PUBLIC VERSION

APPENDIX E WETLAND FIELD SURVEY REPORT



2014 WETLAND FIELD STUDY REPORT LIVENGOOD (MP 401) TO TRAPPER CREEK (MP 709.5)

USAI-UR-SRZZZ-00-000012-000



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1.0 INTRODUCTION

This Wetland Field Study Report provides an interim review of the wetlands that were mapped and field surveyed for the Alaska Liquefied Natural Gas (LNG) Project (Project) during the 2014 field season. This report includes the area of the proposed Project's Mainline corridor (see description below) from Livengood (MP 401) to approximately 43 miles south of Trapper Creek (MP 709.5) (**Figure 1**). This portion of the Project corridor was not part of the previous Alaska Pipeline Project (APP) effort (APP 2011).

1.1 PROJECT DESCRIPTION

The Alaska Gasline Development Corporation, BP Alaska LNG LLC, ConocoPhillips Alaska LNG Company, ExxonMobil Alaska LNG LLC, and TransCanada Alaska Midstream LP (Applicants) plan to construct an integrated Project (the Alaska LNG Project) with interdependent facilities for the purpose of liquefying supplies of natural gas from Alaska, in particular from the Point Thomson Unit (PTU) and Prudhoe Bay Unit (PBU) production fields on the Alaska North Slope (North Slope), for export in foreign commerce. Proposed Project facilities include: a 42-in diameter, 800-mi natural gas pipeline from the North Slope to a Liquefaction Facility near Nikiski. The Liquefaction Facility is comprised of an LNG Plant and marine terminal. The natural gas pipeline would include an offshore section crossing the Cook Inlet. Two pipeline study corridors across the Cook Inlet are being considered, an east pipeline corridor and a west pipeline corridor.

1.2 PURPOSE

The purpose of wetlands and waterbodies mapping is to identify on aerial imagery potential "waters of the United States (U.S.), including wetlands," that are regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (40 Code of Federal Regulations [CFR] Part 230) and Section 10 of the Rivers and Harbors Act (33 CFR Part 328.3[b]) that may be impacted by the Project. As part of the Section 404 permitting process, all projects must avoid impacts to wetlands whenever possible, minimize impacts to wetlands to the maximum extent practicable, and compensate for all unavoidable wetland impacts.

Field surveys were conducted in 2014 to verify the accuracy of wetland types and boundaries as determined in pre-field mapping. Field data will also be used to improve the accuracy of future Project wetland mapping efforts. This information is required for the National Environmental Policy Act process as expected to be administered by FERC and for Section 404 and Section 10 permits administered by the USACE. Additionally, this data will constitute baseline information for the FERC's Resource Report No. 2.

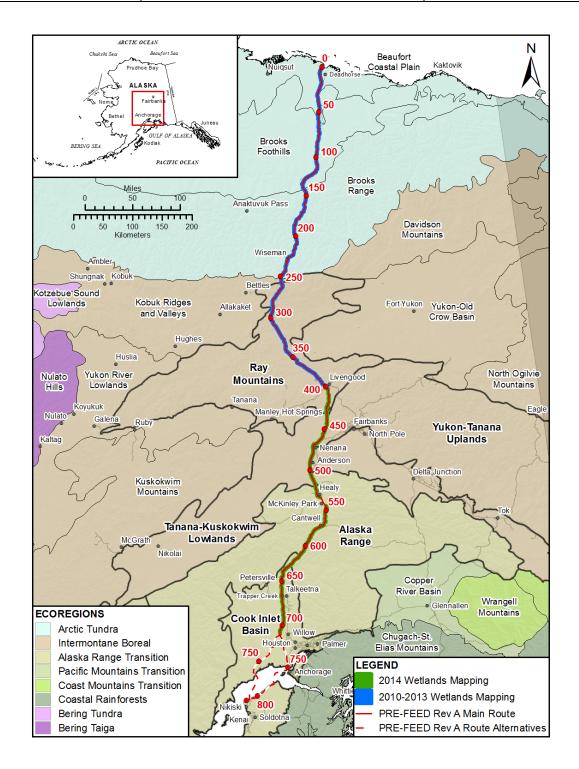
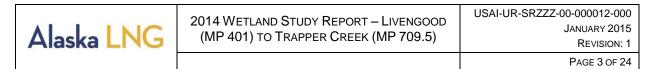


Figure 1. 2014 Project Study Area



1.3 STUDY AREA

The 2014 field season focused on higher confidence routing areas (90% confidence sections of the March 14, 2014 Focus Study Route) along the Project corridor, approximately from Livengood (MP 401) to 43 miles south of Trapper Creek (MP 709.5). Since the proposed Project route was revised (August 5, 2014) during the 2014 field season, not all sections of the revised 90% confidence areas have been field verified. **Appendix A** lists sections of the proposed route south of Livengood that still need to be mapped and/or field verified. Approximately 49 miles of the revised route will need to be mapped after aerial photography is obtained, and 170 miles will need to be field verified in 2015.

The Project route south of Livengood passes through two ecoregions with five sub-ecoregions, as described by Nowacki et al. (2001):

- Intermontane Boreal Ecoregion
 - Ray Mountains Sub-Ecoregion
 - Yukon-Tanana Uplands Sub-Ecoregion
 - o Tanana-Kuskokwim Lowlands Sub-Ecoregion
- Alaska Range Transition Ecoregion
 - Alaska Range Sub-Ecoregion
 - Cook Inlet Basin Sub-Ecoregion

Ecoregions are defined as a unit of land or water with a geographically distinct compilation of species, communities, and environmental conditions. The Alaska LNG corridor, south of Livengood, begins in the Ray Mountains, continues south and passes through the Tanana-Kuskokwim Lowlands, briefly passing through the Yukon-Tanana Uplands, and then through the Alaska Range, before ending in the Cook Inlet Basin Sub-Ecoregion. Ecoregion descriptions are presented in the 2014 Vegetation Study Report (Alaska LNG 2014a). The wetlands survey area was divided into two corridors: a wetland mapping corridor and a field survey corridor. The mapping corridor was 2,000 feet wide (1,000 feet on either side of the proposed centerline). All wetlands and waterbodies were mapped within the mapping corridor using aerial photograph interpretation. The smaller field survey corridor was 300 feet wide (150 feet on each side of the proposed centerline) and centered within the mapping corridor. Field work was concentrated within the field survey corridor, ensuring that the wetland field work occurred near areas most likely to be disturbed by the proposed Project. The locations of any facilities outside of the two corridors were not included in the mapping or field survey.

The field survey area south of Livengood was divided into four geographic spreads for planning purposes for all disciplines:

- Livengood to Healy (LH), Pipeline milepost (MP) 401-525;
- Healy to Trapper Creek (HT), MP 525-667;
- Trapper Creek to Cook Inlet (TI), MP 667-767; and
- Cook Inlet to Nikiski (IN), MP 767-804.



2.0 METHODOLOGY

Wetland Determination Field Survey Protocols (**Appendix B**) were prepared by experienced wetland scientists prior to the 2014 field season. The protocols, summarized below, follow standard methods used to delineate wetlands for large linear projects in Alaska. The protocols comprise a three-phased iterative approach, including: 1) wetland pre-mapping relying primarily on aerial photo interpretation; 2) collection of ground reference data at pre-determined field targets; and 3) revision of the wetland pre-mapping based on the results of the field efforts. The same approach was followed for the Project mapping corridor north of Livengood, as part of the prior APP effort.

Pre-mapping was completed in 2013 and 2014 for the Mainline corridor from Livengood (MP 401) to approximately 43 miles south of Trapper Creek (MP 709.5) (**Appendix A** lists sections of the route that have not been pre-mapped). As noted above, the study effort did not include any off-corridor access roads or facility sites. Initial pre-mapping results were presented in a 2013 Wetland Mapping Report – South of Livengood (Alaska LNG 2013). This 2014 Wetland Field Study Report summarizes the pre-mapping effort and focuses on results of the field data collection. Since data from the Wetland Field Study and the Vegetation Field Study were collected at the same time, some of the vegetation classification data are presented in the appendices of this report. All of the information and methodology used for the Vegetation Study is provided in the 2014 Vegetation Field Study Report (Alaska LNG 2014a). The goal of the Vegetation Study was to identify vegetation cover types according to the Alaska Vegetation Classification System (Viereck et al. 1992).

2.1 DEFINITIONS AND WETLAND NAMING CONVENTIONS

The USACE defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." Most wetlands are considered to be waters of the U.S. and are within the jurisdiction of the USACE (33 CFR Part 328.3[b]). Jurisdictional status is based on connectivity to Traditional Navigable Waters (TNW). Wetlands are considered jurisdictional "if the wetland, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as 'navigable." (Rapanos v. United States and Carabell v. United States [33 U.S. Code §1251 et seq.]) (Stonestreet et al. 2009). Other non-wetland waters of the U.S. under the jurisdiction of the USACE, include deepwater aquatic habitats, unvegetated ponds, river channels, and other special aquatic sites as described by the USACE (See Section. 2.9).

2.1.1 Cowardin Classification

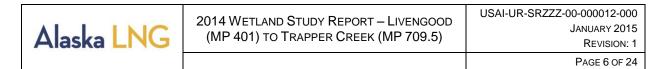
All wetlands and other waters of the U.S. in the wetland mapping corridor were classified using the "Classification of Wetlands and Deepwater Habitats of the United Sates" (Cowardin et al., 1979), commonly referred to as the Cowardin classification system. Cowardin classifies wetlands and aquatic habitats by system, subsystem, class, subclass, and water regime and is based on hydrologic setting (riverine, lacustrine, estuarine, palustrine), vegetation structure (forested, scrub-shrub, emergent, aquatic bed), and water regime (saturated, seasonally flooded, semi-permanently flooded, etc.).

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The Cowardin classifications are used as the standard codes in the National Wetland Inventory (NWI). The NWI Program has mapped many of the wetlands across the U.S., including many in the Project's mapping corridor (at a smaller scale than the Alaska LNG mapping). It was developed largely for mapping based on interpretation of high-altitude aerial photography. **Table 1** lists the most common Cowardin classifications found in the 2014 field survey corridor.

Table 1. Wetland Types within the Project Mapping Corridor from Livengood (MP 401) toTrapper Creek (MP 709.5), Alaska

Cowardin Wetland and Deepwater Habitat Types	Description	Example
Disturbed (D) (non-wetland)	Gravel-filled or previously graded areas, man-made structures	Roads, pads, buildings*
Lacustrine Limnetic (L1)	Deepwater habitats within the lacustrine system	Deepwater lakes*
Lacustrine Littoral (L2)	Vegetated habitats within the lacustrine system, or shoreward bound to 2 meters below annual low water	Lake fringes with unvegetated shallow water, or submerged or floating vegetation
Palustrine Aquatic Bed (PAB)	Habitats dominated by plants growing on or below the water surface	Ponds with submerged or floating vegetation such as pondweeds, water lilies
Palustrine Emergent (PEM)	Habitats dominated by erect, rooted, herbaceous species	Emergent wetlands with grasses, sedges, rushes
Palustrine Moss-Lichen (PML)	Habitats dominated by moss or lichen species	Wetlands with mosses or lichens
Palustrine Scrub-Shrub (PSS)	Habitats dominated by woody vegetation less than 6 meters tall/3-inch diameter at breast height (DBH)	Scrub-shrub wetlands with willow or alder thickets, black spruce, tussock tundra, ericaceous bogs
Palustrine Forested (PFO)	Habitats dominated by woody tree species greater than 6 meters tall/3- inch DBH	Forested wetlands with black spruce, tamarack
Palustrine Unconsolidated Bottom (PUB)	Habitats containing at least 25% cover of particles smaller than stones, and less than 30% cover by vegetation	Ponds with unvegetated shallow water, or submerged or floating vegetation
Riverine Lower Perennial Unconsolidated Shoreline/Unconsolidated Bottom (R2US/UB)	Low-gradient rivers/streams with slow water velocity	Valley bottom streams*
Riverine Upper Perennial Unconsolidated Shoreline/Unconsolidated Bottom (R3US/UB)	High-gradient rivers/streams with fast water velocity	Mountain streams*
Riverine Intermittent Streambed (R4SB)	Channels containing flowing water only part of the year	Intermittent streams*



Upland (U) (non-wetland)	Habitats that do not contain criteria diagnostic of wetlands	Non-wetland communities, ranging from closed spruce forest, mixed woodlands, shrublands to alpine tundra
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* Unvegetated areas

2.1.2 Hydrogeomorphic Classes

Wetlands within the Project mapping corridor were also assigned a hydrogeomorphic (HGM) classification (Smith et al., 1995; and Brinson, 1993) during the mapping process. The HGM classification of wetlands comprises three components: 1) landscape setting; 2) water source (precipitation, surface flow, or groundwater discharge); and 3) hydrodynamics (direction and strength of flow). The three components of the HGM classes are largely responsible for determining a wetland's ecosystem function. The HGM classes in the 2014 field survey corridor are defined below per Smith et al. (1995) and are summarized in **Table 2**.

Riverine – Riverine wetlands occur in floodplains and riparian corridors in association with stream channels. Dominant water sources are often overbank flow from the channel or subsurface hydraulic connections between the stream channel and wetlands; however, sources may be interflow and return flow from adjacent uplands, occasional overland flow from adjacent uplands, tributary inflow, and precipitation. At their headwaters, riverine wetlands often are replaced by slope or depressional wetlands where the channel morphology may disappear. They may intergrade with poorly drained flats or uplands. Perennial flow in the channel is not a requirement.

Depressional – Depressional wetlands occur in topographic depressions. Dominant water sources are precipitation, groundwater discharge, and both interflow and overland flow from adjacent uplands. The direction of flow is normally from the surrounding uplands toward the center of the depression. Elevation contours are closed, thus allowing the accumulation of surface water. Depressional wetlands may have a combination of inlets and outlets or lack them completely. Dominant hydrodynamics are vertical fluctuations, primarily seasonal. Depressional wetlands may lose water through intermittent or perennial drainage from an outlet, by evapotranspiration, and, if they are not receiving groundwater discharge, may slowly contribute to groundwater. Peat deposits may develop in depressional wetlands.

Slope – Slope wetlands normally are found where there is a discharge of groundwater to the land surface. They normally occur on sloping land; elevation gradients may range from steep hillsides to slight slopes. Slope wetlands are usually incapable of depressional storage because they lack the necessary closed contours. Principal water sources are usually groundwater return flow and interflow from surrounding uplands, as well as precipitation. Hydrodynamics are dominated by downslope unidirectional water flow. Slope wetlands can occur in nearly flat landscapes if groundwater discharge is a dominant source to the wetland surface. Slope wetlands lose water primarily by saturation, subsurface and surface flows, and by evapotranspiration. Slope wetlands may develop channels, but the channels serve only to convey water away from the slope wetland. Fens are a common example of slope wetlands.

Flat – There are two types of "flat" wetlands: mineral soil flats and organic soil flats. Mineral soil flats are most common on interfluves, extensive relic lake bottoms, or large floodplain terraces where the main source of water is precipitation. They receive virtually no groundwater discharge which distinguishes them from depressions and slopes. Dominant hydrodynamics are vertical fluctuations. They lose water by evapotranspiration, saturation overland flow, and seepage to

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underlying groundwater. They are distinguished from flat upland areas by their poor vertical drainage, often due to spodic horizons and hardpans, and low lateral drainage, usually due to low hydraulic gradients. Mineral soil flats that accumulate peat can eventually become organic soil flats.

Organic soil flats differ from mineral soil flats, in part, because their elevation and topography are controlled by vertical accretion of organic matter. They occur commonly on flat interfluves, but may also be located where depressions have become filled with peat to form a relatively large flat surface. Water source is dominated by precipitation, while water loss is by saturation, overland flow, and seepage to underlying groundwater. Raised bogs share many of these characteristics, but may be considered a separate class because of their convex upward form and distinct edaphic conditions for plants. Organic flats wetlands over permafrost soils are common in Interior Alaska. These flats can and often occur on slopes up to 20%.

Lacustrine Fringe – Lacustrine fringe wetlands are adjacent to lakes where the water elevation of the lake maintains the water table in the wetland. In some cases, these wetlands consist of a floating mat attached to land. Additional sources of water are precipitation and groundwater discharge, the latter dominating where lacustrine fringe wetlands intergrade with uplands or slope wetlands. Surface water flow is bidirectional, usually controlled by water-level fluctuations such as seiches in the adjoining lake. Lacustrine fringe wetlands are indistinguishable from depressional wetlands where the size of the lake becomes so small relative to fringe wetlands that the lake is incapable of stabilizing water tables. Lacustrine fringe wetlands lose water by flow returning to the lake after flooding, by saturation surface flow, and by evapotranspiration. Organic matter normally accumulates in areas sufficiently protected from shoreline wave erosion.

Hydrogeomorphic Class	Dominant Water Source	Dominant Hydrodynamics	Examples
Riverine	Overbank flow from channel	Unidirectional, horizontal	Riparian scrub-shrub wetlands
Depressional	Groundwater	Vertical	Kettle wetlands
Slope	Groundwater	Unidirectional, horizontal	Avalanche chutes
Flat	Precipitation	Vertical	Peat bogs
Lacustrine Fringe	Overbank flow from lake	Bidirectional, horizontal	Emergent lake edge wetlands

Table 2. Hydrogeomorphic Classes within the Project Mapping Corridorfrom Livengood (MP 401) to Trapper Creek (MP 709.5), Alaska

These HGM classes of wetlands have the potential to perform the following eight functions (Magee and Hollands 1998):

- <u>Modification of groundwater discharge:</u> The capacity of a wetland to influence the amount of water moving from the groundwater to surface water.
- <u>Modification of groundwater recharge:</u> The capacity of a wetland to influence the amount of water moving from surface water to groundwater.
- <u>Storm and flood-water storage</u>: The storage of inflowing water from storm or flooding events, resulting in detention and retention of water on the wetland surface.

- <u>Modification of stream flow:</u> The modification of inflow hydrology by the wetland to produce the outlet stream's hydrology.
- <u>Modification of water quality:</u> Removal of suspended and dissolved solids from surface water and dissolved solids from groundwater and conversion into other forms, plant or animal biomass, or gases. Wetlands with a low slope-angle or location in depressions provide a high level of this function.
- <u>Export of detritus</u>: Export of organic detritus from the wetland to adjacent and downstream aquatic ecosystems.
- <u>Contribution to abundance and diversity of wetland vegetation</u>: The capacity of a wetland to produce an abundance and diversity of hydrophytic plant species individually or as part of a group of wetlands in a local landscape (Tiner 1984).
- <u>Contribution to abundance and diversity of wetland fauna:</u> The capacity of a wetland to support large and / or diverse populations of animal species that spend part or all of their lifecycle in wetlands, individually, or as part of a mosaic of wetlands in a local landscape.

2.2 WETLAND PARAMETERS AND INDICATORS

Wetland determinations were made according to currently accepted methods in Alaska, as described in the "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region" (Regional Supplement) (USACE, 2007a), and the "USACE Wetlands Delineation Manual" (USACE Manual) (USACE, 1987). These methods require a three-parameter approach, of which the three essential characteristics of a wetland (hydrophytic vegetation, hydric soils, and wetland hydrology) must be present to have a positive wetland determination.

Wetland indicators are field verifiable and measurable characteristics of vegetation, soil, and hydrology that generally indicate that the parameter in question is present. The absence of an indicator, however, does not always mean that a parameter is not met, or that a wetland is not present. For these "problematic" situations, the Regional Supplement provides procedures to determine if a parameter is present or not. These generally rely on an understanding of the hydrogeomorphology of a site, and the best professional judgment of the wetland scientist. Each parameter, along with select Alaska-specific indicators, is described below.

2.2.1 Hydrophytic Vegetation

Hydrophytic vegetation, or a community dominated by plants with special adaptations to survive saturated or anaerobic conditions, is required for a positive wetland determination. The U.S. Fish and Wildlife Service prepared the "National List of Vascular Plant Species That Occur in Wetlands" in 1988 (Reed, 1988), which categorizes species based on their estimated probability of occurring in a wetland. USACE took over the task of updating this plant list (Lichvar, and Gillrich 2011, Lichvar et al. 2014). Indicator ratings and their descriptions are as follows:

- OBL (obligate wetland) almost always found in wetlands, rarely in uplands;
- FACW (facultative wetland) usually found in wetlands but occasionally found in uplands;
- FAC (facultative) commonly occurs in either wetlands or uplands;
- FACU (facultative upland) occasionally found in wetlands, but usually occurs in uplands;

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• UPL (obligate upland) – rarely found in wetlands, almost always in uplands.

Plant species with an indicator status of OBL, FACW, or FAC are considered adapted for life in saturated or anaerobic soil conditions. Such species are referred to as hydrophytic vegetation, or hydrophytes.

The presence of hydrophytic vegetation is determined by satisfying either a Dominance Test or a Prevalence Index. The Dominance Test is generally a quick way to characterize the vegetative community, however, communities with a large number of low cover species are more accurately characterized by the Prevalence Index, a weighted average of the wetland indicator status of all plant species in the community. Both methods were used when collecting field data.

If both of these indicators fail, yet the site exhibits both hydric soil and wetland hydrology (see description below), wetland scientists may examine FACU vegetation within the community for morphological adaptations indicating that it is indeed acting as a hydrophyte. Typical morphological adaptations observed in Alaska wetlands include white spruce (*Picea glauca*) with a narrow growth form, widely spaced needles, and less bushy branching; or resin birch (*Betula neoalaskana*) with multiple trunks, an "apple tree" like growth, smaller size, and a rotten core in the tree trunk. If these morphological adaptations were observed, the species may be considered FAC at the site in question, and the Dominance Test recalculated.

2.2.2 Wetland Soils

Hydric soils are also required for a positive wetland determination. The National Resources Conservation Service (NRCS) has defined a hydric soil as "a soil that in its undrained condition is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation" The criteria for hydric soils includes certain soil taxonomic groups that are poorly drained during the growing season, or soils that are frequently ponded or frequently flooded for long or very long durations during the growing season.

Due to anaerobic conditions, hydric soils exhibit certain characteristics that can be observed in the field. These characteristics may include the following:

- High organic content representing accumulation and slow decomposition in anaerobic conditions;
- Reduction of ferric (Fe3+) to ferrous iron (Fe2+) and consequent leaching from the soil profile, causing a greenish- or bluish-gray color (gley formation);
- Generation of hydrogen sulfide, noted by characteristic odor;
- Spots or blotches of different color interspersed with the matrix, or dominant color (mottling); and
- Dark soil colors (low soil chroma).

Indicators have been established by USACE to assist with identification of hydric soils. These indicators are found in the Regional Supplement and the "Field Indicators of Hydric Soils in the United States" (USDA, NRCS 2010). The absence of listed indicators, however, does not preclude the soil from being hydric. If indicators of hydrophytic vegetation and wetland hydrology are present, but hydric soils are not evident, the procedure outlined in the Regional Supplement for problematic hydric soils was followed.



