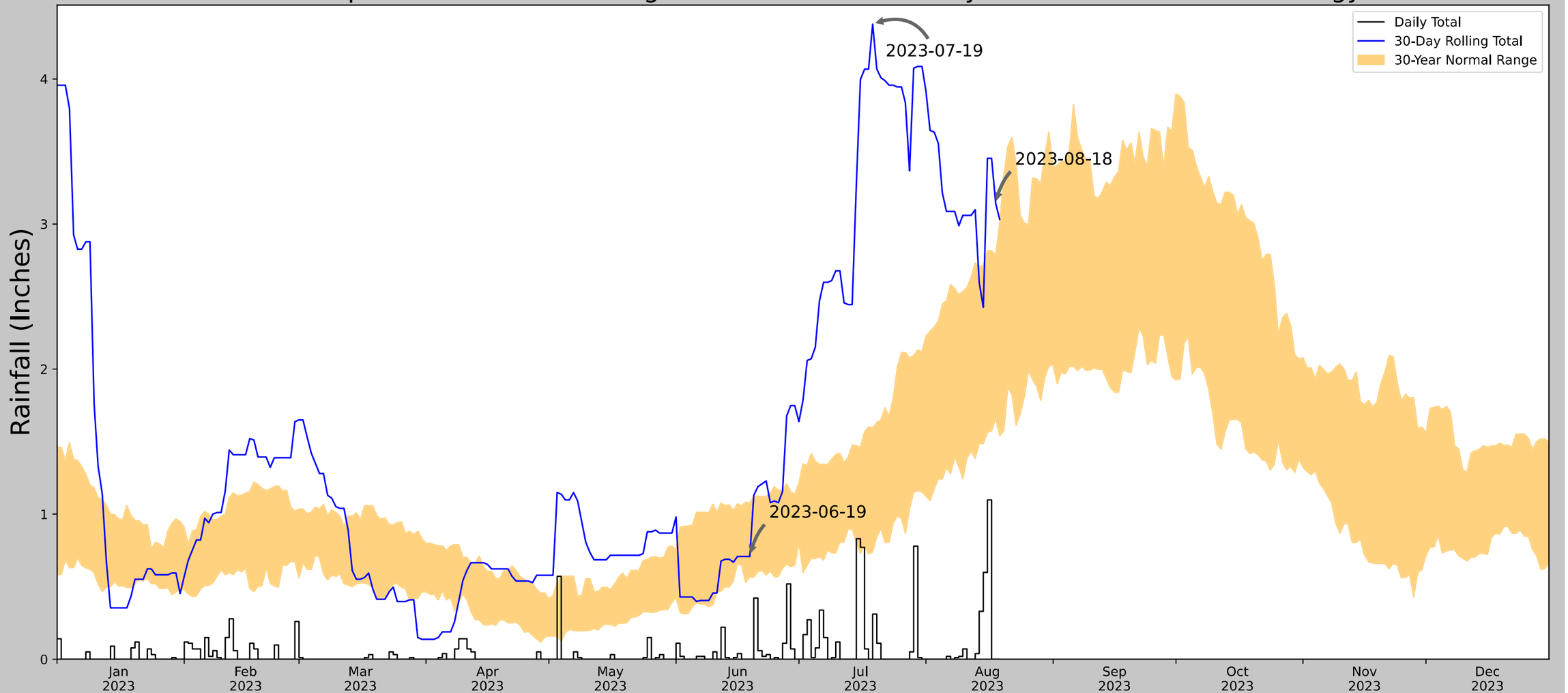
Coordinates	60.996496, -149.632868
Observation Date	2023-08-17
Elevation (ft)	40.978
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-17	1.572047	2.815354	3.452756	Wet	3	3	9
2023-07-18	0.725984	1.601181	4.066929	Wet	3	2	6
2023-06-18	0.530315	1.082677	0.708661	Normal	2	1	2
Result							Wetter than Normal - 17

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ANCHORAGE TED STEVENS INTL AP	61.1692, -150.0278	125.0	17.79	84.022	9.5	11353	90



Coordinates	60.996496, -149.632868
Observation Date	2023-08-18
Elevation (ft)	40.978
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

