WETLAND DETERMINATION DATA FORM - Alaska Region

Projec	t/Site: Susitna-Watana Hydroelectric Project		Borough/City:	Matanusk	a-Susitna Borough Sampling Date: 19-Aug-15	5	
Applic	ant/Owner: Alaska Energy Authority				Sampling Point: SW15_T322_0)4	
Invest	igator(s): BAB		Landform (h	illside, terrac	e, hummocks etc.): Depression		
Local	relief (concave, convex, none): concave		Slope: 1.	7 % / 1.0	Elevation:		
Subre	gion: Cook Inlet Mountains	Lat.:			Long.: Datum: WGS8	84	
Soil M	ap Unit Name:				NWI classification: PEM1B		
Are cli	matic/hydrologic conditions on the site typical for this t	ime of vea	ar? Ye	s No	(If no, explain in Remarks.)		
		•	tly disturbed?	Are "N	lormal Circumstances" present? Yes No		
Are \	/egetation ☐ , Soil ☐ , or Hydrology ☐	naturally	problematic?		eded, explain any answers in Remarks.)		
SUM	MARY OF FINDINGS - Attach site map sho	wing sa	mpling poir	nt locations	s, transects, important features, etc.		
	Hydrophytic Vegetation Present? Yes No	$\overline{}$					
	Hydric Soil Present? Yes ● No		I	s the Sam	npled Area		
	Wetland Hydrology Present? Yes ● No ○		V	vithin a W	etland? Yes ● No ○		
Rem	arks: paludified kettle lake		ļ				
	F						
VEG	ETATION - Use scientific names of plants. L	ist all sp	ecies in the	e plot.			
	-	Absolute	n Dominant	Indicator	Dominance Test worksheet:		
Tre	ee Stratum	% Cove		Status	Number of Dominant Species		
1.					That are OBL, FACW, or FAC: 4 (A	۲)	
2.					Total Number of Dominant Species Across All Strata: 4 (B	3)	
3.					Percent of dominant Species	•	
4.						VB)	
5.					Prevalence Index worksheet:		
	Total Cover	r: <u> </u>	_		Total % Cover of: Multiply by:		
Sa	oling/Shrub Stratum 50% of Total Cover:	0 20	% of Total Cove	er: <u>0</u>	OBL Species <u>18</u> x 1 = <u>18</u>		
1.	Betula glandulosa	8	✓	FAC	FACW Species 21 x 2 = 42		
2.	Vaccinium uliginosum		•	FAC	FAC Species <u>24</u> x 3 = <u>72</u>		
3.	Picea glauca			FACU	FACU Species <u>2</u> x 4 = <u>8</u>		
4.	Andromeda polifolia			FACW	UPL Species0 x 5 =0		
5.	Empetrum nigrum	1		FAC	Column Totals: <u>65</u> (A) <u>140</u>	(B)	
6.		0	. 🖳				
7.		0	. 📙		Prevalence Index = B/A =2.154_		
8.			. 📙		Hydrophytic Vegetation Indicators:		
9.					✓ Dominance Test is > 50%		
10.		0	. \square		Prevalence Index is ≤3.0		
He	Total Cove r rb Stratum_ 50% of Total Cover:			er: 3.4	Morphological Adaptations (Provide supporting data Remarks or on a separate sheet)	ı in	
