WETLAND DETERMINATION DATA FORM - Alaska Region

Applicant/Overe:	Project/Site: Susitna-Watana Hydroelectric Project	Bo	orough/City:	Matanusk	a-Susitna Borough Sampling Date: 09-Jul-13	
Investigator(s).	Applicant/Owner: Alaska Energy Authority				Sampling Point: SW13_T110_02	
Subregion: Interior Alaska Mountains Lat: 62.7657105624 Long: -148.084334841 Datum: MAD83 Solid Mp Unit Name: NWU classification: Upland Are Vegetation No (If no, explain in Remarks.) Are Vegetation , Soil or Hydrology algorithmic factors No (If no, explain in Remarks.) SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No Hydrophytic Vegetation Present? Yes No is the Sampled Area within a Wetland? Yes No Wetland Hydrobox Present? Yes No is the Sampled Area within a Wetland? Yes No Yes No is the Sampled Area within a Wetland? Yes No Wetland Hydrobox Present? Yes No is the Sampled Area within a Wetland? Yes No Wetland Hydrobox Present? Yes No is the Sampled Area within a Wetland? Yes No It 1 Area (ReACW, of FAC Zoolar Area worksheet: Number of Dominant Species Area Stratus: 1 3 0 Prevend of dominant Species Xea (Area Wor		l	Landform (hill	side, terrac	e, hummocks etc.): Hillside	
Subregion: Interior Alaska Mountains Lat: 62.7657105624 Long: -148.084334841 Datum: MAD83 Solid Mp Unit Name: NWU classification: Upland Are Vegetation No (If no, explain in Remarks.) Are Vegetation , Soil or Hydrology algorithmic factors No (If no, explain in Remarks.) SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes No Hydrophytic Vegetation Present? Yes No is the Sampled Area within a Wetland? Yes No Wetland Hydrobox Present? Yes No is the Sampled Area within a Wetland? Yes No Yes No is the Sampled Area within a Wetland? Yes No Wetland Hydrobox Present? Yes No is the Sampled Area within a Wetland? Yes No Wetland Hydrobox Present? Yes No is the Sampled Area within a Wetland? Yes No It 1 Area (ReACW, of FAC Zoolar Area worksheet: Number of Dominant Species Area Stratus: 1 3 0 Prevend of dominant Species Xea (Area Wor	Local relief (concave, convex, none): convex		Slope:	%/ 27.2	2 ° Elevation: 107	
Sail Map Unit Name: Will classification: upland Vec dimalichydrologic conditions on the site typical for this time of year? Yes No (ff no. explain in Remarks.) Are Vegetation , Soil , or Hydrology isignificantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation Present? Yes No (ff needed. explain any answers in Remarks.) SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transacts, important features, etc. Hydrophytic Vegetation Present? Yes No Hydrophytic Vegetation Present? Yes No is the Sampled Area within a Wetland? Yes No Rematics: steep upland hillside, patchy closed tall alder and ts alder willow interspresed w is. Immer of Dominant Species 3		lat: 6				
Are climatic/hydrologic conditions on the site bylcal for this time of year? Yes ● No ○ (if no, explain in Remarks.) Are Vegetation ○ Soil ○ or Hydrology ○ significantly disturbed? Are Normal Circumstances present? Yes ● No ○ Are Vegetation ○ Soil ○ or Hydrology ○ haturally problematic? (if needed, explain any answers in Remarks.) SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes ● No ● Hydrophytic Vegetation Present? Yes ● No ● Is the Sampled Area within a Wetland? Wetland Hydrology Present? Yes ● No ● Is the Sampled Area within a Wetland? Wetland Hydrology Present? Yes ● No ● Is the Sampled Area within a Wetland? VEGETATION - Use scientific names of plants. List all species in the plot. No ● VEGETATION - Use scientific names of plants. List all species in the plot. Number of Dominant Species 1			52.7057 10592			