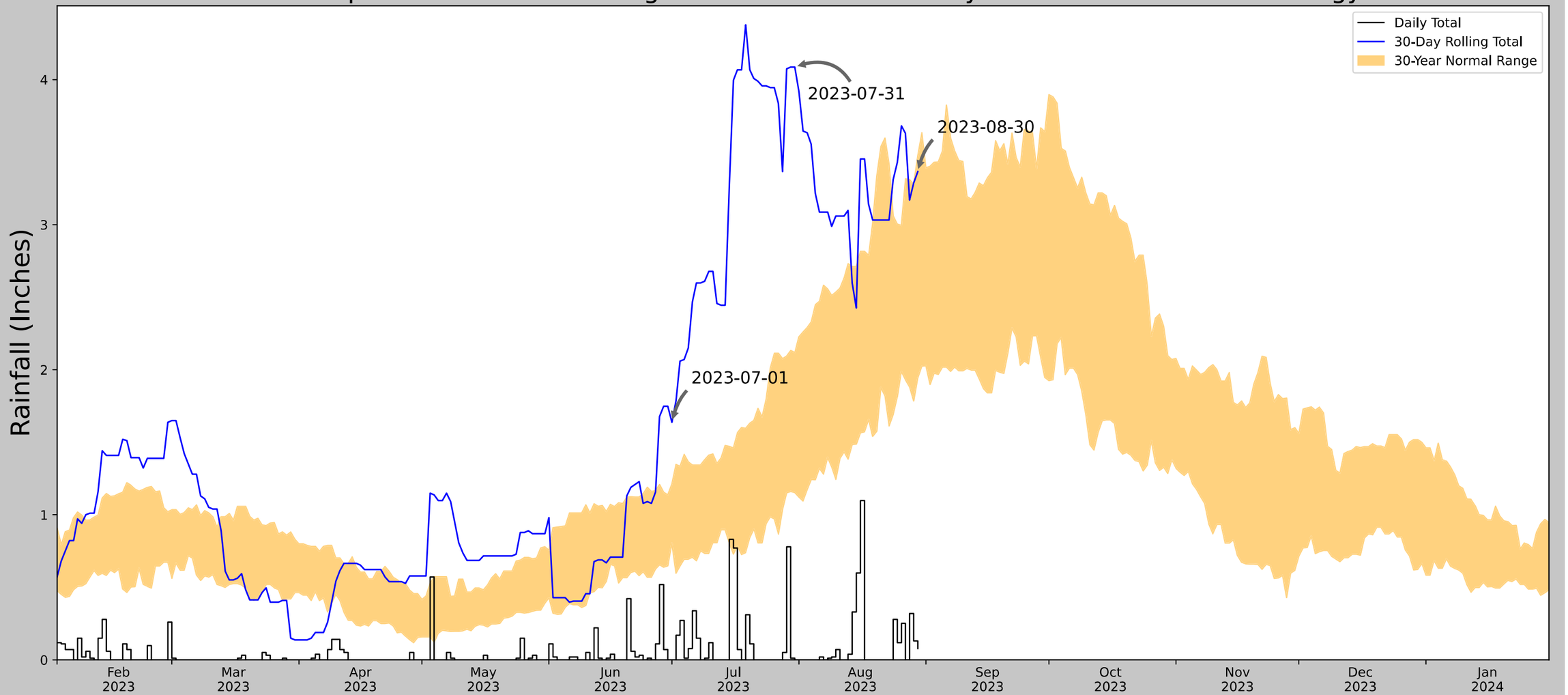
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-18	1.65748	2.788189	3.141732	Wet	3	3	9
2023-07-19	0.739764	1.595669	4.377953	Wet	3	2	6
2023-06-19	0.566142	1.077165	0.708661	Normal	2	1	2
Result							Wetter than Normal - 17

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ANCHORAGE TED STEVENS INTL AP	61.1692, -150.0278	125.0	17.79	84.022	9.5	11353	90

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



Coordinates	60.996496, -149.632868
Observation Date	2023-08-30
Elevation (ft)	40.978
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

