range from permanently flooded surface waters to saturated hydrologic regimes. Wetlands are connected directly to RPWs (Fish Creek and Ublutuoch River) through surface and shallow subsurface hydrologic connections and thus are applicable for jurisdiction under the CWA. No isolated wetlands were observed during the field survey or interpreted during the desk-top mapping exercise.

## DIRECT IMPACTS

Direct impacts to wetlands within the gravel footprint for Alternatives A were calculated by NWI class and presented in Table 1. The majority of wetland types directly impacted by Alternative a fall within the dryer PEM1/SS1B and PEM1/SS1E types [(63.7% and 30.4% respectively) Table 1]. The Alternative A route completely avoids all PEM1H (wet marsh wetland types) and 5.5% of the direct impact area is PEM1F (Table 1). This wetland determination identified a small number of naturally occurring uplands in the area, found on raised ridges surrounding lake basins. Direct upland impacts in the Alternative A alignment only account for 0.3% of the total impact area.

Table 1. Wetland and non-wetland acreage for the Greater Moose's Tooth 2 development Alternative A proposed project gravel footprint, NE NPR-A, Alaska. The footprint includes proposed road, drill pad, and road pullouts. Vertical support members were not included in this table but account for less than 0.1 acre.

| Wetland Type | Road (acres) | GMT2 Pad (acres) | Road Pullouts (acres) | Total Fill (acres) | Total Fill (% of total) |
|---|---|---|---|---|---|
| **Waters of the U.S.** | | | | | |
| PUBH-Pond (<20acres) | 0.1 | - | - | 0.1 | 0.1 |
| **Wetlands** | | | | | |
| PEM1H-Permanently Flooded Emergent Marsh | - | - | - | - | - |
| PEM1F-Semi-permanently Flooded Emergent Meadow | 4.1 | 0.2 | - | 4.3 | 5.5 |
| PEM1/SS1E-Seasonally Flooded Saturated Emergent-Deciduous Shrub Meadow | 23.5 | 0.2 | - | 23.7 | 30.4 |
| PEM1/SS1B-Saturated Emergent Deciduous Shrub Meadow | 34.9 | 13.6 | 1.2 | 49.7 | 63.7 |
| **Uplands (U)** | 0.2 | - | - | 0.2 | 0.3 |
| **TOTAL** | **62.8** | **14.0** | **1.2** | **78.0** | **100.0** |

[1] Totals are rounded to the nearest 0.1 acre.

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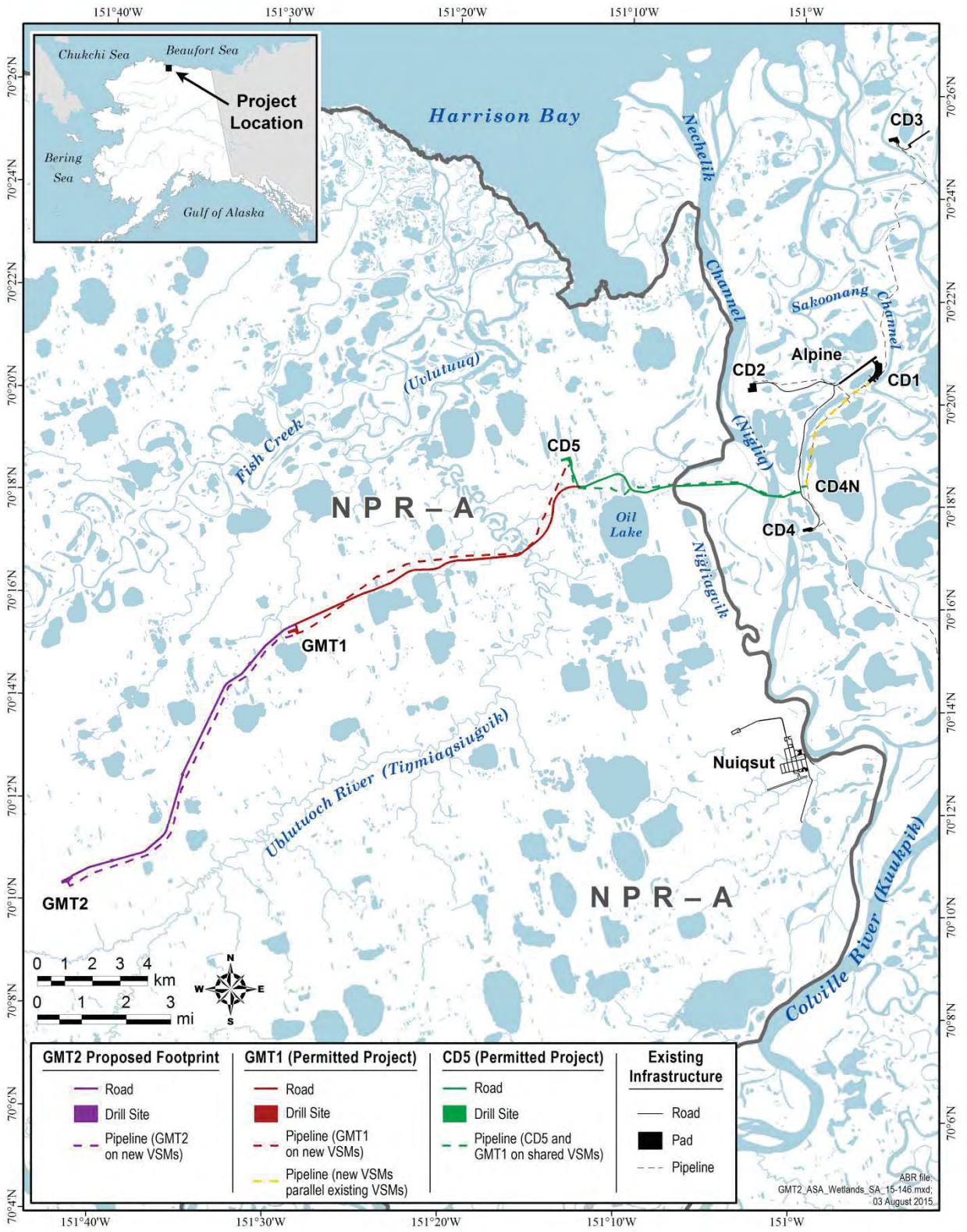


Figure 1. Location and project components for Alternatives of the proposed GMT2 development project

