Jurisdictional Determination Report

Bridge 127.5 Eagle River

Eagle River, Alaska December 14, 2021

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Acronyms and Abbreviations

APT	Antecedent Precipitation Tool
ARRC	Alaska Railroad Corporation
CWA	Clean Water Act
DTM	digital terrain model
GIS	geographic information system
GPS	global positioning system
HDR	HDR Engineering, Inc.
Lidar	Light Detection and Ranging
MOA	Municipality of Anchorage
MP	milepost
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWPR	Navigable Waters Protection Rule
OHW	ordinary high water
ROW	right-of-way
SPN	Special Public Notice
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WOUS	Waters of the U.S.

1.0 Introduction and Purpose

The Alaska Railroad Corporation (ARRC) is planning a track realignment and bridge replacement of ARRC Bridge 127.5 over Eagle River. ARRC has contracted HDR Engineering, Inc. (HDR) to assist with delineation of wetlands and waterbodies within the study area and to preliminarily determine whether those wetlands and waterbodies are subject to U.S. Army Corps of Engineers' (USACE) jurisdiction under authority of Section 404 of the Clean Water Act (CWA) of 1972 (as amended) or Section 10 of the Rivers and Harbors Act of 1899.

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

1.1. Study Area Description

The 36.4-acre study area is located in Eagle River within the Municipality of Anchorage (MOA; Inset 1) and consists of a 200-foot corridor along a 1.7-mile stretch of the rail line, between approximately ARRC mileposts (MP) 126.4 and 128.1. The study area is limited to the ARRC right-of-way (ROW). Land outside of the ROW is military land within Joint Base Elmendorf– Richardson (Figure 1). Within the study area the railroad alignment transects the Elmendorf Moraine, which consists of discontinuous, unconsolidated glacial till.



Inset 1. Study Area Location

Geological Survey (USGS) quadrangles Anchorage B-7 and B-8 and is located in Sections 3, 9, 10 and 16 of Township 14 North, Range 4 West, Seward Meridian. The approximate center of the study area is at 61.316° North latitude and -149.621° West longitude (NAD 83). The study area is within the Cook Inlet ecoregion (USACE 2007) and the Lower Eagle River watershed (12-digit Hydrologic Unit Code 190204010306; USGS 2021a).

2.0 Methods

2.1. Field Work

The study area can be found on U.S.

On August 16, 2021, HDR wetland scientists Alena Gerlek (Professional Wetland Scientist #3144) and Ashley Hovis (Wetland Professional in Training) conducted an on-site investigation of wetlands and waterbodies within the study area. Soil conditions, hydrology, and plant communities were studied using methods described in the 1987 *Wetlands Delineation Manual* and the 2007 *Regional Supplement* (USACE 1987, 2007). The field work occurred within the



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*). Photographs and observational data were collected at additional locations (Observation Points) to document sites that exhibited characteristics similar to those of areas where a data form had already been completed, or to document the presence (or absence) of a waterbody or stream. Locations of Wetland Determination Form sites and Observation Points were logged into a global positioning system (GPS)-enabled iPad.

The USACE Antecedent Precipitation Tool (APT) was used to determine the degree to which any recent climatic events (e.g., abnormally wet or dry conditions) may have influenced hydrology conditions during the time of the field investigation. The APT utilizes 30 years of data on precipitation, drought, and other climatic factors to determine "normal" conditions (Deters 2020). Hydrologic indicators observed in the field on August 16, 2021 would be expected to correlate with the APT output (Appendix A). The APT calculated that the field survey occurred during the dry season and that the antecedent precipitation conditions were wetter than normal, which is consistent with field observations.

2.2. Wetland Mapping and Classification

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

- Digital color ortho-rectified aerial photography at sub-meter ground pixel resolution (MOA 2015a)
- Digital terrain model (DTM) raster dataset at a 3-foot ground pixel resolution (MOA 2015b)
- Light Detection and Ranging (LiDAR)-derived 1-foot topographic contours (MOA 2015c)
- National Hydrography Dataset (USGS 2021b)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping for USGS quadrangles Anchorage B-7 and B-8 (USFWS 2021; Figure 2)
- MOA wetland mapping (MOA 2021; Figure 2)
- Natural Resources Conservation Service (NRCS) soil survey mapping (NRCS 2020; Figure 2)

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. Wetland/upland boundaries were digitized into GIS at a scale of 1:1,200. Surveyors with Kuna Engineering, LLC surveyed the wetted perimeter and ordinary high water (OHW) line of Eagle River within the study area on August 16, 2021. The results of the survey were incorporated into the mapping (Figure 3). Mapped polygons identifying homogeneous wetland and waterbody areas were attributed with NWI mapping codes based on the USFWS' *Classification of Wetlands and Deepwater Habitats of the U.S.* (Cowardin et al. 1979).

3.0 Summary of Findings

3.1. Wetland and Waterbody Classification

Standard Wetland Determination Forms were completed at three sites within the study area (Appendix B). Observation Points were collected at an additional 12 locations (Appendix C). Data points are listed in Table 1 and shown on Figure 3.

Site ID	Plot Type ^a	NWI Type ^b	Latitude	Longitude
001	WDF	U	61.31130	-149.63857
002	OP	U	61.31217	-149.63659
003	OP	U	61.31284	-149.62970
004	WDF	PEM1Cx	61.31378	-149.62582
005	OP	PSS1/EM1Bx	61.31351	-149.62679
006	OP	PSS1/EM1Bx	61.31376	-149.62654
007	OP / WB	PEM1Cx / PUBHx	61.31407	-149.62487
008	WB	PUBHx	61.31549	-149.62170
009	OP	U	61.31678	-149.61962
010	OP	PUSCx	61.31645	-149.62078
011	WB	R3USC	61.31802	-149.61938
012	OP	U	61.31800	-149.61903
013	WDF	U	61.32168	-149.61576
014	OP	U	61.32330	-149.61422
015	OP	U	61.32491	-149.61209

Table 1. Summary of Field Data Points

^a WDF = Wetland Determination Form; OP = Observation Point; WB = Waterbody ^b Cowardin et al. 1979. See Table 2 for full descriptions.