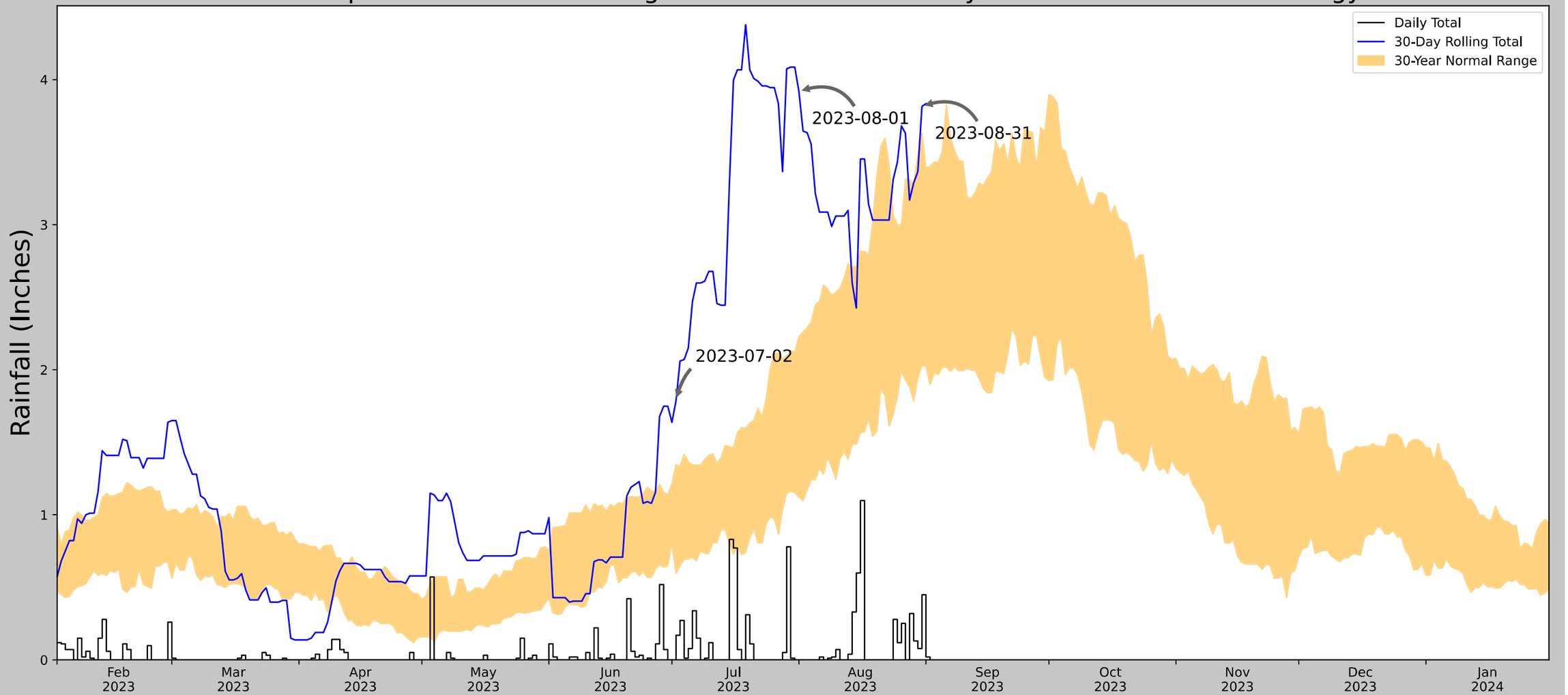
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-30	1.942126	3.47441	3.366142	Normal	2	3	6
2023-07-31	1.152756	2.118504	4.086614	Wet	3	2	6
2023-07-01	0.804331	1.212598	1.637795	Wet	3	1	3
Result							Wetter than Normal - 15

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ANCHORAGE TED STEVENS INTL AP	61.1692, -150.0278	125.0	17.79	84.022	9.5	11353	90

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



Coordinates	60.996496, -149.632868
Observation Date	2023-08-31
Elevation (ft)	40.978
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