2.2.3 Wetland Hydrology

Wetland hydrology is the third parameter required for a positive wetland determination. The most ephemeral of the three parameters, surface water or saturation, need not be present throughout the entire year to meet the definition of wetland hydrology. According to the USACE Manual (1987), wetland hydrology is present when there is inundation or soil saturation to the surface continuously for at least five percent of the growing season in most years. Indicators of wetland hydrology include observing ponding or soil saturation, as well as evidence of previous inundation, such as dry algae on bare soil, watermarks on soils or leaves, and drainage patterns. Where positive indicators were observed, it was assumed that wetland hydrology occurs for a sufficient period of the growing season.

2.3 AERIAL INTERPRETATION (PRE-MAPPING)

Wetland boundaries for the mapping corridor south of Livengood were delineated on digital orthorectified and geo-referenced true color aerial imagery with 1.6-foot pixel resolution using the following aerial imagery:

- Healy Area Orthophoto (U.S. Census Bureau 2006);
- Digital Orthophoto Quarter Quadrangles Anderson Area (Natural Resources Conservation Service, NRCS, 2006);
- Northern Central Corridor Ortho Mosaic (Digital Globe 2013a);
- Southern Corridor Ortho Mosaic (Digital Globe 2013b);
- Talkeetna Aerial Orthophoto (Matanuska Susitna Borough, MSB, 2011a);
- Caswell Aerial Orthophoto (MSB 2011b); and
- Willow Aerial Orthophoto (MSB 2011c).

Data from the following sources was also used during the mapping process:

- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) digital datasets and hardcopy maps;
- NRCS Soil Survey digital datasets and hardcopy maps;
- Light Detection and Ranging generated topographic contours (TransCanada 2011, MSB 2011d);
- Pertinent previous studies, such as Terrestrial and Aquatic Habitat Mapping Along the Alaska Natural Gas Pipeline System (USFWS 1980), the Denali Pipeline Project, the instate Alaska Stand Alone Pipeline Project, and the Alaska Pipeline Project;
- U.S. Geological Survey Digital Raster Graphics (e.g., topographic maps);
- Existing Geographic Information System (GIS) layers including waterbodies, contours, and roads; and
- Existing Land Status GIS layers including: State of Alaska, U.S. Bureau of Land Management, and Native allotments.

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All wetland mapping was created in a GIS platform, using a "heads-up" digitizing effort. This "heads-up" process applies aerial image interpretation to delineate vector polygons of ground features. This is the generally accepted wetland and deepwater habitat mapping technique employed by the U.S. Fish and Wildlife Service personnel as part of the NWI program (Dahl *et al.* 2009). Data sources were overlaid on aerial photography and wetland, non-wetland, and areas of uncertain wetland status were identified by interpreting color, texture, and landscape position, among other elements. Aerial photography clues can include dwarf or stunted trees, topography characteristics (such as swales, toe slopes and depressions), and obvious signs of inundation.

All wetlands were mapped at a scale of 1:2,400 (1 inch to 200 feet) or finer. Lakes, ponds and rivers were mapped at a scale of 1:1,200 (1 inch to 100 feet). Larger rivers and streams were delineated as polygons. Smaller streams, those with bankfull widths of approximately 10 feet or less, were mapped as lines.

Approximately 49 miles of the Project route have not been pre-mapped due to a lack of adequate aerial imagery. There is also a 12 mile gap in the 90% confidence route that has not been pre-mapped (**Appendix A**).

2.4 FIELD TARGET SELECTION

Field targets were selected from the pre-mapping based on changes in the wetlands types, aerial vegetation signatures, NWI classification, and NRCS soil classification. The primary focus of the pre-selected field targets was to characterize specific wetland types which represent all similar wetland types in the region and to identify wetland/upland boundaries by selecting paired plots. Field targets were used to confirm areas where wetland subject matter experts had high confidence in their aerial interpretation, and were used to confirm or correct wetland boundary locations. Field targets were also placed in low-confidence areas to provide field data where the photo signatures or landscape features were not clearly indicative of wetland or upland. Field targets spanned the full range of Cowardin and HGM classes within the Project mapping corridor.

Field targets were evaluated during the field season provided there was land access. If a field target could not be accessed, a new field target was located on a nearby accessible parcel in an area with similar aerial photography vegetation signatures and site conditions as the original field target.

2.5 WETLAND FIELD DATA COLLECTION

The 2014 wetland field study was conducted from early June through early September, and focused on field targets from Livengood (MP 401) to 43 miles south of Trapper Creek (MP 709.5).



Photo taken by V. Watkins

Figure 2. Field Data Collection by a Wetland Scientist

2.5.1 Crew Composition

Two three-person crews collected data in 2014. Each crew consisted of a field crew chief, an assistant wetland scientist / Global Positioning System (GPS) Technician, and a wilderness safety specialist. Each position had defined roles and responsibilities in the field and required a specific level of technical expertise.

Field crew chiefs were required to have proven field experience and a strong familiarity with wetland science. They were in charge of the field crews and ultimately responsible for data collection quantity and quality; daily reporting; crew health and safety; and data submittal on a daily or near-daily basis. Field crew chiefs also planned the workday for the crew, coordinated with Project management, and addressed any technical issues.

Wetland scientists / GPS technicians were required to be experienced in field work, familiar with wetland science principles, and to have attended a wetland delineation training course. They assisted in the wetland field survey (**Figure 2**) with appropriate supervision by the field crew chief. The wetland scientist / GPS technician was also responsible for electronic data collection at each site using a Trimble backpack-mounted GPS instrument. They worked closely with field crew

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chiefs to verify that the data was accurate and complete, and were also responsible for the maintenance and care of the GPS equipment, managing the crew's electronic data, and ensuring data files were uploaded to the Project's SharePoint site on a daily or near-daily basis.

Wilderness safety specialists were professionally trained in firearms proficiency, Alaska wilderness survival, and First Aid / cardiopulmonary resuscitation. They were responsible for protecting the field crew from aggressive wildlife encounters, and assisting the field crew chief in the communication of and compliance with all Project health and safety policies.

2.5.2 Wetland Determination Field Protocols

Wetland Determination Field Survey Protocols are provided in **Appendix B**. As described in the protocols, data was collected as either a Determination Point (DP), where a hard copy Wetland Determination Form was completed, or an Observation Point (OP), in which notes and photographs were used to describe wetland status and the community. All wetlands and waterbodies were classified using Cowardin codes.

The field crew chief examined vegetation and topography to determine appropriate sampling location(s) at each field target. Although field targets were used to guide the location of field crews, field crew chiefs were allowed discretion in the number, type (DP or OP), and final location of data points. This flexible approach allowed scientists to collect data in locations that best described the target community, allowed them to collect additional data as field conditions warranted, and enhanced efficiency by allowing scientists to collect observational data if a similar community was thoroughly described nearby. Wetland scientists used their best professional judgment and collected appropriate field data to adequately revise the wetland pre-mapping.

Field crew chiefs maintained field logbooks and hardcopy field maps with aerial photography, field targets, and pre-mapped wetland boundaries and classifications. The wetland scientist / GPS technician entered some of the data into electronic data forms specific to DPs and OPs. Daily field quality assurance/quality control (QA/QC) procedures are described in Section 2.6. Hardcopy and electronic data forms, field notes, maps, GPS data, and site photos were uploaded daily to the Project SharePoint website.

2.6 QUALITY ASSURANCE/QUALITY CONTROL

The wetland and vegetation technical lead conducted quality audits during the first week of each deployment. These audits ensured data quality and consistency between teams, and provided an opportunity for any problems to be corrected immediately.

Each crew member was responsible for collecting and recording clear and accurate data. The field crew chief reviewed all hardcopy and electronic data forms and completed a QA/QC checklist before leaving each site.

The field crew manager ensured that all data files were uploaded to the Project website. These transmitted files were then downloaded and reviewed by office-based data management staff. The wetland technical lead checked each hardcopy data sheet and electronic data form for quality and consistency, as it was received. If problems arose, the field crew was notified promptly to ensure that any data quality issues were corrected immediately.

Wetland mapping was also reviewed by experienced wetland scientists both after the initial premapping, and after map revisions were complete.



2.7 WETLAND MAP REVISIONS

The wetland pre-mapping was revised to incorporate the results of the 2014 field studies, including revision of the wetland classifications (e.g., HGM and Cowardin). Map revisions followed procedures outlined in the Wetland Determination Field Survey Protocols (**Appendix B**), and included the 2014 GPS data, Wetland Determination Forms, Vegetation Classification Forms for upland sites, site photographs, logbooks, and field maps as additional data sources. Map revisions were only made with post-processed GPS data and field forms that passed the QA/QC process (Section 2.6).

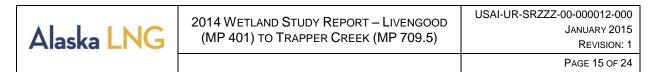
Generally, the wetland pre-mapping revision process involved:

- Exporting spatial data for all field targets and photo points from the Alaska LNG database;
- Compiling electronic copies of all notes, sketches, and photographs associated with above points; and
- Using this data in a GIS platform to update files through heads-up digitizing, or modifying the initial map on screen as described in Section 3.2 of the Wetland Determination Field Survey Protocols.

Note that, when updating the map for both wetland and upland polygons, changes were not necessarily applied solely to the polygon containing field data. Rather, field data were used to "recalibrate" that portion of the map (generally within one half mile of the data collection site), represented by a particular spectral signature (combination of color, tone, shadow, etc.), and recoded in that area as deemed appropriate. As the aerial imagery used for pre-mapping had seasonal variations (including imagery taken prior to green-up), revisions were most often needed to correct pre-mapping interpretations of vegetation height, percent canopy coverage, and plant species composition.

2.8 WETLAND FUNCTIONAL ASSESSMENT

Wetlands are known to provide a variety of ecological functions depending on the location and type of wetland. At sites determined to be wetland, a Wetland Functional Assessment Data Sheet was collected. Information from this data sheet will be incorporated into the functional models described in *A Rapid Procedure for Assessing Wetland Functional Capacity* (Magee and Hollands 1998). Hydrogeomorphic (HGM) classes of wetlands and the eight wetland functions identified by Magee and Hollands are described in Section 2.1.2 and in the Wetland Determination Field Survey Protocols (**Appendix B**). The functional assessment models provide a Functional Capacity Index for each wetland function. The Functional Capacity Index indicates the potential degree to which the wetland performs the function and is only comparable to other wetlands within the same HGM class and region. The results from the models will be extrapolated to the applicable wetlands within the mapping corridor. This information will potentially serve as the basis to determine appropriate compensatory mitigation for the unavoidable impacts of the Project. Wetland functional assessment data will be reported in 2016, after all field data is collected.



2.9 JURISDICTIONAL DETERMINATION

The USACE regulates wetlands and other waters of the U.S. that are under their jurisdiction. Jurisdictional status is based on connectivity to Traditional Navigable Waters (TNW) (Rapanos v. United States and Carabell v. United States [33 U.S. Code §1251 et seq.]).

The Project, similar to other large pipeline and energy projects permitted by the USACE, will assume that all delineated wetlands fall under USACE jurisdiction; because the FERC requires that the Project adhere to certain construction requirements in all wetlands, regardless of jurisdiction, it will be assumed that all wetlands fall within USACE jurisdiction for purposes of planning, permitting, mitigation, and construction methods.



3.0 RESULTS

3.1 WETLAND FIELD DATA COLLECTION

A total of 212 field targets comprising wetlands, non-wetlands, and uncertain areas were sampled by field crews during the 2014 field season (**Table 3**). Wetland crews collected Wetland Determination Data Forms at 192 field targets, Vegetation Classification Data Forms at 10 field targets and OPs at 10 field targets. The 2014 wetland determination data forms and the Wetland and Vegetation Field Data Summary Table are provided in **Appendix C**.

Spread	Milepost	Total Number of Field Targets Completed	Number of Field Targets Completed Within Current 90% Confidence Field Survey Corridor
Livengood to Healy	401 - 525	46	28
Healy to Trapper Creek	525 - 667	102	84
Trapper Creek to Cook Inlet	667 - 767	64	34
Cook Inlet to Nikiski	767 - 804	0	0
Total:		212*	146

Table 3. Field Targets Completed in 2014

*66 of the field targets completed fall outside of the current proposed route (90% confidence route) (Appendix A).

Since the proposed Project route was revised on August 5, 2014, after pre-mapping and field surveys began, 66 field targets were surveyed in areas that are no longer within the 90% confidence portions of the route. A total of 146 field targets have been completed within the current 90% confidence field survey corridor. Also, some sections that have been rerouted have either (1) only been pre-mapped and not field verified or (2) not been pre-mapped or field verified due to a lack of quality aerial imagery (**Appendix A**).

3.2 WETLAND MAP REVISIONS

The wetland delineation pre-mapping was revised according to the criteria summarized in Section 2.7 of this report. The 2014 final wetland delineation maps are included as **Appendix D**. A summary of wetland acreage per spread within the Project mapping corridor south of Livengood is presented in **Table 4** in which wetlands are organized by HGM (Brinson, 1993) and Cowardin (Cowardin et al.1979) classifications. Of the approximate 71,026 acres in the mapping corridor, wetlands and other waters of the U.S comprise 23,183 acres or 33 percent of the total.

Within the Livengood to Healy spread approximately 42% of the area is wetland. About 78% of the wetlands in this spread are palustrine scrub-shrub and palustrine forested wetlands, the majority of which are dominated by black spruce (*Picea glauca*) plant communities on permafrost soils. About 21% of the wetlands within this reach are higher quality wetlands, such as depressional palustrine emergent, palustrine, aquatic bed, palustrine unconsolidated bottom, and riverine wetlands. These wetlands are mostly semipermanently or permanently flooded wetlands providing aquatic habitats for a variety of species.

Within the Healy to Trapper Creek spread about 22% of the area is wetland. This spread contains far fewer acres of the lower quality permafrost wetlands (about 14% of all wetlands within the



spread). About 55% of the wetlands within this spread are depressional higher quality wetlands, and about 25% of the wetlands in this spread are within riverine systems.

About one third (36%) of the Trapper Creek to Cook Inlet spread covered by this report is wetland. About 94% of these wetlands are classified as depressional, and 5% are riverine wetlands. About 26% of these depressional and riverine wetlands consist primarily of semipermanently or permanently flooded wetlands, such as palustrine unconsolidated bottom, palustrine aquatic bed, palustrine emergent, and riverine systems.

Table 4. Wetland Acreage within the Project Mapping Corridor South of Livengood, byHydrogeomorphic and Cowardin Types

HGM and Cowardin Classification	Livengood to Healy (acres)	Healy to Trapper Creek (acres)	Trapper Creek to Cook Inlet (MP 709.5) (acres)	Grand Total (acres)
Flat	(40100)	(40.00)		
PEM	17.07	2.22	0	19.29
PEM/SS	79.39	82.80	0	162.19
PFO	472.58	8.78	0.43	481.79
PFO/EM	0	4.59	0	4.59
PFO/SS	2838.10	4.18	0	2842.28
PSS	5210.34	773.24	0	5983.58
PSS/EM	1031.67	904.55	0	1936.22
PSS/FO	116.30	0	0	116.30
Depressional				
L1UB	0	111.32	0	111.32
L2UB	0	7.93	0	7.93
РАВ	14.93	114.28	183.31	312.52
PAB/EM	0	39.07	11.35	50.42
PEM	160.68	1025.66	242.85	1429.19
PEM/SS	20.73	713.54	549.73	1284
PFO	1.90	286.49	266.17	554.56
PFO/EM	0	0.64	0	0.64
PFO/SS	1.13	60.09	254.22	315.44
PML	0	0.68	0	0.68
PSS	40.10	1286.26	1003.72	2330.08
PSS/EM	403.04	328.84	174.19	906.07
PSS/FO	0	0.36	736.03	736.39
PUB	24.60	123.71	80.39	228.70
PUB/AB	0	3.45	8.17	11.62
PUB/EM	0	1.87	0	1.87
Slope				
PEM	0	23.99	0	23.99
PEM/SS	0	13.87	0	13.87
PFO/SS	0	62.15	0	62.15
PSS	2.98	12.56	0	15.54
PSS/EM	0	33.86	0	33.86
PUB	0	0.45	0	0.45
Lacustrine Fringe	r			
PAB	0	0.77	24.61	25.38
Riverine	r			
PAB	32.63	0.88	1.43	34.94
PEM	30.84	41.23	7.72	79.79
PEM/SS	72.84	15.80	56.94	145.58
PFO	296.41	49.37	0	345.78
PFO/SS	633.79	0	0	633.79
PSS	362.16	215.21	73.34	650.71
PSS/EM	456.42	105.85	21.00	583.27
PSS/FO	0	24.79	0	24.79
PSS/US	0	0.21	12.35	12.56
PUB	5.91	25.59	3.30	34.8
PUB/SS	0	1.44	0	1.44
R2UB	134.54	68.97	11.24	214.75
R2US	0.47	22.33	0	22.80

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R3RB	0	3.18	0	3.18		
R3UB	64.34	194.53	7.86	266.73		
R3US	21.32	77.81	0	99.13		
R3US/PSS	0	11.47	0	11.47		
R4SB	7.73	7.01	0	14.74		
Wetlands and Waters Total Area	12554.94	6897.87	3730.35	23183.16		
No HGM						
Disturbed	163.24	645.74	75.10	884.08		
Upland	8421.13	23530.85	6369.55	38321.53		
No Aerial Photos	8626.26	10.59	0	8636.85		
Total Area	29765.57	31085.05	10175.00	71025.62		

Waterbody crossings occurring along the Project route are presented in **Table 5.** A total of 132 intermittent, lower perennial and upper perennial stream and river crossings were mapped within the approximately 309-mile length of this portion of the Project route. Nine of these waterbody crossings are major crossings (>100 feet). **Table 6** shows the nine major crossings that were identified during the wetland mapping process. More detailed information on waterbody crossings can be found in the 2014 Stream Hydrology Survey Report (Alaska LNG 2014b).

Table 5. Preliminary Stream Crossings and Flow Regimes, Along the Project Route South
of Livengood, by Study Spread

		Stream Classification							
	Lower Perennial (R2) Crossing			Upper Perennial (R3) Crossing			Intermittent (R4) Crossing		
Study Spread	Major (>100 ft)	Interm e diate (10-100 ft)	Minor (<10 ft)	Major (>100 ft)	Intermediate (10-100 ft)	Minor (<10 ft)	Major (>100 ft)	Intermediate (10-100 ft)	Minor (<10 ft)
Livengood to Healy	3	5	1	0	3	0	0	5	24
Healyto Trapper Creek	1	1	0	4	11	12	1	3	33
Trapper Creek to Cook Inlet	0	0	0	0	7	4	0	3	11
Cook Inlet to Nikiski	0	0	0	0	0	0	0	0	0
Total:	4	6	1	4	21	16	1	11	68
Grand Total:									132

Table 6. Major Waterbody Crossings Along the Project Route South of Livengood

Major Crossings				
Study Spread	Stream Classification	Stream Name	MP	
		Chatanika River	438.8	
Livengood to Healy Healy to Trapper Creek	R2	Tanana River	470.2	
	R2	Nenana River #1	478.9	
		Chulitna River	644.5	
	R3	Yanert Fork	544.9	
		Nenana River #4	563.1	
		Jack River	569.0	
		Troublesome Creek	643.3	
	R4	Dry Creek	528.0	

3.3 NEXT STEPS

Some sections of the proposed 90% confidence Project route were revised after the 2014 field studies were underway. Two rerouted segments near Trapper Creek were pre-mapped and field verified in September. The four additional rerouted segments, any alternative segments, and off-corridor areas will need to be pre-mapped, and then field verified in 2015. Sections of the route lacking adequate aerial photography will also need to be pre-mapped and field verified. **Appendix A** lists sections of the proposed route south of Livengood that still need to be mapped and/or field verified. Additional aerial photography will be provided in a subsequent draft of this Resource Report.



4.0 ACRONYMS AND ABBREVIATIONS

APP	Alaska Pipeline Project
CFR	Code of Federal Regulations
DP	Determination Point
FERC	Federal Energy Regulatory Commission
GIS	Geographic Information System
GPS	Global Positioning System
HGM	Hydrogeomorphic
LNG	Liquefied Natural Gas
MP	Milepost
NRCS	National Resources Conservation Service
NWI	National Wetland Inventory
OP	Observation Point
PJD	Preliminary Jurisdictional Determination
Project	Alaska LNG
QA/QC	Quality Assurance/Quality Control
ROW	Right-of-Way
TNW	Traditional Navigable Water
U.S.	United States
USACE	U.S. Army Corps of Engineers

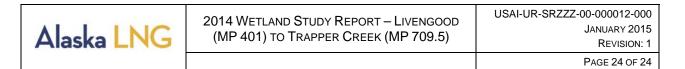


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6.0 APPENDICES



APPENDIX A – SUMMARY OF 2014 WETLAND AND VEGETATION MAPPING AND FIELD TARGETS COMPLETED

Summary of Wetland and Vegetation Mapping

Livengood (MP 401) to Approximately 43 Miles South of Trapper Creek (MP 709.5)

> Unmapped Areas Due To Lack Of Aerial Photography

- MP 405.5 MP 432
- MP 480 MP 500.5 (we have imagery of this section, but it's very poor quality)
- MP 592.4 MP 592.8
- MP 586 MP 587.1

> Field Verification Of Rerouted Areas Needed

- MP 407 MP 433
- MP 440 MP 454
- MP 468 MP 516
- MP 585 MP 605

> 90% Confidence Area Gaps

• MP 533 – MP 545

> 2014 Field Season Field Data Point Locations

• Wetland Points

Points Located Within The Most Current		Points Located Outside The Current 90%	
90% Confidence Route		Confidence Route	
Feature ID	Field Target #	Feature ID	Field Target #
W61LH001	1	W61LH006	6
W61LH002	2	W61LH007	7
W61LH003	3	W61LH010	7
W61LH004	4	W61LH008	8
W61LH005	5	W61LH009	9
W61LH023	23	W61LH011	11
W61LH024	24	W61LH012	12
W61LH025	25	W61LH013	13
W61LH026	26	W61LH014	14
W61LH027	27	W61LH015	15
W61LH028	35	W61LH016	16
W61LH029	36	W61LH017	17
W61LH031	37	W61LH018	18
W61LH032	38	W61LH019	19
W61LH033	39	W61LH020	20
W61LH034	40	W61LH021	21
W61LH035	41	W61LH047	20
W61LH036	42	W61LH022	22
W61LH037	43	W61LH030	34
W61LH038	44	W61HT038	61
W61LH039	45	W61HT032	76
W61LH040	47	W61HT033	77
W61LH041	46	W61HT035	78
W61LH042	48	W61HT034	79
W61LH043	49	W61HT007	80

