

GMT2-07

pem1/ss1b

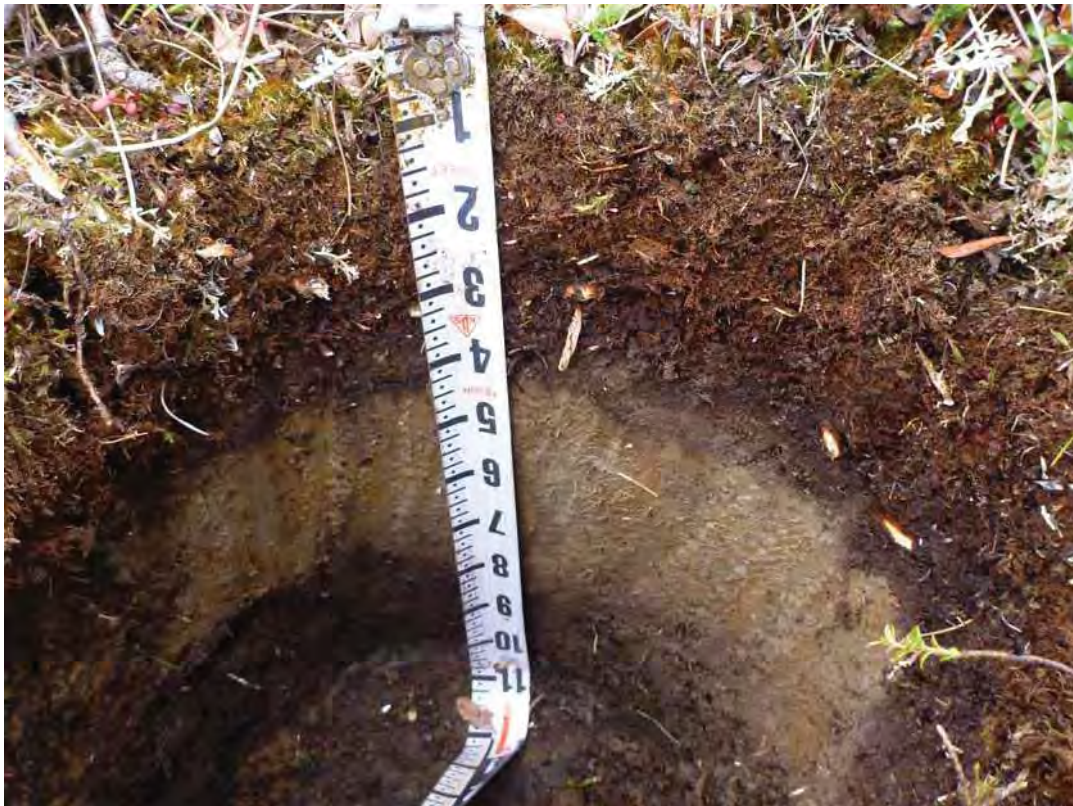
Wetland Functional Class: Saturated Graminoid/Shrub Meadow

Wildlife Habitat: Moist Tussock Tundra



Hydric Soil Indicators: Alaska Redox with 2.5Y Hue

Wetland Hydrology Indicators: Surface water in depressions and secondary hydrology indicators



WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: GMT2 Borough/City: North Slope Borough Sampling Date: 21-Jul-15
Applicant/Owner: Conoco Phillips Alaska, Inc. (CPAI) Sampling Point: GMT2-08
Investigator(s): WAD, EKJ Landform (hillside, terrace, hummocks etc.): Flat plateau
Local relief (concave, convex, none): flat Slope: 0.0 % / 0.0 ° Elevation: 76
Subregion: Northern Alaska Lat.: 70.2377566666667 Long.: -151.547598333333 Datum: _____
Soil Map Unit Name: _____ NWI classification: pem1/ss1e

Are climatic/hydrologic conditions on the site typical 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 ☐ naturally 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 <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks: slightly depressed top of small plateau.	