Are Vegetation . Sol or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No Are Vegetation . Sol or Hydrology naturally problematic? (if needed, explain any answers in Remarks.) SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transacts, important features, etc. Hydrolytic Vegetation Present? Yes No Hydrology Present? Yes No is the Sampled Area within Wetland? Yes No Remarks.steep upland hilside, partly closed tail afder and ts afder willow interspersed wits. Immediate Test worksheet: Nome of Dominant Species Tree Stratum Absolute Dominant Indicator Species Across Al State: 4 (i) 2 0 O Prevention of Commant Species 3 (ii) 3 0 O Prevention of Commant Species 7.0(ii) Matter O Dominant Species 7.0(ii) 3 0 O Prevention of Commant Species 7.0(ii) Indicator Nome of Dominant Species 7.0(ii) 4 0 O Prevention of Commant Species 7.0(ii) Indicator 10 Indicator 10 FAC FAC	·					
Hydric Sol Present? Yes No ● Is the Sampled Area within a Wetland? Yes No ● Remarks: steep upland hillside, patchy closed tail alder and ts alder willow interspersed w is. Image: Sol Present? Yes No ● VEGETATION - Use scientific names of plants. List all species in the plot. Dominant Indicator % Cover Species? Dominant Indicator % Cover Species? Dominant Indicator % Cover Species? Dominant Indicator Number of Dominant Species Total Number of Dominant Species 75.0% (P) 2 0 0 Cover: 0 Cover of: Multiply by: 3 0 0 Cover of: Multiply by: Cover of: Multiply by: Sapling/Shrub Stratum 50% of Total Cover: 0 FAC FAC FAC FACU Species 0 × 2 = 0 1. Alnus viridis 25 FAC FAC FAC FAC FACU Species 142 × 3 = 426. 4. Sprase stevenii 20 FACU FACU FACU Species 0 × 2 = 0 5. Bak igliquea 2 FACU FACU Species 0 × 2 = 0 9. Prevalence Index = FAI 50% of Total Cover: 163	Are Vegetation , Soil , or Hydrology Are Vegetation , Soil , or Hydrology	significantly naturally pro	v disturbed? oblematic?	Are "N (If nee	lormal Circumstances" present? Yes $oldsymbol{O}$ No $igodoldsymbol{O}$	
Hydric Soil Present? Yes No @ Is the Sampled Area within a Wetland? Yes No @ Remarks: steep upland hillside, patchy closed tall alder and ts alder willow interspersed wits. within a Wetland? Yes No @ VEGETATION - Use scientific names of plants. List all species in the plot. Dominant Indicator Species? Dominant Indicator Species? Dominant Species 3 (B) 1	Hydrophytic Vegetation Present? Yes No)				
Wetand hydrology Present? Yes No within a Wetland? Yes No Remarks: steep upland hillside, patchy closed tail alder and ts alder willow interspersed w is. Yes No Tree Stratum .		the Sam				
Remarks: steep upland hillside, patchy closed tall alder and ts alder willow interspersed w is. VEGETATION - Use scientific names of plants. List all species in the plot. Tree Stratum Absolute % Cover Dominant species? Dominant Strature Dominant Total without % Cover Dominant Species % Status Dominant Mumber of Dominant % Species Accors All Stratu. 4. (h) 1. 0 <t< td=""><td>,</td><td>etland? Yes \cup No $ullet$</td></t<>	,	etland? Yes \cup No $ullet$				
VEGETATION - Use scientific names of plants. List all species in the plot. Term in the species in the plot. Tre Stratum Absolute Species? Status 1. 0 0 1 2. 0 0 1			llow interspers	sed w ls.		