			01
W61LH044	50	W61HT008	81
W61LH045	51	W61HT009	82
W61LH046	52	W61HT013	83
W61HT001	53	W61HT014	84
W61HT011	54	W61HT015	85
W61HT010	55	W60HT039	100
W61HT012	56	W61HT016	115
W61HT004	58	W61HT017	114
W61HT003	57	W61HT018	113
W61HT005	59	W61HT019	117
W61HT002	60	W60HT054	130
W61HT037	62	W60HT055	132
W61HT036	63	W60HT025	148
W61HT025	64	W60TI051	150
W61HT026	65	W60TI040	151
W61HT024	66	W60TI039	152
W61HT023	67	W60TI046	156
W61HT027	68	W60TI045	155
W61HT028	69	W60TI044	154
W61HT030	70	W60TI042	160
W61HT029	71	W60TI043	159
W61HT006	72	W60TI041	161
W61HT022	73	W60TI047	162
W61HT021	74	W60TI048	162
W61HT031	75	W60TI037	163
W60HT002	86	W60TI036	164
W60HT001	87	W60TI035	165
W60HT003	88	W60TI032	166
W60HT033	89	W60TI034	168
W60HT034	90	W60TI031	167
W60HT015	91	W60TI030	169
W60HT028	92	W60TI027	170
W60HT029	93	W60TI028	171
W60HT030	94	W60TI029	172
W60HT031	95	W60TI023	173
W60HT032	97	W60TI024	174
W60HT035	98	W60TI025	175
W60HT037	99	W60TI020	176
W60HT038	100	W60TI019	177
W60HT040	101	W60TI022	178
W60HT041	102	W60TI017	179
W60HT042	103	W60TI018	180
W60HT024	104	W60TI015	181
W60HT026	106	W60TI016	182
W60HT027	107		
W60HT044	108		
W60HT045	109		
W60HT046	110		
W60HT048	112		
W61HT020	116		
W60HT050	119		
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W60HT018 121 W60HT051 123 W60HT020 125 W60HT021 126 W60HT023 128 W60HT004 133 W60HT005 134 W60HT006 135 W60HT005 136 W60HT053 138 W60HT083 142 W60HT09 141 W60HT010 143 W60HT012 145 W60HT013 146 W60HT014 147 W60HT057 202 W60HT059 203 W60HT050 158 W60T1052 205 W60T1053 206 W60T1054 207 W60T1055 208	
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W60TI068 220	
W60TI067 221	
W60TI014 183	
W60TI013 184	
W60TI012 185	
W60TI010 186	
W60TI008 187	
W60TI006 188	
W60TI004 190	
W60TI003 191	
W60TI001 193	
W60TI069 223	
W60TI070 224	

• Vegetation Points

Points Located Within The Most Current		Points Located Outside	The Current 90%	
90% Confidence Route		Confidence Route		
Feature ID	Field Target #	Feature ID	Field Target #	
W60HT016	91	W60TI033	166	
W60HT036	98	W60TI026	173	
W60HT043	103	W60TI021	176	
W60HT017	120			
W60HT052	124			
W60HT022	127			
W60HT011	144			
W60HT058	202			
W60TI072	210			
W60TI057	211			
W60TI060	213			
W60TI066	219			
W60TI011	186			
W60TI009	187			
W60TI007	189			
W60TI005	190			
W60TI002	192			
W60TI071	225			

• Wetland Observation Points

Points Located Within The Most Current		Points Located Outside The Current 90%	
90% Confidence Route		Confidence Route	
Feature ID	Field Target #	Feature ID	Field Target #
W61LH002_0P	2	W61LH006_0P	6
W61LH005_0P	5	W61LH009_0P	9
W61LH025_0P	25	W61LH011_0P	11
W61LH028_0P	35	W61LH011_0P1	10
W61LH031_0P	37	W61LH012_0P	12
W61LH033_0P	39	W61LH016_0P	16
W61LH034_0P	40	W61LH030_0P	34
W61LH035_0P	41	W61LH030_0P1	34
W61LH037_0P	43	W61HT014_0P	84
W61LH038_0P	44	W61HT015_0P	85
W61LH039_0P	45	W61HT017_0P	114
W61LH041_0P	46	W61HT016_0P	115
W61LH041_0P1	46	W61HT019_0P	117
W61LH042_0P	48	W60HT055_0P1	131
W61LH043_0P	49	W60HT055_0P	131
W61LH046_0P	52	W60TI028_0P	171
W61HT001_0P	53	W60TI023_0P	173
W61HT011_0P	54	W60TI025_0P	175
W61HT010_0P	55	W60TI020_0P	176
W61HT012_0P	56	W60TI015_0P	181
W61HT003_0P	57		

W61HT004_0P	58	
W61HT005_0P	59	
W61HT002_0P	60	
W61HT038_0P	61	
W61HT036_0P	63	
W61HT025_0P	64	
W61HT024_0P	66	
W61HT023_0P	67	
W61HT027_0P	68	
W61HT006_0P	72	
W61HT022_0P1	73	
W61HT022_0P	73	
W61HT031_0P	75	
W60HT015_0P	91	
W60HT028_0P	92	
W60HT030_0P	94	
W60HT031_0P	96	
W60HT026_0P	105	
W60HT045_0P	109	
W60HT046_0P	111	
W60HT023_0P	129	
W60HT053_0P	137	
W60HT053_0P1	140	
W60HT059_0P	203	
W60HT059_0P1	204	
W60TI052_0P	205	
W60TI055_0P	208	
W60TI063_0P	216	
W60TI068_0P	220	
W60TI013_0P	184	
W60TI012_0P	185	
W60TI010_0P	186	
W60TI008_0P	187	
W60TI001 0P	193	

Alternative Routes - South of MP 709.5

- Mapping was completed on two alternate routes from MP 709.5 south to Nikiski. The new 90% confidence route from MP 709.5 southwest to Tyonek has also been mapped, but only where aerial imagery is available. This section of the mapping still needs a QA/QC check.
 - Mapping completed from MP 709.5 to 731, and from MP 757 to 767 (Cook Inlet).
 - Mapping not completed from MP 731 to MP 757 (aerial imagery is needed).
- > Field verification is needed for all alternate routes south of MP 709.5.
- > There is no 90% confidence route for any segments on the Kenai Peninsula



APPENDIX B – 2014 WETLAND DETERMINATION FIELD SURVEY PROTOCOLS

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Alaska LNG

2014 Wetland Determination

Field Survey Protocols

USAKE-UR-SPFLD-00-0008

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REVISION MODIFICATION LOG

Revision	Section	Description
2	3.7, 3.10	Removed information on determining jurisdictional status of wetlands.

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- APPENDIX D FIELD STUDIES EXECUTION

FIGURES

FIGURE 1 PROPOSED ALASKA LNG ROUTE

Note – All pipeline routing and/or facility siting information described in this document should be considered preliminary and subject to change.

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ACRONYMS AND ABBREVIATIONS

- CFR Code of Federal Regulations
- FCI Functional Capacity Index
- FERC Federal Energy Regulatory Commission
- GIS Geographic Information System
- GPS Global Positioning System
- GTP Gas Treatment Plant
- HGM hydrogeomorphic
- LNG liquefied natural gas
- MP milepost
- MSB Matanuska Susitna Borough
- NRCS Natural Resources Conservation Service
- NWI National Wetland Inventory
- PBU Prudhoe Bay Unit
- PTU Point Thomson Unit
- ROW right-of-way
- RPW Relatively Permanent Water
- U.S. United States
- USACE U.S. Army Corps of Engineers
- USFWS U.S. Fish and Wildlife Service

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1.0 PROJECT DESCRIPTION

BP, ConocoPhillips, ExxonMobil, and TransCanada are currently developing a potential project, known as the Alaska LNG Project, to treat, transport, and deliver natural gas from the Alaska's North Slope to a new liquefied natural gas (LNG) plant and marine terminal on Cook Inlet (the "Project"). The proposed Project includes the following major components in Alaska: an LNG Plant, a Gas Pipeline, a Gas Treatment Plant (GTP), a Prudhoe Bay Unit (PBU) Gas Transmission Line, and a Point Thomson Unit (PTU) Gas Transmission Line. In October 2013, the Project selected a site in the Nikiski area on the Kenai Peninsula as the preferred location for a proposed natural gas liquefaction plant and marine terminal. Pipeline routing definition from the Prudhoe Bay Unit to the plant location is ongoing.

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Figure 1. Proposed Alaska LNG Route

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2.0 INTRODUCTION

Alaska LNG will conduct wetland determination surveys to verify the pre-field mapping wetland types and boundaries of all waters of the United States (U.S.), including wetlands, within the defined corridor and in specific areas along the Project route. The 2014 field survey will be conducted on a limited basis focusing portions of the route between Livengood and Trapper Creek, Alaska.

All waters of the U.S. are regulated by the U.S. Army Corp of Engineers (USACE) under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. All projects, as part of the Section 404 permitting process, must avoid impacts to wetlands wherever possible, minimize impacts to wetlands to the maximum extent practicable, and compensate for all unavoidable wetland impacts.

Results of the wetland surveys will facilitate the eventual evaluation of project-related direct, indirect, and cumulative impacts under the Federal Energy Regulatory Commission (FERC) Resource Report 2 (Water Use and Quality), the National Environmental Policy Act, and Section 404 and Section 10 permits administered by the USACE.

This document presents the wetland determination field survey protocols that will be used during the 2014 field season. It discusses the protocols used in both the field and office for delineating the boundaries of areas that are regulated by USACE and may be impacted by the proposed project.

2.1 **OBJECTIVES**

The main objectives for the Alaska LNG 2014 wetland field season are:

- Complete wetland surveys in the vicinity of the pre-selected field targets;
- Collect data at field-selected observation points and at additional wetland determination points where necessary to adequately update the field maps; and
- Update the pre-field wetland mapping based on results of the field data.

2.2 PROJECT AREA

The wetlands survey area for the project is divided into two corridors: A wetland mapping corridor and a field survey corridor. The mapping corridor has been preliminarily established as a 2,000 foot corridor (1,000 feet on either side of the proposed alignment centerline). This mapping corridor width may be modified, with the approval of USACE, to exclude terrain features such as steep mountain slopes or lands on the far side of rivers, which are not under consideration for use. All wetlands and waterbodies will be mapped within the mapping corridor using aerial photograph interpretation. The smaller field survey corridor is 300-feet-wide (150-feet on each side of the proposed alignment centerline) and centered within the mapping corridor. Field work will be concentrated within the field survey corridor, ensuring that the wetland field work occurs near areas most likely to be disturbed by the proposed project.

The Alaska LNG field survey area south of Livengood is divided into four geographic spreads for planning purposes:

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- Livengood to Healy, milepost (MP) 399-520;
- Healy to Trapper Creek, MP 520-660;
- Trapper Creek to Cook Inlet, MP 660-743; and
- Cook Inlet to Nikiski, MP 743-806.

The 2014 field season will focus on areas along this Project corridor, approximately between Livengood and Trapper Creek.

The Alaska LNG project route south of Livengood will pass through two ecoregions, Boreal-Intermontane Boreal and Alaska Range Transition, with five sub-ecoregions, as described by Nowacki et al. (2001). Ecoregions are defined as a unit of land or water with a geographically distinct compilation of species, communities, and environmental conditions. The Alaska LNG corridor, south of Livengood, begins in the Ray Mountains, continues south and passes through the Tanana-Kuskokwim Lowlands, briefly passing through the Yukon-Tanana Uplands, and then through the Alaska Range, before ending in the Cook Inlet Basin sub-ecoregion.

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3.0 METHODS

3.1 OVERVIEW

The USACE defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." These wetlands are considered to be waters of the U.S. and are within the jurisdiction of the USACE (33 Code of Federal Regulations (CFR) Part 328.3[b]).

Other non-wetland waters of the U.S. under the jurisdiction of the USACE include deepwater aquatic habitats, unvegetated ponds, river channels, and other special aquatic sites as described by the USACE (Federal Register 1982). Unvegetated ponds, lakes, and river channels in the survey area are classified as other waters of the U.S., but not wetlands.

Uplands are non-wetland areas that are neither deepwater aquatic habitats, nor other special aquatic sites.

All wetlands and other waters of the U.S. in the preliminary Alaska LNG corridor will be delineated and classified using standard National Wetland Inventory (NWI) codes as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Cowardin classifies wetlands and aquatic habitats by system, subsystem, class, subclass, and water regime and is based on hydrologic setting (riverine, lacustrine, estuarine, palustrine), vegetation structure (forested, scrub-shrub, emergent, aquatic bed), and water regime (saturated, temporarily flooded, seasonally flooded, semi-permanently flooded, etc.).

One deviation from standard NWI protocols for this project will be the use of two non-wetland categories. One category will include all vegetated uplands. The other will be labeled "Disturbed/Fill" and include uplands that have been impacted by human development, including all roads, gravel pads, buildings, and farmland.

Standard methods are used to delineate wetlands for large linear projects in Alaska. The protocols comprise a three-phased iterative approach, including: 1) wetland pre-mapping relying primarily on aerial photo interpretation; 2) collection of ground reference data at predetermined field targets; and 3) revision of wetland pre-mapping based on results of field efforts.

3.2 WETLAND PRE-MAPPING

The wetland pre-mapping has been completed for the preliminary Alaska LNG route. Wetland boundaries were delineated on digital ortho-rectified and geo-referenced true color aerial photography with 1.6-foot pixel resolution using the following aerial imagery:

- Healy Area Orthophoto (U.S. Census Bureau 2006);
- Digital Orthophoto Quarter Quadrangles Anderson Area (Natural Resources Conservation Service, NRCS, 2006);
- Northern Central Corridor Ortho Mosaic (Digital Globe 2013a);
- Southern Corridor Ortho Mosaic (Digital Globe 2013b);

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- Talkeetna Aerial Orthophoto (Matanuska Susitna Borough, MSB, 2011a);
- Caswell Aerial Orthophoto (MSB 2011b);
- Willow Aerial Orthophoto (MSB 2011c);
- Point MacKenzie Aerial Orthophoto (MSB 2011d); and
- Nikiski Area Aerial Orthophoto (Kenai Peninsula Borough 2006).

Data from the following sources was also used during the mapping process:

- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) digital datasets and hardcopy maps;
- NRCS Soil Survey digital datasets and hardcopy maps;
- Light Detection and Ranging (LIDAR) generated topographic contours (TransCanada 2011, MSB 2011e);
- Kenai Watershed Forum Cook Inlet Wetlands for the Kenai Peninsula and the Matanuska Susitna Boroughs (Gracz 2011);
- Pertinent previous studies, such as Terrestrial and Aquatic Habitat Mapping Along the Alaska Natural Gas Pipeline System (USFWS 1980), the Denali Pipeline Project, the instate Alaska Stand Alone Pipeline Project, and the Alaska Pipeline Project;
- U.S. Geological Survey Digital Raster Graphics (e.g., topographic maps);
- Existing Geographic Information System (GIS) layers including waterbodies, contours, and roads; and
- Existing Land Status GIS layers including: State of Alaska, U.S. Bureau of Land Management, and Native allotments.

All wetland mapping was created in a GIS geodatabase, using a "heads-up" digitizing effort. This "heads-up" process applies aerial image interpretation to delineate vector polygons of ground features. This is the generally accepted wetland and deepwater habitat mapping technique employed by the U.S. Fish and Wildlife Service personnel as part of the NWI program (Dahl *et al.* 2009). Data sources were overlaid on aerial photography and wetland, non-wetland, and areas of uncertain wetland status were identified by interpreting color, texture, and landscape position, among other elements. Aerial photography clues can include dwarf or stunted trees, topography characteristics (such as swales, toe slopes and depressions), and obvious signs of inundation.

All wetlands were mapped at a scale of 1:2,400 (1 inch to 200 feet) or finer. Lakes, ponds and rivers were mapped at a scale of 1:1,200 (1 inch to 100 feet). Larger rivers and streams were delineated as polygons. Smaller streams, those with bankfull widths of approximately 10 feet or less, were mapped as vector lines.

3.3 FIELD TARGET SELECTION

Field targets were selected based on changes in the wetlands types, aerial vegetation signatures, NWI classification, and NRCS soil classification. The primary focus of the pre-

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selected field targets will be to characterize specific wetland types which represent all similar wetland types in the region and to identify wetland/upland boundaries by selecting paired plots. Field targets will be used to confirm areas where wetland Subject Matter Experts have high confidence in their aerial interpretation, and will be used to confirm or correct wetland boundary locations. Field targets were also placed in low-confidence areas to provide field data where the photo signatures or landscape features were not clearly indicative of wetland or upland. The USACE may want to review and approve the 2014 field target locations that are selected to ensure that an appropriate range of representative wetlands are sampled.

Field targets may be re-evaluated based on the status of land access permissions. When necessary, new field targets will be located on nearby accessible parcels in areas with similar aerial photography vegetation signatures and site conditions as the original field targets.

3.4 WETLAND FIELD DATA COLLECTION

Wetland determinations will be made using the USACE *Wetlands Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region* (Regional Supplement) (2007a).

In order for an area to be identified as a wetland, the following three parameters must be present:

- <u>Hydrophytic vegetation</u>: The prevalent vegetation must be adapted to areas of saturated or inundated soils.
- <u>Hydric soils</u>: The soil must be classified as hydric or possess characteristics that are associated with reducing soil conditions.
- <u>Wetland hydrology</u>: The area must be inundated or saturated at some time during the growing season.

Field targets will be accessed via existing highways and secondary roads where available. A helicopter will be required to access remote sites. A Global Positioning System (GPS) device will be used to locate sites and to collect coordinates. At each field target, a USACE *Wetland Determination Data Form – Alaska Region* (Appendix A) will be used to determine if the site is a wetland, other water of the U.S., or upland. All wetlands and waterbodies will be delineated and classified using NWI codes. The GPS device will also be used to collect limited field data on an electronic form that will be developed for the Project.

Field crews will also collect qualitative wetland data at observation points and establish additional field targets and complete *Wetland Determination Data Forms* where necessary, and will not be limited by the pre-selected field targets. The field crews will identify changes in wetland types or wetland/upland boundaries not easily identified on the aerial photography. Wetland scientists will use their best professional judgment and collect appropriate field data to adequately revise the wetland pre-mapping. A detailed wetland field survey gear list is provided in **Appendix B**.

3.5 MAP REVISIONS

As wetlands field data becomes available, the field data will be downloaded in the office and plotted on the base maps of the corridor. The location of each plot will be attributed with the

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information collected in the field. This allows the creation of a reference dataset linking an aerial photography signature to a wetland status and vegetation type. This reference dataset will be used to finalize the mapping of the 2,000-foot corridor.

3.6 WETLAND FUNCTIONAL ASSESSMENT

Wetlands are known to provide a variety of ecological functions depending on the location and type of wetland. At sites determined to be wetland, a *Wetland Functional Assessment Data Sheet* (**Appendix A**) will be collected. Information from this data sheet will be incorporated into the functional models described in *A Rapid Procedure for Assessing Wetland Functional Capacity* (Magee and Hollands 1998). Magee and Hollands have identified five hydrogeomorphic (HGM) classes of wetland that occur in Alaska.

- <u>Depressional wetlands:</u> Depressional wetlands occur in a topographic depression. Predominant water sources are direct precipitation, surface water runoff, and groundwater (Brinson 1976).
- <u>Slope wetlands:</u> Slope wetlands generally occur on a hillside and water flow is predominantly unidirectional parallel to the slope. The water source is primarily groundwater and occasionally precipitation (Brinson 1976).
- <u>Lacustrine fringe wetlands:</u> A lacustrine fringe wetland borders a lake and lacks any topographic features. The water source is surface water and flow is bidirectional.
- <u>Flat wetlands</u>: There are two types of flats wetlands: organic and mineral flats. Flat wetlands in Alaska are primarily organic flats. Organic flats "can occur on relatively gentle to moderate slopes up to 20% in steepness. In relatively undisturbed conditions and without significant human alteration, the dominant hydrodynamics are vertical, even on relatively gentle to moderate slopes (i.e. slopes < 20%). Specifically, the main hydrologic input to wetlands within the organic soil flat class in interior Alaska is precipitation" (ADEC/USACE 1999).
- <u>Riverine wetlands:</u> Riverine wetlands are adjacent to rivers and are dominated by overbank flooding. Water flow is bidirectional locally with an overall regional flow down the river valley.

Magee and Hollands use these HGM classes to compare the functions of wetlands within a particular HGM class. Each HGM class represents a separate functional model, which is used to define the Functional Capacity Index (FCI) of eight functions. The eight functions identified by Magee and Hollands are listed below.

- <u>Modification of groundwater discharge:</u> The capacity of a wetland to influence the amount of water moving from the groundwater to surface water.
- <u>Modification of groundwater recharge:</u> The capacity of a wetland to influence the amount of water moving from surface water to groundwater.
- <u>Storm and flood-water storage</u>: The storage of inflowing water from storm or flooding events, resulting in detention and retention of water on the wetland surface.
- <u>Modification of stream flow:</u> The modification of inflow hydrology by the wetland to produce the outlet stream's hydrology.

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- <u>Modification of water quality:</u> Removal of suspended and dissolved solids from surface water and dissolved solids from groundwater and conversion into other forms, plant or animal biomass, or gases. Wetlands with a low slope-angle or location in depressions provide a high level of this function.
- <u>Export of detritus:</u> Export of organic detritus from the wetland to adjacent and downstream aquatic ecosystems.
- <u>Contribution to abundance and diversity of wetland vegetation</u>: The capacity of a wetland to produce an abundance and diversity of hydrophytic plant species individually or as part of a group of wetlands in a local landscape (Tiner 1984).
- <u>Contribution to abundance and diversity of wetland fauna:</u> The capacity of a wetland to support large and / or diverse populations of animal species that spend part or all of their lifecycle in wetlands, individually, or as part of a mosaic of wetlands in a local landscape.

The Magee and Hollands functional assessment method requires site-specific information to be entered into a model that will produce a FCI for each wetland function. The FCI indicates the potential degree to which the wetland performs the function and is only comparable to other wetlands within the same HGM class and region. The FCI scale is from 0.0 to 1.0. Most of the model inputs will be collected in the field, with the remaining variables taken from available GIS datasets (such as wetland size and land ownership). The results from the functional assessment models will be extrapolated to the applicable wetlands within the mapping corridor. This information will potentially serve as the basis to determine appropriate compensatory mitigation for the unavoidable impacts of the project. The *Wetland Functional Assessment Data Sheet* will be reviewed and adjusted as necessary to collect appropriate data for the different ecoregions.

3.7 JURISDICTIONAL DETERMINATION

USACE regulates wetlands and other waters of the U.S. that are under their jurisdiction. Jurisdictional status is based on connectivity to Traditional Navigable Waters (Rapanos v. United States and Carabell v. United States [33 U.S. Code §1251 et seq.]). Field visits by USACE, the Federal Energy Regulatory Commission, the Environmental Protection Agency, and the Owner's Representative could also be conducted (with minimal notice) to observe field survey teams while they are conducting wetland delineations, and to review protocols and any data collected.

The Project, similar to other large pipeline and energy projects permitted by the USACE, will assume that all wetlands found fall under USACE jurisdiction. Because the FERC requires that the Project adhere to certain construction requirements in all wetlands, regardless of jurisdiction, the Project will assume that all wetlands found will be within the USACE jurisdiction for permitting, mitigation, and construction method purposes.

3.8 DATA RECORDING AND PROCESSING

Data will be recorded on hardcopy field forms (**Appendix A**), and some of the data will be entered into an electronic data form. Electronic data files will be uploaded to a Project website

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through an internet connection or by a satellite link, and will include GPS locations, electronic data form, site photos, site sketches, and field notes.

3.9 QUALITY ASSURANCE/QUALITY CONTROL

The Wetlands Technical Lead will conduct quality audits during the first week of each deployment. These audits will ensure data quality and consistency between teams, and will provide an opportunity for any problems to be corrected immediately.