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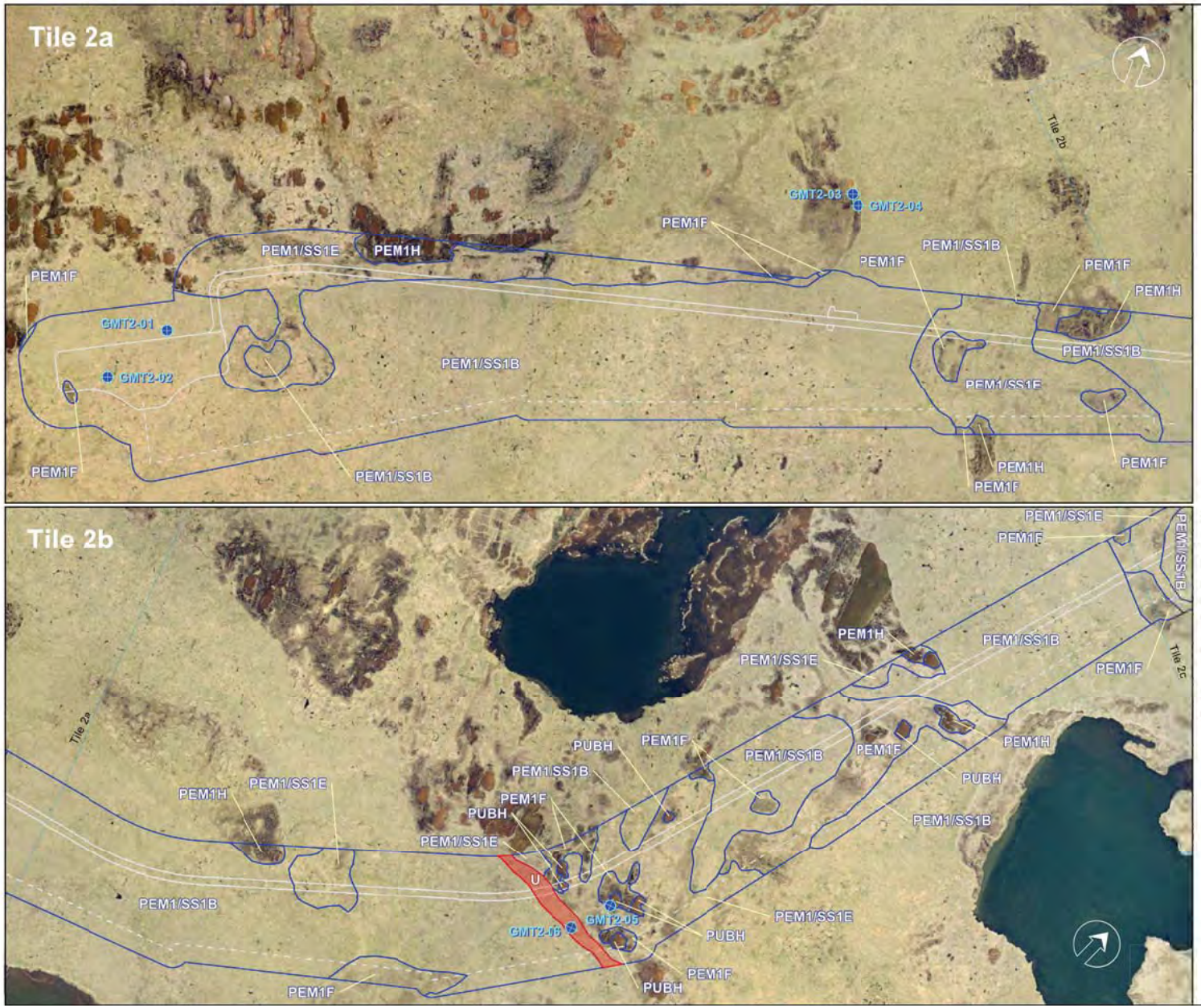



# Figure 2a–b. Wetlands and waters for the GMT2 Alternative A study area NE NPR-A, North Slope, Alaska.

Map prepared by:
ABR Inc.–Environmental Research & Services

11 July 2017 | GMT2_ASA_NWI_Tile2ab_17-102.mxd

## GMT2 Proposed Footprint

- Alt A Drill Site, Road, and Subsistence Access (20170511)
- Pipeline (Alt A, 20170511)
- Wetland
- Upland
- Field Verification Point

## Waters of the U.S.[1]

| | |
|---|---|
| PUBH | Pond (<20 acres) |

## Wetlands[1]

| | |
|---|---|
| PEM1H | Permanently Flooded Emergent Marsh |
| PEM1F | Semi-permanently Flooded Emergent Meadow |
| PEM1/SS1E | Seasonally Flooded Saturated Emergent-Deciduous Shrub Meadow |
| PEM1/SS1B | Saturated Emergent-Deciduous Shrub Meadow |

## Uplands

| | |
|---|---|
| U | Upland |

[1] Follows National Wetlands Inventory (NWI) map conventions and Cowardin et al. (1979) classification system.

Approximate scale = 1:10,000

0 500 1,000 Feet

0 100 200 300 Meters

Figure Map Tiles: 2a, 2b, 2c, 2d, 2e

Orthophoto mosaic from 30 June 1999 and 13–14 July 2001; 2 foot pixel resolution; Alaska State Plane Zone 4, NAD 1983, U.S. feet; Absolute Map Scale applies when printed at 11"x17"