One of the three sites where Wetland Determination Forms were completed was determined to be wetland and the remaining two sites were determined to be upland. Both upland sites lacked indicators of hydrophytic vegetation, primary wetland hydrology, and hydric soils.

Ditches

Two wetland and waterbody complexes were identified in the ditches on either side of the railroad embankment. These complexes consist of excavated saturated and seasonally flooded wetlands and excavated seasonally flooded and permanently flooded ponds. Wetlands were documented to be dominated by emergent and shrub species including water horsetail (*Equisetum fluviatile*), tall cottongrass (*Eriophorum angustifolium*), paper birch saplings (*Betula papyrifera*) and balsam poplar saplings (*Populus balsamifera*). Evidence of regular vegetation clearing along the railroad embankment that inhibits shrub growth was observed. Soils consist of a thin layer of organic material overlying glacial till with minimal soil development. Hydrogen sulfide odor was detected within the first three inches of the soil surface at all sites where



wetlands were documented. Ponds are limited to the ditches and varied from approximately 2 to 8 feet wide.

The ditches are located between cut slopes and the railroad embankment. The wetlands and waterbodies in the ditches formed as a result of excavation into the water table and are wholly located in uplands. The complexes do not carry a relatively permanent flow of water and do not have a surface connection to naturally occurring wetlands or waterbodies. All wetlands and waterbodies in excavated ditches were given the x modifier (Table 2).

Eagle River

The study area includes the main channel of Eagle River and seasonally flooded unconsolidated shoreline below the OHW line.

Uplands

Undisturbed areas outside of the railroad embankment are primarily upland white spruce (*Picea glauca*) woodland and mixed conifer and broadleaf woodland dominated by white spruce, paper birch, and balsam poplar. Upland soils were well drained gravelly and cobbly silty loam with no redox features. Upland sites lacked any one primary indicator or two secondary indicators of wetland hydrology.

3.2. Mapping Results

Approximately 0.1 acre of excavated wetlands were mapped within the 36.4-acre study area. Wetland types include scrub-shrub and emergent. An additional 0.3 acre of excavated palustrine ponds and 0.5 acre of perennial stream (i.e. Eagle River) were mapped. The remaining 35.5 acres of the study area were determined to be upland. Wetland and waterbody classes found within the study area and acreages of each NWI classification are provided in Table 2.

Figure 3 displays wetland, upland, and waterbody boundaries. Locations of the Wetland Determination Form sites and Observation Points are also shown.

Table 2. Mapping Summary

NWI Code ^a	Description	Acres ^b					
Wetlands							
PSS1/EM1Bx	Excavated saturated broad-leaved deciduous scrub-shrub/persistent emergent wetland	0.1					
PEM1Cx	Excavated seasonally flooded persistent emergent wetland	<0.1					
	Total Wetlands	0.1					
Waterbodies							
PUBHx	Excavated permanently flooded pond with an unconsolidated bottom	0.3					
PUSCx	Excavated seasonally flooded pond with an unconsolidated shore						
R3UBH	R3UBH Permanently flooded upper perennial stream with an unconsolidated bottom – Eagle River						
R3USC Seasonally flooded upper perennial streambank with an unconsolidated shore – Eagle River							
	Total Waterbodies	0.8					
Uplands							
U	Upland	35.5					
	Total Uplands	35.5					
	Total Mapped Area	36.4					

^a Cowardin et al. 1979

^b Total acreage presented may not reflect the sum of the individual cells due to rounding.

4.0 Jurisdictional Determination

The wetland delineation described in Section 2.0 was prepared in compliance with the USACE *Wetlands Delineation Manual* (USACE 1987) and the 2007 *Regional Supplement* (USACE 2007). The on-site delineation conducted by HDR indicated that there are approximately 0.1 acre of wetlands and 0.8 acre of waterbodies within the 36.4-acre study area. This section provides a likely determination of the jurisdictional status of the wetlands and waterbodies within the study area. The USACE will determine the total area of jurisdictional waters of the United States (WOUS) under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act.

4.1. Section 10

The Alaska District of the USACE has determined that Eagle River is a navigable water regulated under Section 10 of the Rivers and Harbors Act of 1899 (USACE 2021). The 0.5 acre of Eagle River within the study area is a jurisdictional WOUS.

4.2. Section 404

On June 22, 2020 the changes to the definition of WOUS contained in the Navigable Waters Protection Rule (NWPR; 85 FR 22250) came into effect. For the purposes of the CWA, the NWPR revised the definition of WOUS to include only territorial seas; tributaries; lakes and ponds, and impoundments of jurisdictional waters; and adjacent wetlands. On August 30, 2021, the U.S. District Court for the District of Arizona issued an order to the Environmental Protection Agency (USEPA) and the USACE vacating and remanding the NWPR. At the time of this report, the agencies are interpreting the definition of WOUS consistent with the pre-2015 regulatory regime until further notice (USEPA 2021).



The pre-2015 regulatory regime utilizes the 2008 joint guidance issue by USEPA and USACE to implement the U.S. Supreme Court's 2006 decision in the consolidated cases of *Rapanos v. United States* and *Carabell v. United States*, in which the Court addressed where the federal government can apply the CWA specifically by determining whether a wetland or tributary is a WOUS. Under the Rapanos guidance (USEPA and USACE 2008), ditches, including roadside ditches, excavated in uplands that drain only uplands and that do not carry a relatively permanent flow of water are not considered WOUS.