1.	Carex saxatilis	15	✓	FACW	Problematic Hydrophytic Vegetation (Explain)		
2.	Trichophorum caespitosum	10	▽	OBL	Indicators of hydric soil and wetland hydrology must		
3.	Eriophorum angustifolium		_	OBL	be present, unless disturbed or problematic.		
4.	Equisetum sylvaticum			FAC	District (and its on leastly 1911)		
5.	Equisetum arvense			FAC	Plot size (radius, or length x width)		
6.	Swertia perennis	2		FACW	% Cover of Wetland Bryophytes (Where applicable)		
7.	Viola palustris	2	_	FACW	% Bare Ground _2		
8.	Iris setosa	1	. 📙	FAC	Total Cover of Bryophytes 50		
9.	Sanguisorba canadensis	1		FACW			
10.	Calamagrostis canadensis	1	. \square	FAC	Hydrophytic		
10.		r: 48			Vegetation		
10.	Total Cover 50% of Total Cover:		– % of Total Cove	er: 9.6	Present? Yes • No •		

US Army Corps of Engineers Alaska Version 2.0

SOIL Sampling Point: SW15_T322_04

Histic Epipedon (A2) Hydrogen Sulfide (A4) Alaska Alpine swales (TA5) Underlying Layer Alaska Redox With 2.5Y Hue Other (Explain in Remarks) Alaska Gleyed (A13) Alaska Redox (A14) Alaska Gleyed Pores (A15) Restrictive Layer (if present): Type: Depth (inches): Remarks: Hydric Soil Present? Alaska Hydrology Indicators: Primary Indicators (any one is sufficient) Alaska Alpine swales (TA5) Underlying Layer Other (Explain in Remarks) Other (Explain in Remarks) Alaska Redox With 2.5Y Hue Other (Explain in Remarks) 3 One indicator of hydrophytic vegetation, one primary indicator of wetland hydrola and an appropriate landscape position must be present 4 Give details of color change in Remarks Hydric Soil Present? Becondary Indicators Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) Water Stained L W Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Drainage Pattern			Redox Fea			Total				
9-14 **Type: C=Concentration. D=Depletion. RM=Reduced Matrix. **I Location: PL=Pore Lining. RC=Root Channel. M=Matrix) Color (moist)	<u>%</u> Color	(moist) %	Type ¹	Loc ²		Remarks			
9-14 Muck *Type: C=Concentration. D=Depletion. RM=Reduced Matrix ** Location: PL=Pore Lining. RC=Root Channel. M=Matrix *Ypdric Soil Indicators:							OI			
**Type: C=Concentration. D=Depletion. RM=Reduced Matrix **Location: PL=Pore Lining. RC=Root Channel. M=Matrix **Pydric Soil Indicators:										
Hydric Soil Indicators: Histosol or Histel (A1)						Muck				
Hydric Soil Indicators: Histosol or Histel (A1)										
Hydric Soil Indicators: Histosol or Histel (A1)										
Hydric Soil Indicators: Histosol or Histel (A1)										
Hydric Soil Indicators: Indicators for Problematic Hydric Soils? Alaska Gleyed Without Hue SY Alaska Color Change (TA4) Alaska Gleyed Without Hue SY Alaska Gleyed (A12) Alaska Alpine swales (TA5) Other (Explain in Remarks) Alaska Gleyed (A12) Alaska Redox (A14) Alaska Redox (A14) Alaska Gleyed Pores (A15) 4 Give details of color change in Remarks 4 Give details of color change in Remarks										
Hydric Soil Indicators: Histosol or Histel (A1)										
Hydric Soil Indicators: Histosol or Histel (A1)		ion. RM=Reduced Matr	rix ² Location: PL=Po	— —— ore Lining. RC	=Root Char	nnel. M=Matrix				
Histosol or Histel (A1) Hydrogen Sulfide (A4) Hydrogen Sulfide (A4) Alaska Alpine swales (TA5) Other (Explain in Remarks) Thick Dark Surface (A12) Alaska Gieyed (A13) Alaska Redox (A14) Alaska Redox (A14) Alaska Redox (A14) Alaska Gieyed Pores (A15) estrictive Layer (if present): Type: Depth (inches): Hydric Soil Present? Petland Hydrology Indicators: Frimary Indicators (any one is sufficient) Hydrice Water (A1) High Water Table (A2) Saturation (A3) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Dry-Season Water Table (C2) Sediment Deposits (B3) Algal Mat or Crust (B4) Ino Deposits (B5) Surface Soil Cracks (B6) Water Table Present? Yes No Depth (inches): 0 Depth (inches): 0 Depth (inches): 0 Wetland Hydrology Present? Wetland Hydrology Present? Wetland Hydrology Present? Yes No Depth (inches): 0 Bescribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:				_						