Each crew member is responsible for collecting clear and accurate data according to the sampling protocol. The Field Crew Chief will review all hardcopy and electronic data forms and complete a quality assurance/quality control (QA/QC) checklist (**Appendix C**) before leaving each site.

The Field Crew Manager will ensure that all data files, hardcopy and electronic, are uploaded to the Project website. These transmitted files will then be downloaded and reviewed by officebased data management staff. The Wetland Technical Lead will check each hardcopy data sheet and electronic data form for quality and consistency, as it is received. If problems arise, the field crew will be notified promptly to ensure that any data quality issues are corrected immediately.

3.10 REPORTING

The results of the 2014 field work will be compiled into a field survey report at the end of the season. The report will include a GIS dataset comprised of field-verified wetland mapping, field sample locations, and data collected at each site. It will also outline the field survey methods and identify all wetland types found throughout the corridor describing common plant species, hydrology indicators, and hydric soil indicators.

After the 2015 wetland field season, a report on the Wetland Functional Assessment for all wetlands surveyed will be provided. The Wetland Functional Assessment will be submitted to USACE for review and concurrence. Once USACE concurs, the wetland boundaries delineated will be used to calculate project impacts for Section 404 permitting. The Wetland Functional Assessment will help USACE characterize the impacted wetlands to determine appropriate compensatory mitigation for the unavoidable project impacts to wetlands and other waters of the U.S.

Results of this survey will be provided in the FERC Resource Report 2.

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4.0 FIELD STUDIES EXECUTION

Field study execution details are currently being developed. **Appendix D** will include field execution details consisting of: field crew composition, schedule and march charts, field target maps, and general project-wide permits and approvals. Field safety will also be discussed and a specific Job Safety Analysis (JSA) developed for wetland surveys will be included.

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6.0 APPENDICES

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APPENDIX A – WETLAND DETERMINATION DATA FORM

WETLAND DETERMINATION DATA FORM

Date: Project Name & No.: Alaska LNG 26221163 Feature Id: Investigators: State: Alaska Region: Alaska Milepost: I State: Alaska Region: Alaska Milepost: I Latitude: Longitude: I Logbook No Logbook Page No.: Picture No.: SiTE PARAMETERS Subrégion: Landform (hillslope, terrace, nummocks, Slope (%): Pre-mapped Alaska LNG/NWI classification: Soil Map Unit Name: Are climatic/hydrologic conditions on the site typical for this time of year? Are "Normal Circumstances" prese YesNo (if no explain in Notes) Are VegetationSoil or Hydrology Naturality Problematic? No (if yes, explain in Notes.) StimMARY OF FINDINGS Hydrology Present? Yes No Is the Sampled Area within a Wetland? Wetland Hydrology Present? Yes No Is the Sampled Area within a Wetland? Noles and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline	
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WETLAND DETERMINATION DATA FORM

Tree Stratum (Plot sizes:)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC:	
1.				Total Number of Dominant Species Across All Strata: % Dominant Species that are OBL, FACW, or FAC;	
2.		in contra		and the second	
3.					
4:				Prevalence Index worksheet:	
Total Cov	er:			Total % Cover of: Multiply by:	
50% of total cov	er: 20	% of total cov	er:	OBL species:X i =	
Sapling/Shrub Stratum ()	Absolute	Dominant	Indicator	FACW species:X 2 =	
	% Cover	Species? (Y/N)	Status	FAC speciesX 3 =	
1.				FACU species X 4 = UPL species X 5 =	
2.	-	1		Column Totals:(A)(B)	
3.			-	PI = B/A =	
4					
5.					
6.	1			1	
7.				1	
8.	-			1	
9	1			1	
Total Covi 50% of total covi		% of total cov		1	

Herb Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
t				Prevalence Index is ≤ 3.0
2.				Morphological Adaptations' (Provide supporting data in Notes)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4		1	-	Indicators of hydric soil and wetland hydrology must be present unless
5.				disturbed or problematic.
6.			1	and and the
7.				% Bare Ground
8.			-	% Cover of Wetland Bryophytes
9.				Total Cover of Bryophytes
10				% Cover of Water
Tolai	Cover	C. T. and T.		Hydrophytic Vegetation Present (Y/N): Notes: (If observed, list morphological adaptations below)
50% of total	cover: 20	% of total cov	er	and here the second sector production of

WETLAND DETERMINATION DATA FORM

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SOIL PROFI	LE DESCRIPTION:	Describe		d to docume	nt the ind	licator or (confirm the abser	ce of indicators.)	
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CONCEPT INFORMATION - CONFIDENTIAL

WETLAND DETERMINATION DATA FORM

Inimany Vacatation Tune (D)	P= Plot, M= Matrix
Forested-Evergreen-Needle-lea Scrub Shrub-Evergreen-Broad- Persistent Aquatic Br	Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved aved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent ed Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 d Dwarf shrub (<0.5m)	lbh, >6m tall)Sapling (<5 dbh, <6m tall)Tall shrub (2-6m)Short shrub (0.5-2m) Tall herb (≥1m)Short herb (<1m)Moss-LichenFloatingSubmerged
): Evenness of Wetland Type Distribution (M): EVen Highly UnevenModerately even
Vegetation Density/Dominand 80%) Very High Dens	ce (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- sity (80-100%)
nterspersion of Cover & Ope Peripheral Cover26-	n Water (P): 100% Cover or Open Water<25% Scattered/Peripheral Cover >75% Scattered or 75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): L	.ow (< 5 plant species) Medium (5-25 species) High (>25)
	osent (none) One or Few Several to Many N/A
Cover Distribution of Domina OpenSmall Scatter	nt Layer (P): No VegSolitary, Scattered Stems1 or More Large Patches; Parts of Site ed PatchesContinuous Cover
Dead Woody Material (P) Lo Abundant (>50% of surface)	w Abundance (0-25% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P). High (small groupings, diverse	Low (large patches, concentric rings) Moderate (broken irregular rings) and interspersed)
GM Class (P): Slope	Flat Lacustrine Fringe Depressional Rivenne Estaurine Fringe
IVDROLOGIC VAPIABLES	
Outlet Intermittent In	t/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No let/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerenn Perennial Inlet/Perennial OutletPerennial OutletPerennial Inlet/No OutletPerenn
nlet/Outlet Class (P): No Inle Outlet Intermittent In Inlet/Intermittent Outlet Netland Water Regime (P):	let/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Pe
nlet/Outlet Class (P): No Inlee DutletIntermittent Ini nlet/Intermittent Outlet Wetland Water Regime (P): Net: Perm. Flooded, Intermitter Evidence of Sedimentation (F Created	Iet/Intermittent Unitermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Inlet/Perennial Outlet Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Drier: Seasonally Flooded, Temporarily Flooded Context Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Pitter: Seasonally Flooded Context Perennial Outlet Perennial Outlet Pitter: Seasonally Flooded Context Seasonally Flooded Context Perennial Outlet Pitter: Seasonally Flooded Context Seasonally Flooded Context <t< td=""></t<>
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nlet/Outlet Class (P): No Inlei DutletIntermittent Ini Inter/Intermittent Outlet Wetland Water Regime (P): Net: Perm. Flooded, Intermitter Evidence of Sedimentation (F Created Microrelief of Wetland Surfac Frequency of Overbank Flood Return Interval >5 yrs Degree of Outlet Restriction (Idel/Intermittent Unitermittent Inter/Net Intermittent Intel/Perennial Outlet Perennial Intel/Perennial Intel/No Outlet Perennial Intel/No Outlet Perennial Intel/Perennial Outlet Perennial Intel/Perennial Outlet Drier: Seasonally Flooded, Temporarily Flooded, Saturated Drier: Seasonally Flooded, Temporarily Flooded, Saturated Intly Exposed, Semiperm. Flooded Flovaquent Soils Sediment P): No Evidence Observed Sediment Observed on Wetland Substrate
nlet/Outlet Class (P): No Inlet DutletIntermittent Ini Inter/Intermittent Outlet Wetland Water Regime (P): Net: Perm. Flooded, Intermitter Evidence of Sedimentation (F Created Microrelief of Wetland Surfac Frequency of Overbank Flood Return Interval >5 yrs Degree of Outlet Restriction (Nater pH (P): No water	Idel/Intermittent Unitermittent Inter/Net Intermittent Intel/Perennial Outlet Perennial Intel/Perennial Intel/No Outlet Perennial Intel/No Outlet Perennial Intel/Perennial Outlet Drier: Seasonally Flooded, Temporarity Flooded, Saturated Perennial Intel/Perennial Outlet Perennial Intel/No Outlet
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nlet/Outlet Class (P): No Inlei DutletIntermittent.Ini Intermittent Outlet Wetland Water Regime (P): Net: Perm. Flooded, Intermitter Evidence of Sedimentation (F Created Microrelief of Wetland Surfac Frequency of Overbank Flood Return Interval >5 yrs Degree of Outlet Restriction (Nater pH (P): No water Surficial Glacial Deposit Under Slacial Till/Not Permeable Basin Topographic Gradient (Evidence of Seeps and Spring CANDSCAPE VARIABLES (M).	Intermittent Unitermittent Intermittent Intel/Perennial OutletPerennial Intel/No OutletPerennial Intel/Perennial OutletPerennial Intel/No OutletPerennial OutletPerennial OutletPerennial OutletPerennial OutletPerennial Sediment Observed on Wetland Substrate Fluxaquent Soils Sediment (P): No Evidence Observed Sediment Observed on Wetland Substrate Pronounced (>18in) (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in) (Intervial (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs (P): No Outflow Restricted Outflow Unrestricted Outflow

Watershed Land Use: 0-5% Rural_____ 5-25% Urbanized_____ 25-50% Urbanized_____ >50% Urbanized_____

Medium (10-100 acres)

Crew Chief QA/QC check:

Small (<10 acres)_

Size:

GPS Technician QA/QC check:

Large (>100 acres)

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	WETLAND DETERMINATION	USAKE-UR-SPFLD-00-0008
	FIELD SURVEY PROTOCOLS	April 2014
Alaska LNG		REVISION: 2
	CONCEPT INFORMATION - CONFIDENTIAL	

APPENDIX B – WETLAND SURVEY GEAR LIST

	WETLAND DETERMINATION FIELD SURVEY PROTOCOLS	USAKE-UR-SPFLD-00-0008			
Alaska LNG	FIELD SURVEY PROTOCOLS	April 2014			
		REVISION: 2			
	CONCEPT INFORMATION - CONFIDENTIA	AL			
Wetland and Vegetation Gea	ır	Communication			
1 - Sharp shooter shovel (fiber	rglass, not wood handle)	1 - VHF Radio			
1 – U-Dig-it (Hand shovel)		1 - charger for vhf radio			
1 – Compass		1 - Iridium Satellite Phone			
1 – Hand lens		1 charger for satellite phone			
1 – Leatherman/sample knife (folding) 4" serrated	Safety/Survival Pack (Need for 2teams)			
1 – Digital camera		2 – Sleeping Bags			
1 - calculator		1 - Tent			
1 – extra batteries for digital ca		1-Wilderness First Aid Kit			
1 - pH meter (pen kind) with st		1 - Flare gun kit			
1 – Pocket rod (measuring tape		1 - Emergency procedures Manual			
1-Opaque small spray bottle fil		1 - Iodine Tablets/Filter			
2 packages – gallon Ziploc bag	S	1 - 50' Nylon Rope/Parachute cord			
1 package- pint Ziploc bags		1 – small Flashlight/headlamp (for soil pit)			
1- Squirt Water bottle (for m	noistening soil to color)	2 - Space Blankets			
	mination Form – Alaska Region (on Rite-in-				
the-Rain) with functional asses		1 – Bear Spray			
1 set – Field Maps on Rite-in-t		1 – Tarp (10' x 12')			
4+ – Rite-in-the-Rain Field not		1 – Gloves – Work/Latex/Insulated rubber			
12+- Mechanical Pencils w/ e	xtra lead	matches			
12+- Sharpies (red and black)	1 11 1 / 1 / 1 / 1	1 – Roll of duct tape			
1- Laptop Computer (for down	loading data every night)	Flagging tape (1 bright color per team)			
2 – Clipboards		BPA-free water jug			
Extra Rite-in-the-Rain paper		Personal Gear			
1 - 12 inch file (for shovel share) 1 - scissors	rpening) with handle	1 - Xtratuffs 1 – Felt insoles for Xtratuffs			
1 – tape 2 – post it notes		 Blaze Orange Surveyor Field Vest Mosquito Head Net 			
2 – post it notes 2 – toilet paper		1 – Rain Jacket/Pants			
1- Roll of duct tape		2 - Bug Spray			
1 - (see through) small dry bag	for soil kit	2 – Sunblock			
	bag for field reference materials	1 – Sun Glasses			
$1 - \text{(see through) medium dry to 1 - \text{dry erase board (for picture})$		1 - Sun Glasses 1 - Water Bottle			
1 – plant press	· /	1 - Backpack			
1 – plant press Books	·	1 - Backpack 1 - Hat			
1 – plant press Books 1 – Munsell Soil Color charts		 Backpack Hat Cell phone and charger 			
 1 – plant press Books 1 – Munsell Soil Color charts 1 – Flora of Alaska and Neighb 		 Backpack Hat Cell phone and charger – umbrella 			
 1 – plant press Books 1 – Munsell Soil Color charts 1 – Flora of Alaska and Neighb 1 – Trees and Shrubs – Viereck 	oring Territories – Eric Hulten	 Backpack Hat Cell phone and charger 			
 1 – plant press Books 1 – Munsell Soil Color charts 1 – Flora of Alaska and Neight 1 – Trees and Shrubs – Viereck 1 – Western Boreal Forest and 	ooring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar	 Backpack Hat Cell phone and charger – umbrella 			
 1 – plant press Books 1 – Munsell Soil Color charts 1 – Flora of Alaska and Neighb 1 – Trees and Shrubs – Viereck 1 – Western Boreal Forest and 1 – Wetland Sedges of Alaska 	oring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin	 Backpack Hat Cell phone and charger – umbrella 			
 1 – plant press Books 1 – Munsell Soil Color charts 1 – Flora of Alaska and Neight 1 – Trees and Shrubs – Viereck 1 – Western Boreal Forest and 1 – Wetland Sedges of Alaska 1 – Willows of Interior Alaska 	oring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin – Collett	 Backpack Hat Cell phone and charger – umbrella 			
 1 – plant press Books 1 – Munsell Soil Color charts 1 – Flora of Alaska and Neight 1 – Trees and Shrubs – Viereck 1 – Western Boreal Forest and 1 – Wetland Sedges of Alaska 1 – Willows of Interior Alaska 	oring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin	 Backpack Hat Cell phone and charger – umbrella 			
 1 – plant press Books 1 – Munsell Soil Color charts 1 – Flora of Alaska and Neight 1 – Trees and Shrubs – Viereck 1 – Western Boreal Forest and 1 – Wetland Sedges of Alaska 1 – Willows of Interior Alaska 1 – National List of Plant Spec 	oring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin – Collett ies that Occur in Wetlands – Alaska Region -	 Backpack Hat Cell phone and charger – umbrella 			
 1 – plant press Books 1 – Munsell Soil Color charts 1 – Flora of Alaska and Neight 1 – Trees and Shrubs – Viereck 1 – Western Boreal Forest and 1 – Wetland Sedges of Alaska 1 – Willows of Interior Alaska 1 – National List of Plant Spec Reed 1988 (print) 	oring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin – Collett ies that Occur in Wetlands – Alaska Region - Idflowers – Verna Pratt	 Backpack Hat Cell phone and charger – umbrella 			
 1 - plant press Books 1 - Munsell Soil Color charts 1 - Flora of Alaska and Neighb 1 - Trees and Shrubs - Viereck 1 - Western Boreal Forest and 1 - Wetland Sedges of Alaska 1 - Willows of Interior Alaska 1 - National List of Plant Spec Reed 1988 (print) 1 - Field Guide to Alaskan Will 1 - Wildflowers along the Alass 	oring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin – Collett ies that Occur in Wetlands – Alaska Region - Idflowers – Verna Pratt	 Backpack Hat Cell phone and charger – umbrella 			
 1 - plant press Books 1 - Munsell Soil Color charts 1 - Flora of Alaska and Neighb 1 - Trees and Shrubs - Viereck 1 - Western Boreal Forest and 1 - Wetland Sedges of Alaska 1 - Willows of Interior Alaska 1 - National List of Plant Spec Reed 1988 (print) 1 - Field Guide to Alaskan Will 1 - Wildflowers along the Alass 	ooring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin – Collett ies that Occur in Wetlands – Alaska Region - Idflowers – Verna Pratt skan Highway – Verna Pratt ing Wetland Functional Capacity: Based on	 Backpack Hat Cell phone and charger – umbrella 			
 1 - plant press Books 1 - Munsell Soil Color charts 1 - Flora of Alaska and Neighb 1 - Trees and Shrubs - Viereck 1 - Western Boreal Forest and 1 - Wetland Sedges of Alaska 1 - Willows of Interior Alaska 1 - National List of Plant Spec Reed 1988 (print) 1 - Field Guide to Alaskan Wil 1 - Wildflowers along the Alass 1 - Rapid Procedure for Assess HGM Classification - Hollands 1 - 1987 Wetland Delineation 	ooring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin – Collett ies that Occur in Wetlands – Alaska Region - Idflowers – Verna Pratt skan Highway – Verna Pratt ing Wetland Functional Capacity: Based on s and Magee (print) Manual (print)	 Backpack Hat Cell phone and charger – umbrella 			
 1 - plant press Books 1 - Munsell Soil Color charts 1 - Flora of Alaska and Neight 1 - Trees and Shrubs - Viereck 1 - Western Boreal Forest and 1 - Wetland Sedges of Alaska 1 - Willows of Interior Alaska 1 - National List of Plant Spec Reed 1988 (print) 1 - Field Guide to Alaskan Wil 1 - Wildflowers along the Alas 1 - Rapid Procedure for Assess HGM Classification - Hollands 1 - 1987 Wetland Delineation 1 - 2007 Regional Supplement 	ooring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin – Collett ies that Occur in Wetlands – Alaska Region - Idflowers – Verna Pratt iskan Highway – Verna Pratt ing Wetland Functional Capacity: Based on s and Magee (print) Manual (print) to the Corps of Engineers Wetland Delineation	 Backpack Hat Cell phone and charger – umbrella 			
 1 - plant press Books 1 - Munsell Soil Color charts 1 - Flora of Alaska and Neight 1 - Trees and Shrubs - Viereck 1 - Western Boreal Forest and 1 - Wetland Sedges of Alaska 1 - Willows of Interior Alaska 1 - National List of Plant Spec Reed 1988 (print) 1 - Field Guide to Alaskan Wil 1 - Wildflowers along the Alass 1 - Rapid Procedure for Assess HGM Classification - Hollands 1 - 1987 Wetland Delineation 1 - 2007 Regional Supplement Manual - Alaska Region (print) 	ooring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin – Collett ies that Occur in Wetlands – Alaska Region - Idflowers – Verna Pratt iskan Highway – Verna Pratt ing Wetland Functional Capacity: Based on s and Magee (print) Manual (print) to the Corps of Engineers Wetland Delineation t)	 Backpack Hat Cell phone and charger – umbrella 			
 1 - plant press Books 1 - Munsell Soil Color charts 1 - Flora of Alaska and Neight 1 - Trees and Shrubs - Viereck 1 - Western Boreal Forest and 1 - Wetland Sedges of Alaska 1 - Willows of Interior Alaska 1 - National List of Plant Spec Reed 1988 (print) 1 - Field Guide to Alaskan Wil 1 - Wildflowers along the Alas 1 - Rapid Procedure for Assess HGM Classification - Hollands 1 - 1987 Wetland Delineation 1 - 2007 Regional Supplement Manual - Alaska Region (print) 	ooring Territories – Eric Hulten Aspen Parkland – MacKinnon and Pojar – Tande and Lipkin – Collett ies that Occur in Wetlands – Alaska Region - Idflowers – Verna Pratt ing Wetland Functional Capacity: Based on s and Magee (print) Manual (print) to the Corps of Engineers Wetland Delineation t) and Deepwater Habitats – Cowardin (print)	 Backpack Hat Cell phone and charger – umbrella 			

	WETLAND DETERMINATION	USAKE-UR-SPFLD-00-0008
Alaska LNG	FIELD SURVEY PROTOCOLS	April 2014
		REVISION: 2
	CONCEPT INFORMATION - CONFIDENTIAL	

APPENDIX C – QA/QC CHECKLIST

Wetland Determination Data Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID:

 Field Target:

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- □ Site description, site parameters and summary of findings are complete?
- □ A detailed site sketch is included?

2. Vegetation

- □ At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- □ Vegetation names are entered legibly for all strata present?
- □ Cover calculations are complete and correct?
- □ All dominant species have been determined and recorded per strata?
- □ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- □ Soil profile is complete?
- □ Appropriate hydric soil indicators are marked?

4. Hydrology

- □ Appropriate hydrology indicators are marked?
- □ Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

□ Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

□ Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

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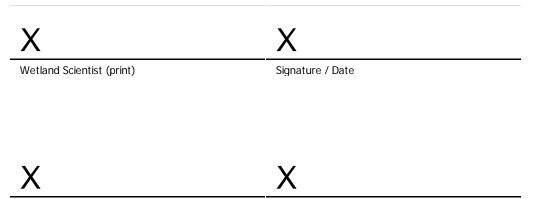
□ Each logbook page is initialed and dated?

7. Maps

- U Wetland boundaries have been corrected if necessary?
- □ Maps are initialed and dated?

8. Photos

- □ Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- □ Two photos were taken for each Observation Point (vegetation/site overview)?