The two excavated wetland and waterbody complexes identified in the study area on either side of the railroad embankment would not be considered WOUS under the Rapanos guidance as they are ditches excavated in uplands that drain only uplands. The documented wetlands and waterbodies were formed when the railroad was realigned through the Elmendorf Moraine and excavation intersected the groundwater table. The ditches are approximately 15 to 20 feet lower in elevation than the original ground surface, and no naturally occurring wetlands were documented in the vicinity. At the north end of the complexes water in the ditches was observed to reinfiltrate into the embankment fill. The excavated waterbodies do not have a surface connection to Eagle River. The 0.3 acre of excavated waterbodies and 0.1 acre of excavated wetland are likely not WOUS subject to USACE jurisdiction under Section 404 of the CWA.

For the purposes of the CWA, the Rapanos guidance interpreted the definition of WOUS to include traditional navigable waters. Eagle River is a traditional navigable water and is subject to jurisdiction under Section 404 of the CWA.

5.0 References

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Figures













Appendix A

Antecedent Precipitation Tool Results





Observation Date	2021-08-16
Elevation (ft)	183.48
Drought Index (PDSI)	Not available
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile(in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2021-08-16	1.384646	2.654331	3.043307	Wet	3	3	9
2021-07-17	0.725984	1.451575	1.019685	Normal	2	2	4
2021-06-17	0.52126	1.001969	0.681102	Normal	2	1	2
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 MERRILL FLD	61.2169, -149.855	138.123	10.384	45.357	5.144	8195	88
EAGLE RVR GAKONA CIRCLE	61.3192, -149.5436	566.929	2.566	383.449	2.139	24	0
ELMENDORF AFB	61.25, -149.8	191.929	7.515	8.449	3.445	2642	0
EAGLE RIVER 2.6 ESE	61.3122, -149.4958	798.885	4.155	615.405	4.427	0	2
FT RICHARDSON WTP	61.2272, -149.6503	470.144	6.244	286.664	4.6	492	0

Oct	Nov	Dec
2021	2021	2021

Appendix B

Wetland Determination Forms

August 16, 2021

WETLAND DETERMINATION DATA FORM – Alaska Region								
Project: MP 127.5 - Eagle River Bridge Borough/City: MOA	Date: 8/10/21							
Applicant/Owner: AKKC	Sampling Point #: 601							
Investigator(s): 1. Gl/UK + H. HWI	IDR Alaska, Inc.							
Lat. (dec.°) 01.311304 Long. Long. 149.03900 ± 'NAD 83 Recorded c	n GPS #: 📈 Marked on map? 🦳 Field Map #:							
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Landfo	vrm:Slope (%): Aspect: E							
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear/ c	convex / concave NWI classification:							
Photo nos./descriptions: N, S, SOI XZCamera #: 1/4/	Veg Type (Viereck Level 4 or other): <u>TAV</u>							
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: No:	_ If no, explain HGM type://							
Are Vegetation <u>M</u> , Soil <u>M</u> , or Hydrology <u>M</u> significantly disturbed? Are "Normal Circu	umstances" present? Yes V No							
Are Vegetation M, Soil M, or Hydrology M naturally problematic? If needed, explain	answers here.							
SUMMARY OF FINDINGS								
Hydrophytic Vegetation Present? Yes No 🖌 Is the sampled are								
Hydric Soil Present? Yes No within a wetland?	Yes No							
Wetland Hydrology Present? Yes No Mo	Remarks (e.g., marginal?):							
VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % car	n total >100%.							
 Tree Stratum (dbh≥ 3")	Dominance Test worksheet:							
Species Cov.% Dom? Ind. Species Cov.% Dom? Ind.	Number of Dominant Species							
$1. \frac{1. 10}{10} \frac{10}{10} \frac{1}{10} $	That are OBL, FACW, or FAC:(A)							
2. <u><u>PTC guas</u> <u>B</u> <u>PTICU 6.</u></u>	Total Number of Dominant							
3 / 4 8	Species Across All Strata: (B)							
Total Tree Cover: 16	Percent of Dominant Species 60							
125	That are OBL, FACW, or FAC:(A/B)							
Sanling/Shrub Stratum (woody plants < 3" dbh)								
Abs.Cov.% Dom? Ind. Abs.Cov.% Dom? ind.								
1. Piz Mar 7 FALW 7. GOG CONT	OBL species X1=							
2. BOT PAR 5 PAW 8. VOL VIT 25 Y FAC	FACW species $\frac{2}{\sqrt{1-1}}$ X2= $\frac{54}{\sqrt{1-1}}$							
3. The gran 3 P. Rhs gran 5 FAC	FAC species $\underline{34}$ X3= $\underline{10L}$							
4. Kas uch 5 TAW 10. Gr ber 5 TAW	FACU species X4=K							
S. Spi bro I MAW 11. ET MO III 3 PAC	UPL + NL species X5=							
$\frac{1}{10} = \frac{1}{10} $	Column Totals:125_(A)3972_ (B)							
Total Sapling/Shrub Cover:	1 14							
50% of total cover: 20% of total cover:	Prevalence Index = B/A =							
Herb Stratum Abs Cov % Dom? Ind Abs Cov % Dom? Ind								
1. Calan 3 PAC 12.								
2. LUP NOUT I FAW 13.	Hydrophytic Vegetation Indicators:							
3. Cha an FAW 14	Dominance Test is>50%							
4.5 pi and 5 Y PAW 15	Prevalence Index is ≤3.0							
5. The way in the second secon	Morphological Adaptations ¹ (Provide supporting							
7 for 0 for 16 y For 19 for 19 for 100	data in Remarks or on a separate sheet)							
8. 19.	Problematic Hydrophytic Vegetation ¹ (Explain)							
9 20								
10 21	¹ Indicators of hydric soil and wetland hydrology must							
11 22	be present unless disturbed or problematic.							
Total Herb Cover: 20								
50% of total cover:1% 20% of total cover:5.2	Hydrophytic /							
Circular 1/10-ac plot or other plot dimension: <u>10 x 30</u> % of bare ground: <u>5</u>	Vegetation Yes No <u>V</u>							
% Cover of Wetland Bryophytes% Total Cover of Bryophytes%								
Remarks:								
plot limited to gully bettom								