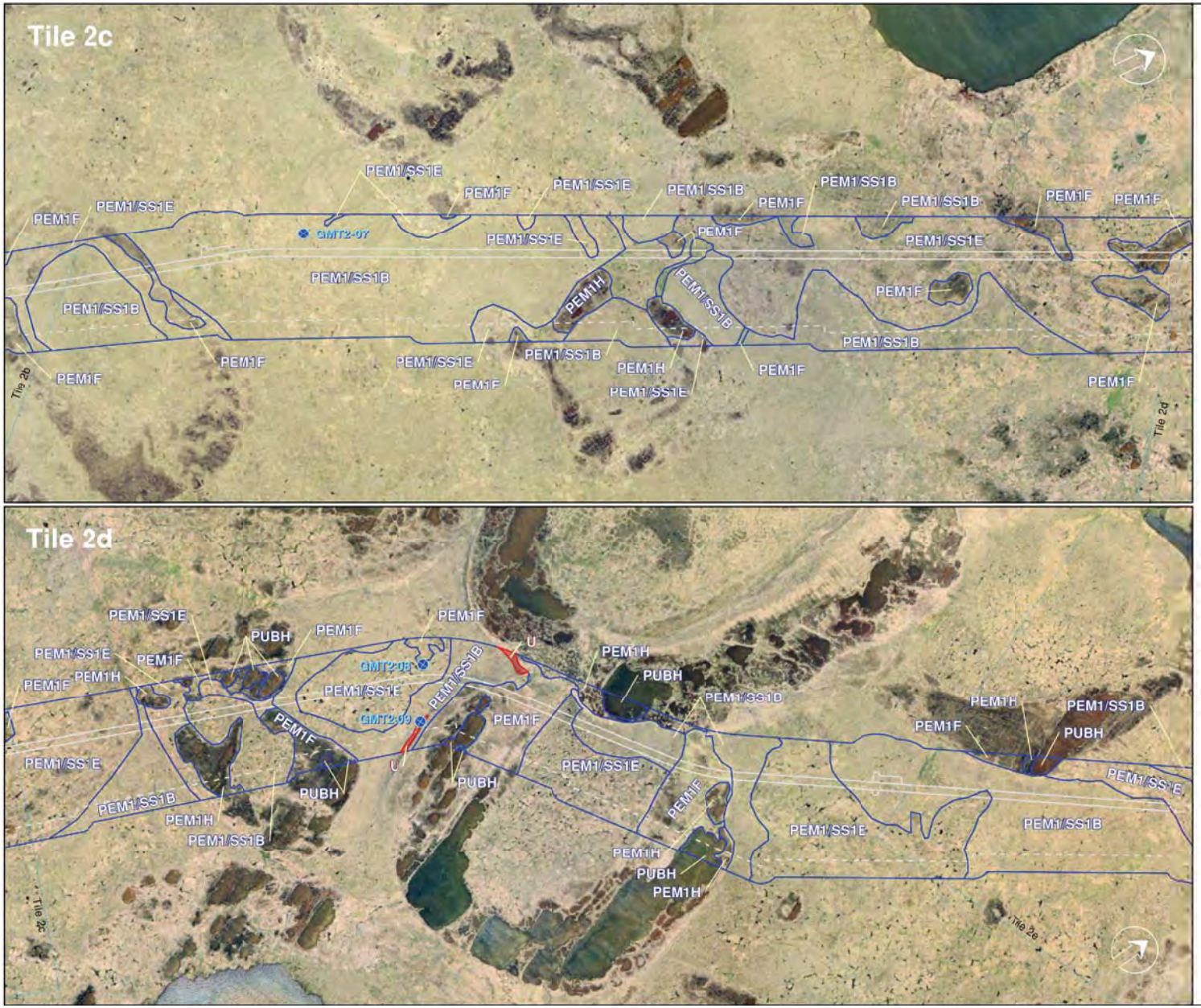



**Figure 2c–d. Wetlands and waters for the GMT2 Alternative A study area NE NPR-A, North Slope, Alaska.**

Map prepared by:
ABR Inc.–Environmental Research & Services

11 July 2017 | GMT2_ASA_NWI_Tile2cd_17-102.mxd

## GMT2 Proposed Footprint

- Alt A Drill Site, Road, and Subsistence Access (20170511)
- Pipeline (Alt A, 20170511)
- Wetland
- Upland
- Field Verification Point

## Waters of the U.S.[1]

| | |
|---|---|
| PUBH | Pond (<20 acres) |

## Wetlands[1]

| | |
|---|---|
| PEM1H | Permanently Flooded Emergent Marsh |
| PEM1F | Semi-permanently Flooded Emergent Meadow |
| PEM1/SS1E | Seasonally Flooded Saturated Emergent-Deciduous Shrub Meadow |
| PEM1/SS1B | Saturated Emergent-Deciduous Shrub Meadow |

## Uplands

| | |
|---|---|
| U | Upland |

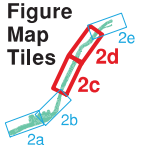
[1] Follows National Wetlands Inventory (NWI) map conventions and Cowardin et al. (1979) classification system.

Approximate scale = 1:10,000

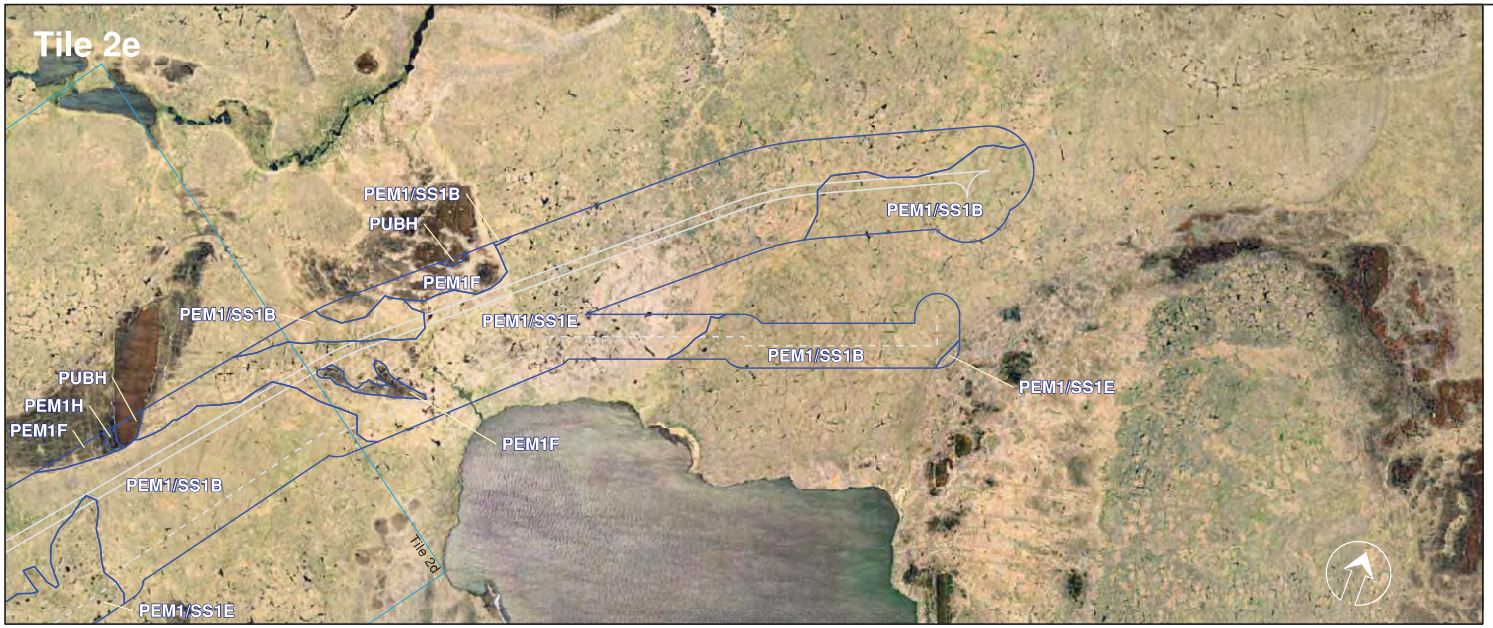
0 500 1,000 Feet

0 100 200 300 Meters

Figure Map Tiles




Orthophoto mosaic from 30 June 1999 and 13–14 July 2001; 2 foot pixel resolution; Alaska State Plane Zone 4, NAD 1983, U.S. feet; Absolute Map Scale applies when printed at 11"x17"




# Figure 2e. Wetlands and waters for the GMT2 Alternative A study area NE NPR-A, North Slope, Alaska.

Map prepared by:
ABR Inc.–Environmental Research & Services

11 July 2017 | GMT2_ASA_NWI_Tile2e_17-102.mxd

## GMT2 Proposed Footprint

- Alt A Drill Site, Road, and Subsistence Access (20170511)
- Pipeline (Alt A, 20170511)
- Wetland
- Upland
- Field Verification Point

## Waters of the U.S.[1]

| | |
|---|---|
| PUBH | Pond (<20 acres) |

## Wetlands[1]

| | |
|---|---|
| PEM1H | Permanently Flooded Emergent Marsh |
| PEM1F | Semi-permanently Flooded Emergent Meadow |
| PEM1/SS1E | Seasonally Flooded Saturated Emergent-Deciduous Shrub Meadow |
| PEM1/SS1B | Saturated Emergent-Deciduous Shrub Meadow |

## Uplands

| | |
|---|---|
| U | Upland |

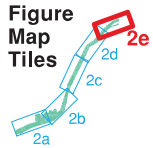
[1] Follows National Wetlands Inventory (NWI) map conventions and Cowardin et al. (1979) classification system.