Field Crew Chief (print)

Signature / Date

	WETLAND DETERMINATION	USAKE-UR-SPFLD-00-0008
Alaska LNG	FIELD SURVEY PROTOCOLS	April 2014
		REVISION: 2
	CONCEPT INFORMATION - CONFIDENTIAL	

APPENDIX D – FIELD STUDIES EXECUTION



APPENDIX C – 2014 WETLANDS FIELD DATA SUMMARY TABLE AND U.S. ARMY CORPS OF ENGINEERS ALASKA DISTRICT WETLAND DETERMINATION FORMS

Feature ID	Data Type ¹	Date	Field Target #	Latitude	Longitude	Cowardin Code	HGM Classification	Vegetation Classification
W60HT001	WDF	6/9/2014	87	62.9995	-149.5567	PSS1B	SLOPE	II B 2
W60HT002	WDF	6/9/2014	86	63.0112	-149.5465	PEM1/SS1B	FLAT	III A 2, II C 2
W60HT003	WDF	6/9/2014	88	62.9939	-149.5775	UPLAND	N/A	III A 1, II C 2
W60HT004	WDF	6/10/2014	133	62.4506	-150.271	PSS1/EM1B	DEPRESSIONAL	II C 2, III A 2
W60HT005	WDF	6/10/2014	136	62.4455	-150.2689	PSS1B	DEPRESSIONAL	II B 2
W60HT006	WDF	6/10/2014	135	62.4468	-150.2694	PEM1F	DEPRESSIONAL	III A 3
W60HT007	WDF	6/10/2014	134	62.4489	-150.2715	UPLAND	N/A	II B 1
W60HT008	WDF	6/12/2014	142	62.4209	-150.2638	UPLAND	N/A	I C 2
W60HT009	WDF	6/12/2014	141	62.4207	-150.2655	PEM1F	DEPRESSIONAL	III A 3
W60HT010	WDF	6/12/2014	143	62.4182	-150.2633	UPLAND	N/A	III A 3
W60HT011	Veg	6/13/2014	144	62.3957	-150.2659	UPLAND	N/A	I C 2
W60HT012	WDF	6/13/2014	145	62.3793	-150.2694	PSS1B	RIVERINE	II B 2
W60HT013	WDF	6/14/2014	146	62.3652	-150.2603	PEM1B	DEPRESSIONAL	III A 1
W60HT014	WDF	6/11/2014	147	62.3618	-150.2578	PEM1B/ PUBF	DEPRESSIONAL	III A 2
W60HT015	WDF	6/24/2014	91	62.9348	-149.6872	PSS1B	FLAT	II B 2, II C 2
W60HT015_OP	OP	6/24/2014	91	62.9347	-149.6872	R4SB	*	N/A
W60HT016	Veg	6/24/2014	91	62.9345	-149.6871	UPLAND	N/A	I C 2, II C 2
W60HT017	Veg	6/24/2014	120	62.5347	-150.2366	UPLAND	N/A	I C 2, II B 2
W60HT018	WDF	6/24/2014	121	62.5342	-150.2363	UPLAND	N/A	I C 2, II B 2
W60HT019	WDF	6/24/2014	122	62.5343	-150.2351	PEM1F	DEPRESSIONAL	III A 3
W60HT020	WDF	6/25/2014	125	62.5283	-150.2378	UPLAND	N/A	II B 2, III A 2
W60HT021	WDF	6/25/2014	126	62.5278	-150.2386	UPLAND	N/A	I C 1, II C 2
W60HT022	Veg	6/25/2014	127	62.5229	-150.2405	UPLAND	N/A	I C 2, II B 2
W60HT023	WDF	6/25/2014	128	62.5152	-150.252	UPLAND	N/A	I C 2, II C 2
W60HT023_OP	OP	7/6/2014	129	62.5012	-150.267	UPLAND	N/A	NONE
W60HT024	WDF	6/26/2014	104	62.7728	-150.0452	PSS4/1B	DEPRESSIONAL	II A 2, II B 2, II C 2
W60HT025	WDF	7/9/2014	148	62.3449	-150.2641	PEM1C	DEPRESSIONAL	III A 3, II C 2
W60HT026	WDF	6/26/2014	106	62.7657	-150.0687	UPLAND	N/A	I B 3, II B 1
W60HT026_OP	OP	6/26/2014	105	62.7693	-150.0582	R4SB	*	II B 1, I B 2
W60HT027	WDF	6/26/2014	107	62.7657	-150.0693	PEM1/SS1F	DEPRESSIONAL	III A 3, II C 2
W60HT028	WDF	6/27/2014	92	62.9293	-149.6967	UPLAND	N/A	I C 2
W60HT028_OP	OP	6/27/2014	92	62.9288	-149.6957	R3UB	*	N/A
W60HT029	WDF	6/27/2014	93	62.8983	-149.7387	UPLAND	N/A	I C 2, II C 1

Feature ID	Data Type ¹	Date	Field Target #	Latitude	Longitude	Cowardin Code	HGM Classification	Vegetation Classification
W60HT030	WDF	6/27/2014	94	62.8787	-149.8255	PSSI/EM1B	DEPRESSIONAL	II C 2, III A 3
W60HT030_OP	OP	6/27/2014	94	62.8772	-149.8248	UPLAND	N/A	II C 2, II B 2
W60HT031	WDF	6/28/2014	95	62.868	-149.8518	UPLAND	N/A	I B 2, II C 2
W60HT031_OP	OP	6/28/2014	96	62.8679	-149.8521	UPLAND	N/A	I C 2
W60HT032	WDF	6/28/2014	97	62.8679	-149.8532	UPLAND	N/A	I C 2, II C 2
W60HT033	WDF	7/1/2014	89	62.9732	-149.6314	PSS1/EM1B	DEPRESSIONAL	II C 2, III A 3
W60HT034	WDF	7/1/2014	90	62.9565	-149.6504	PSS1/EM1B	FLAT	II C 2, III A 3
W60HT035	WDF	7/1/2014	98	62.8632	-149.8723	PEM1/SS1B	DEPRESSIONAL	III A 3, II C 2
W60HT036	Veg	7/1/2014	98	62.863	-149.872	UPLAND	N/A	I C 2, II C 2
W60HT037	WDF	7/2/2014	99	62.863	-149.8741	PSS1/EM1B	DEPRESSIONAL	II B 1, III A 3
W60HT038	WDF	7/2/2014	100	62.8408	-149.8894	PEM1/SS1B	DEPRESSIONAL	III A 3, II C 2
W60HT039	WDF	7/2/2014	100	62.8402	-149.8888	UPLAND	N/A	I C 3, II B 2
W60HT040	WDF	7/2/2014	101	62.8326	-149.8979	PEM1/SS1F	DEPRESSIONAL	III A 3, II C 2
W60HT041	WDF	7/2/2014	102	62.8213	-149.9196	PEM1/SS1F	FLAT	III A 3, II C 2
W60HT042	WDF	7/3/2014	103	62.8047	-149.9663	PSS1B	DEPRESSIONAL	II C 2, III A 3
W60HT043	Veg	7/3/2014	103	62.8051	-149.9669	UPLAND	N/A	I C 2, II B 1
W60HT044	WDF	7/3/2014	108	62.7582	-150.0935	PEM1/SS1B	DEPRESSIONAL	III A 3, II C 2
W60HT045	WDF	7/3/2014	109	62.7377	-150.1466	PEM1/SS1B	DEPRESSIONAL	III A 2, I C 2, II C 2
W60HT045_OP	OP	7/3/2014	109	62.7377	-150.1465	R4SB	*	III A 2, II C 2, I C 2
W60HT046	WDF	7/3/2014	110	62.7373	-150.1472	PSS1/EM1B	SLOPE	II C 2, III A 2
W60HT046_OP	OP	7/5/2014	111	62.6987	-150.2309	UPLAND	N/A	I C 3, II B 1
W60HT047	WDF	7/9/2014	149	62.3445	-150.2713	PFO4/SS1B	FLAT	I A 2, II C 2
W60HT048	WDF	7/5/2014	112	62.6263	-150.2281	UPLAND	N/A	I B 1
W60HT049	WDF	7/5/2014	118	62.546	-150.2506	PFO4/SS1B	FLAT	I A 3, II B 2
W60HT050	WDF	7/5/2014	119	62.5465	-150.2496	PFO1/4/SS1B	FLAT	I C 2, II B 2
W60HT051	WDF	7/5/2014	123	62.533	-150.2371	PEM1C	DEPRESSIONAL	III A 3
W60HT052	Veg	7/5/2014	124	62.5329	-150.2364	UPLAND	N/A	I C 2, II B 2
W60HT053	WDF	7/8/2014	138	62.4313	-150.2687	PSS1/EM1B	DEPRESSIONAL	II C 2, III A 3
W60HT053_OP	OP	7/8/2014	137	62.4316	-150.2688	PEM1F	*	III A 3
W60HT053_OP1	OP	7/6/2014	140	62.4264	-150.2672	PEM1/SS1F	*	III A 3, II C 2
W60HT054	WDF	7/6/2014	130	62.4886	-150.2726	PEM1/SS1F	DEPRESSIONAL	III A 3,I IC 2
W60HT055	WDF	7/6/2014	132	62.477	-150.2716	PEM1F	DEPRESSIONAL	III A 3
W60HT055_OP	OP	7/6/2014	131	62.4865	-150.2716	PEM1F	*	III A 3

Feature ID	Data Type ¹	Date	Field Target #	Latitude	Longitude	Cowardin Code	HGM Classification	Vegetation Classification
W60HT055_OP1	OP	7/6/2014	131	62.4893	-150.2728	R4SB	*	N/A
W60HT056	WDF	7/6/2014	139	62.4266	-150.2675	PSS1/EM1B	DEPRESSIONAL	II C 2, III A 3
W60HT057	WDF	9/3/2014	202	62.354	-150.2745	PEM1/SS1B	DEPRESSIONAL	III A 3, II C 2
W60HT058	Veg	9/3/2014	202	62.3547	-150.2735	UPLAND	N/A	I C 2, II C 2
W60HT059	WDF	9/3/2014	203	62.3299	-150.2765	UPLAND	N/A	I C 2, II C 2
W60HT059_OP	OP	9/3/2014	203	62.33	-150.2721	PEM1E	*	III A 2, II C 2
W60HT059_OP1	OP	9/3/2014	204	62.3274	-150.2728	PEM1H	*	III A 3
W60TI001	WDF	6/1/2014	193	61.808	-150.3114	PSS1B	DEPRESSIONAL	II C I
W60TI001_OP	OP	6/1/2014	193	61.8082	-150.3117	UPLAND	N/A	I A 3, II C 2
W60TI002	Veg	6/1/2014	192	61.8083	-150.3106	UPLAND	N/A	I A 3, II C 2
W60TI003	WDF	6/1/2014	191	61.8313	-150.2817	PEM1B	DEPRESSIONAL	III A 3
W60TI004	WDF	6/2/2014	190	61.8341	-150.2804	PEM1/SS1B	DEPRESSIONAL	III A 2, II C 2
W60TI005	Veg	6/2/2014	190	61.8341	-150.2809	UPLAND	N/A	I C 1
W60TI006	WDF	6/2/2014	188	61.9255	-150.2017	PEM1/SS1B	DEPRESSIONAL	III A 2, II C 2
W60TI007	Veg	6/2/2014	189	61.9238	-150.2045	UPLAND	N/A	II B 2, II C 2, III A 2
W60TI008	WDF	6/3/2014	187	61.9459	-150.1957	PSS1B	FLAT	II C 1
W60TI008_OP	OP	6/3/2014	187	61.9466	-150.1952	UPLAND	N/A	II B 2, II C 2
W60TI009	Veg	6/3/2014	187	61.9467	-150.1952	UPLAND	N/A	II B 2, II C 2
W60TI010	WDF	6/3/2014	186	61.949	-150.1938	PSS1/ EM1C	DEPRESSIONAL	II C 2, III A 2
W60TI010_OP	OP	6/3/2014	186	61.9485	-150.1941	PSS1B	*	II B 2, II C 2
W60TI011	Veg	6/3/2014	186	61.9482	-150.1943	UPLAND	N/A	II B 2, II C 2
W60TI012	WDF	6/3/2014	185	61.9553	-150.1912	UPLAND	N/A	II C 2
W60TI012_OP	OP	6/3/2014	185	61.9556	-150.1889	PSS4/1B	*	II A 3, II C 2
W60TI013	WDF	6/3/2014	184	61.9871	-150.1974	PEM1/SS1B	FLAT	II B 2, III A 2
W60TI013_OP	OP	6/3/2014	184	61.9862	-150.1976	PSS1/3B	*	II C 2
W60TI014	WDF	6/4/2014	183	61.988	-150.1973	UPLAND	N/A	II B 2, II C 2
W60TI015	WDF	6/4/2014	181	62.032	-150.1967	PEM1/SS1B	DEPRESSIONAL	III A 2, II C 2
W60TI015_OP	OP	6/4/2014	181	62.0322	-150.1965	PSS4/1B	*	II A 2, II C 2
W60TI016	WDF	6/4/2014	182	62.0317	-150.1972	PEM1B	DEPRESSIONAL	III A 2
W60TI017	WDF	6/4/2014	179	62.0357	-150.1927	PSS4/1B	DEPRESSIONAL	II A 3, II C 2
W60TI018	WDF	6/4/2014	180	62.0352	-150.193	PEM1/SS1F	DEPRESSIONAL	III A 3, II C 2
W60TI019	WDF	6/5/2014	177	62.048	-150.1785	PSS4/1B	DEPRESSIONAL	II A 3, II C 2
W60TI020	WDF	6/5/2014	176	62.0481	-150.1783	PUB/ ABH	DEPRESSIONAL	III D 1

Feature ID	Data Type ¹	Date	Field Target #	Latitude	Longitude	Cowardin Code	HGM Classification	Vegetation Classification
W60TI020_OP	OP	6/5/2014	176	62.0479	-150.1776	PEM1F	*	III A 3
W60TI021	Veg	6/5/2014	176	62.0483	-150.1748	UPLAND	N/A	I C 2, II C 2
W60TI022	WDF	6/5/2014	178	62.0477	-150.179	PEM1/SS1B	DEPRESSIONAL	III A 2, II C 2
W60TI023	WDF	6/5/2014	173	62.0581	-150.1671	PSS1/EM1C	RIVERINE	II C 2, III A 3
W60TI023_OP	OP	6/5/2014	173	62.0581	-150.1668	N/A	N/A	N/A
W60TI024	WDF	6/5/2014	174	62.0571	-150.1686	PSS1/EM1B	DEPRESSIONAL	II C 2, III A 2
W60TI025	WDF	6/5/2014	175	62.0569	-150.1686	UPLAND	N/A	I A 2, II B 2
W60TI025_OP	OP	6/5/2014	175	62.0569	-150.1694	PF04/SS4B	*	I A 2, II A 2
W60TI026	Veg	6/5/2014	173	62.0576	-150.1679	UPLAND	N/A	I C 2, II C 2
W60TI027	WDF	6/6/2014	170	62.0645	-150.1595	PSS4/1B	DEPRESSIONAL	II A 2, II C 2
W60TI028	WDF	6/6/2014	171	62.0644	-150.16	PF04/SS4B	FLAT	I A 2, II A 2
W60TI028_OP	OP	6/6/2014	171	62.0641	-150.1605	UPLAND	N/A	I C 2, II C 2
W60TI029	WDF	6/5/2014	172	62.0641	-150.1608	UPLAND	N/A	I C 2, II B 2
W60TI030	WDF	6/5/2014	169	62.0646	-150.1597	PSS4/1B	DEPRESSIONAL	II A 2, II C 2
W60TI031	WDF	6/8/2014	167	62.1223	-150.164	PSS4/1B	DEPRESSIONAL	II A 2, II C 2
W60TI032	WDF	6/8/2014	166	62.123	-150.1637	PF04B	DEPRESSIONAL	I A 2
W60TI033	Veg	6/8/2014	166	62.1233	-150.1646	UPLAND	N/A	I C 2
W60TI034	WDF	6/8/2014	168	62.1223	-150.1636	PSS4/EM1B	DEPRESSIONAL	II A 3, III A 2
W60TI035	WDF	6/8/2014	165	62.1357	-150.1653	PSS1/4/EM1B	DEPRESSIONAL	II C 2, III A 3
W60TI036	WDF	6/8/2014	164	62.1358	-150.1652	PSS4/1B	DEPRESSIONAL	II A 2, II C 2
W60TI037	WDF	6/9/2014	163	62.1362	-150.1652	PF04B	DEPRESSIONAL	I A 2
W60TI038	WDF	6/11/2014	153	62.2427	-150.2513	PSS1C	RIVERINE	II C 1
W60TI039	WDF	6/11/2014	152	62.2858	-150.2474	PSS1C	RIVERINE	II C 2
W60TI040	WDF	6/11/2014	151	62.2882	-150.2495	PEM1B	DEPRESSIONAL	III A 2
W60TI041	WDF	6/30/2014	161	62.1681	-150.195	PSS4/EM1B	DEPRESSIONAL	II A 2, III A 2
W60TI042	WDF	6/13/2014	160	62.1884	-150.216	PSS1/4/EM1F	DEPRESSIONAL	II C 2, III A 2
W60TI043	WDF	6/13/2014	159	62.1888	-150.2134	PF04/1B	RIVERINE	I C 2
W60TI044	WDF	6/14/2014	154	62.2313	-150.2404	UPLAND	N/A	I C 1
W60TI045	WDF	6/14/2014	155	62.2314	-150.2399	PSS4/1B	DEPRESSIONAL	II A 2, II B 2
W60TI046	WDF	6/14/2014	156	62.2314	-150.2393	PSS1F	DEPRESSIONAL	II C 2
W60TI047	WDF	6/30/2014	162	62.1678	-150.1942	PEM1F	FLAT	III A 3
W60TI048	WDF	6/30/2014	162	62.1676	-150.1923	PFO1/4B	FLAT	I C 1, II C 1
W60TI049	WDF	7/8/2014	157	62.221	-150.2349	PSS4/1B	FLAT	II A 3, II C 2

Feature ID	Data Type ¹	Date	Field Target #	Latitude	Longitude	Cowardin Code	HGM Classification	Vegetation Classification
W60TI050	WDF	7/8/2014	158	62.2208	-150.2359	PEM1/SS4E	FLAT	III A 3, II A 3
W60TI051	WDF	7/9/2014	150	62.29	-150.2512	PEM1B	DEPRESSIONAL	III A 2
W60TI052	WDF	9/4/2014	205	62.2084	-150.2376	PEM1E	DEPRESSIONAL	III A 3
W60TI052_OP	OP	9/4/2014	205	62.2084	-150.2359	PEM1/SS1B	*	III A 2, II B 2
W60TI053	WDF	9/4/2014	206	62.1985	-150.235	UPLAND	N/A	I C 2, II C 2
W60TI054	WDF	9/4/2014	207	62.1792	-150.2229	PF01/SS1B	FLAT	I B 2, II B 2, III B 2
W60TI055	WDF	9/5/2014	208	62.1549	-150.2082	PEMI/SS1B	DEPRESSIONAL	III A 2, II B 2
W60TI055_OP	OP	9/5/2014	208	62.1548	-150.2084	R2UBH	*	N/A
W60TI056	WDF	9/5/2014	209	62.1352	-150.2288	PSS1/EM1C	DEPRESSIONAL	II C 2, III A 3
W60TI057	Veg	9/5/2014	211	62.1046	-150.2247	PF01/SS1E	*	I B 2, II B 2
W60TI058	WDF	9/6/2014	210	62.1065	-150.2254	PEM1/SS1F	DEPRESSIONAL	III A 3, II C 2
W60TI059	WDF	9/6/2014	212	62.1034	-150.2253	PFO4/SS1B	FLAT	I A 2, II C 2
W60TI060	Veg	9/6/2014	213	62.086	-150.2128	PF04/SS1B	*	I A 2, II B 1
W60TI061	WDF	9/7/2014	214	62.0609	-150.2039	PSS1/4C	DEPRESSIONAL	II B 2, II C 2
W60TI062	WDF	9/7/2014	215	62.0501	-150.2095	PEMI/SS1E	FLAT	III A 3, II C 2
W60TI063	WDF	9/7/2014	216	62.0492	-150.2115	UPLAND	N/A	I C 2, II C 2
W60TI063_OP	OP	9/7/2014	216	62.0492	-150.2116	R4SB	*	N/A
W60TI064	WDF	9/7/2014	217	62.0428	-150.2133	PEM1/SS1E	DEPRESSIONAL	III A 3, II C 2
W60TI065	WDF	9/7/2014	218	62.0423	-150.2136	UPLAND	N/A	I A 1, II B 2
W60TI066	Veg	9/7/2014	219	62.0355	-150.2151	UPLAND	N/A	I C 2, II B 2, III A 2
W60TI067	WDF	9/8/2014	221	62.0318	-150.2051	PSS4/EM1B	DEPRESSIONAL	II A 3, III A 2
W60TI068	WDF	9/8/2014	220	62.0317	-150.2083	UPLAND	N/A	I C 2, II B 2
W60TI068_OP	OP	9/8/2014	220	62.0319	-150.2089	PSS4/EM1B	*	I B 2, III A 3
W60TI069	WDF	9/8/2014	223	61.768	-150.3201	UPLAND	N/A	I C 2, II B 2
W60TI070	WDF	9/8/2014	224	61.7612	-150.3139	PSS3/1B	DEPRESSIONAL	I C 2, III A 2
W60TI071	Veg	9/8/2014	225	61.7602	-150.3142	UPLAND	N/A	I C 3, II B 2
W60TI072	Veg	9/6/2014	210	62.1062	-150.2247	UPLAND	N/A	I C 3, II C 2
W61HT001	WDF	6/27/2014	53	63.8855	-149.0751	PSSI/4B	FLAT	II C 1, II A 3
W61HT001_OP	OP	6/27/2014	53	63.8845	-149.0798	UPLAND	N/A	I C 2
W61HT002	WDF	6/28/2014	60	63.6074	-148.7725	PSS4/1B	SLOPE	I A 2, II C 1
W61HT002_OP	OP	6/28/2014	60	63.6075	-148.7714	PEM1/SS1/4C	*	III A 1, II C 1, II B 2
W61HT003	WDF	6/28/2014	57	63.672	-148.7644	PSS1/4B	FLAT	II C 1, II A 2
W61HT003_OP	OP	6/28/2014	57	63.6714	-148.7642	PSS1C	*	II C 1

Feature ID	Data Type ¹	Date	Field Target #	Latitude	Longitude	Cowardin Code	HGM Classification	Vegetation Classification
W61HT004	WDF	6/28/2014	58	63.6724	-148.7633	UPLAND	N/A	II C 1, I A 2
W61HT004_OP	OP	6/28/2014	58	63.6721	-148.7632	PSS1/4B	*	II C 1, II A 2
W61HT005	WDF	6/29/2014	59	63.6414	-148.7389	PEM1B		III A 2
W61HT005_OP	OP	6/29/2014	59	63.6413	-148.7387	PEM1E	*	III A 3
W61HT006	WDF	6/29/2014	72	63.3494	-149.075	PSS1C	RIVERINE	II B 1
W61HT006_OP	OP	6/29/2014	72	63.3495	-149.0753	PEM1E	*	III A 3
W61HT007	WDF	6/29/2014	80	63.1576	-149.4106	PEM1E	FLAT	III A 3
W61HT008	WDF	6/29/2014	81	63.1574	-149.4109	PEM1F	FLAT	III A 3
W61HT009	WDF	6/29/2014	82	63.1573	-149.4113	PUB/ABH	DEPRESSIONAL	III D 1
W61HT010	WDF	6/30/2014	55	63.8192	-148.9913	PSS1/EM1B	FLAT	II C 1, III A 2
W61HT010_OP	OP	6/30/2014	55	63.8191	-148.991	PSS1/EM1B	*	II C 1, III A 2
W61HT011	WDF	6/30/2014	54	63.8198	-148.9922	PSS1/EM1B	FLAT	II C 1, III A 2
W61HT011_OP	OP	6/30/2014	54	63.8197	-148.9924	PSS1C	*	II C 1, III A 3
W61HT012	WDF	6/30/2014	56	63.8099	-148.967	PSS1/EM1B	FLAT	II C 1, III A 2
W61HT012_OP	OP	6/30/2014	56	63.8103	-148.9679	PSS1A	*	II B 1
W61HT013	WDF	7/1/2014	83	63.1423	-149.4213	UPLAND	N/A	I A 2, II B 2, II C 1
W61HT014	WDF	7/1/2014	84	63.1328	-149.4491	UPLAND	N/A	I C 2, II B 2, II C 1
W61HT014_OP	OP	7/1/2014	84	63.1323	-149.4503	UPLAND	N/A	I A 2, II C 1
W61HT015	WDF	7/1/2014	85	63.1143	-149.4715	UPLAND	N/A	III A 1
W61HT015_OP	OP	7/1/2014	85	63.1145	-149.4714	PSS1C	*	II B 1
W61HT016	WDF	7/2/2014	115	62.5653	-150.2594	UPLAND	N/A	III A 3
W61HT016_OP	OP	7/2/2014	115	62.5654	-150.2592	UPLAND	N/A	II B 1
W61HT017	WDF	7/2/2014	114	62.5659	-150.2634	UPLAND	N/A	I B 1, III A 1
W61HT017_OP	OP	7/2/2014	114	62.5661	-150.2626	PEM1C	*	III A 3
W61HT018	WDF	7/2/2014	113	62.5648	-150.265	PEM1B	DEPRESSIONAL	III A 3
W61HT019	WDF	7/3/2014	117	62.5571	-150.2628	UPLAND	N/A	I C 3, II B 2, III A 1
W61HT019_OP	OP	7/3/2014	117	62.5571	-150.2623	PEM1B	*	III A 2
W61HT020	WDF	7/3/2014	116	62.5577	-150.2654	PEM1/SS1B	FLAT	III A 3, II C 2
W61HT021	WDF	7/5/2014	74	63.3134	-149.1822	PEM1/SS1F	FLAT	III A 3, II C 2
W61HT022	WDF	7/5/2014	73	63.315	-149.1814	UPLAND	N/A	II B 2, II C 1
W61HT022_OP	OP	7/5/2014	73	63.3152	-149.1819	UPLAND	N/A	II C 1
W61HT022_OP1	OP	7/5/2014	73	63.3149	-149.181	UPLAND	N/A	II B 2, II C 1
W61HT023	WDF	7/5/2014	67	63.4159	-148.8457	PSS1/EM1B	FLAT	II C 1, III A 2