1.		Absolute	Dominant	Indicator		
2. 0				Status		
3.	2					
4. 0 0 0 1 5. 0 0 0 1 Sapling/Shrub Stratum 50% of Total Cover: 0 20% of Total Cover: 0 1. Alnus viridis 65 0 FAC FAC FAC 3. Vaccinium uliginosum 10 FAC FAC FAC Species 0 x 2 = 0 5. Rhododendron groenlandicum 10 FAC FAC FAC UPL Species 0, x 1 = 0, 4, 4 5. Spiraea stevenii 20 FAC FAC FAC UPL Species 0, x 5 = 0 Column Totals: 168.1 (A) 530.4 (B) 6. Sailix glauca 25 FAC FAC Prevalence Index = B/A = 3.155 7. Linnaea borealis 3 FAC Prevalence Index = B/A = 3.155 8. Betula glandulosa 2 FAC Prevalence Index = S1/A = 3.155 10. Betula nana 1 FAC Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 1. Calamagrostis canadensis 3 2 FAC Preculence Index or hydricoloy must be present, unless disturbed or pro	3					
5.	1					
Total Cover:						
Sapling/Shrub Stratum 50% of Total Cover: 0 20% of Total Cover:: 0 1. Alnus viridis 65 Y FAC 2. Ribes triste 35 Y FAC 3. Vaccinium uliginosum 10 FAC 4. Spirae a stevenii 20 FAC 5. Rhododendron groenlandicum 1 FAC 6. Salix glauca 25 FAC 7. Linnae borealis 3 FAC 8. Betula glandulosa 2 FAC 9. Picea glauca 1 FAC 10. Betula nana 1 FAC 11. Calamagrostis canadensis 3 FAC 12. Chamaenerion angustifolium 2 FAC 13. Mertensia paniculata 0.1 FAC 14. Calamagrostis canadensis 3 FAC 15						
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1 Index instruct 10 10 FAC 3. Vaccinium uliginosum 10 FAC FAC 4. Spiraea stevenii 20 FAC UPL Species 0 x 4 = 104.4 5. Rhododendron groenlandicum 1 FAC UPL Species 0 x 5 = 0 6. Salix glauca 25 FAC Prevalence Index = B/A = 3.155 Hdrophytic Vegetation Indicators: 9. Picea glauca 1 FAC V Dominance Test is > 50% 10. Betula nana 1 FAC Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 11. Calamagrostis canadensis 3 ✓ FAC 12. Charmaenerion angustifolium 2 ✓ FAC 13. Mertensia paniculata 0.1 FAC Problematic Hydrophytic Vegetation ¹ (Explain) 14. 0 0 0 9 9 0 1 14. 0 0 0 9 9 1 1 15. 0 0	1. Alnus viridis	65		FAC		
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a private 1 FAC 5. Rhododendron groenlandicum 1 FAC 6. Salix glauca 25 FAC 7. Linnaea borealis 3 FACU 8. Betula glandulosa 2 FAC 9. Picea glauca 1 FACU 10. Betula nana 1 FAC 11. FAC Prevalence Index = B/A = 3.155 12. FAC Hydrophytic Vegetation Indicators: 9. Picea glauca 1 FAC 10. Betula nana 1 FAC 11. FAC Prevalence Index is ≤ 3.0 12. Chamagrostis canadensis 3 V 12. Chamaenerion angustifolium 2 F AC 13. Mertensia paniculata 0.1 FACU 14. 0 Problematic Hydrophytic Vegetation ¹ (Explain) 13. Mertensia paniculata 0.1 FACU 10. 0 Problematic Hydrophytes (Where applicable) 13. Mertensia paniculata 0 <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>						
6. Salix glauca 25 FAC 7. Linnaea borealis 3 FAC 8. Betula glandulosa 2 FAC 9. Picea glauca 1 FAC 10. Betula nana 1 FAC Vertex Stratum 50% of Total Cover: 163. 10. Eduanarosis 3 FAC 11. Calamagrostis canadensis 3 FAC 12. Chamaenerion angustifolium 2 FAC 3. Mertensia paniculata 0.1 FAC 4. 0 Plot size (radius, or length x width) 10m 50. 0 O Plot size (radius, or length x width) 10m 6. 0 0 O Plot size (radius, or length x width) 10m 7. 0 0 O Plot size (radius, or length x width) 10m 9. 0 0 O Hydrophytic Vegetation 1 10. Total Cover: 5.1 0 Hydrophytes Net of Bryophytes 10. 0 0 Hydrophytic Yegetation 1 10. 0 0 <t< td=""><td></td><td></td><td></td><td></td><td>0 PL Species 0 x 5 = 0</td></t<>					0 PL Species 0 x 5 = 0	