Approximate scale = 1:10,000

0 500 1,000 Feet

0 100 200 300 Meters

Figure Map Tiles




Orthophoto mosaic from 30 June 1999 and 13–14 July 2001; 2 foot pixel resolution; Alaska State Plane Zone 4, NAD 1983, U.S. feet; Absolute Map Scale applies when printed at 11"x17"

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Appendix A. Wetland Determination Forms

# 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: **GMT2-01**

Investigator(s): WAD, EKJ Landform (hillside, terrace, hummocks etc.): Flat

Local relief (concave, convex, none): convex Slope: 0.0 % / 0.0 ° Elevation: 118

Subregion : Northern Alaska Lat.: 70.1739833333334 Long.: -151.69239 Datum: WGS84

Soil Map Unit Name: **NWI classification:** pem1/ss1b

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 ◉ No ○ | **Is the Sampled Area within a Wetland?** Yes ◉ No ○ |
| Hydric Soil Present? | Yes ◉ No ○ | |
| Wetland Hydrology Present? | Yes ◉ No ○ | |

Remarks: high center polygons or unpatteerned ground near the GMT2 proposed pad area

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

| Tree Stratum | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | 0 | ☐ | |
| 2. | 0 | ☐ | |
| 3. | 0 | ☐ | |
| 4. | 0 | ☐ | |
| 5. | 0 | ☐ | |
| **Total Cover:** | 0 | | |

50% of Total Cover: 0 20% of Total Cover: 0

| Sapling/Shrub Stratum | | | |
|---|---|---|---|
| 1. Salix pulchra | 5 | ☐ | FACW |
| 2. Betula nana | 15 | ☑ | FAC |
| 3. Rhododendron tomentosum | 10 | ☑ | FACW |
| 4. Vaccinium vitis-idaea | 5 | ☐ | FAC |
| 5. Cassiope tetragona | 5 | ☐ | FACU |
| 6. Salix reticulata | 2 | ☐ | FAC |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 42 | | |

50% of Total Cover: 21 20% of Total Cover: 8.4

| Herb Stratum | | | |
|---|---|---|---|
| 1. Eriophorum vaginatum | 40 | ☑ | FACW |
| 2. Carex bigelowii | 2 | ☐ | FAC |
| 3. Eriophorum angustifolium | 2 | ☐ | OBL |
| 4. Arctagrostis latifolia | 0.1 | ☐ | FACW |
| 5. Saussurea angustifolia | 1 | ☐ | FAC |
| 6. Pedicularis sudetica | 1 | ☐ | FACW |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 46.1 | | |

50% of Total Cover: 23.05 20% of Total Cover: 9.22

**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 | 2 | x 1 = | 2 |
| FACW Species | 56.1 | x 2 = | 112.2 |
| FAC Species | 25 | x 3 = | 75 |
| FACU Species | 5 | x 4 = | 20 |
| UPL Species | 0 | x 5 = | 0 |
| Column Totals: | 88.1 (A) | | 209.2 (B) |

Prevalence Index = B/A = 2.375

**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.

Plot size (radius, or length x width)

% Cover of Wetland Bryophytes (Where applicable) 5

% Bare Ground 0

Total Cover of Bryophytes 15

**Hydrophytic Vegetation Present?** Yes ◉ No ○

Remarks:

## SOIL

**Sampling Point:** **GMT2-01**

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

| Depth (inches) | Matrix Color (moist) | | % | Redox Features Color (moist) | | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 0-3 | | | | | | | | | Fibric Organic | |
| 3-5 | | | | | | | | | Hemic Organic | |
| 5-9 | 10YR | 3/2 | 100 | | | | | | Silt Loam | |
| 9-11 | 10YR | 2/2 | 100 | | | | | | Sapric Organic | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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

**Hydric Soil Indicators:**

- [x] 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 Soils[3] :**

- [ ] 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): 11

**Hydric Soil Present?** Yes ◉ No ○

Remarks:
considered a histosol assuming saturation if not frozen

## 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)
- [x] Microtopographic Relief (D4)
- [x] FAC-neutral Test (D5)

**Field Observations:**

| | | | | |
|---|---|---|---|---|
| Surface Water Present? | Yes ○ | No ◉ | Depth (inches): | 0 |
| Water Table Present? | Yes ○ | No ◉ | Depth (inches): | 0 |
| Saturation Present? (includes capillary fringe) | Yes ○ | No ◉ | Depth (inches): | 0 |

**Wetland Hydrology Present?** Yes ◉ No ○

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

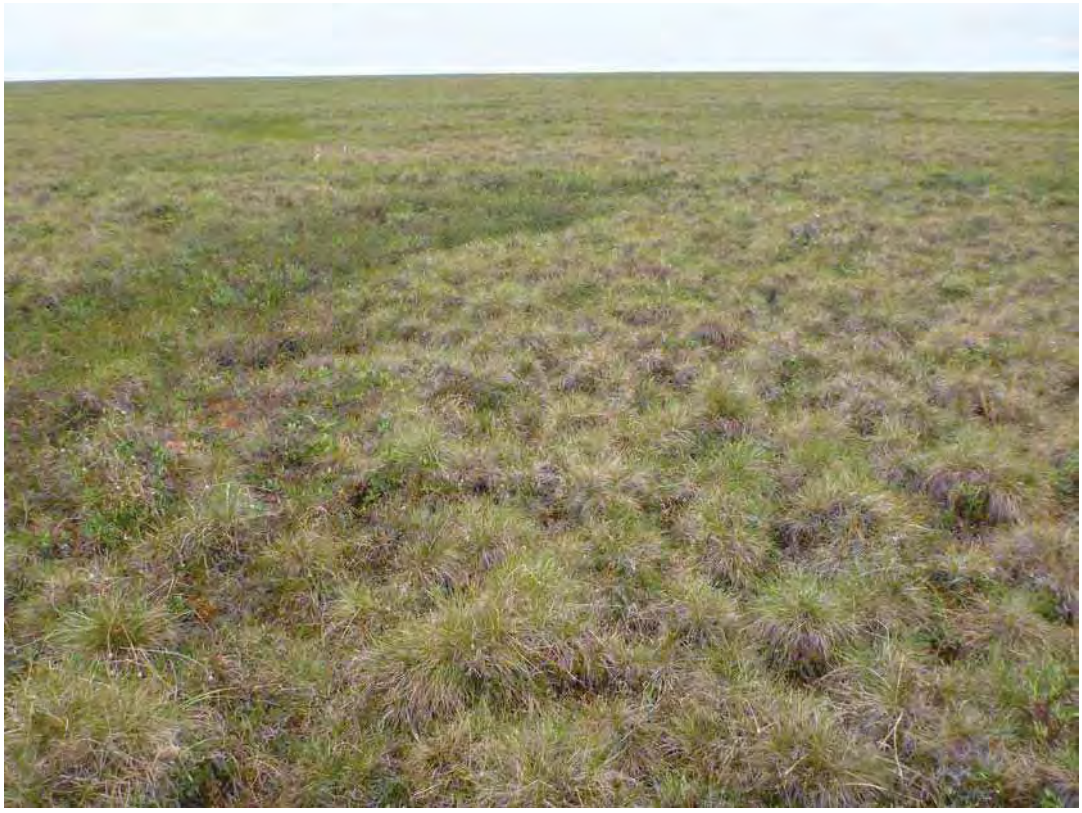
Remarks:
Secondary hydrology indicators only.