2014 Wetland and Vegetation Field Data Summary Table

Feature ID	Data Type ¹	Date	Field Target #	Latitude	Longitude	Cowardin Code	HGM Classification	Vegetation Classification
W61HT023_OP	OP	7/5/2014	67	63.4161	-148.8459	PSS1C	*	II C 1
W61HT024	WDF	7/5/2014	66	63.4377	-148.8269	PSSIB	FLAT	II C 1
W61HT024_OP	OP	7/5/2014	66	63.4377	-148.8278	UPLAND	N/A	I A 2, II C 1
W61HT025	WDF	7/6/2014	64	63.4416	-148.8026	PSSIB	SLOPE	II C 1
W61HT025_OP	OP	7/6/2014	64	63.4418	-148.8027	UPLAND	N/A	I A 2, II A 2, II C 1
W61HT026	WDF	7/6/2014	65	63.4416	-148.8039	UPLAND	N/A	I A 2, II C 2, III A 1
W61HT027	WDF	7/6/2014	68	63.4025	-148.8579	PEM1/SS1B	SLOPE	III A 2, II C 2
W61HT027_OP	OP	7/6/2014	68	63.4023	-148.858	UPLAND	N/A	II C 2
W61HT028	WDF	7/6/2014	69	63.3799	-148.9101	PSS1/EM1B	FLAT	II C 1, III A 2
W61HT029	WDF	7/6/2014	71	63.374	-148.9484	PSS1/EM1B	RIVERINE	II C 1, III A 2
W61HT030	WDF	7/6/2014	70	63.3742	-148.9471	PSS1C	RIVERINE	II B 1, II C 2
W61HT031	WDF	7/7/2014	75	63.2556	-149.2624	PEM1/SS1F	FLAT	III A 3, II C 2
W61HT031_OP	OP	7/7/2014	75	63.2551	-149.2626	PSS1B	*	II C 1
W61HT032	WDF	7/7/2014	76	63.254	-149.2642	PSS1/EM1B	FLAT	II C 1, III A 3
W61HT033	WDF	7/7/2014	77	63.2536	-149.2647	PSS1B	FLAT	II B 1, III A 2
W61HT034	WDF	7/8/2014	79	63.2366	-149.2748	PFO1/4/SS1B	RIVERINE	I C 3, III A 2
W61HT035	WDF	7/8/2014	78	63.2441	-149.2724	UPLAND	N/A	II C 2, III A 2
W61HT036	WDF	7/8/2014	63	63.4654	-148.8062	PSS1/EM1B	FLAT	II A 2, II C 1, III A 2
W61HT036_OP	OP	7/8/2014	63	63.4654	-148.8062	PSS1B	*	II C 1
W61HT037	WDF	7/8/2014	62	63.5206	-148.8005	UPLAND	N/A	I A 2, II C 1, III A 1
W61HT038	WDF	7/8/2014	61	63.5235	-148.8019	UPLAND	N/A	I A 2, II C 2
W61HT038_OP	OP	7/8/2014	61	63.5235	-148.8021	PEM1F	*	III A 3
W61LH001	WDF	6/7/2014	1	65.4459	-148.6187	PSS4/1/F04B	FLAT	II B 1, I A 2
W61LH002	WDF	6/7/2014	2	65.4451	-148.6184	PSS1/4C	RIVERINE	II C 1
W61LH002_OP	OP	6/7/2014	2	65.445	-148.6185	R4SB	*	N/A
W61LH003	WDF	6/7/2014	3	65.4441	-148.6186	UPLAND	FLAT	II A 2, II B 2, II C 2
W61LH004	WDF	6/7/2014	4	65.4303	-148.6122	PSS4B	FLAT	II A 2
W61LH005	WDF	6/8/2014	5	65.4195	-148.6085	UPLAND	FLAT	I A 2
W61LH005_OP	OP	6/8/2014	5	65.4201	-148.6075	PSS1C	*	II C 1
W61LH006	WDF	6/8/2014	6	65.4045	-148.6171	PSS1B	FLAT	II B 2, II C 2
W61LH006_OP	OP	6/8/2014	6	65.4045	-148.6177	PSS1/4B	*	II B 2, II C 2
W61LH007	WDF	6/8/2014	7	65.3952	-148.6277	PSS4/1B	FLAT	II A 2, II C 2
W61LH008	WDF	6/8/2014	8	65.3196	-148.6614	PSS 13B	FLAT	II C 1, II C 2

2014 Wetland and Vegetation Field Data Summary Table

Feature ID	Data Type ¹	Date	Field Target #	Latitude	Longitude	Cowardin Code	HGM Classification	Vegetation Classification
W61LH009	WDF	6/9/2014	9	65.3075	-148.6655	UPLAND	N/A	I A 2, II C 1
W61LH009_OP	OP	6/9/2014	9	65.307	-148.6652	PSS1B	*	II C 1
W61LH010	WDF	6/8/2014	7	65.3948	-148.6281	PSS1/EM1B	FLAT	II C 1, III A 2
W61LH011	WDF	6/9/2014	11	65.2631	-148.6819	UPLAND	N/A	II C 1
W61LH011_OP	OP	6/9/2014	11	65.2629	-148.6822	PSS1B	*	II B 2, II C 2
W61LH011_OP1	OP	6/9/2014	10	65.2642	-148.6791	UPLAND	N/A	II B 1
W61LH012	WDF	6/9/2014	12	65.2143	-148.6904	PSS1B	FLAT	II C 1
W61LH012_OP	OP	6/9/2014	12	65.2141	-148.6906	PSS1/EM1B	*	II C 1, III B 2
W61LH013	WDF	6/10/2014	13	65.1957	-148.7037	PSS4/1B	FLAT	I A 2, II A 2, II C 1
W61LH014	WDF	6/10/2014	14	65.1945	-148.7052	PSS4/1B	FLAT	II A 2, II C 2
W61LH015	WDF	6/10/2014	15	65.1256	-148.7437	PSS1B	DEPRESSIONAL	II B 1
W61LH016	WDF	6/11/2014	16	65.1146	-148.7285	PSS1/4	FLAT	II C 2, II A 2
W61LH016_OP	OP	6/11/2014	16	65.1145	-148.7291	PSS1/4B	*	II B 1 , II C 1 , III A 3
W61LH017	WDF	6/10/2014	17	65.1076	-148.7204	PSS1/EM1B	FLAT	II C 1, III A 2
W61LH018	WDF	6/10/2014	18	65.1074	-148.7203	PSS1/EM1B	FLAT	II C 1, III A 2
W61LH019	WDF	6/11/2014	19	65.0862	-148.7217	PEM 1 SS1B	FLAT	III A 2, II C 1
W61LH020	WDF	6/11/2014	20	65.0851	-148.7205	PSS1/EMIB	FLAT	II C 1, III A 2
W61LH021	WDF	6/11/2014	21	65.0843	-148.7199	UPLAND	N/A	I B 2, III B 1
W61LH022	WDF	6/12/2014	22	65.0732	-148.7052	UPLAND	N/A	I C 2, II A 2
W61LH023	WDF	6/12/2014	23	65.0354	-148.6759	PF04/SS1B	FLAT	I A 2, II C 2
W61LH024	WDF	6/12/2014	24	65.0339	-148.6752	UPLAND	N/A	I C 1
W61LH025	WDF	6/14/2014	25	64.9949	-148.6753	UPLAND	N/A	II C 2, III A 2
W61LH025_OP	OP	6/14/2014	25	64.9948	-148.6748	PSS1/EM1B	*	II C 2, III A 2
W61LH026	WDF	6/12/2014	26	64.9946	-148.6742	UPLAND	N/A	II C 2
W61LH027	WDF	6/14/2014	27	64.9943	-148.6724	UPLAND	N/A	II A 2, I A 2
W61LH028	WDF	6/14/2014	35	64.782	-148.8209	UPLAND	N/A	I A 2, II C 1
W61LH028_OP	OP	6/14/2014	35	64.7822	-148.8211	UPLAND	N/A	II B 1
W61LH029	WDF	6/14/2014	36	64.7824	-148.8228	PM1B	FLAT	III A 2
W61LH030	WDF	6/15/2014	34	64.7887	-148.8101	PSS4/IB	FLAT	I A 2, II C 2
W61LH030_OP	OP	6/15/2014	34	64.7882	-148.8117	PSS4B	*	II A 1
W61LH030_OP1	OP	6/15/2014	34	64.7873	-148.8118	PSS4/1B	*	II A 2, II C 2
W61LH031	WDF	6/15/2014	37	64.7643	-148.8276	PF04/SSIB	FLAT	I A 2, II C 1
W61LH031_OP	OP	6/15/2014	37	64.7642	-148.8271	PSS4/1C	*	II A 2, II C 2

2014 Wetland and Vegetation Field Data Summary Table

Feature ID	Data Type ¹	Date	Field Target #	Latitude	Longitude	Cowardin Code	HGM Classification	Vegetation Classification
W61LH032	WDF	6/15/2014	38	64.7635	-148.8271	UPLAND	N/A	I C 2, II B , II C 2
W61LH033	WDF	6/16/2014	39	64.7391	-148.8337	PFO4/SS1B	FLAT	I A 2, II C 1
W61LH033_OP	OP	6/16/2014	39	64.739	-148.8336	UPLAND	N/A	I B 2, II C 1
W61LH034	WDF	6/16/2014	40	64.7363	-148.8406	PSS4B	FLAT	I A 2, II C 1
W61LH034_OP	OP	6/16/2014	40	64.7365	-148.8371	UPLAND	N/A	I C 2, II C 2
W61LH035	WDF	6/16/2014	41	64.7218	-148.8574	PSS1/4B	FLAT	II C 2, II A 2
W61LH035_OP	OP	6/16/2014	41	64.7221	-148.8575	PF04/SS1B	*	I A 2, II B 1
W61LH036	WDF	6/16/2014	42	64.7215	-148.8583	PF04/SS4B	FLAT	I A 2, II A 2
W61LH037	WDF	6/16/2014	43	64.7209	-148.856	PF04/SS1B	FLAT	I A 2, II C 1
W61LH037_OP	OP	6/16/2014	43	64.7203	-148.8572	UPLAND	N/A	I B 1, II C 2
W61LH038	WDF	6/17/2014	44	64.709	-148.8758	UPLAND	N/A	I A 2, II C 1
W61LH038_OP	OP	6/17/2014	44	64.7093	-148.8756	PSS1B	*	II B 1
W61LH039	WDF	6/17/2014	45	64.7081	-148.8741	PSS1B	FLAT	II B 1
W61LH039_OP	OP	6/17/2014	45	64.7086	-148.8735	PFO4/SS1B	*	I A 2, II B 2, III A 2
W61LH040	WDF	6/17/2014	47	64.6867	-148.9252	PF01/SS1B	FLAT	I B 2, II C 2
W61LH041	WDF	6/17/2014	46	64.6863	-148.9226	UPLAND	N/A	II B 1, II C 2
W61LH041_OP	OP	6/17/2014	46	64.6864	-148.9224	PSS1/EM1B	*	III A 2, II C 2
W61LH041_OP1	OP	6/17/2014	46	64.6853	-148.9225	PEM1C	*	III A 3
W61LH042	WDF	6/18/2014	48	64.0043	-149.1292	PSS1/EM1B	FLAT	II C 1, III A 2
W61LH042_OP	OP	6/18/2014	48	64.005	-149.1299	PSS1/4B	*	II C 1, II A 2
W61LH043	WDF	6/19/2014	49	63.9926	-149.1228	PSS1/4B	FLAT	II B 2, II C 1
W61LH043_OP	OP	6/19/2014	49	63.9924	-149.1228	PSS1/4/EM1B	*	II C 1, III A 2
W61LH044	WDF	6/19/2014	50	63.9467	-149.1097	PFO4/SS1B	FLAT	I A 2, II B 2, II C 1
W61LH045	WDF	6/19/2014	51	63.9439	-149.1071	PSS1/4B	FLAT	II C 1, II A 2
W61LH046	WDF	6/27/2014	52	63.9307	-149.0932	PSS1/EM1B	FLAT	II C 1, III A 2
W61LH046_OP	OP	6/27/2014	52	63.9308	-149.0919	PSS1/4B	*	II C 1, II A 2
W61LH047	WDF	6/11/2014	20	65.086	-148.72	PEM1 SS1C	FLAT	III A 3, II C 1

¹WDF = Wetland Data Form; Veg = Vegetation Data Form; OP = Observation Point, No Data Form

*HGM Classification was not collected on Vegetation Forms or at Observation Points

SITE DESCRIPTION			1			
Survey Type: Centerline Acces	ss Road (explain)	Other (expla	iin) <u>X cossidic</u>	Field Targ	jet: 087	Map #: <u>59</u> Map Date: <u>5/27/</u> /
Date: ()6 - 09 - 20 14	Project Name & No.:	Alaska LNG	26221306		Feature Id:	W60HT:001
Investigators: Dan La Plant,	Zoe Meade					Team No.: WGO
State: Alaska	Region: Alaska		Milepost: (003		
Latitude: 62° 59' 58.11"		Longitude	149° 33	24.68	3 "	Datum: WGS84
Logbook No.: 2	Logbook Page No.: (100	Picture No.:	PHT	001_	N, S, Pit, Plug

SITE PARAMETERS	
Subregion: interior	Landform (hillslope, terrace, hummocks, etc.): hillslope
Slope (%): 3 - 5 0 0	Local relief (concave, convex, none):
Pre-mapped Alaska LNG/NWI classification: PSS 1F	Soil Map Unit Name:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (if no explain in Notes)	Are "Normal Circumstances" present: Yes No_X (If no, explain in Notes.)
Are Vegetation, Soil, or Hydrology Significantly Disturbe	d? No X (If yes, explain in Notes)
Are Vegetation, Soil, or Hydrology_ X Naturally Problematic	c? No (If yes, explain in Notes.)
SUMMARY OF FINDINGS	
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area within a Wetland? Yes No
Hydric Soil Present? Yes No	Wetland Type: PSS1B
Wetland Hydrology Present? Yes No	Alaska Vegetation Classification (Viereck): IIB 2_

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

Beaver dans complex See sketch on page 001 in 2 Jogbook 2

1. 2. 3. 4.		(Y/N)	1	No. of Dominant Species that are OBL, FACW, or FAC:
3. 4.	-			Total Number of Dominant Species Across All Strata: _2
4.				│ % Dominant Species that are OBL, FACW, or FAC: _/∕∕∕∕∕ (
				Prevalence Index worksheet:
Total Cover	0		1	
50% of total cover	: 0 20)% of total cov	ver:O	OBL species:0X 1 =0
Sapling/Shrub Stratum (2.6')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $\cancel{83}$ x 2 = $\cancel{166}$ FAC species $\cancel{88}$ x 3 = $\cancel{264}$ FACU species $\cancel{11}$ x 4 = $\cancel{44}$
1. Alnus sep	15		FAC	$\begin{array}{c c} \hline & & & \\ \hline & & & \\ \hline & & & \\ \hline \\ \hline$
2. Salex nichardsonii	65	У	FACW	
3. Salex Pulchra	15		FACU	PI = B/A = 2.60 (B)
4. Spiraea stevenii	5		FACU	
5.]
6.				
7.				
8.		-		
9.		1		
Total Cover: 50% of total cover:	2	% of total cov	er: 20	
VEGETATION (use scientific names of plants			-1-1	
Herb Stratum(G')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3.0
1. Chamerion angustofolium	1		FACU	Morphological Adaptations ¹ (Provide supporting data in
2. Mertensia paniculata	1		FACU	Notes)
3. Anemone richardsonii	T		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Viola palustris	3		FACW	¹ Indicators of hydric soil and wetland hydrology must be present unless
5. Geranium erianthum	4		FACU	disturbed or problematic.
6. Calama grostis Canadensis	60	У	FAC	A State of the sta
7. Smilaciona stellata	1		FAC.	0 % Bare Ground
B. Veratrum Viride	10		FAC	<u>30</u> % Cover of Wetland Bryophytes
⁹ . Sanguisorba canadensis	T		FACW	50 Total Cover of Bryophytes
^{0.} Equisetum Arvense	2		FAC	20 % Cover of Water
Total Cover:_	85			Hydrophytic Vegetation Present (Y/N):
50% of total cover:	42.5 200	% of total cove	er: 17	Notes: (If observed, list morphological adaptations below):

arctis Lupinus

2011		-	Date 06 - 0 9	Easture II	NGOT	+02-		Soil Pit Required (Y/N)
SOIL	E DESCRIPTION: (I		discrimination of the second				confirm the absence	
	Matrix	Jeschbe	Redox Features		ument the			
Depth (inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0 - 4		/0		70	Type	LUC	Fibric	organics
4-22	10 YR 4 3	106				-	Coarse sand	
1- L L	10 /15 115	100					Course surg	
	-	-	-				-	
¹ Type: C=Cor	ncentration, D=Deple	tion, RM	I=Reduced Matrix	x, CS=Cov	ered or Co	ated Sand G	Grains, ² Location:	PL=Pore Lining, M=Matrix.
HYDRIC SOIL	L INDICATORS			10-10-	2		INDICATORS F	OR PROBLEMATIC HYDRIC SOILS ³
Histosol or His	stel (A1)	_	Alaska Gle	yed (A13)			Alaska Color Ch	nange (TA4) ⁴
Histic Epipedo	on (A2)		Alaska Rec	lox (A14)			Alaska Alpine S	wales (TA5)
	A3)		Alaska Gle	yed Pores	(A15)		Alaska Redox w	
Hydrogen Sul								without 5Y Hue or Redder Underlying
	urface (A12)	2					Other (Explain i	n Notes) 🗙 * 461
³ One indicator	or of hydrophytic year	tation c	ne primary indica	tor of wetla	and hydrolo	oov, and an		be position must be present unless
disturbed or p	problematic.					3,,		
	of color change in No							
	ver (if present). Type	e.	•	Depth (i	nches):			
	ayer (if present): Type	e:	and the product of some difference of the					
Restrictive La	Present (Y/N):	(+ Soll re	checked	on 6/30/	14 Bg 2, Christi	opnen. ski lajbook 4000-3 pag
Restrictive La	Present (Y/N):	(+ Soll re	ology p S by	on 6/20/ Diesent begin	with land	Iscop position _
Restrictive La Hydric Soil P Notes: hyd & 7	Present (Y/N):	l Istr , th	~, wella outlet	+ Source Q hyd, block-	elayy p S by	on 6/20/ Diesent begin	14 Bg 2, Christi	Iscop position _
Restrictive La Hydric Soil P Notes: hya & 7 HYDROLOG	Present (Y/N): drophy fix vag terrare e	(, Ar TORS (1	~, wella outlet	* Soil ra Q hyd, D l ocle- is sufficien	olary p S by	on 6/20/ Diesent begin	with lane with lane in drives.	Iscop position _
Restrictive La Hydric Soil P Notes: hya & 7 HYDROLOG Surface Wate	Present (Y/N): drophy fix vag terrare « Y PRIMARY INDICA	tors (a	my one indicator	* Soil ra D. hyd. D l octc- is sufficien (B6)	olayy p S by D s	on 6/20) Dresent Deave SECONDAR Nater-staine Leaves (B9)	with lane with lane in drives.	or more required) Stunted or Stressed Plants (D1)
Restrictive La Hydric Soil P Notes: hyd g 7 HYDROLOGY Surface Wate High Water Ta	Present (Y/N): drophy fix vag terrare ee Y PRIMARY INDICA er (A1)X	TORS (i Su (B)	my one indicator	 South of the second s	t) s agery (Con G(2) Dresent Deave SECONDAR Water-staine Leaves (B9) Drainage Pa Drainage Pa	ty indicators (2 of the second	or more required) Stunted or Stressed Plants (D1)
Restrictive La Hydric Soil P Notes: hyd Surface Wate High Water Ta Saturation (A:	Present (Y/N): drophy fix Wy tervare ev Y PRIMARY INDICA Pr (A1) Table (A2)X 3)	TORS (1 Su Int (B) Co	m, wolla crolled any one indicator rface Soil Cracks indation Visible or 7) arsely Vegetated ncave Surface (B	 Soil re Soil re b l ocle- is sufficien (B6)	t) s agery c	Con G(20) Dresent Beaut SECONDAR Water-staine Leaves (B9) Drainage Pa Drainage Pa Drainage Pa Drainage Pa Drainage Pa Drainage Pa	A DS S. Christi with land with land tr christian A Discrete State A Discrete St	brown position or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic
Restrictive La Hydric Soil P Notes: hyd g 7 HYDROLOGY Surface Wate High Water Ta Saturation (A:	Present (Y/N): drophy fix Vig fervare ee Y PRIMARY INDICA er (A1) Table (A2)X	TORS (a Su Bu Bu Co Ma	any one indicator rface Soil Cracks indation Visible or arsely Vegetated incave Surface (B arl Deposits (B15)	 Soil re Soil re b l ocle- is sufficien (B6)	t) s agery c	Con G(20) Dresent Deaves SECONDAR Water-staine Leaves (B9) Drainage Pa Drainage Pa Drainage Rh Living Roots	A DS S. Christi with land with land tr christian A Discrete state A Discrete st	br more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
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Restrictive La Hydric Soil P Notes: hya & 7 HYDROLOG Surface Wate High Water Ta Saturation (A Saturation (A Water Marks Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Surface Wate	Present (Y/N):	TORS (i Su Su Su Inu (B) Sp Co Ma Dr Wa Oc Dr Wa V	any one indicator frace Soil Cracks indation Visible or arsely Vegetated incave Surface (B inf Deposits (B15) drogen Sulfide lor (C1) y-Season ater Table (C2) her (Explain in No	Southy day	agery [Contractions of the second and the s	14 03 5, Christian with /and try INDICATORS (2 of the second	brup position

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Emergent-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) ○ Sapling (<5 dbh, <6m tall) ○ Tall shrub (2-6m) 15 Short shrub (0.5-2m) 35 Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 Or More Large Patches; Parts of Site
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Exidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Inter/Intermittent Outlet Perennial Intel/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 vrs Return Interval 2-5 vrs
Inter/Intermittent Outlet Perennial Intel/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Inter/Intermittent Outlet Perennial Intel/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Inter/Intermittent OutletPerennial Intet/Perennial Outlet
Inter/Intermittent Outlet Perennial Intet/Perennial OutletX
Intervinternitient Outlet Perennial Intel/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created

Wetland Land Use: High Intensity (i.e., ag.)_ Moderate Intensity (i.e., forestry)_ Low Intensity (i.e. open space)_ X Watershed Land Use: 0-5% Rural_ 5-25% Urbanized 25-50% Urbanized >50% Urbanized Medium (10-100 acres) Large (>100 acres) X

Size: Small (<10 acres)

GPS Technician QA/QC check:

Crew Chief QA/QC check: Man Jollan Х

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT001 Field Target: 087 Date: 06-09-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Z Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated? -

7. Maps

- Difference were the set of the se
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

Х Meade 08

Wetland Scientist (print)

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APPAut

Field Crew Chief (print)

Signature / Date

P.