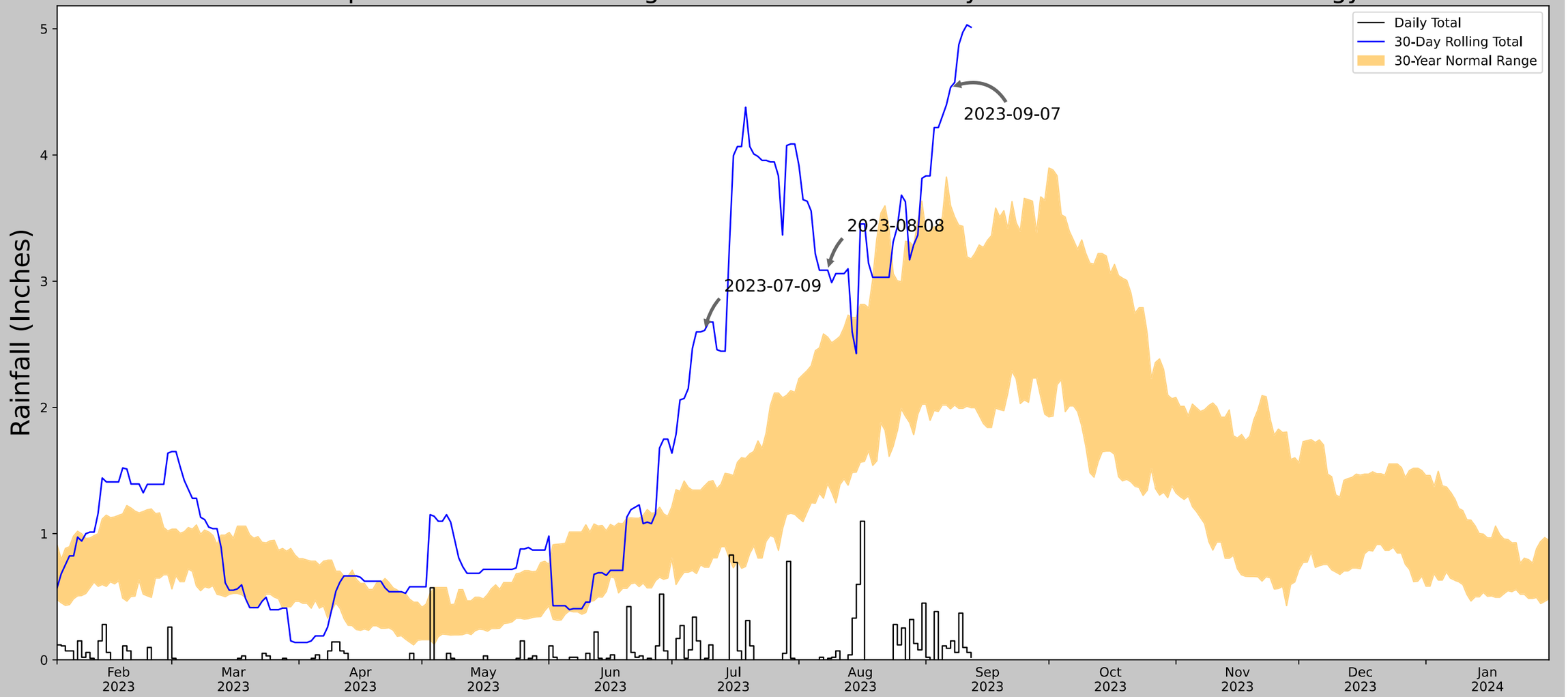
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-31	2.024803	3.633858	3.814961	Wet	3	3	9
2023-08-01	1.122441	2.226772	3.917323	Wet	3	2	6
2023-07-02	0.597244	1.347244	1.787402	Wet	3	1	3
Result							Wetter than Normal - 18

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ANCHORAGE TED STEVENS INTL AP	61.1692, -150.0278	125.0	17.79	84.022	9.5	11353	90