# GMT2-01

pem1/ss1b

Wetland Functional Class: Saturated Graminoid/Shrub Meadow

Wildlife Habitat: Moist Tussock Tundra



Hydric Soil Indicators: Histosol

Wetland Hydrology Indicators: Secondary hydrology indicators only

# 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: **GMT2-02**

Investigator(s): WAD, EKJ | Landform (hillside, terrace, hummocks etc.): Flat

Local relief (concave, convex, none): convex | Slope: 0.0 % / 0.0 ° | Elevation: 106

Subregion : Northern Alaska | Lat.: 70.1725616666667 | Long.: -151.69516 | Datum: WGS84

Soil Map Unit Name: | **NWI classification:** pem1/ss1b

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 ◉ No ○ | **Is the Sampled Area within a Wetland?** Yes ◉ No ○ |
| Hydric Soil Present? | Yes ◉ No ○ | |
| Wetland Hydrology Present? | Yes ◉ No ○ | |

Remarks: lower lying area with innundated pitts and troughs

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

| Tree Stratum | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | ☐ | |
| 2. | | ☐ | |
| 3. | | ☐ | |
| 4. | | ☐ | |
| 5. | | ☐ | |
| **Total Cover:** | 0 | | |
| **Sapling/Shrub Stratum** | 50% of Total Cover: 0 | 20% of Total Cover: 0 | |
| 1. Salix pulchra | 10 | ☑ | FACW |
| 2. Rhododendron tomentosum | 10 | ☑ | FACW |
| 3. Betula nana | 15 | ☑ | FAC |
| 4. Cassiope tetragona | 5 | ☐ | FACU |
| 5. Vaccinium vitis-idaea | 10 | ☑ | FAC |
| 6. | 0 | ☐ | |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 50 | | |
| **Herb Stratum** | 50% of Total Cover: 25 | 20% of Total Cover: 10 | |
| 1. Eriophorum angustifolium | 5 | ☐ | OBL |
| 2. Carex aquatilis | 5 | ☐ | OBL |
| 3. Eriophorum vaginatum | 40 | ☑ | FACW |
| 4. Saussurea angustifolia | 1 | ☐ | FAC |
| 5. | 0 | ☐ | |
| 6. | 0 | ☐ | |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 51 | | |
| | 50% of Total Cover: 25.5 | 20% of Total Cover: 10.2 | |

**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: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL Species | 10 | x 1 = | 10 |
| FACW Species | 60 | x 2 = | 120 |
| FAC Species | 26 | x 3 = | 78 |
| FACU Species | 5 | x 4 = | 20 |
| UPL Species | 0 | x 5 = | 0 |
| Column Totals: | 101 (A) | | 228 (B) |

Prevalence Index = B/A = 2.257

**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.

Plot size (radius, or length x width)

% Cover of Wetland Bryophytes (Where applicable): 5

% Bare Ground: 0

Total Cover of Bryophytes: 15

**Hydrophytic Vegetation Present?** Yes ◉ No ○

Remarks:

## SOIL

**Sampling Point: GMT2-02**

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

| Depth (inches) | Matrix Color (moist) | | Matrix % | Redox Features Color (moist) | | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 0-3 | | | 100 | | | | | | Fibric Organic | |
| 3-7 | 10YR | 2/3 | 100 | | | | | | Silty Clay Loam | |
| 7-11 | | | 100 | | | | | | Hemic Organic | with mineral content |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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

**Hydric Soil Indicators:**

- [x] 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 Soils[3] :**

- [ ] Alaska Color Change (TA4)[4]
- [ ] Alaska Alpine swales (TA5)
- [ ] Alaska Redox With 2.5Y Hue
- [ ] Alaska Gleyed Without Hue 5Y or Redder Underlying Layer
- [x] 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): 11

**Hydric Soil Present?** Yes (•) No ( )

Remarks:
positive alpha alpha reaction,

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one is sufficient)

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] 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)
- [x] Presence of Reduced Iron (C4)
- [ ] Salt Deposits (C5)
- [ ] Stunted or Stressed Plants (D1)
- [x] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [x] Microtopographic Relief (D4)
- [x] FAC-neutral Test (D5)

**Field Observations:**

| | | | | |
|---|---|---|---|---|
| Surface Water Present? | Yes (•) | No ( ) | Depth (inches): | 1 |
| Water Table Present? | Yes ( ) | No (•) | Depth (inches): | |
| Saturation Present? (includes capillary fringe) | Yes (•) | No ( ) | Depth (inches): | 4 |

**Wetland Hydrology Present?** Yes (•) No ( )

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

Remarks:
frozen at 11 inches

# GMT2-02

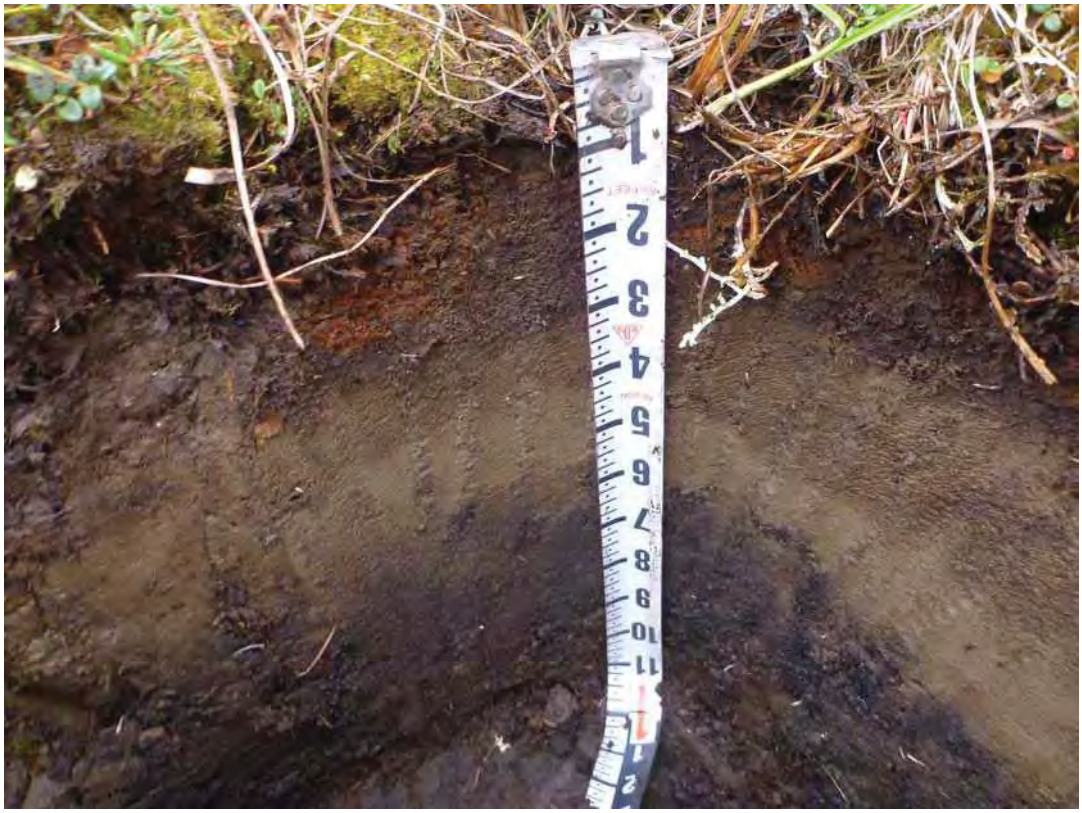
pem1/ss1b

Wetland Functional Class: Seasonally Flooded/Saturated Graminoid/Shrub Meadow

Wildlife Habitat: Moist Sedge/Shrub Tundra

Hydric Soil Indicators: Histosol

Wetland Hydrology Indicators: Saturation and surface water in nearby troughs



# 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: **GMT2-03**

Investigator(s): WAD, EKJ Landform (hillside, terrace, hummocks etc.): drained pund