SOIL										Sampling Point #: 001
Profile E	escription:	Describe to the de	epth needed f	to document the ir	ndicator	r or confirm	the abse	nce of indicate	ors)	
Depth	Horizon	Soil Matrix		Red	<u>ox Fea</u>	tures			a,a dip.	
(in.) 0-2	<u>(opt.)</u> Øi	Color (moist)	<u>%</u>	<u>Color (moist)</u>	<u>%</u>	Type ¹	Loc ²	Texture	(pos/ neg)	<u>_Remarks</u> (or use comment number)
2-5	<u>0e</u>	10:10 11-						<u></u>		
12.24		IPAR OL	<u>IW</u>					216		
<u> </u>		1040417	<u>10</u> 20					SH	400%	25 To cobily
		10 100 PI 60			<u> </u>					
			<u></u>							
۲ <u>ــــــ</u>										
¹ Type: C	= Concentrat	ion, D = Depletion	, RM = Redu	ced Matrix, CS=C	oated S	Sand Grains	² Locatio	n: PL = Pore	Lining, RC :	= Root Channel, M = Matrix
Hydric S	oil Indicators	(check ones that	apply, meas	ure from top of n	nineral	l layers unl	ess othe	rwise noted)	;	
Standard	Indicators:			Indicators for	Proble	ematic Hyd	ric Soils [:]	3.		
$\int \underline{/V}$ Hist	osol or Histel	(A1)		Alaska C	olor Ch	nange⁴ (TA4	4)	³ Or	ne indicator o	of hydrophytic vegetation,
Hist	ic Epipedon (/	(8-16" organics	, sat'd,	Alaska A	lpine S	wales (TA5))	hyc	irology, and	an appropriate landscape
Blac	k Histic (A3)		1 22)	Alaska R	edox w	/ith 2.5Y Hu	е	pos	sition must be	e present unless disturbed
Hyd	rogen Sulfide	(A4) (within 12"of r	nineral	Alaska G	leyed v	vithout Hue	5Y or Re	edder ⁴ Giv	ve details of	color change in Remarks.
surfa	ace; @	' in this pit		Underl	ying La	ayer				
Thic	k Dark Surfac	e (A12)		Other (e.g. Supplem	j., see p ient: exi	.91 of 2007 plain in Rema	arks)			
Alas	ka Gleyed (A	13)								
Alas	ka Hedox (A1	4)								
Alas	ka Gleyeu Po	res (A15)		Droinges Class				· · · ·		
Type	s Layer (ii pres			Soil Map Unit N	;: <u>M</u>	IWV		ria Call Dura		
Depth	(inches)			Con Map Onit N	vanie.		nyu	nc soli Presi	ent	res No
Comments	5:			1			l			
1.										
2. 3.										
HYDROLC	GY								ş.	
Wetland H	lydrology Inc	licators (check on	es that apply	/, measure from s	soil su	rface):	Secor	ndary Indicato	ors (at least 2	2 are required)
Primary In	dicators (an	y one indicator is s	sufficient)				NV	Vater-Stained	Leaves (B9)
N Surfac	e Water (A1)		Surface	e Soil Cracks (B6)				rainage Patte	erns (B10)	
High V	Vater Table (A	.2) (w/in 12")	Inundat	tion Visible on Aer	ial Ima	gery (B7)	C	xid'd Rhizosp	pheres on Liv	ving Roots (C3) (within 12")
Satura	ation (A3) (w/ir	າ 12")	Sparsel	ly Vegetated Cond	cave Si	urface (B8)	P	resence of Re (pos. a.a. or s	educed fron soil color cha	(C4) Inde w/in 12")
Water	Marks (B1)		Marl De	eposits (B15)			s	alt Deposits (C5)	
Sedim	ent Deposits (B2)	Hydroge	en Sulfide Odor (C	C1)		' s	tunted or Stre	essed Plants	(D1)
υπυ	eposits (B3)		Dry-Sea	ason Water Table	(C2)		G	eomorphic Po	osition (D2)	
Algal N	Aat or Crust (E	34)	Other (e	explain)				nallow Aquita w/in 24", can	ra (D3) perch H2O v	w/in 12")
Iron De	eposits (B5)						Ň	licrotopograph	nic Relief (D	4) (caused by water)
							F.	AC Neutral Te	est (D5)	, , ,
Field Obse	rvations (in. fr	om ground surface	e):					(# UBL+FACW	dominants >	# FACU+UPL dominants)
Surface Wa	ater Present?	Yes	No 🔟	Depth of water	(in.)					
Water Tabl	e Present?	Yes	No 📈	Depth to water	(in.)					
		Seeping	g in at that de	epth but not yet fill	led?:					
Saturation I	Present?	Yes	No	Depth to sat. (in	ı.)		Wetla	nd Hydrolog	y Present?	Yes No
(includes ca	apillary fringe)			Epi Endo L	Jnknow	/n			-	
Describe R	ecorded Data	(stream gauge, m	onitoring wel	I, aerial photos, p	revious	s inspection	s), if avai	lable:		
Remarks:										



Site 001. Vegetation, north view. August 16, 2021.