Histic Epipedon (A2)			☐ Alaska Color Change (TA4) ☐ Alaska Gleyed Without Hue 5Y or Redder							
Hydrogen Sulfide (A4) Thick Dark Surface (A12) Alaska Gleyed (A13) Alaska Gleyed (A13) Alaska Gleyed Pores (A15) estrictive Layer (if present): Type: Depth (inches): Primary Indicators: **Type: Depth (inches): **Portand Hydrology Indicators: **Portand Hydrology Present? **Portand	` '									
Thick Dark Surface (A12) Alaska Gleyed (A13) Alaska Redox (A14) Alaska Gleyed Pores (A15) Alaska Gleyed Pores (A15) Alaska Gleyed Pores (A15) Alaska Gleyed Pores (A15) **Give details of color change in Remarks* **Give details of color change in Remarks* **Hydric Soil Present?* **POROLOGY* **Jetland Hydrology Indicators:** **Immary Indicators (anv one is sufficient) **Surface Water (A1) **Jetland Hydrology Indicators:* **Immary Indicators (anv one is sufficient) **Jetland Hydrology Indicators:* **Jetland Hydrology Indicators:* **Immary Indicators (anv one is sufficient) **Jetland Hydrology Indicators:* **Jetland Hydrology Indicato	,			,		Other (Explain in Remark	s)			
Alaska Gleyed (A13) Alaska Redox (A14) Alaska Gleyed Pores (A15) Alaska Gleyed Present? Yes No Depth (inches): 1 Wetland Hydrology Present? Solution Present? Yes No Depth (inches): 0 Wetland Hydrology Present? Yes No Depth (inches): 0 Bescribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:	• ,									
Alaska Redox (A14) Alaska Gleyed Pores (A15) A Give details of color change in Remarks Hydric Soil Present?	` ,						ydrology,			
astaka delyeur fores (ATS) destrictive Layer (if present): Type: Depth (inches): ### Water Soil Present? Present?	, , ,	and	an appropriate landsc	ape position n	nust be pre	sent				
Type: Depth (inches): Pyprology Wetland Hydrology Indicators: Pyimary Indicators: Secondary Indicators: Water Stained L Water Stained L Sparsely Vegetated Concave Surface (B8) Water Marks (B1) Water Marks (B1) Dry-Season Water Table (C2) Sediment Deposits (B2) Dry-Season Water Table (C2) Sediment Deposits (B3) Other (Explain in Remarks) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (B6) Water Present? Water Table Present? Yes No Depth (inches): 1 Water Table Present? Water Table Present? Yes No Depth (inches): 0 Wetland Hydrology Present? Secondary Indicators Secondary Indicators Secondary Indicators Primary Indicators Notation Visible on Aerial Imagery (B7) Drainage Patteri Water Cable Oncave Surface (B8) Oxidized Rhizos; Presence of Red Salt Deposits (C1) Salt Deposits (C2) Stunted on Stried Surface Soil Cracks (B6) Wetland Hydrology Present? Salt Deposits (B5) Depth (inches): 0 Wetland Hydrology Present? Secondary Indicators Secondary Indicators Oxidized Rhizos; Oxidized	a Gleyed Pores (A15)	4 Giv	e details of color char	nge in Remark	S					
POROLOGY Vetland Hydrology Indicators:	Layer (if present):									
PYDROLOGY Vetland Hydrology Indicators:						Hydric Soil Present	? Yes • No O			
YDROLOGY //etland Hydrology Indicators: // Frimary Indicators (any one is sufficient) // Surface Water (A1) // High Water Table (A2) // Saturation (A3) // Water Marks (B1) // Sediment Deposits (B2) // Dry-Season Water Table (C2) // Sediment Deposits (B3) // Other (Explain in Remarks) // Geomorphic Posit (B4) // Iron Deposits (B5) // Shallow Aquitare // Microtopographi // Surface Water Present? // Surface Water Rable (C2) // Stunted or Stres // Geomorphic Posit (B4) // Shallow Aquitare // Microtopographi // FAC-neutral Test // Water Table Present? // Yes ● No Depth (inches): 1 Water Table Present? // Yes ● No Depth (inches): 0 // Depth (inches): 0 // Wetland Hydrology Present? // Yes ● No Depth (inches): 0 // Wetland Hydrology Present? // Yes ● No Depth (inches): 0 // Saturation Present? // Yes ● No Depth (inches): 0 // Saturation Present? // Yes ● No Depth (inches): 0 // Saturation Present? // Yes ● No Depth (inches): 0 // Saturation Present? // Yes ● No Depth (inches): 0 // Wetland Hydrology Present?	(inches):									