VEGETATION -Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	<input type="checkbox"/>	_____
2. _____	_____	<input type="checkbox"/>	_____
3. _____	_____	<input type="checkbox"/>	_____
4. _____	_____	<input type="checkbox"/>	_____
5. _____	_____	<input type="checkbox"/>	_____
Total Cover: <u>0</u>			
Sapling/Shrub Stratum	50% of Total Cover: <u>0</u>	20% of Total Cover: <u>0</u>	
1. <u>Salix pulchra</u>	<u>5</u>	<input type="checkbox"/>	FACW
2. <u>Betula nana</u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC
3. <u>Vaccinium vitis-idaea</u>	<u>5</u>	<input type="checkbox"/>	FAC
4. <u>Rhododendron tomentosum</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACW
5. <u>Empetrum nigrum</u>	<u>5</u>	<input type="checkbox"/>	FAC
6. _____	<u>0</u>	<input type="checkbox"/>	_____
7. _____	<u>0</u>	<input type="checkbox"/>	_____
8. _____	<u>0</u>	<input type="checkbox"/>	_____
9. _____	<u>0</u>	<input type="checkbox"/>	_____
10. _____	<u>0</u>	<input type="checkbox"/>	_____
Total Cover: <u>35</u>			
	50% of Total Cover: <u>17.5</u>	20% of Total Cover: <u>7</u>	
Herb Stratum			
1. <u>Eriophorum vaginatum</u>	<u>40</u>	<input checked="" type="checkbox"/>	FACW
2. <u>Pyrola asarifolia</u>	<u>5</u>	<input type="checkbox"/>	FACU
3. <u>Arctagrostis latifolia</u>	<u>1</u>	<input type="checkbox"/>	FACW
4. <u>Carex bigelowii</u>	<u>5</u>	<input type="checkbox"/>	FAC
5. <u>Eriophorum angustifolium</u>	<u>5</u>	<input type="checkbox"/>	OBL
6. <u>Saxifraga hirculus</u>	<u>1</u>	<input type="checkbox"/>	OBL
7. <u>Carex aquatilis</u>	<u>5</u>	<input type="checkbox"/>	OBL
8. _____	<u>0</u>	<input type="checkbox"/>	_____
9. _____	<u>0</u>	<input type="checkbox"/>	_____
10. _____	<u>0</u>	<input type="checkbox"/>	_____
Total Cover: <u>62</u>			
	50% of Total Cover: <u>31</u>	20% of Total Cover: <u>12.4</u>	

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: 100.0% (A/B)

Prevalence Index worksheet:
Total % Cover of: Multiply by:
OBL Species 11 x 1 = 11
FACW Species 56 x 2 = 112
FAC Species 25 x 3 = 75
FACU Species 5 x 4 = 20
UPL Species 0 x 5 = 0
Column Totals: 97 (A) 218 (B)
Prevalence Index = B/A = 2.247

Hydrophytic Vegetation Indicators:
☒ Dominance Test is > 50%
☒ Prevalence Index is ≤3.0
☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Plot size (radius, or length x width) _____
% Cover of Wetland Bryophytes (Where applicable) 5
% Bare Ground 5
Total Cover of Bryophytes 10

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: drepa and unk aquatic mosses as wet bryo.

SOIL

Sampling Point: GMT2-08

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4		100					Hemic Organics	
4-10	2.5Y	4/1	100				Silty Clay	
10-13	2.5Y	3/2	60	10YR	2/2	40	Hemic Organics	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix

²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators:

☐ Histosol or Histel (A1)☐ Histic Epipedon (A2)☐ Hydrogen Sulfide (A4)☐ Thick Dark Surface (A12)☐ Alaska Gleyed (A13)☐ Alaska Redox (A14)☐ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils³:

☐ Alaska Color Change (TA4)⁴☐ Alaska Alpine swales (TA5)☐ Alaska Redox With 2.5Y Hue

☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer☒ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: seasonal frost
Depth (inches): 13

Hydric Soil Present? Yes ☒ No ☐

Remarks:
alpha alpha positive

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one is sufficient)

☒ Surface Water (A1)☐ High Water Table (A2)☒ Saturation (A3)☐ 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)☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