Site 001. Vegetation, south view. August 16, 2021.



Site 001. Soil. August 16, 2021.



Site 001. Soil. August 16, 2021.

WETLAND DETERMINATION DATA FORM -	- Alaska Region
Project: MP 1275 Barll River Bridge Borough/City: MOA	Date: 8/16/21
Applicant/Owner: ARRC	Sampling Point #: 004
Investigator(s): A GRAMATA, MANS	HDB Alaska Inc
Lat (dec 9) [1] 313 734 Long 149 (2759)5 + 'NAD 83 Becorded c	DR GPS #: Marked on man?
Subragion (giralo ano): SE Southeantral Wastern Albuttan Interior Nothern Landfe	And S # Marked Of Map ! Meid Map #
Land relief. Shape garage glaper / garage / Garage / Garage / Chara un/daunal and	
Local relief: Shape across slope. Intear / convex / concave/ Shape up/downslope: Whear of	convex / concave NWI classification: <u>FIFINICA</u>
	Veg Type (Viereck Level 4 or other):
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: No:	_ If no, explain. HGM type:
Are Vegetation <u>IV</u> , Soil <u>1</u> , or Hydrology <u>1</u> significantly disturbed? Are "Normal Circu	umstances" present? Yes <u>V</u> No
Are Vegetation <u><i>I</i></u> , Soil <u><i>I</i></u> , or Hydrology <u><i>I</i></u> naturally problematic? If needed, explain	answers here. L WCHKr than worman
SUMMARY OF FINDINGS	
Hydrophytic Vegetation Present? Yes V No Is the sampled are	
Hydric Soil Present? Yes Ves No within a wetland	? Yes No
Wetland Hydrology Present? Yes 💆 No	Remarks (e.g., marginal?):
VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % ca	n total >100%.
	Dominance Test worksheet:
Species Cov.% Dom? Ind. Species Cov.% Dom? Ind.	Number of Dominant Species
1 5 5	That are OBL, FACW, or FAC:(A)
2 6	Total Number of Dominant
3 7	Species Across All Strata: (B)
4 8	
Total Tree Cover:	That are OBL_EACW_or_EAC: 100 (A/P)
	Prevalence Index worksheet:
Sapling/Shrub Stratum (woody plants < 3" dbh)	Total % Cover of: Multiply by:
Abs.Cov.% Dom? Ind. Abs.Cov.% Dom? Ind.	
1. Bet pap 1 FALV 7.	OBL species $0 \xrightarrow{0} X_1 = 0 \xrightarrow{0} U$
2. POOPTC T FAU 8.	FACW species X2=
3 9	FAC species X3=
4 10	FACU species X4=
5 11 11	UPL + NL species X5=
6 12	Column Totals:(A)(B)
Total Sapling/Shrub Cover: included m WbS	
50% of total cover: 20% of total cover:	Prevalence Index = $B/A = 1.25$
Herb Stratum	
Abs.Cov.% Dom? Ind. Abs. Cov.% Dom? Ind.	
1. <u>Eqn XN 60 1 062</u> 12	Hydrophytic Vegetation Indicators:
2. En m 15 OBL 13	
3. <u>VN plue L YN</u>	Dominance Test is>50%
4. <u>(ALCOM)</u> <u>PIO 15.</u>	
5. <u>Viu fui 1</u> 16 16	Morphological Adaptations ¹ (Provide supporting
6. <u>Equilar 5</u>	data in Remarks or on a separate sheet)
۱۵ ۱۵ ۱۵ ۱۵	Problematic Hydrophytic Vegetation ¹ (Explain)
۵ 20	
10 21	¹ Indicators of hydric soil and wetland hydrology must
11. 22.	be present unless disturbed or problematic.
Total Herb Cover: 98	
UQ 101	
50% of total cover: 20% of total cover:	ryarophytic Vegetation Yes No
Circular 1/10-ac plot or other plot dimension: 5×40 % of bare ground: 5 % Cover of Wetland Bryophytes% Total Cover of Bryophytes% (where applicable)	Present?
Remarks:	
prot fimited to arren. bear Willows - browsel - 570	
warn fing, Itigal in starting with	