Wetland Hydrology Indicators: Primary Indicators (any one is sufficient) Secondary Indicators ✓ Surface Water (A1) Inundation Visible on Aerial Imagery (B7) Drainage Pattern ✓ High Water Table (A2) Sparsely Vegetated Concave Surface (B8) Oxidized Rhizosp ✓ Saturation (A3) Marl Deposits (B15) Presence of Red Water Marks (B1) Hydrogen Sulfide Odor (C1) Salt Deposits (C2) Sediment Deposits (B2) Dry-Season Water Table (C2) ✓ Stunted or Stress Drift Deposits (B3) Other (Explain in Remarks) ✓ Geomorphic Poss Algal Mat or Crust (B4) Shallow Aquitard Iron Deposits (B5) Microtopographi Surface Soil Cracks (B6) Present? Water Table Present? Yes No Depth (inches): 1 Water Table Present? Yes No Depth (inches): 0 Wetland Hydrology Present? Wetland Hydrology Present? Vescribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:										
Water Stained Levision Linundation Visible on Aerial Imagery (B7) □ Drainage Pattern ✓ Surface Water (A1) □ Inundation Visible on Aerial Imagery (B7) □ Drainage Pattern ✓ High Water Table (A2) □ Sparsely Vegetated Concave Surface (B8) □ Oxidized Rhizosy ✓ Saturation (A3) □ Marl Deposits (B15) □ Presence of Red □ Water Marks (B1) □ Hydrogen Sulfide Odor (C1) □ Salt Deposits (C1) □ Sediment Deposits (B2) □ Dry-Season Water Table (C2) □ Stunted or Stres □ Drift Deposits (B3) □ Other (Explain in Remarks) □ Geomorphic Pos □ Algal Mat or Crust (B4) □ Shallow Aquitare □ Iron Deposits (B5) □ Microtopographi □ Surface Soil Cracks (B6) □ V FAC-neutral Test □ Water Table Present? Yes □ No □ Depth (inches): 1 Water Table Present? Yes □ No □ Depth (inches): 0 □ Saturation Present? Yes □ No □ Depth (inches): 0 □ Depth (inches): 0 □ Depth (inches): 0 □ Saturation Present? Yes □ No □ Depth (inches): 0 □ Depth (inches): 0										
✓ Surface Water (A1)							cators (two or more are required)			
✓ High Water Table (A2) Sparsely Vegetated Concave Surface (B8) Oxidized Rhizosp ✓ Saturation (A3) Marl Deposits (B15) Presence of Red Water Marks (B1) Hydrogen Sulfide Odor (C1) Salt Deposits (C Sediment Deposits (B2) Dry-Season Water Table (C2) ✓ Stunted or Stres Drift Deposits (B3) Other (Explain in Remarks) ✓ Geomorphic Pos Algal Mat or Crust (B4) Shallow Aquitare Iron Deposits (B5) Microtopographi Surface Soil Cracks (B6) ✓ FAC-neutral Test ield Observations: Surface Water Present? Yes No Depth (inches): 1 Water Table Present? Yes No Depth (inches): 0 Wetland Hydrology Present? Saturation Present? Yes No Depth (inches): 0 Wetland Hydrology Present? Gincludes capillary fringe) Yes No Depth (inches): 0 Wetland Hydrology Present?							` '			
✓ Saturation (A3) Marl Deposits (B15) Presence of Red ✓ Water Marks (B1) Hydrogen Sulfide Odor (C1) Salt Deposits (C1) ✓ Sediment Deposits (B2) Dry-Season Water Table (C2) ✓ Stunted or Stres ✓ Drift Deposits (B3) Other (Explain in Remarks) ✓ Geomorphic Pos ✓ Algal Mat or Crust (B4) Shallow Aquitard ✓ Iron Deposits (B5) Microtopographi ✓ Surface Soil Cracks (B6) FAC-neutral Test ield Observations: Depth (inches): 1 Surface Water Present? Yes No Depth (inches): 0 Water Table Present? Yes No Depth (inches): 0 Wetland Hydrology Present? (includes capillary fringe) Yes No Depth (inches): 0 escribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:	` ,									
Water Marks (B1)	` '			oncave Surfac	e (B8)		hizospheres along Living Roots (C3)			
Sediment Deposits (B2) Dry-Season Water Table (C2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (B6) Other (Explain in Remarks) Microtopographi Surface Water Present? Ves No Depth (inches): 1 Water Table Present? Yes No Depth (inches): 0 Saturation Present? Yes No Depth (inches): 0 Depth (inches): 0 Secribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:				(04)						