☐ Water Stained Leaves (B9)☐ Drainage Patterns (B10)☐ Oxidized Rhizospheres along Living Roots (C3)☒ Presence of Reduced Iron (C4)☐ Salt Deposits (C5)☐ Stunted or Stressed Plants (D1)☒ Geomorphic Position (D2)☒ Shallow Aquitard (D3)☐ Microtopographic Relief (D4)☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☒ No ☐

Depth (inches):

Water Table Present? Yes ☐ No ☒

Depth (inches):

Saturation Present? (includes capillary fringe) Yes ☒ No ☐

Depth (inches):

Wetland Hydrology Present? Yes ☒ No ☐

Recorded Data (stream gauge, monitor well, aerial photo, previous inspection), if available:

Remarks:
surface water in troughs near pit, assume at least a dry season water table that can't be verified due to frozen soil

U.S. Army Corps of Engineers

Alaska Version 2.0

GMT2-08

pem1/ss1e

Wetland Functional Class: Seasonally Flooded Saturated Graminoid/Shrub Meadow

Wildlife Habitat: Moist Sedge Shrub Tundra



Hydric Soil Indicators: Positive for alpha alpha dipyrdil

Wetland Hydrology Indicators: Surface water in low depressions, saturation



WETLAND DETERMINATION DATA FORM - Alaska Region

Project/Site: GMT2 Borough/City: North Slope Borough Sampling Date: 21-Jul-15
 Applicant/Owner: Conoco Phillips Alaska, Inc. (CPAI) Sampling Point: GMT2-09
 Investigator(s): WAD, EKJ Landform (hillside, terrace, hummocks etc.): small bluff
 Local relief (concave, convex, none): convex Slope: 5.2 % / 3.0 ° Elevation: 79
 Subregion: Northern Alaska Lat.: 70.236918333333 Long.: -151.54449 Datum: _____
 Soil Map Unit Name: _____ NWI classification: Upland

Are climatic/hydrologic conditions on the site typical 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 ☐ naturally 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 <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Remarks: <u>bluff or rdge at the edge of drained lake basin. some evidence of disturbance, smashed tussocks.</u>	

VEGETATION -Use scientific names of plants. List all species in the plot.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	<input type="checkbox"/>	_____
2. _____	_____	<input type="checkbox"/>	_____
3. _____	_____	<input type="checkbox"/>	_____
4. _____	_____	<input type="checkbox"/>	_____
5. _____	_____	<input type="checkbox"/>	_____
Total Cover: <u>0</u>			
Sapling/Shrub Stratum	50% of Total Cover: <u>0</u>	20% of Total Cover: <u>0</u>	
1. <u>Salix pulchra</u>	<u>5</u>	<input type="checkbox"/>	FACW
2. <u>Salix richardsonii</u>	<u>5</u>	<input type="checkbox"/>	FACW
3. <u>Vaccinium vitis-idaea</u>	<u>10</u>	<input checked="" type="checkbox"/>	FAC
4. <u>Salix rotundifolia ssp. dodgeana</u>	<u>15</u>	<input checked="" type="checkbox"/>	UPL
5. <u>Salix reticulata</u>	<u>5</u>	<input type="checkbox"/>	FAC
6. <u>Rhododendron tomentosum</u>	<u>10</u>	<input checked="" type="checkbox"/>	FACW
7. <u>Cassiope tetragona</u>	<u>15</u>	<input checked="" type="checkbox"/>	FACU
8. _____	<u>0</u>	<input type="checkbox"/>	_____
9. _____	<u>0</u>	<input type="checkbox"/>	_____
10. _____	<u>0</u>	<input type="checkbox"/>	_____
Total Cover: <u>65</u>			
Herb Stratum	50% of Total Cover: <u>32.5</u>	20% of Total Cover: <u>13</u>	
1. <u>Eriophorum vaginatum</u>	<u>30</u>	<input checked="" type="checkbox"/>	FACW
2. <u>Saussurea angustifolia</u>	<u>5</u>	<input type="checkbox"/>	FAC
3. <u>Stellaria longipes</u>	<u>0.1</u>	<input type="checkbox"/>	FAC
4. <u>Pyrola asarifolia</u>	<u>1</u>	<input type="checkbox"/>	FACU
5. <u>Luzula confusa</u>	<u>1</u>	<input type="checkbox"/>	FAC
6. <u>Poa arctica</u>	<u>1</u>	<input type="checkbox"/>	FAC
7. <u>Pedicularis verticillata</u>	<u>1</u>	<input type="checkbox"/>	FAC
8. <u>Festuca rubra</u>	<u>5</u>	<input type="checkbox"/>	FAC
9. <u>Papaver macounii</u>	<u>0</u>	<input type="checkbox"/>	FACU
10. _____	<u>0</u>	<input type="checkbox"/>	_____
Total Cover: <u>44.1</u>			
50% of Total Cover: <u>22.05</u>		20% of Total Cover: <u>8.82</u>	