ບອນແກ	Horizon	Soil Matri	ix '	Bo	day Esa		110 0.536		ators)		
(in.)	(opt.)	Color (moist)	%			aures 1		_	α,α dip. (pos/	-	in manufa-
0-1	<u>10pt.</u>	00101 (1110131)	<u>/o</u>	COLOF (MOIST)	<u>%</u>	IVpe'	Loc ²	Texture	<u>(pos/</u> neg)	Or use co	emarks
~ 2	13.0										
- 11,	0.11	r.124						-			
	<u>BIC</u>	595/1	100					Sal	-	95% 00	We sand avoily
· · · · ·							1			68	Il Mochine
										0	170000
· · ·	<u> </u>										
					·····						
ype: C	= Concentra	tion, D = Depletior	n, RM = Re	duced Matrix, CS=C	oated S	Sand Grains	² Locatic	n: PL = Pore	elinina BC	= Boot Char	nal M - Matrice
/dric So	il Indicator	s (check ones tha	t apply, me	easure from top of	mineral	lavers un	ess othe	rwise noted	I)•	= 1100t Onai	mer, m = matrix
andard	Indicators:			Indicators for	r Proble	ematic Hvd	ric Soils	3.	·/•		
🔨 Histo	sol or Histel	(A1)		N Alaska C	Color Ch	ange ⁴ (TA4		°O	ne indicator	of hydrophyt	
Histic	Epipedon (A2) (8-16" organic	s, sat'd				•)	on	e primary in	dicator of we	tland
u	nderlain by mi	neral soil with chrom	a ≤2)	Alaska A	Vpine Sv	wales (TA5)	hy	drology, and	an appropria	ate landscape
_ Black	Histic (A3)			Alaska F	ledox wi	ith 2.5Y Hu	е	po or	problematic.	pe present un	lless disturbed
Hydro	ogen Sulfide	(A4) (within 12"of	mineral	Alaska G	leved w	vithout Hue	5Y or Re	dder ⁴ G	ive details o	f color chang	e in Remarks.
surfac	ce; @ <u></u> _	" in this pit		Under	lying La	iyer					
_ Thick	Dark Surfac	ce (A12)		Other (e.	g., see p.	.91 of 2007					
_ Alask	a Gleyed (A	13)			nem. exu	nam in Rema	(rks)				
Alask	a Redox (At	4)									
Alask	a Gleyed Po	res (A15)									
strictive	Laver (if pre	nont)		Duration of a		A.5.					
SUICTIVE		sent)		Urainade Class	S: V I	PN	1				
ype:		seril)		Soil Man Unit N	s: V Vame	۲D		rio Coll Droe			
ype: epth ((inches)		1999 - Camera Parlan 1999 - Camera Parlan 1999 - Camera Parlan 1999 - Camera Parlan	Soil Map Unit N	s: V Name:	PD	Hyd	ric Soil Pres	sent?	Yes _V_	No
Type: Type: Thepth (Thents: Tol ((inches)	Kmevt - SO	rls are	Soil Map Unit N	s: V Name: MM7	rme wi	Hyd Mini	ric Soil Pres	i l devel	Yes_/	No
Type: Depth (mments: Hol ((inches)	Kmevt - SO	rls are	Soil Map Unit M	s: V Name: MM7	rD nne wi	Hyd Mini	ric Soil Pres	i l clevel	Yes_ <u>/</u> lopMnt	No
Pepth (mments: Tol ((inches)) CMbOn	Kment - So	th are	Soil Map Unit M	s: V Name: MM7	PD	Hyd Mini	ric Soil Pres	i 1 devel	Ves_V	No
repth (nments: Hol g ROLO((inches)) <i>CrWbO</i> N 3Y rdrology inc	KMANT - SO	TH MC	Soil Map Unit N	s: V Name: MM7 soil sur	YD MML W/ face):	Hyd Mini Secor	ric Soil Pres	i 1 devel	Yes <u>/</u> / <i>Apm/</i> ,+ 2 are required	No
rype: epth (nments: tol (ROLOC land Hy nary Indi	(inches)) <i>CMbOn</i> 3Y rdrology inc cators (an	licators (check on v one indicator is s	its app sufficient)	Soil Map Unit N	s: V Name: MM/7 Soil sur	YD MML W/ face):	Hyd Min Secor	ric Soil Pres	sent? i cluuel prs (at least : i Leaves (B9	Yes <u>/</u> lopm/t 2 are required	No d)
epth (nments: tol (ROLO land Hy harv Indi Surface	(inches)) <i>CrWbOn</i> GY rdrology Inc <u>cators (an</u> Water (A1)	licators (check on y one indicator is s	nes that app	Soil Map Unit N Soil Map Unit N Soil Map Unit N ply, measure from some	s: V Name: MM/7 soil sur	YD MML Wį face):	Hyd Minn Secor M w D	ric Soil Pres	sent? <i>i OUVU</i> <u>Drs (at least ;</u> I Leaves (B9 erns (B10) _	Yes <u>/</u> lopm/t- 2 are required	No d)
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ype: epth (nments: tot 2 ROLOC land Hy ary Indi Surface High Wa Saturati Water M Sedimer	(inches) (inches)(inches)(inches)(inches)(inches)(inches)(inches)(inches)(inches)(inches)(inches)(inches) _	licators (check on y one indicator is s 2) (w/in 12") 12") B2)	The set that app sufficient) N Surfa N Surfa N Spars Mari I N Hydro	Drainage Class Soil Map Unit N JW/JWWW ply, measure from s ice Soil Cracks (B6) lation Visible on Aer sely Vegetated Conc Deposits (B15) pgen Sulfide Orlor (C	soil sur	face): gery (B7) rface (B8)	Hyd Min Secor A W D O P O V S S S S S S S S S S S S S S S S S S	ric Soil Pres	sent? <i>i OUVU</i> <u>ors (at least a</u> I Leaves (B9 erns (B10) pheres on Li educed Iron soil color cha (C5)	Yes Yes 2 are required 2 are required (C4) ange w/in 12"	No d) C3) (within 12")
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ype: ype: epth (nments: HOLO(Iand Hy hary Indi Surface High Wa Saturati Water M Sedimer Drift Dep Algal Ma ron Dep Observa- ace Wate r Table I ation Pro- des capi ibe Rec	(inches) (inches) archard cators (an water (A1) ater Table (A on (A3) (w/ir farks (B1) nt Deposits (posits (B3) at or Crust (B posits (B3) at or Crust (B posits (B5) at or Crust (B) posits (B5) at or Crust (B) posits (B) at or Crust (B) at o	kmark - So licators (check on y one indicator is s (v) (w/in 12") 12") B2) B2) B4) om ground surface Yes V Yes V Seeping Yes V (stream gauge, mo	I'ls Are ines that app sufficient) N Surfa Surfa I Inund Surfa I No I Other No I other No I n at that No I No I	Depth of water (Depth to water (Depth	soil sur ial Imag cave Su (in.) <u>4</u> (in.) <u>1</u> ed?: nknown evious i	YD MML W/ face): gery (B7) rface (B8) rface (B8) inspections	Hyd Minn Secor M D O P N Si G N Si G M Si (u M Hyd M Hyd	ric Soil Pres	sent? <i>i Clevel</i> <u>prs (at least :</u> I Leaves (B9 erns (B10) pheres on Li educed Iron soil color cha (C5) essed Plants osition (D2) ard (D3) perch H2O of hic Relief (D est (D5) (dominants > y Present?	Yes PpMV+ 2 are required 2 are required 2 are required 2 are required (C4) ange w/in 12" 4) (caused by # FACU+UPL Yes	No d) C3) (within 12") () water) No Laws a deminants)

NO EVICINE of flow through all wet ~225 ft to WSW. Wetland begins near allwet. Porcupine in Medical US Army Corps of Engineers Alaska Version 2.0 Modified by HDR 2019



Site 004. Vegetation, north view. August 16, 2021.