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SOIL			Date 6 30 /14 F	eature ID	PO		01	Soil Pit Required (Y/N)_
	LE DESCRIPTION: (I	Describe			nent the	indicator or	confirm the abse	
Depth	Matrix		Redox Features			indicator of		
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-4	-						Fibric	organics
1-20	5Y 5/1	95	5Y 314	5	С	PL		and - med-Ifine
							- any -	
	11							
		1	1	1	1 de	4 p		n
	[11]	\$	410 C	ar	Fur,	1 ICE	canald	forming fitances
	oncentration, D=Deple	etion, RM	A=Reduced Matrix,	CS=Covere	ed or Coa	ated Sand (n: PL=Pore Lining, M=Matrix.
			141.1.01	1 (1 10)	A second a second			S FOR PROBLEMATIC HYDRIC SOI
	istel (A1)	_	Alaska Gleye					Change (TA4) ⁴
	on (A2)	_	Alaska Redo					e Swales (TA5)
Black Histic (A			Alaska Gleye	a Pores (A	15)	-		with 2.5Y Hue
lydrogen Sul	lfide (A4)						Layer	d without 5Y Hue or Redder Underlyin
	urface (A12)	_	14				Other (Expla	n in Notes) × 461 low ord
One indicator	or of hydrophytic vege	tation, o	ne primary indicator	r of wetland	hydrolo	gy, and an	appropriate lands	cape position must be present unless
Give details o	of color change in No	tes.	1	1		1 1h		P9 93
Restrictive La	ayer (if present): Type	e:/	Vone	Depth (incl	nes):	NA		
						1		
	1	1						1 1 1
lydric Soil P	Present (Y/N):	/			- Pr	intr-1	Hydra, Dos	tion, 1-11d, Ves Pres
Hydric Soil P Notes: 50;)	Present (Y/N):	1 ut	Dr.J.Ziston	fer A	- Pr Red	iman 1	Hile, por	tion, Hild, Ves Pres
Hydric Soil P Notes: Soil	Present (Y/N):	/ set	Dr.J. Zistor	fer A	- Pr Red	iman-1 y Due	Hilino, Dox	tion, Hild, Ves Pres to at Reboy conc. 5
lydric Soil P Notes: Soil (Ack	Present (Y/N): 1 2.1 10024 m 08 AUA,1454	1 1 tou	In J. Zaston	ter A #As L	- Pr Red	imar-1 -y Due aganz	Hite, Pox to Low	tion, 1-412, Veg Pres to of Redoy care. I last & leteric prob. 50.)
UAK	Present (Y/N):) d / 2024 m 08 AUA, 1454 Y PRIMARY INDICAT	1 tou	in 50,1	#AS U	on	<i>WSANE</i>	5Mm Can	ition, I.t.J.d., UEG Pres to at Reboy care. I lant & literic pros. 50.) 2 or more required)
UALK IYDROLOGY	V PRIMARY INDICAT	I Jur	my one indicator is	#AS L sufficient)	on	<i>WSANE</i>	YUNDICATORS	lant & literic Rob. 50.)
UACK IYDROLOGY	08 AUA.1454	I Irv FORS (a Sui	rr GD,1 Iny one indicator is a face Soil Cracks (B	# As 1 sufficient) 6)	900 S	econdar	YUNDICATORS	land & HARVIC Rob. 50.) 2 or more required)
HYDROLOGY Surface Water	V PRIMARY INDICAT	I Jov TORS (a Sui Inu	Inv one indicator is a face Soil Cracks (B Indation Visible on A	# As 1 sufficient) 6)	S S L	ECONDAR Vater-staine eaves (B9)	YUNDICATORS	2 or more required) Stunted or Stressed Plants (D1)
HYDROLOGY Gurface Water High Water Ta	US AUA, 1450 Y PRIMARY INDICAT or (A1) X able (A2) X	I Jov FORS (a Sui Inu (B7	Inv one indicator is a face Soil Cracks (B Indation Visible on A	# As 1 sufficient) 6)	en s V Lery D	ECONDAR Vater-staine eaves (B9) Vatinage Pa	Y INDICATORS (2 or more required) 2 Stunted or Stressed Plants (D1) Geomorphic Position (D2)
HYDROLOGY Surface Water	US AUA, 1450 Y PRIMARY INDICAT or (A1) X able (A2) X	I Jov FORS (a Sui Inu (B7 Spa	Inv one indicator is face Soil Cracks (B indation Visible on A	#AS 2 sufficient) 6) verial Image	En S - L ery D	CONDAR ECONDAR Vater-staine eaves (B9) Prainage Pa Dividized Rh iving Roots	Y INDICATORS (Ind (tterns (B10) X izospheres along (C3) (2 or more required) Stunted or Stressed Plants (D1)
HYDROLOGY Surface Water High Water Ta Saturation (A3	US AUA, 1450 Y PRIMARY INDICAT or (A1) X able (A2) X	TORS (a Sun (B7 Spa Con	GD, G	#AS L sufficient) 6) Aerial Image	Dry D C P	CONDAR ECONDAR Vater-staine eaves (B9) Drainage Pa Exidized Rh iving Roots resence of	Y INDICATORS (Y INDICATORS (d tterns (B10) X izospheres along (C3) Reduced	2 or more required) 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic
HYDROLOGY Surface Water High Water Ta Saturation (A3 Water Marks (0 AJA, 1450 Y PRIMARY INDICAT er (A1) X able (A2) X (B1)	TORS (a Sun Inu (B7 Spa Con Ma	GD, G	#AS L sufficient) 6) Aerial Image	ery D P Ir	CONDAR Vater-staine eaves (B9) trainage Pa Dividized Rh iving Roots resence of on (C4)	Y INDICATORS I I I I I I I I I I I I I I I I I I	2 or more required) 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOGY Surface Water High Water Ta Saturation (A3 Water Marks (OF AJA, 1450 Y PRIMARY INDICAT er (A1) X able (A2) X	TORS (a Sun Inu (B7 Spa Con Ma	Any one indicator is a structure Iny one indicator is a structure face Soil Cracks (B Indation Visible on A ()	#AS 2 sufficient) 6) verial Image	ery D P Ir	CONDAR Vater-staine eaves (B9) trainage Pa Dividized Rh iving Roots resence of on (C4)	Y INDICATORS (Y INDICATORS (d tterns (B10) X izospheres along (C3) Reduced	2 or more required) 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic
UKK IYDROLOGY Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep	0 AJA, 1450 Y PRIMARY INDICAT er (A1) X able (A2) X (B1)	TORS (a Sun Inu (B7 Spa Con Ma Ma - Hyo Odr	GDI	#AS 2 sufficient) 6) Aerial Image	S S S S S S S S S S	CONDAR Vater-staine eaves (B9) trainage Pa Dividized Rh iving Roots resence of on (C4)	Y INDICATORS (Y INDICATORS (d tterns (B10) X izospheres along (C3) Reduced	2 or more required) 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOGY Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits	US AUA, 1450 Y PRIMARY INDICAT or (A1) X able (A2) X (B1) X cosits (B2) X (B3)	I Jure TORS (a Sun Inu (B7 Spa Con Ma Hyd Odd Dry Wa	GDI G	#AS 2 sufficient) 6) Aerial Image	S S S S S S S S S S	WANK ECONDAR Vater-staine eaves (B9) Inainage Pa Dividized Rh iving Roots resence of on (C4) alt Deposits	Y INDICATORS (Y INDICATORS (d tterns (B10) X izospheres along (C3) Reduced	2 or more required) 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOGY Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits	Ø AJA, 1450 Y PRIMARY INDICAT er (A1) X able (A2) X (B1) posits (B2)	I Jure TORS (a Sun Inu (B7 Spa Con Ma Hyd Odd Dry Wa	GDI	#AS 2 sufficient) 6) verial Image	S S S S S S S S S S	WANK ECONDAR Vater-staine eaves (B9) Inainage Pa Dividized Rh iving Roots resence of on (C4) alt Deposits	Y INDICATORS (Y INDICATORS (d tterns (B10) X izospheres along (C3) Reduced	2 or more required) 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
UACK HYDROLOGY Surface Water High Water Ta Saturation (A3 Vater Marks (Sediment Dep Drift Deposits	US AUA, 1450 Y PRIMARY INDICAT or (A1) able (A2) (B1) cosits (B2) (B3) Crust (B4)	I Jure TORS (a Sun Inu (B7 Spa Con Ma Hyd Odd Dry Wa	GD, G	#AS 2 sufficient) 6) verial Image	S S S S S S S S S S	WANK ECONDAR Vater-staine eaves (B9) Inainage Pa Dividized Rh iving Roots resence of on (C4) alt Deposits	Y INDICATORS (Y INDICATORS (d tterns (B10) X izospheres along (C3) Reduced	2 or more required) 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
UACK HYDROLOGY Surface Water High Water Ta Saturation (A3 Vater Marks (Sediment Dep Drift Deposits	US AUA, 1450 Y PRIMARY INDICAT or (A1) able (A2) (B1) cosits (B2) (B3) Crust (B4)	I Jure TORS (a Sun Inu (B7 Spa Con Ma Hyd Odd Dry Wa	GD, G	#AS 2 sufficient) 6) verial Image	S S S S S S S S S S	WANK ECONDAR Vater-staine eaves (B9) Inainage Pa Dividized Rh iving Roots resence of on (C4) alt Deposits	Y INDICATORS (Y INDICATORS (d tterns (B10) X izospheres along (C3) Reduced	2 or more required) 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOGY Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C ron Deposits (US AUA, 1450 Y PRIMARY INDICAT or (A1) able (A2) (B1) cosits (B2) (B3) Crust (B4)	TORS (a Sun Inu (B7 Spa Con Ma Hyd Odd Dry Wa Oth	GD, G	#AS 2 sufficient) 6) verial Image	S S S S S N S S S S S S S S S S S S S	ECONDAR Vater-staine eaves (B9) Irainage Pa Dxidized Rh iving Roots resence of on (C4) alt Deposits lotes:	SRD Carr INDICATORS Ind Ind Ind Itterns (B10) X izospheres along Ind (C3) Ind Reduced Ind Is (C5) Ind	I and X IHAric Flob. Sol. 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
HYDROLOGY Surface Water High Water Ta Saturation (A3 Nater Marks (Sediment Dep Drift Deposits Algal Mat or C ron Deposits (Surface Water	Ø AJA, 1450 Y PRIMARY INDICAT er (A1) X able (A2) X 3) X (B1) cosits (B2) (B3) (B5) r Present (Y/N): Y	TORS (a Sun Inu (B7 Spa Con Ma Ma Dry Wa Oth	Imp one indicator is a face Soil Cracks (B indicator Visible on A indicator Visible on A indicator Visible on A indicator Surface (B8) rel Deposits (B15)	# As L sufficient) 6) Astronomic and the second	S S S S S N S S S S S S S S S S S S S	ECONDAR Vater-staine eaves (B9) Irainage Pa Dxidized Rh iving Roots resence of on (C4) alt Deposits lotes:	SRD Carr INDICATORS Ind Ind Ind Itterns (B10) X izospheres along Ind (C3) Ind Reduced Ind Is (C5) Ind	2 or more required) 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOGY Surface Water High Water Ta Saturation (A3 Nater Marks (Sediment Dep Drift Deposits Algal Mat or C ron Deposits (Surface Water	US AUAIAK Y PRIMARY INDICAT er (A1) X able (A2) X 3) X (B1) (B3) (B3) (B5)	TORS (a Sun Inu (B7 Spa Con Ma Ma Dry Wa Oth	GDI	# As L sufficient) 6) Astronomic and the second	S S S S S N S S S S S S S S S S S S S	ECONDAR Vater-staine eaves (B9) Irainage Pa Dxidized Rh iving Roots resence of on (C4) alt Deposits lotes:	SRD Carr INDICATORS Ind Ind Ind Itterns (B10) X izospheres along Ind (C3) Ind Reduced Ind Is (C5) Ind	I and X IHAric Flob. Sol. 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
HYDROLOGY Surface Water High Water Ta Saturation (A3 Nater Marks (Sediment Dep Drift Deposits Algal Mat or C ron Deposits (Surface Water Nater Table P Saturation Pre	Ø & AJA, I ASA Y PRIMARY INDICAT er (A1) able (A2) able (A2) (B1) (B1) (B3) (B3) (B5) r Present (Y/N): Y Present (Y/N): Y	I Juri TORS (a Sun Inu (B7 Spa Con Ma - Odd Dry Wa Oth		# As L sufficient) 6) 6)	S S S S S N S S S S S S S S S S S S S	ECONDAR Vater-staine eaves (B9) Irainage Pa Dxidized Rh iving Roots resence of on (C4) alt Deposits lotes:	SRD Carr INDICATORS Ind Ind Ind Itterns (B10) X izospheres along Ind (C3) Ind Reduced Ind Is (C5) Ind	I and X IHAric Flob. Sol. 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
HYDROLOGY Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C ron Deposits (Surface Water Vater Table P Saturation Pre includes capil	Ø & AJA, I ASA Y PRIMARY INDICAT er (A1) able (A2) able (A2) (B1) (B1) (B3) (B3) (B5) r Present (Y/N): Y Present (Y/N): Y	I Juri TORS (a Sun Inu (B7 Spa Con Ma - Odd Dry Wa Oth	Imp one indicator is a face Soil Cracks (B ndation Visible on A) Indation Visible on A) Imp one indicator is a face Soil Cracks (B) Indation Visible on A) Imp one indicator is a face Soil Cracks (B) Indation Visible on A) Imp one indicator is a face Soil Cracks (B) Indation Visible on A) Imp one indicator is a face Soil Cracks (B) Indation Visible on A) Imp one indicator is a face Soil Cracks (B) Indation Visible on A) Imp one indicator Visible on A)	# As L sufficient) 6) 6)	S S S S S N S S S S S S S S S S S S S	ECONDAR Vater-staine eaves (B9) Irainage Pa Dxidized Rh iving Roots resence of on (C4) alt Deposits lotes:	SRD Carr INDICATORS Ind Ind Ind Itterns (B10) X izospheres along Ind (C3) Ind Reduced Ind Is (C5) Ind	I and X IHAric Flob. Sol. 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
HYDROLOGY Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Fon Deposits (Surface Water Vater Table P Saturation Pre Includes capil Jotes:	Ø & AJA, I ASA Y PRIMARY INDICAT er (A1) able (A2) able (A2) (B1) (B1) (B3) (B3) (B5) r Present (Y/N): Y Present (Y/N): Y	I Juri TORS (a Sun Inu (B7 Spa Con Ma - Odd Dry Wa Oth		# As L sufficient) 6) 6)	S S S S S N S S S S S S S S S S S S S	ECONDAR Vater-staine eaves (B9) Irainage Pa Dxidized Rh iving Roots resence of on (C4) alt Deposits lotes:	SRD Carr INDICATORS Ind Ind Ind Itterns (B10) X izospheres along Ind (C3) Ind Reduced Ind Is (C5) Ind	I and X IHAric Flob. Sol. 2 or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)

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SITE DESCRIPTION						
Survey Type: Centerline 🗶 Acc	ess Road (explain)	_ Other (exp	plain)	Field Tar	get: <u>086</u>	Map #: <u>58</u> Map Date: <u>5/2.7/14</u>
Date: 06 - 09 - 2014	Project Name & No.:	: Alaska LN	G 26221306		Feature Ic	1:W60 HT002
Investigators: Dan La Plan	t, Zoe Mead	te				Team No.: W60
State: Alaska	Region: Alaska		Milepost:	602		
Latitude: 63° 00' 40.08	,	Longitud	le: 149° 32	47.86	14	Datum: WGS84
Logbook No.: () () 2.	Logbook Page No.:	2	Picture No.:	PWGO	FT 002	- Nis, Pit, plug
SITE PARAMETERS			N 16			
Subregion: interior			Landform (hi	llslope, terrad	ce, hummock	(s, etc.): +errace
Slope (%): / 5						Concave
Pre-mapped Alaska LNG/NWI classific	ation: PEMI/SSIE	3	Soil Map Uni			
Are climatic/hydrologic conditions on the Yes No (if no ex		of year?	Are "N Yes	ormal Circun KNo		esent: plain in Notes.)
Are Vegetation, Soil, or H	ydrology Significant	tly Disturbed	? No <u>X</u>	_(If yes, exp	lain in Notes	3)
Are Vegetation, Soil, or H	ydrology Naturally F	Problematic?	ν Νο <u>Χ</u>	_ (If yes, exp	plain in Notes	s.)
SUMMARY OF FINDINGS		1	T.	1		
Hydrophytic Vegetation Present? Yes	No	Is	s the Sampled A	Area within a	Wetland?	Yes No
Hydric Soil Present? Yes_	X No	v	Vetland Type:	PEM1	1557	LB
Wetland Hydrology Present? Yes_	<u> </u>	— A	laska Vegetatio	n Classificati	on (Viereck):	II.A2,IIC2
Notes and Site Sketch: Please include corridor. See Site Stetch		1	, Length of featu	re, Distances	s from Cente	rline, Photo Locations, and Survey

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes;)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC: _3 Total Number of Dominant Species Across All Strata: _3
•				% Dominant Species that are OBL, FACW, or FAC: 100 (
β.				
1.				Prevalence index worksheet:
Total Cover				Total % Cover of: Multiply by:
50% of total cover	r: <u>0</u> 20	% of total cov	er: <u>0</u>	OBL species: \bigcirc X 1 = \bigcirc
Sapling/Shrub Stratum(2G')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 35 $x = 70$ FAC species 70 $x = 210$ FACU species 0 $x = 0$ UPL species 0 $x = 0$ Column Totals: 105 (A) 260 (B)
1. Andromeda polifolia	35	Y	FACW	UPL speciesX 5 =
2. Betula hana	30	Y	FAC	Column Totals: 105 (A) 280 (B)
Empetrum nigrum	10		FAC	PI = B/A = 2,67
1. Spiraea Stevenii 2m	-	~		
. Salix Ovalifolia	10		FAC	
· Vaccinium uliquino sum	20		FAC	
" vaccinium vitis-idaea	T			
3.				
9.				
9. Total Cove				
9.		0% of total cov	ver:_21_	-
9. Total Cove 50% of total cove	r: <u>52.5</u> 20	0% of total cov	ver:_21_	-
Total Cover 50% of total cove VEGETATION (use scientific names of plant	r: <u>52,5</u> 20 s))% of total cov	ver:2_1	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cove /EGETATION (use scientific names of plant	r: <u>52.5</u> 20		1	Dominance Test is > 50%
D. Total Cover 50% of total cove VEGETATION (use scientific names of plant Herb Stratum (<u>26′</u>)	r: <u>52.5</u> 20 s) Absolute	Dominant Species?	Indicator	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
Total Cover 50% of total cove VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Carex bigeLowii	r: 52.5 2(s) Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test is > 50%
 Total Coversity 50% of total coversity VEGETATION (use scientific names of plant Herb Stratum (26') 1. Carex bigeLowii 2. Rubus Chamaemorous 	r: <u>52.5</u> 20 s) Absolute % Cover 45	Dominant Species?	Indicator Status FA C	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
Total Cover 50% of total cover /EGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Carex bigeLowii 2. Rubus Chamaemorous 3.	r: <u>52.5</u> 20 s) Absolute % Cover 45	Dominant Species?	Indicator Status FA C	✓ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
Total Cover 50% of total cover VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Carex bigeLowii 2. Rubuj Chamaemorous 3. 4.	r: <u>52.5</u> 20 s) Absolute % Cover 45	Dominant Species?	Indicator Status FA C	✓ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
Total Cover 50% of total cove VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Carex bigeLowii 2. Rubus Chamaemorous 3. 4. 5.	r: <u>52.5</u> 20 s) Absolute % Cover 45	Dominant Species?	Indicator Status FA C	✓ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
Total Cover 50% of total cover /EGETATION (use scientific names of plant <u>-lerb Stratum (26')</u> 1. Carex bigeLowii 2. Rubus Chamaemorous 3. 4. 5. 6.	r: <u>52.5</u> 20 s) Absolute % Cover 45	Dominant Species?	Indicator Status FA C	✓ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
Total Cover 50% of total cove VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Carex bigeLowii 2. Rubuj Chamaemorous 3. 4. 5. 6. 7.	r: <u>52.5</u> 20 s) Absolute % Cover 45	Dominant Species?	Indicator Status FA C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic.
9. Total Cover 50% of total cove VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Carex bigeLowii	r: <u>52.5</u> 20 s) Absolute % Cover 45	Dominant Species?	Indicator Status FA C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. Q % Bare Ground
9. Total Cover 50% of total cover VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Carex bigeLowii 2. Rubus Chamaemorous 3. 4. 5. 6. 7. 8. 9.	r: <u>52.5</u> 20 s) Absolute % Cover 45	Dominant Species?	Indicator Status FA C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O % Bare Ground 8.5 % Cover of Wetland Bryophytes
50% of total cove VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Carex bigeLowii 2. Rubus Chamaemorous 3. 4. 5. 6. 7. 8.	r: 52.5 20 s) Absolute % Cover 45 T	Dominant Species?	Indicator Status FA C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. Ø % Bare Ground 8.5 % Cover of Wetland Bryophytes 8.5 Total Cover of Bryophytes

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SOIL PROFI		Describe	Date 06-09-14 Feat				confirm the absence	Soil Pit Required (Y/N) /	
Depth	Matrix	(0000110	Redox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-13							- Fibric	organics	
13-20				-			Histic	Hense	
20-22							Sandlgrave		
				_	-				
		1		-		-			
		-	-	-		-			
	ncentration D=Depl	etion R	M=Reduced Matrix, C	S=Cov	ered or Co	ated Sand (Prains ² Location:	PL=Pore Lining, M=Matrix.	
	L INDICATORS			5-000				FOR PROBLEMATIC HYDRIC SOILS	
Histosol or H	istel (A1) <u>X</u>		Alaska Gleyed	(A13)			Alaska Color C	hange (TA4) ⁴	
	on (A2)		Alaska Redox (Alaska Alpine Swales (TA5)		
Black Histic (A3)	_	Alaska Gleyed	Pores	(A15)		Alaska Redox	with 2.5Y Hue	
	lfide (A4)	_					Alaska Gleyed Layer	without 5Y Hue or Redder Underlying	
Thick Dark S	urface (A12)						Other (Explain in Notes)		
disturbed or p ⁴Give details	problematic. of color change in N	otes.						pe position must be present unless	
	Present (Y/N):								
			from Su-fac	e			-		

RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Dry-Season	Notes:			
Depth (in): NA				
Depth (in): 2	Wetland Hydrology Present (Y/N):			
Depth (in): Ø		1		
	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 Notes): Depth (in): N A	Surface Soil Cracks (B6) Water-stained Leaves (B9) Inundation Visible on Aerial Imagery (B7) Drainage Patterns (B10) Sparsely Vegetated Concave Surface (B8) Oxidized Rhizospheres along Living Roots (C3) Marl Deposits (B15) Presence of Reduced Iron (C4) Hydrogen Sulfide Odor (C1) Salt Deposits (C5) Dry-Season Water Table (C2) Notes: Other (Explain in Notes): Vetland Hydrology Present (Y/N):		

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) 0 Sapling (<5 dbh, <6m tall) 0 Tall shrub (2-6m) 0 Short shrub (0.5-2m) 0 Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a> <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover <a>N/A <a> <a> <a>
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A_X
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Histosol:Fibric_X Histosol:Hemic Histosol: Sapric
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Injet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Per
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water X Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading Surficial Obsciel Dependent of the depende
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%)
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below_X
Wetland, Instanostion Wetland Isolated Wetlands Within 400m Not Connected Converted Below X

Medium (10-100 acres)

Small (<10 acres) X

Size: Since. , Crew Chief QA/QC check:

Large (>100 acres)

2,11

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID:
 W60 HT0
 Field Target:
 086
 Date:
 06 - 09 - 14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Discrete Solution Solution Solution
- D Appropriate hydric soil indicators are marked?