Dominance Test worksheet:
 Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)
 Total Number of Dominant Species Across All Strata: 5 (B)
 Percent of dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:
 Total % Cover of: Multiply by:
 OBL Species 0 x 1 = 0
 FACW Species 50 x 2 = 100
 FAC Species 43.1 x 3 = 129.3
 FACU Species 16 x 4 = 64
 UPL Species 0 x 5 = 0
 Column Totals: 109.1 (A) 293.3 (B)
 Prevalence Index = B/A = 2.688

Hydrophytic Vegetation Indicators:
☒ Dominance Test is > 50%
☒ Prevalence Index is ≤3.0
☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

Hydrophytic Vegetation Present? Yes ☒ No ☐

Plot size (radius, or length x width) _____
 % Cover of Wetland Bryophytes (Where applicable) 0
 % Bare Ground 0
 Total Cover of Bryophytes 15

Remarks: _____

SOIL

Sampling Point: GMT2-09

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3		100					Peat	
3-7	10YR	3/2	100				Silt Loam	
7-10	10YR	2/1	100				Silt Loam, with organics	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix ² Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators:
☐ Histosol or Histel (A1)
☐ Histic Epipedon (A2)
☐ Hydrogen Sulfide (A4)
☐ Thick Dark Surface (A12)
☐ Alaska Gleyed (A13)
☐ Alaska Redox (A14)
☐ Alaska Gleyed Pores (A15)

Indicators for Problematic Hydric Soils³:
☐ Alaska Color Change (TA4)⁴
☐ Alaska Alpine swales (TA5)
☐ Alaska Redox With 2.5Y Hue
☐ Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):
Type: seasonal frost
Depth (inches): 10

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (any one is sufficient)
☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ 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)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)
☐ Water Stained Leaves (B9)
☐ Drainage Patterns (B10)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Salt Deposits (C5)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☒ Shallow Aquitard (D3)
☐ Microtopographic Relief (D4)
☐ FAC-neutral Test (D5)

Field Observations:
Surface Water Present? Yes ☐ No ☒ Depth (inches):
Water Table Present? Yes ☐ No ☒ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches):

Wetland Hydrology Present? Yes ☒ No ☐

Recorded Data (stream gauge, monitor well, aerial photo, previous inspection), if available:

Remarks:

GMT2-09

Upland

Wetland Functional Class: Upland

Wildlife Habitat: Moist Tussock Tundra



Hydric Soil Indicators: No hydric soil indicators

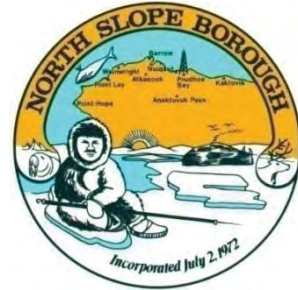
Wetland Hydrology Indicators: One secondary indicator (shallow aquitard)



This page intentionally left blank.

APPENDIX C
HDL 2016 PROJECT ANALYSIS REPORT

**Nuiqsut Repair
Bridge Crossings**



**North Slope Borough
Department of Public Works
Capital Improvement
Program Management**

Prepared by:



3335 Arctic Boulevard, Suite 100
Anchorage, Alaska 99503

February 10, 2016