Site 004. Vegetation, south view. August 16, 2021.



Site 004. Soil. August 16, 2021.

WETLAND DETERMINATION DATA FORM	– Alaska Region
Project: MP127.5 Earle River Bridge Borough/City: MO,	A Date:
Applicant/Owner: ARKO	Sampling Point #: <u>013</u>
Investigator(s): <u>A, (fl(ull + A, fl(v))</u> Firm:	HDR Alaska, Inc.
Lat. (dec.°) 01.521002 Long. 190.615755 ±' NAD 83 Recorded	on GPS #: Marked on map? Field Map #:
Subregion (circle one): SE Southcentral Western Aleutian Interior Northern Land	form: Transav taken WML slope (%):Aspect:
Local relief: Shape across slope: linear / convex / concave Shape up/downslope: linear	convex / concave NWI classification:
Photo nos./descriptions: N 501 KZ Camera #: 10	, Veg Type (Viereck Level 4 or other):
Are climatic / hydrologic conditions on the site typical for this time of year? Yes: No:	If no, explain. HGM type:
Are Vegetation //, Soil //, or Hydrology // significantly disturbed? Are "Normal Circ	cumstances" present? Yes 🖊 No
Are Vegetation <u>A</u> , Soil <u>A</u> , or Hydrology <u>A</u> naturally problematic? If needed, explai	n answers here. Lwetter than normal
SUMMARY OF FINDINGS	
Hydrophytic Vegetation Present? Yes No Is the sampled a	
Hydric Soil Present? Yes No within a wetland	1? Yes No
Wetland Hydrology Present? Yes No	Remarks (e.g., marginal?):
VEGETATION (Use scientific names.) Estimate absolute % cover (not relative cover). % c	an total >100%.
Tree Stratum (dbh≥ 3")	Dominance Test worksheet:
Species Cov.% Dom? Ind. Species Cov.% Dom? Ind.	Number of Dominant Species That are OBL, FACW, or FAC:
2 6	Total Number of Dominant
3 7	Species Across All Strata:
4 6 6	Percent of Dominant Species 7.2
	That are OBL, FACW, or FAC:(A/B)
50% of total cover: 20% of total cover:	
<u>Saping/Sinup Stratum (</u> woody plants < 3 dbn) Abs Cov % Dom? Ind Abs Cov % Dom? Ind	I otal % Cover of: Multiply by:
1. Pop bal 40 Y FAU Z.	OBL species X1=
2. Prc glu 3 FAW 8.	FACW species X2=
3. Aln ten 15 FAC 9	FAC species 17 $X_3 = 51$
4. 10 10 I FAW 10.	FACU species 66 X4= 264
5. <u>VILL CARE 1</u> <u>FNOW 11.</u>	UPL + NL species X5=
6. <u>[20] 42</u> <u>1</u> <u>14</u> <u>12</u> <u>10</u>	Column Totals: <u>83</u> (A) <u>315</u> (B)
Total Sapling/Shrub Cover: <u>10</u> 50% of total cover: <u>39</u> 20% of total cover: <u>15, 6</u>	Prevalence Index - $B/A = \frac{3}{2}, \frac{90}{2}$
Herb Stratum	
Abs.Cov.% Dom? Ind. Abs. Cov.% Dom? Ind.	
1.000000 1 1 10012.	Hydrophytic Vegetation Indicators:
2. <u>MCCW15 L 4 PNO13.</u>	A Dominance Test is E0%
4 DAY SEC FACILITY FACILITY	Prevalence Index is ≤3.0
5. TW alk T FAW 16.	
6 17 17	data in Remarks or on a separate sheet)
7 18 18	Problematic Hydrophytic Vogetation! (Evolution)
8 19 19	
۷ 20 <u></u> <u></u> <u></u>	
10 21	be present unless disturbed or problematic
Total Harb Cover:	
50% of total cover: 20% of total cover:	Hydrophytic Vegetation Ves No
Circular 1/10-ac plot or other plot dimension: <u>//01/40</u> % of bare ground: <u>//0</u> % Cover of Wetland Bryophytes% Total Cover of Bryophytes%	Present?
(where applicable)	
plot-limited to swale/gully "May litter	