Drift Deposits (B3)										
Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Surface Soil Cracks (B6) ☐ Surface Soil Cracks (B6) ☐ FAC-neutral Test ield Observations: Surface Water Present? Yes No Depth (inches): 1 Water Table Present? Yes No Depth (inches): 0 Saturation Present? Yes No Depth (inches): 0 Security Factorized Hydrology Present? Saturation Present? Yes No Depth (inches): 0 Security Factorized Hydrology Present? Security Factorized Hydrology Present? Saturation Present? Yes No Depth (inches): 0 Security Factorized Hydrology Present?	,									
☐ Iron Deposits (B5) ☐ Microtopographi ☐ Surface Soil Cracks (B6) ☐ FAC-neutral Test ield Observations: Surface Water Present? Yes No Depth (inches): 1 Water Table Present? Yes No Depth (inches): 0 Saturation Present? Yes No Depth (inches): 0 Seturation Present? Yes No Depth (inches): 0	Deposits (B3)		Other (Explain in Rem	narks)			` '			
Surface Soil Cracks (B6) FAC-neutral Test Field Observations: Surface Water Present? Yes No Depth (inches): 1 Water Table Present? Yes No Depth (inches): 0 Saturation Present? (includes capillary fringe) Wetland Hydrology Present? Depth (inches): 0 Wetland Hydrology Present? Depth (inches): 0 Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:	. ,									
ield Observations: Surface Water Present? Yes No Depth (inches): 1 Water Table Present? Yes No Depth (inches): 0 Saturation Present? Yes No Depth (inches): 0 Saturation Present? Yes No Depth (inches): 0 Secribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:	I Mat or Crust (B4)						. ,			
Surface Water Present? Yes No Depth (inches): 1 Water Table Present? Yes No Depth (inches): 0 Saturation Present? Yes No Depth (inches): 0 Secribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:	I Mat or Crust (B4) Deposits (B5)					▼ FAC-fleutra	i rest (D5)			
Water Table Present? Yes No Depth (inches): 0 Saturation Present? Yes No Depth (inches): 0	I Mat or Crust (B4) Deposits (B5) ace Soil Cracks (B6)									
Saturation Present? Yes No Depth (inches): 0 escribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:	I Mat or Crust (B4) Deposits (B5) ace Soil Cracks (B6) servations:	● No ○	Donth (inches): 1							
(includes capillary fringe) Yes No Depth (inches): 0 escribe Recorded Data (stream gauge, monitor well, aerial photos, previous inspection) if available:	I Mat or Crust (B4) Deposits (B5) ace Soil Cracks (B6) servations: Water Present? Yes		, , ,							
	I Mat or Crust (B4) Deposits (B5) ace Soil Cracks (B6) servations: Water Present? Yes able Present? Yes		, , ,		Wetlan	nd Hydrology Presen	t? Yes • No O			
lemarks:	I Mat or Crust (B4) Deposits (B5) ace Soil Cracks (B6) servations: Water Present? Yes able Present? Ves	● No ○	Depth (inches): 0		Wetlan	nd Hydrology Presen	t? Yes • No O			
emarks:	I Mat or Crust (B4) Deposits (B5) ace Soil Cracks (B6) servations: Water Present? Yes able Present? Yes on Present? Se capillary fringe) Yes	No ○No ○	Depth (inches): 0 Depth (inches): 0	pection) if ava		nd Hydrology Presen	t? Yes • No O			
	I Mat or Crust (B4) Deposits (B5) ace Soil Cracks (B6) servations: Water Present? Yes able Present? Yes on Present? S capillary fringe) Recorded Data (stream gate	No ○No ○	Depth (inches): 0 Depth (inches): 0	pection) if ava		nd Hydrology Presen	t? Yes • No O			
urface water present in small scattered patches. D1stunted picea. D2kettle.	I Mat or Crust (B4) Deposits (B5) ace Soil Cracks (B6) servations: Water Present? Yes able Present? Yes on Present? S capillary fringe) Recorded Data (stream gate	No ○No ○	Depth (inches): 0 Depth (inches): 0	pection) if ava		nd Hydrology Presen	t? Yes • No O			

U.S. Army Corps of Engineers Alaska Version 2.0