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



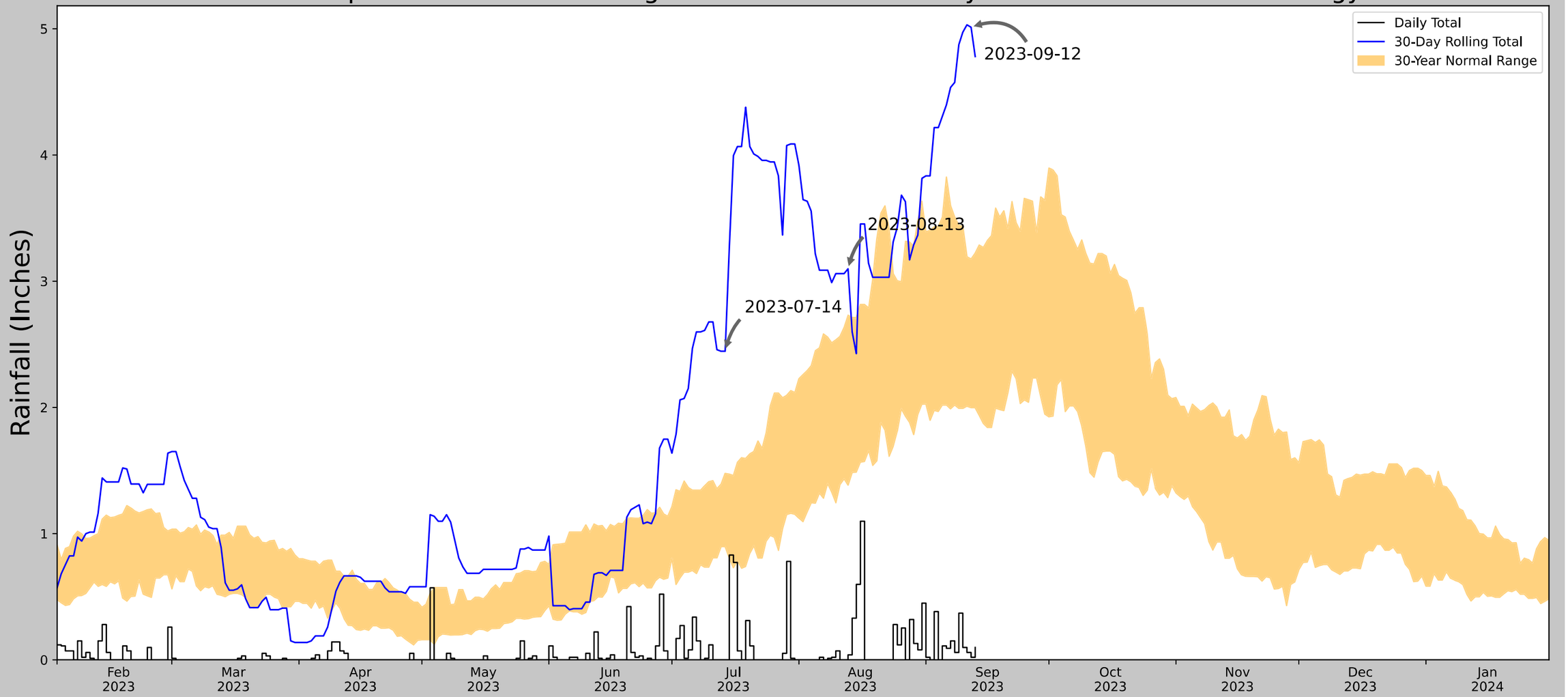
Coordinates	60.996496, -149.632868
Observation Date	2023-09-07
Elevation (ft)	40.978
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-09-07	1.988976	3.597638	4.535433	Wet	3	3	9
2023-08-08	1.394882	2.556693	3.086614	Wet	3	2	6
2023-07-09	0.734252	1.379134	2.610236	Wet	3	1	3
Result							Wetter than Normal - 18

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ANCHORAGE TED STEVENS INTL AP	61.1692, -150.0278	125.0	17.79	84.022	9.5	11353	90



Coordinates	60.996496, -149.632868
Observation Date	2023-09-12
Elevation (ft)	40.978
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-09-12	1.998032	3.176772	5.011811	Wet	3	3	9
2023-08-13	1.383858	2.730709	3.098425	Wet	3	2	6
2023-07-14	0.897244	1.477165	2.444882	Wet	3	1	3
Result							Wetter than Normal - 18