SOIL	1 = 4								مند الافريس.	
Profile Description	: (Describe to the d	epth neede	d to document the	indicato	r or confirm	the abse	nce of indicat		Sampling Point #:	
Depth Horizon	Soil Matri	· · · · · · · · · · · · · · · · · · ·	Bedox Features							
(in.) (opt.)	Color (moist)	%	Color (moist) % Type1				T	a,a dip. (pos/	α,α dip. (pos/ Bemarks	
D-2 02		-79		/0	<u>TADE.</u>	LOC-	_lexture_	neg)	(or use comment number)	
24 A	104122/1	100					5:1		·······	
4-16 BL	104R312	1 <u>90</u>					Sal		CAT I Make Lander O	
			······································		····				BOTO CARDON TO INNO	
		<u> </u>								
	r									
·····					<u> </u>					
¹ Type: C = Concent	ation, D = Depletion	, RM = Red	uced Matrix, CS=0	Coated S	Sand Grain	s ² Locatio	n: PL = Pore	Lining, RC	= Root Channel, M = Matri:	
Hydric Soil Indicate	rs (check ones that	apply, mea	sure from top of	minerai	l layers un	less othe	erwise noted)	:		
Standard Indicators			Indicators for	r Proble	ematic Hyd	dric Solls	3:			
Listic Epipeder			/^¥Alaska (Color Ch	nange⁴ (TA	4)	°Or one	e indicator	of hydrophytic vegetation,	
underlain by	(A2) (8-16" organics nineral soil with chroma	, saťd, i ≤2)	Alaska A	Vpine S	wales (TA5	5)	hyd	rology, and	an appropriate landscape	
Black Histic (A3)	·	Alaska F	ledox w	/ith 2.5Y Hu	le	pos or c	ition must b roblematic.	e present unless disturbed	
Hydrogen Sulfic	le (A4) (within 12"of	nineral	Alaska G	aleyed v	vithout Hue	95Y or Re	dder ⁴ Giv	/e details of	i color change in Remarks.	
surface; @	" in this pit		Under Other (-	lying La	iyer					
I NICK Dark Sur	ace (A12)		subatice.	u., see p ment: ext	olain in Rem	arks)				
Alaska Gleyed (A13)									
Alaska Reuox (/	$\left(14\right)$									
Bestrictive Laver (if p	esent)		Drainage Clea							
Type:	ensinement		Soil Map Unit I		NI)					
Depth (inches)				vame.		nya 🛛	ric Soli Prese	ent?	Yes No K	
Comments:										
1. refusal or	, cobbles to	manel	lat 16"							
. U		U ·	• -						, the f	
YDROLOGY										
Vetland Hydrology I	idicators (check on	es that app	ly, measure from	soil su	rface):	Secor	ndary Indicato	rs (at least :	2 are required)	
rimary Indicators (a	ny one indicator is s	ufficient)			,	Nw	ater-Stained	Leaves (B9)	
Surface Water (A)	N Surfac	e Soil Cracks (B6)			D	rainage Patte	rns (B10)	/	
High Water Table	(A2) (w/in 12")	Inunda	ation Visible on Ae	rial Imag	gery (B7)	o	xid'd Rhizosp	heres on Liv	ving Roots (C3) (within 12")	
Saturation (A3) (w	(in 12")	Sparse	ely Vegetated Con	cave Su	ırface (B8)		resence of Re	duced Iron	(C4)	
Water Marks (B1)		Marl D	eposits (B15)				alt Deposits ((C5)	ange win 12)	
Sediment Deposits	(B2)	Hydrog	gen Sulfide Odor (0	C1)		Si	tunted or Stre	ssed Plants	(D1)	
L Drift Deposits (B3)						Geomorphic Position (D2) LOW SPOT / heslope				
Algal Mat or Crust	(B4)	Other	(explain)			A SI	hallow Aquitar	rd (D3) oreb ⊟2⊖ v	//////////////////////////////////////	
Iron Deposits (B5)						M	icrotopograph	ic Belief (D	W/III IZ) 4) (Caused by water)	
						T FA	AC Neutral Te	st (D5)	(outset by water)	
eld Observations (in.	from around surface):				1	(# OBL+FACW	dominants >	# FACU+UPL dominants)	
urface Water Present	' Yes	No <u>V</u>	Depth of water	(in.)						
ater Table Present?	Yes	No 📝	Depth to water	(in.)						
	Seeping	in at that d	lepth but not vet fil	. / led?:					,	
aturation Present?	Yes	No	Depth to sat. (in	.)		Wetlar	nd Hydrology	Present?	Yes No.	
ncludes capillary fringe)		Epi Endo L	Inknowr	 1		,		100 <u>110 Y</u>	
escribe Recorded Date	a (stream gauge, mo	nitoring we	ll, aerial photos, p	revious	inspection	s), if availa	able:			
emarks:			A	·····						
			ある ふく おく 人名 しい		4					
Red of low	44 5077 m	SWR	le betwee	len -	ARRI	welk	+ Artil	1400	mil	

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Site 013. Vegetation, north view. August 16, 2021.



Site 013. Vegetation, south view. August 16, 2021.



Site 013. Soil. August 16, 2021.

Appendix C

Observation Point Photographs

August 16, 2021



Site 002. Vegetation, south view. August 16, 2021.



Site 002. Soil. August 16, 2021.



Site 003. Vegetation, south view. August 16, 2021.



Site 003. Soil. August 16, 2021.



Site 005. Vegetation, northeast view. August 16, 2021.



Site 005. Vegetation, southwest view. August 16, 2021.



Site 006. Vegetation, southwest view. August 16, 2021.



Site 006. Soil. August 16, 2021.

FX



Site 007. Waterbody, northeast view. August 16, 2021.



Site 007. Vegetation, southwest view. August 16, 2021.



Site 008. Waterbody, north view. August 16, 2021.



Site 008. Waterbody, south view. August 16, 2021.

FSS



Site 009. Swale, west view. August 16, 2021.



Site 009. Swale, east view. August 16, 2021.

FSS



Site 010. Waterbody, south view. August 16, 2021.



Site 010. Waterbody, north view. August 16, 2021.



Site 011. Waterbody, northeast view. August 16, 2021.



Site 011. Waterbody, northwest view. August 16, 2021.



Site 012. Vegetation, northeast view. August 16, 2021.



Site 012. Vegetation, southwest view. August 16, 2021.



Site 014. Vegetation, north view. August 16, 2021.



Site 014. Vegetation, south view. August 16, 2021.



Site 015. Vegetation, north view. August 16, 2021.



Site 015. Soil. August 16, 2021.