7. Linnaea borealis 3 FACU Prevalence Index = B/A =3.155 8. Betula glandulosa 2 FAC Hydrophytic Vegetation Indicators: 9. Picea glauca 1 FACU Prevalence Index is > 50% 10. Betula nana 1 FAC Prevalence Index is > 50% 10. Betula nana 1 FAC Prevalence Index is > 50% 11. Calamagrostis canadensis 3 ✓ FAC 12. Chamaenerion angustifolium 2 ✓ FACU 13. Mertensia paniculata 0.1 FACU Problematic Hydrophytic Vegetation 1 (Explain) 14					Column Totals: <u>168.1</u> (A) <u>530.4</u> (B)	
7. Linnaea Doreans 3 FACU 8. Betula glandulosa 2 FAC 9. Picea glauca 1 FACU 10. Betula nana 1 FACU 10. Betula nana 1 FAC 11. FACU Ø Dominance Test is > 50% 10. Betula nana 1 FAC 11. FACU Ø Prevalence Index is ≤ 3.0 11. Calamagrostis canadensis 1 FAC 11. Calamagrostis canadensis 3 Ø FAC 12. Chamaenerion angustifolium 2 Ø FACU Problematic Hydrophytic Vegetation ¹ (Explain) 11. FACU 1 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Problematic Hydrophytic Vegetation ¹ (Explain) 12. Chamaenerion angustifolium 2 Ø FACU Plot size (radius, or length x width) 10m 3. Mertensia paniculata 0.1 FACU Plot size (radius, or length x width) 10m 4. 0 0 0 Wetand Bryoph					Prevalence Index = B/A = 3.155	
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10. Betula nana 1 FAC Prevalence Index is ≤3.0 Total Cover:163 Herb Stratum 50% of Total Cover:81.5 20% of Total Cover:32.6 Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 1. Calamagrostis canadensis 3 ✓ FAC Problematic Hydrophytic Vegetation ¹ (Explain) 2. Chamaenerion angustifolium 2 ✓ FACU Problematic Hydrophytic Vegetation ¹ (Explain) 3. Mertensia paniculata 0.1 FACU FACU Plot size (radius, or length x width) 10m 4. 0		·				
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Herb Stratum 50% of Total Cover: 81.5 20% of Total Cover: 32.6 Remarks or on a separate sheet) 1. Calamagrostis canadensis 3 Image: FAC Problematic Hydrophytic Vegetation ¹ (Explain) 2. Chamaenerion angustifolium 2 Image: FAC Problematic Hydrophytic Vegetation ¹ (Explain) 3. Mertensia paniculata 0.1 FACU Image: FACU 4. 0 Image: FACU Plot size (radius, or length x width) 10m 5. 0 Image: FACU Plot size (radius, or length x width) 10m 6. 0 Image: FACU Plot size (radius, or length x width) 10m 7. 0 Image: FACU Plot size (radius, or length x width) 10m 8. 0 Image: FACU Plot size (radius, or length x width) 10m 9. 0 Image: FACU % Bare Ground 1 10. 0 Image: FACU Hydrophytic Yegetation 10. Total Cover: 5.1 FACU Hydrophytic				FAC		
2. Chamaenerion angustifolium 2 Image: FACU of the present of the				32.6	Remarks or on a separate sheet)	
3. Mertensia paniculata 0.1 FACU be present, unless disturbed or problematic. 4. 0 0 Plot size (radius, or length x width) 10m 5. 0 0 % Cover of Wetland Bryophytes (Where applicable) 6. 0 0 % Bare Ground 1 7. 0 0 % Bare Ground 1 8. 0 0 Hydrophytes 20 9. 0 0 Hydrophytic Yegetation		3		FAC		
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1 0 0 10m 5. 0 0 90 0 90 90 90 90 90 0 10m 90 10m 90 10m 90 10m 90 10m 90 90 10m 90	3. Mertensia paniculata	0.1		FACU	be present, unless disturbed or problematic.	