Figure and tables made by the
Antecedent Precipitation Tool
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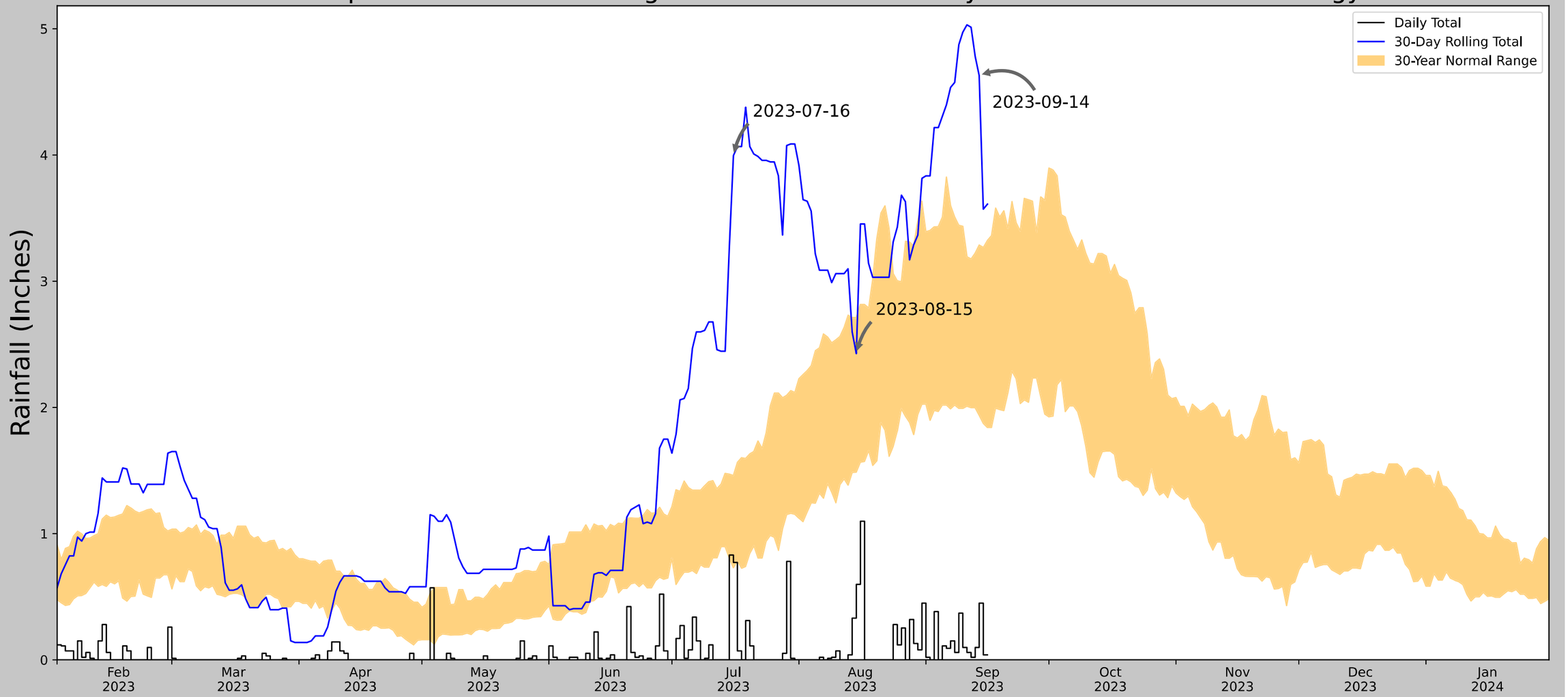
Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ANCHORAGE TED STEVENS INTL AP	61.1692, -150.0278	125.0	17.79	84.022	9.5	11353	90

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



Coordinates	60.996496, -149.632868
Observation Date	2023-09-14
Elevation (ft)	40.978
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-09-14	1.936614	3.286614	4.629921	Wet	3	3	9
2023-08-15	1.487008	2.711417	2.425197	Normal	2	2	4
2023-07-16	0.729528	1.46063	3.996063	Wet	3	1	3
Result							Wetter than Normal - 16

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

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U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ANCHORAGE TED STEVENS INTL AP	61.1692, -150.0278	125.0	17.79	84.022	9.5	11353	90

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