Local relief (concave, convex, none): concave Slope: % / ° Elevation: 89

Subregion : Northern Alaska Lat.: 70.1827233333333 Long.: -151.65278 Datum:

Soil Map Unit Name: **NWI classification:** pusc

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 ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

**Is the Sampled Area within a Wetland?** **Yes ◉ No ○**

Remarks: small dried pond

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

| Tree Stratum | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | ☐ | |
| 2. | | ☐ | |
| 3. | | ☐ | |
| 4. | | ☐ | |
| 5. | | ☐ | |
| **Total Cover:** | 0 | | |
| **Sapling/Shrub Stratum** | 50% of Total Cover: 0 | 20% of Total Cover: 0 | |
| 1. | | ☐ | |
| 2. | | ☐ | |
| 3. | | ☐ | |
| 4. | | ☐ | |
| 5. | | ☐ | |
| 6. | | ☐ | |
| 7. | | ☐ | |
| 8. | | ☐ | |
| 9. | | ☐ | |
| 10. | | ☐ | |
| **Total Cover:** | 0 | | |
| **Herb Stratum** | 50% of Total Cover: 0 | 20% of Total Cover: 0 | |
| 1. Carex aquatilis | 1 | ☑ | OBL |
| 2. | 0 | ☐ | |
| 3. | 0 | ☐ | |
| 4. | 0 | ☐ | |
| 5. | 0 | ☐ | |
| 6. | 0 | ☐ | |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 1 | | |
| | 50% of Total Cover: 0.5 | 20% of Total Cover: 0.2 | |

**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: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL Species | 1 | x 1 = | 1 |
| FACW Species | 0 | x 2 = | 0 |
| FAC Species | 0 | x 3 = | 0 |
| FACU Species | 0 | x 4 = | 0 |
| UPL Species | 0 | x 5 = | 0 |
| Column Totals: | 1 (A) | | 1 (B) |

Prevalence Index = B/A = 1.000

**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.

Plot size (radius, or length x width)

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

**Hydrophytic Vegetation Present?** **Yes ◉ No ○**

Remarks:

## SOIL

**Sampling Point:** GMT2-03

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
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[1] Type: 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 Soils[3] :**

- ☐ 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: unknown
Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks:
no pit

## 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:
saturated to surface

# GMT2-03

pusc

Wetland Functional Class: Semi-permanently Flooded Wet Graminoid Meadow

Wildlife Habitat: Non-patterned Wet Sedge Meadow

Hydric Soil Indicators: No pit, typically inundated

Wetland Hydrology Indicators: Saturated to surface, surface cracking

# 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: **GMT2-04**

Investigator(s): WAD, EKJ Landform (hillside, terrace, hummocks etc.): Flat

Local relief (concave, convex, none): flat Slope: 0.0 % / 0.0 ° Elevation: 75

Subregion : Northern Alaska Lat.: 70.182495 Long.: -151.652286666667 Datum:

Soil Map Unit Name: **NWI classification: PEM1F**

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 ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

**Is the Sampled Area within a Wetland? Yes ◉ No ○**

Remarks: WET SEDGE MEADOW, non patterned.

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

| Tree Stratum | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | ☐ | |
| 2. | | ☐ | |
| 3. | | ☐ | |
| 4. | | ☐ | |
| 5. | | ☐ | |
| **Total Cover:** | 0 | | |
| **Sapling/Shrub Stratum** | 50% of Total Cover: 0 | 20% of Total Cover: 0 | |
| 1. Salix pulchra | 1 | ☐ | FACW |
| 2. Betula nana | 11 | ☑ | FAC |
| 3. | 0 | ☐ | |
| 4. | 0 | ☐ | |
| 5. | 0 | ☐ | |
| 6. | 0 | ☐ | |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 12 | | |
| **Herb Stratum** | 50% of Total Cover: 6 | 20% of Total Cover: 2.4 | |
| 1. Carex aquatilis | 15 | ☑ | OBL |
| 2. Eriophorum angustifolium | 45 | ☑ | OBL |
| 3. Carex rotundata | 3 | ☐ | OBL |
| 4. Pedicularis sudetica | 1 | ☐ | FACW |
| 5. Carex saxatilis | 5 | ☐ | FACW |
| 6. | 0 | ☐ | |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 69 | | |
| 50% of Total Cover: | 34.5 | 20% of Total Cover: | 13.8 |

**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 | 63 | x 1 = | 63 |
| FACW Species | 7 | x 2 = | 14 |
| FAC Species | 11 | x 3 = | 33 |
| FACU Species | 0 | x 4 = | 0 |
| UPL Species | 0 | x 5 = | 0 |
| Column Totals: | 81 (A) | | 110 (B) |

Prevalence Index = B/A = 1.358

**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.

Plot size (radius, or length x width)

% Cover of Wetland Bryophytes (Where applicable): 5

% Bare Ground: 30

Total Cover of Bryophytes: 5

**Hydrophytic Vegetation Present? Yes ◉ No ○**

Remarks: drepa is weetland moss

## SOIL

**Sampling Point: GMT2-04**

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | | 100 | | | | | Mucky Peat | hemic org. |
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| | | | | | | | | |

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

**Hydric Soil Indicators:**

- [x] 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 Soils[3] :**

- [ ] 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): 15

**Hydric Soil Present?** Yes (●) No ( )

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (any one is sufficient)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift deposits (B3)
- [x] 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)
- [ ] 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)
- [x] 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:
meadow likely has surface water in wetter years.

# GMT2-04

PEM1F

Wetland Functional Class: Semi-permanently Flooded Wet Graminoid Meadow

Wildlife Habitat: Non-patterned Wet Sedge Tundra

Hydric Soil Indicators: Histosol

Wetland Hydrology Indicators: High water table, saturation, algal matt, iron deposits

# 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: **GMT2-05**

Investigator(s): WAD, EKJ Landform (hillside, terrace, hummocks etc.): basin

Local relief (concave, convex, none): concave Slope: % / ° Elevation: 88

Subregion : Northern Alaska Lat.: 70.1899316666667 Long.: -151.59698 Datum:

Soil Map Unit Name: **NWI classification:** pubh

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 ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

**Is the Sampled Area within a Wetland?** **Yes ◉ No ○**

Remarks: small partially drained pond

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

| Tree Stratum | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | ☐ | |
| 2. | | ☐ | |
| 3. | | ☐ | |
| 4. | | ☐ | |
| 5. | | ☐ | |
| **Total Cover:** | 0 | | |
| **Sapling/Shrub Stratum** | 50% of Total Cover: 0 | 20% of Total Cover: 0 | |
| 1. | | ☐ | |
| 2. | | ☐ | |
| 3. | | ☐ | |
| 4. | | ☐ | |
| 5. | | ☐ | |
| 6. | | ☐ | |
| 7. | | ☐ | |
| 8. | | ☐ | |
| 9. | | ☐ | |
| 10. | | ☐ | |
| **Total Cover:** | 0 | | |
| **Herb Stratum** | 50% of Total Cover: 0 | 20% of Total Cover: 0 | |
| 1. Carex aquatilis | 1 | ☑ | OBL |
| 2. Eriophorum angustifolium | 1 | ☑ | OBL |
| 3. | 0 | ☐ | |
| 4. | 0 | ☐ | |
| 5. | 0 | ☐ | |
| 6. | 0 | ☐ | |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 2 | | |
| | 50% of Total Cover: 1 | 20% of Total Cover: 0.4 | |