5. 0	-				Plot size (radius, or length x width) 10m	
0. 0. <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>						
7.						
0. 0. <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>						
10. 0 0 Hydrophytic Total Cover: 5.1 Vegetation					Total Cover of Bryophytes	
Total Cover: <u>5.1</u> Total Cover: <u>5.1</u> Vegetation						
			of Total Cover	1 0 2		
Remarks: understory domminated by leaf litter 80. 2% vacvit			5. 10tal Covel.	1.02		

		the depth ne Matrix	eeded to docu	iment the indicator or co Re	onfirm the ab		cators)			
Depth (inches)	Color (mo	ist)	%	Color (moist)	%	Type ¹	Loc 2	Texture	Remarks	
0-3			100					Hemic Organics		
3-17	10YR	3/3	100					Loamy Sand	lots of grvl becoming more abundant w dep	
			,	<u>_</u>				-		
									-	
									-	
			,	· · ·						
		,								
¹ Type: C=Cor	ncentration. D	Depletion	. RM=Redu	ced Matrix ² Locatio	n: PL=Por	e Lining. R	C=Root Cha	annel. M=Matrix		
Hydric Soil I	ndicators:			Indicators for P	roblemati	c Hydric S	oils: ³			
Histosol or	Histel (A1)			Alaska Color C	hange (TA	4) 4		Alaska Gleyed Without H	ue 5Y or Redder	
Histic Epip	edon (A2)			Alaska Alpine	•			Underlying Layer		
	Sulfide (A4)			Alaska Redox	With 2.5Y I	Hue		Other (Explain in Remarl	(S)	
	Surface (A12))		³ One indicator o	f hydrophy	tic vegetatio	on, one prir	mary indicator of wetland h	ydrology,	
Alaska Gle				and an appropria	te landsca	pe position	must be pr	esent		
	yed Pores (A1	5)		⁴ Give details of o	olor chang	e in Remarl	ks			
Restrictive Laye		- /								
Type:	er (ir present).							Hydric Soil Present	:? Yes 🔿 No 🖲	
Depth (incl	nes):									
Remarks:										
bedrock shoud	be pretty shall	ow. no hyd	dric soil indi	cators						
HYDROLO	GY									
Wetland Hyd	rology Indica	tors:						_Secondary Indi	icators (two or more are required)	
Primary Indica		is sufficient	t)					_	ined Leaves (B9)	
Surface Water (A1) Inundation Visible on Aerial Imagery (B7								Patterns (B10)		
	er Table (A2)			Sparsely Vegetated Concave Surface (B8)						
Saturatior	. ,			Marl Deposits (B15) Presence of Reduced Iron (C4) Hydrogen Sulfide Odor (C1) Salt Deposits (C5)						
	Deposits (B2)			_						
				Dry-Season Water Table (C2) Stunted or Stressed Plants (D1) Other (Explain in Remarks) Geomorphic Position (D2)						
	or Crust (B4)			Other (Explain in Remarks) Geomorphic Position (D2) Shallow Aquitard (D3)						
Iron Depo	. ,								graphic Relief (D4)	
	oil Cracks (B6)								al Test (D5)	
Field Observa	ations:									
Surface Water	Present?	Yes C	No 💿	Depth (inch	es):					
Water Table P	Present?	Yes \subset) No 🖲	Depth (inch	es):		Wetla	nd Hydrology Presen	nt? Yes 🔾 No 🖲	
Saturation Pre (includes capi		Yes C	No 🖲	Depth (inch	es):					
Describe Recor	ded Data (stre	am gauge,	, monitor w	ell, aerial photos, pre	evious inspe	ection) if av	ailable:			

Remarks:

no wetland hydrology indicators