**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: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL Species | 2 | x 1 = | 2 |
| FACW Species | 0 | x 2 = | 0 |
| FAC Species | 0 | x 3 = | 0 |
| FACU Species | 0 | x 4 = | 0 |
| UPL Species | 0 | x 5 = | 0 |
| Column Totals: | 2 (A) | | 2 (B) |

Prevalence Index = B/A = 1.000

**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.

Plot size (radius, or length x width)

% Cover of Wetland Bryophytes (Where applicable)

% Bare Ground

Total Cover of Bryophytes

**Hydrophytic Vegetation Present?** **Yes ◉ No ○**

Remarks:

## SOIL

**Sampling Point: GMT2-05**

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

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
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[1] Type: 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 Soils[3] :**

- ☐ 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: unknown
Depth (inches):

**Hydric Soil Present?** Yes ◉ No ○

Remarks:
no pit, innundated pond

## 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): | 3 |
| 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:

# GMT2-05

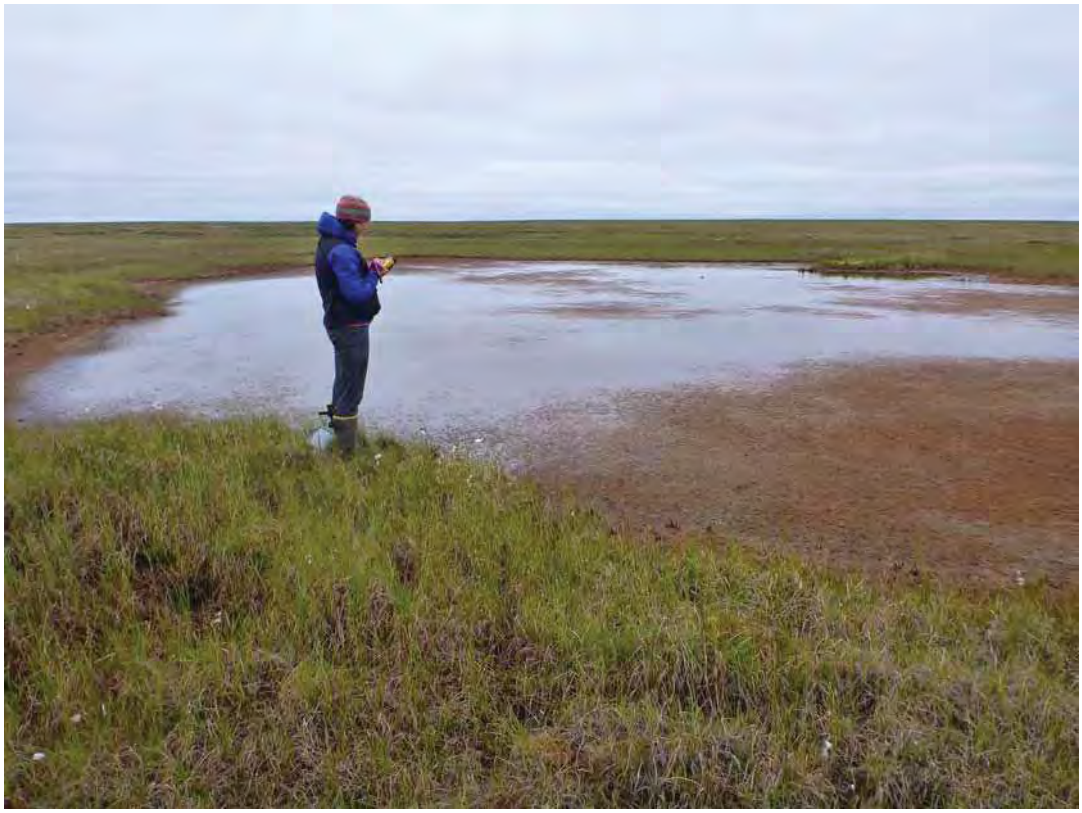
pubh

Wetland Functional Class: Permanently Flooded Pond

Wildlife Habitat: Shallow Open Water with no Islands

Hydric Soil Indicators: No pit, innundated

Wetland Hydrology Indicators: Permanently flooded



# 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: **GMT2-06**

Investigator(s): WAD, EKJ Landform (hillside, terrace, hummocks etc.): small bluuff

Local relief (concave, convex, none): convex Slope: 3.5 % / 2.0 ° Elevation: 86

Subregion : Northern Alaska Lat.: 70.18894 Long.: -151.597735 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 ◉ No ○

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

**Is the Sampled Area within a Wetland?** Yes ○ No ◉

Remarks: bluff at the edge of a drained lake basin

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

| Tree Stratum | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | ☐ | |
| 2. | | ☐ | |
| 3. | | ☐ | |
| 4. | | ☐ | |
| 5. | | ☐ | |
| **Total Cover:** | 0 | | |
| **Sapling/Shrub Stratum** | 50% of Total Cover: 0 | 20% of Total Cover: 0 | |
| 1. Cassiope tetragona | 35 | ☑ | FACU |
| 2. Salix richardsonii | 10 | ☑ | FACW |
| 3. Salix pulchra | 5 | ☐ | FACW |
| 4. Rhododendron tomentosum | 10 | ☑ | FACW |
| 5. Vaccinium vitis-idaea | 5 | ☐ | FAC |
| 6. Salix rotundifolia ssp. dodgeana | 2 | ☐ | UPL |
| 7. Salix reticulata | 5 | ☐ | FAC |
| 8. Dryas integrifolia | 2 | ☐ | FACU |
| 9. Betula nana | 0 | ☐ | FAC |
| 10. | 0 | ☐ | |
| **Total Cover:** | 74 | | |
| **Herb Stratum** | 50% of Total Cover: 37 | 20% of Total Cover: 14.8 | |
| 1. Carex bigelowii | 25 | ☑ | FAC |
| 2. Bistorta officinalis | 10 | ☑ | FAC |
| 3. Saussurea angustifolia | 5 | ☐ | FAC |
| 4. Eriophorum vaginatum | 10 | ☑ | FACW |
| 5. Anthoxanthum monticola ssp. alpinum | 1 | ☐ | FACU |
| 6. Festuca rubra | 1 | ☐ | FAC |
| 7. Poa arctica | 1 | ☐ | FAC |
| 8. Pedicularis groenlandica | 1 | ☐ | FACW |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 54 | | |
| 50% of Total Cover: 27 | 20% of Total Cover: 10.8 | | |

**Dominance Test worksheet:**

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

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

Percent of dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL Species | 0 | x 1 = | 0 |
| FACW Species | 36 | x 2 = | 72 |
| FAC Species | 54 | x 3 = | 162 |
| FACU Species | 37 | x 4 = | 148 |
| UPL Species | 1 | x 5 = | 5 |
| Column Totals: | 128 (A) | | 387 (B) |

Prevalence Index = B/A = 3.023

**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.

Plot size (radius, or length x width)

% Cover of Wetland Bryophytes (Where applicable) 0

% Bare Ground 0

Total Cover of Bryophytes 20

**Hydrophytic Vegetation Present?** Yes ◉ No ○

Remarks:

## SOIL

**Sampling Point: GMT2-06**

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

| Depth (inches) | Matrix Color (moist) | | % | Redox Features Color (moist) | | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 0-3 | | | 100 | | | | | | Mucky Peat | |
| 3-10 | 10YR | 4/3 | 80 | 10YR | 4/2 | 20 | RM | M | Clay Loam | |
| 10-11 | 10YR | 3/2 | 100 | | | | | | Silt Loam | |
| 11-13 | 10YR | 3/3 | 100 | | | | | | Loamy Sand | |
| 13-18 | 10YR | 4/2 | 100 | | | | | | Loamy Sand | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

[1] Type: 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 Soils[3] :**

- ☐ 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): 18

**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:

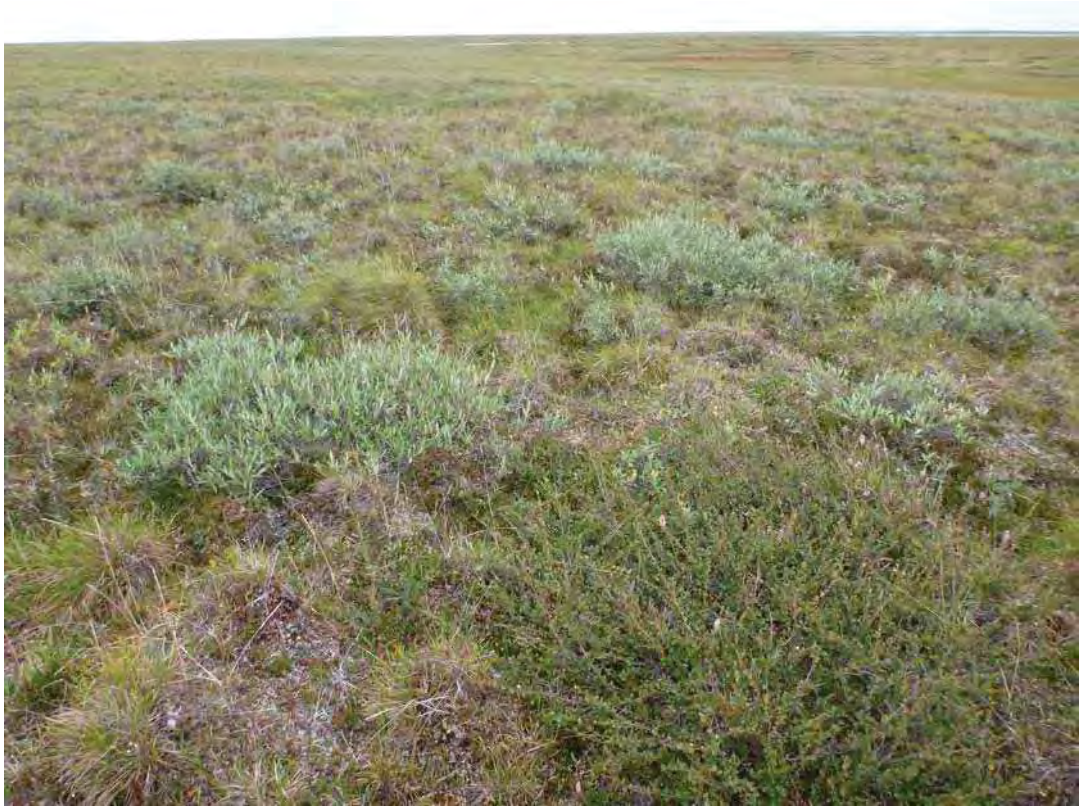
Remarks:
well drained ridge, deep active layer

# GMT2-06

Upland

Wetland Functional Class: Upland

Wildlife Habitat: Moist Tussock Tundra



Hydric Soil Indicators: no hydric soil indicators

Wetland Hydrology Indicators: no 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: **GMT2-07**

Investigator(s): WAD, EKJ Landform (hillside, terrace, hummocks etc.): Flat

Local relief (concave, convex, none): flat Slope: 0.0 % / 0.0 ° Elevation: 101

Subregion : Northern Alaska Lat.: 70.2107666666667 Long.: -151.584118333333 Datum:

Soil Map Unit Name: **NWI classification:** pem1/ss1b

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 ◉ No ○ | **Is the Sampled Area within a Wetland?** Yes ◉ No ○ |
| Hydric Soil Present? | Yes ◉ No ○ | |
| Wetland Hydrology Present? | Yes ◉ No ○ | |

Remarks: mosstly non patterned tussock ttundra, very slight slope, no surface dranage features as mapped. This site is borderline wetland

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

| Tree Stratum | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | ☐ | |
| 2. | | ☐ | |
| 3. | | ☐ | |
| 4. | | ☐ | |
| 5. | | ☐ | |
| **Total Cover:** | 0 | | |
| **Sapling/Shrub Stratum** | 50% of Total Cover: 0 | 20% of Total Cover: 0 | |
| 1. Salix pulchra | 10 | ☑ | FACW |
| 2. Salix reticulata | 5 | ☐ | FAC |
| 3. Betula nana | 10 | ☑ | FAC |
| 4. Rhododendron tomentosum | 10 | ☑ | FACW |
| 5. Empetrum nigrum | 1 | ☐ | FAC |
| 6. Vaccinium vitis-idaea | 5 | ☐ | FAC |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 41 | | |
| **Herb Stratum** | 50% of Total Cover: 20.5 | 20% of Total Cover: 8.2 | |
| 1. Eriophorum vaginatum | 45 | ☑ | FACW |
| 2. Carex bigelowii | 5 | ☐ | FAC |
| 3. Bistorta officinalis | 3 | ☐ | FAC |
| 4. Eriophorum angustifolium | 5 | ☐ | OBL |
| 5. | 0 | ☐ | |
| 6. | 0 | ☐ | |
| 7. | 0 | ☐ | |
| 8. | 0 | ☐ | |
| 9. | 0 | ☐ | |
| 10. | 0 | ☐ | |
| **Total Cover:** | 58 | | |
| | 50% of Total Cover: 29 | 20% of Total Cover: 11.6 | |

**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: 100.0% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL Species | 5 | x 1 = | 5 |
| FACW Species | 65 | x 2 = | 130 |
| FAC Species | 29 | x 3 = | 87 |
| FACU Species | 0 | x 4 = | 0 |
| UPL Species | 0 | x 5 = | 0 |
| Column Totals: | 99 (A) | | 222 (B) |

Prevalence Index = B/A = 2.242

**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.

Plot size (radius, or length x width)

% Cover of Wetland Bryophytes (Where applicable) 0

% Bare Ground 0

Total Cover of Bryophytes 10

**Hydrophytic Vegetation Present?** Yes ◉ No ○

Remarks:

## SOIL

**Sampling Point: GMT2-07**

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

| Depth (inches) | Matrix Color (moist) | | % | Redox Features Color (moist) | | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 0-3 | | | 100 | | | | | | Fibric Organic | |
| 3-4 | | | 100 | | | | | | Hemic Organic | |
| 4-8 | 2.5Y | 4/2 | 85 | 10YR | 4/4 | 15 | RM | PL | Silty Clay Loam | |
| 8-11 | | | 100 | | | | | | Hemic Organic | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

[1] Type: 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 Soils[3] :**

- ☐ 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): 11

**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): | 1 |
| 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 not at soil pit but in troughs within the signature