4. Hydrology

- □ Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- 1 Notes have been recorded at each site, including general description, sketch, and
- accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

Difference in the second secon soil pit, 1 soil plug)?Two photos were taken for each Observation Point (vegetation/site overview)?

Meadl 08

Wetland Scientist (print)

ment Х Signature / Date

f 6/9/14

2. N. L

Х

Field Crew Chief (print)

Signature / Date/

1

SITE DESCRIPTION	Ale and a second		COTT	idor	Televel Towner and
Survey Type: Centerline	ss Road (explain) Oth	ner (expla	in)_X	Field Target: 088	Map #: 60 Map Date: 727/14
Date: 06-09-14	Project Name & No.: Alas	ska LNG	26221306	Feature Id	W60HT003
Investigators: Dan La Plant,	Zoe Meade				Team No.: ₩60
State: Alaska	Region: Alaska		Milepost: (003	
Latitude: 62° 59' 38, 18	Lo	ongitude:	149;30	139.18	Datum: WGS84
Logbook No.: 002	Logbook Page No.:	3	Picture No.:	P- W60HT- V	V, E, Pit, plug
SITE PARAMETERS			1.		
Subregion: interior			Landform (hill	slope, terrace, hummock	s, etc.): hillslope w/
Slope (%):				oncave, convex, none):	hummocks
Pre-mapped Alaska LNG/NWI classifica	tion: PSS1B		Soil Map Unit	Name:	
Are climatic/hydrologic conditions on the Yes X No (if no expl	site typical for this time of ye ain in Notes)	ear?	Are "No Yes_X	ormal Circumstances" pre No (If no, exp	sent: blain in Notes.)
Are Vegetation, Soil, or Hyd	Irology Significantly Dis	sturbed?	No_X	_(If yes, explain in Notes)	
Are Vegetation, Soil, or Hyd	Irology Naturally Proble	ematic?	No_X	_ (If yes, explain in Notes	.)
SUMMARY OF FINDINGS	1. 20-1 - 1	100	- TILLE	1-3-1	CHS - 1
Hydrophytic Vegetation Present? Yes_	X No	ls ti	he Sampled A	rea within a Wetland?	Yes NoX
Hydric Soil Present? Yes	NoX	Wet	tland Type: (Apland	
Wetland Hydrology Present? Yes	No <u>X</u>	Alas	ska Vegetation	Classification (Viereck):	ША1, ДС2
Notes and Site Sketch: Please include D corridor.	A.	nterline, L	ength of featur	e, Distances from Center	line, Photo Locations, and Survey
see logbool	K				
. h					
	1				
N ³					
	Ψ.				
					*
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4.1

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes:)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC: $\frac{Q}{U}$
1.		(1/1)		Total Number of Dominant Species Across All Strata: $\frac{4}{100}$
2.				% Dominant Species that are OBL, FACW, or FAC: <u>100</u>
3.				The Lorenza and the second
4.				Prevalence Index worksheet:
*. Total Cover:	0			Total % Cover of: Multiply by:
50% of total cover:		% of total cov	er: Ø	OBL species:X 1 =
Sapling/Shrub Stratum (20)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $1 X 2 = 2$ FAC species $130 X 3 = 390$ FACU species $7 X 4 = 28$
Spiraea Stevenii	2		FACU	UPL species0X 5 =0
Betula nana	25	Y	FAC	Column Totals: 138 (A) 420 (B)
Empetrum nigrum	10	Y	FAC	PI = B/A = 3.04
· Vaccinium vitis-idaea	Т		FAC	
5. Rhodo dendron tomentosum	1		FACW]
3. Vaccinium uliginosum	10	Y	FAC	
3.				
9.				
Total Cover:				
50% of total cover:	23,3 20	% of total cov	rer: <u>4.4</u>	
VEGETATION (use scientific names of plants)		-	
) Absolute	Dominant	Indicator	Hydrophytic Vegetation Indicators:
		Dominant Species?		Dominance Test is > 50%
Herb Stratum(0)	Absolute	Dominant	Indicator	Dominance Test is > 50% Prevalence Index is ≤ 3.0
<u>Herb Stratum (26)</u> 1. Calamagrostis canadensis	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0
<u>Herb Stratum (26)</u> 1. Calamagrostis canadensis ^{2.} Gymnocarpium dryopteris	Absolute % Cover 8 5	Dominant Species?	Indicator Status FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
Herb Stratum (<u>26</u>) ^{1.} Calamagrostis canadensis ^{2.} Gymnocarpium dryopteris	Absolute % Cover 8 5 5	Dominant Species?	Indicator Status FAC FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
Herb Stratum (<u>26</u>) 1. Calamagrostis canadensis ^{2.} Gymnocarpium dryopteris ^{3.} Cornus Canadensis ^{4.} Anemone narcissiflora	Absolute % Cover 85 5 T	Dominant Species?	Indicator Status FAC FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
Herb Stratum (<u>26</u>) 1. Calamagrostis canadensis 2. Gymnocarpium dryopteris 3. Cornus Canadensis 4. Anemone narcissiflora 5.	Absolute % Cover 85 5 T	Dominant Species?	Indicator Status FAC FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle
Herb Stratum (<u>26</u>) 1. Calamagrostis canadensis 2. Gymnocarpium dryopteris 3. Cornus Canadensis 4. Anemone narcissiflora 5. 6.	Absolute % Cover 85 5 T	Dominant Species?	Indicator Status FAC FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle
<u>Herb Stratum (26)</u> 1. Calamagrostis canadensis 2. Gymnocarpium dryopteris 3. Cornus Canadensis 4. Anemone narcissifiora 5. 6. 7.	Absolute % Cover 85 5 T	Dominant Species?	Indicator Status FAC FACU FACU	
Herb Stratum (<u>26</u>) 1. Calamagrostis canadensis 2. Gymnocarpium dryopteris 3. Cornus Canadensis 4. Anemone narcissiflora 5. 6. 7. 8.	Absolute % Cover 85 5 T	Dominant Species?	Indicator Status FAC FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlead disturbed or problematic.
1. Calamagrostis canadensis 2. Gymnocarpium dryopteris 3. Cornus Canadensis 4. Anemone narcissiflora 5. 6. 7. 8. 9.	Absolute % Cover 85 5 T	Dominant Species?	Indicator Status FAC FACU FACU	
Herb Stratum (<u>26</u>) 1. Calamagrostis canadensis 2. Gymnocarpium dryopteris 3. Cornus Canadensis 4. Anemone narcissiflora 5. 6. 7. 8.	Absolute % Cover 85 5 T T	Dominant Species?	Indicator Status FAC FACU FACU	

SOIL			Date 06-14-09 Fe				1.1	Soil Pit Required (Y/N)	
SOIL PROFI	LE DESCRIPTION: (Describe	to the depth needed	d to doc	ument the	indicator or	confirm the absence	e of indicators.)	
Depth	Matrix		Redox Features		4				
inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0 - 2							FIBRIC	organic	
2 - 6	17	11				-	Sitt loor		
-22	10 YR 4/1	100					Silt loam	+ gravel mix	
	- 7.5 YR 2.5/1	100						*	
					2	1			
Type: C=C	oncentration, D=Deple	etion, RN	Reduced Matrix, C	CS=Cov	ered or Co	ated Sand C		: PL=Pore Lining, M=Matrix.	
IYDRIC SO	IL INDICATORS		Alter The		I		INDICATORS	FOR PROBLEMATIC HYDRIC SOILS	
listosol or ⊢	listel (A1)		Alaska Gleyed	(A13)			Alaska Color (Change (TA4) ⁴	
	don (A2)		Alaska Redox	(A14)			Alaska Alpine Swales (TA5)		
Black Histic	(A3)		Alaska Gleyed	Pores	(A15)	123	Alaska Redox	with 2.5Y Hue	
Hydrogen Su	ulfide (A4)						Alaska Gleyeo Layer	I without 5Y Hue or Redder Underlying	
Thick Dark S	Surface (A12)	_					Other (Explain in Notes)		
listurbed or Give details	problematic. of color change in No	tes.						ape position must be present unless	
Restrictive L	ayer (if present): Type	e:	~	Depth (i	nches):	~			
lydric Soil	Present (Y/N):	1							
Notes:						_			

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or n	nore required)	200
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stre Plants (D1)	
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic P	osition (D2)
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquita	ard (D3)
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopograp Relief (D4)	hic
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)		est (D5)
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:		
Algal Mat or Crust (B4)	Other (Explain in Notes):	1 Sec. 1		
Iron Deposits (B5)				
Surface Water Present (Y/N): N	Depth (in):	Wetland Hydrology Present (Y/N): _	N	
Water Table Present (Y/N):	Depth (in):	Depth (in): Wetland Hydrology Present (Y/N):		
Saturation Present (Y/N): (includes capillary fringe)	Depth (in);			
Notes:				· . E
-42				
				3 4

VEGETATION VARIABLES P= Plot, M	M= Matrix
Forested-Evergreen-Needle-leaved	acking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-
Percent Cover (P): Tree (>5 dbh, >6m tall)_ Dwarf shrub (<0.5m)	Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) m) Short herb (<1m)
Number of Wetland Types (M):	Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse 80%) Very High Density (80-100%)	(0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-
Interspersion of Cover & Open Water (P): Peripheral Cover>75% Scattered	100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant	species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) _	One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): Open Small Scattered Patches	No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Continuous Cover
Dead Woody Material (P): Low Abundance Abundant (>50% of surface)	(0-25% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large High (small groupings, diverse and interspers	e patches, concentric rings) Moderate (broken irregular rings) ed)
HGM Class (P): Slope Flat	Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES	
Soil Factors (P): Soil Lacking	Histosol:FibricHistosol:HemicHistosol: Sapric Mineral: SiltyMineral: Clayey
HYDROLOGIC VARIABLES	
Inlet/Outlet Class (P): No Inlet/Outlet Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Outlet Perennial In	No Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial Outlet
Wetland Water Regime (P): Drier: Seas Wet: Perm. Flooded, Intermittently Exposed, S	sonally Flooded, Temporarily Flooded, Saturated Semiperm, Flooded
Created	ce Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Created Microrelief of Wetland Surface (P): Absent	Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Created Microrelief of Wetland Surface (P): Absent Frequency of Overbank Flooding (P): No O	
Created Microrelief of Wetland Surface (P): Absent Frequency of Overbank Flooding (P): No O Return Interval >5 yrs	Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Created Microrelief of Wetland Surface (P): Absent Frequency of Overbank Flooding (P): No O Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow	Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) verbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs
Created Microrelief of Wetland Surface (P): Absent_ Frequency of Overbank Flooding (P): No O Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Water pH (P): No surface water Ci Surficial Glacial Deposit Under Wetland (P)	Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) verbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs
Created Microrelief of Wetland Surface (P): Absent_ Frequency of Overbank Flooding (P): No O Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Water pH (P): No surface water Ci Surficial Glacial Deposit Under Wetland (P) Glacial Till/Not Permeable Basin Topographic Gradient (M): Low (Poorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) verbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrs vRestricted OutflowUnrestricted Outflow ircumneutral (5.5-7.4)Alkaline (>7.4)Acid (<5.5)PH Reading
Created Microrelief of Wetland Surface (P): Absent_ Frequency of Overbank Flooding (P): No O Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Water pH (P): No surface water Ci Surficial Glacial Deposit Under Wetland (P) Glacial Till/Not Permeable Basin Topographic Gradient (M): Low (Poorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) verbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrs vRestricted Outflow Incumneutral (5.5-7.4)Alkaline (>7.4)Acid (<5.5)PH Reading
Created Microrelief of Wetland Surface (P): Absent_ Frequency of Overbank Flooding (P): No O Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Water pH (P): No surface water Ci Surficial Glacial Deposit Under Wetland (P) Glacial Till/Not Permeable Basin Topographic Gradient (M): Low (Evidence of Seeps and Springs (P): No See	Poorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) verbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrs vRestricted Outflow Incumneutral (5.5-7.4)Alkaline (>7.4)Acid (<5.5)PH Reading
Created Microrelief of Wetland Surface (P): Absent_ Frequency of Overbank Flooding (P): No O Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Water pH (P): No surface water Ci Surficial Glacial Deposit Under Wetland (P) Glacial Till/Not Permeable Basin Topographic Gradient (M): Low Evidence of Seeps and Springs (P): No See LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolate	Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) verbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs v Restricted Outflow Unrestricted Outflow ircumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Created Microrelief of Wetland Surface (P): Absent_ Frequency of Overbank Flooding (P): No O Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Water pH (P): No surface water Ci Surficial Glacial Deposit Under Wetland (P) Glacial Till/Not Permeable Basin Topographic Gradient (M): Low (Evidence of Seeps and Springs (P): No See LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolate Only Connected Above Connected	Poorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) verbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrs vRestricted Outflow ircumneutral (5.5-7.4)Alkaline (>7.4)Acid (<5.5)PH Reading
Created Microrelief of Wetland Surface (P): Absent_ Frequency of Overbank Flooding (P): No O Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Water pH (P): No surface water C: Surficial Glacial Deposit Under Wetland (P) Glacial Till/Not Permeable Basin Topographic Gradient (M): Low of Seese LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolate Only Connected Above Connected Wetland Land Use: High Intensity (i.e., absence of Seese	Poorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) verbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrs vRestricted Outflow ircumneutral (5.5-7.4)Alkaline (>7.4)Acid (<5.5)PH Reading
Created Microrelief of Wetland Surface (P): Absent_ Frequency of Overbank Flooding (P): No O Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Water pH (P): No surface water Ci Surficial Glacial Deposit Under Wetland (P) Glacial Till/Not Permeable Basin Topographic Gradient (M): Low (Evidence of Seeps and Springs (P): No See LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolate Only Connected Above Connected Wetland Land Use: High Intensity (i.e., a Watershed Land Use: 0-5% Rural	Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) verbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs vRestricted Outflow Unrestricted Outflow ircumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)

Wetland Determination Data Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: 1160 HT 063 Field Target: 88

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included?

2. Vegetation

- ☑ At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- U Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- I All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

Each logbook page is initialed and dated?

7. Maps

Wetland boundaries have been corrected if necessary?



8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

Zoe Mende

Wetland Scientist (print)

Signature / Date

Field Crew Chief (print)

- long Signature / Date

SITE DESCRIPTION				10-17-	-	
Survey Type: Centerline Acce	ss Road (explain)	Other (explai	n) <u> </u>	Field Targ	jet: <u>/33</u>	Map #: <u>93</u> Map Date: <u>5/27/14</u>
Date: 06 - 10 - 14	Alaska LNG	IG 26221306 Feature Id			1: W60 HT 004	
Investigators: Dan LaPlan	t, Zoe Medo	le				Team No.: W60
State: Alaska	Region: Alaska	_	Milepost:	124		
Latitude: 62°27'02.0	2 "	Longitude:	1500 10	6'15.	34 "	Datum: WGS84
Logbook No.: 002	Logbook Page No.:	005	Picture No.: PW60HT004_			E, S. Pit, Plug
SITE PARAMETERS		1.241		-	Call.	
Subregion: interior			Landform (hi	illslope, terrad	e, hummock	s, etc.): Slight humocks
Slope (%): 0 - 3			Local relief (concave, convex, none): Concove			
Pre-mapped Alaska LNG/NWI classifica	ition: PSS2 / EMI	1.C	Soil Map Unit Name:			
Are climatic/hydrologic conditions on the Yes No (if no exp		of year?	Are "Normal Circumstances" present: Yes_X No (If no, explain in Notes.)			
Are Vegetation, Soil, or Hy	drology Significantl	ly Disturbed?	No X	(If yes, exp	lain in Notes)
Are Vegetation, Soil, or Hy	drology Naturally P	roblematic?	No <u>X</u>	(If yes, exp	plain in Notes	s.)
SUMMARY OF FINDINGS		di Maril	-	1		ALII - 11
Hydrophytic Vegetation Present? Yes_	XNo	Is th	ne Sampled /	Area within a	Wetland?	Yes No
Hydric Soil Present? Yes_	X No	Wet	land Type:	PSSI,	IEMJ.	B

 Wetland Hydrology Present?
 Yes ______ No_____

 Alaska Vegetation Classification (Viereck):
 T C 2, TIL A 2______

 Notes and Site Sketch: Please include Directional & North Arrow: Contacting Longth of feature Distances from Contacting Please include Directional & North Arrow: Contacting Longth of feature Distances from Contacting Please include Directional & North Arrow: Contacting Distances from Contacting Please include Directional & North Arrow: Contacting Distances from Contacting Please include Directional & North Arrow: Contacting Distances from Contacting Please include Directional & North Arrow: Contacting Distances from Contacting

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

See skitch in Loybook OOZ PAJE 805

Tree Stratum (Plot sizes:)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: <u>3</u> Total Number of Dominant Species Across All Strata: <u>3</u>
1.				% Dominant Species that are OBL, FACW, or FAC: 100 (
2.				
3.				A CONTRACTOR OF A CONTRACTOR OFTA CONTRACTOR O
4.			-	Prevalence Index worksheet:
Total Cover:	0			Total % Cover of: Multiply by:
50% of total cover:	0 20	% of total cov	ver: 0	OBL species: $48 \times 1 = 48$
Sapling/Shrub Stratum (_26*)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 35 $x_2 = 70$ FAC species 52 $x_3 = 156$ FAC species 0 $x_4 = 0$
1. Picea mariana	20	Y	FACW	UPL species 0 X 5 = 0
Betula nana	15		FAC	Column Totals: 135 (A) 274 (B)
3. Vaccinium oxycoccus	5		OBL	PI = B/A = 2:03
4. Chamaedaphne Calycula	ta 2		FACW	
5. Rhododendron tomentosum	4		FACW	
6. Empetrum nigrum	30	Y	FAC	
7,				
8.		1		
9. Total Cover:	_ A		or 15,2	-
9.		0% of total cov	ver: <u>15,2</u>	-
9. Total Cover: 50% of total cover:	38 20	0% of total cov	ver: <u>15,2</u>	
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants	38 20	Dominant Species? (Y/N)	ver: 15,2	Hydrophytic Vegetation Indicators:
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equise form arvense	38 20) Absolute	Dominant Species?	Indicator	$\frac{X}{X}$ Dominance Test is > 50% $\frac{X}{X}$ Prevalence Index is < 3.0
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equise fum arvense	38 20) Absolute	Dominant Species?	Indicator Status	_XDominance Test is > 50%
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equise (vm arvense 2. Dry sera rotundi: falia	38 20) Absolute % Cover 7	Dominant Species?	Indicator Status FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equise fum arvense 2. Dro sera rotundi: falia 3. Rubus Cham aemorow	38 20) Absolute % Cover 7	Dominant Species?	Indicator Status FAC OBL FACW	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>Z6'</u>) 1. Equise fum arvense 2. Dro sera rotundifalia 3. Rubus Chamaemorows ^{4.} Pedicularis labridorica	38 20) Absolute % Cover 7 1 1 2	Dominant Species?	Indicator Status FAC 0BL	<u>X</u> Dominance Test is > 50% <u>X</u> Prevalence Index is ≤ 3.0 <u>Morphological Adaptations¹ (Provide supporting data in Notes)</u>
9. Total Cover: 50% of total cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>Z6'</u>) 1. Equise (um arvense 2. Dro sera rotundi: falia 3. Rubus Chamaemorow ^{4.} Pedicularis labridorica ^{5.} Carex microglo Chin	38 20) Absolute % Cover 7 1 1	Dominant Species?	Indicator Status FAC OBL FACW FACW	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>Z6'</u>) 1. <u>Fauise fum</u> arvense 2. Dro sera rotundi: falia 3. Rubus Chamaemorow ^{4.} <u>Pedicularis labridorica</u> ^{5.} <u>Carex microglo Chim</u> ^{6.} Carex limos a	38 20) Absolute % Cover 7 1 1 7 1 2 40	Dominant Species?	Indicator Status FAC OBL FACW FACW OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O% Bare Ground
9. Total Cover: 50% of total cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>Z6'</u>) 1. Equise (un arvense 2. Dry sera rotundi: falia 3. Rubus Chamaemorow 4. Pedicularis labridorica 5. Carex microglo Chin 6. Carex limosa 7.	38 20) Absolute % Cover 7 1 1 7 1 2 40	Dominant Species?	Indicator Status FAC OBL FACW FACW OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>Z6'</u>) 1. Equise fum arvense 2. Dro sera rotund i falia 3. Rubus Chamaemorow 4. Pedicularis labridorica 5. Carex microglo Chin 6. Carex limosa 7. 8.	38 20) Absolute % Cover 7 1 1 7 1 2 40	Dominant Species?	Indicator Status FAC OBL FACW FACW OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O % Bare Ground
9. Total Cover: 50% of total cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>Z6'</u>) 1. Equise tum arvense 2. Dro sera rotundifalia 3. Rubus Chamaemorows ^{4.} Pedicularis labridorica ^{5.} Carex microglo Chim ^{6.} Carex limosa 7. 8. 9.	38 20) Absolute % Cover 7 1 1 7 1 2 40	Dominant Species?	Indicator Status FAC OBL FACW FACW OBL	$\frac{X}{X} \text{Dominance Test is > 50\%}$ $\frac{X}{X} \text{Prevalence Index is ≤ 3.0}$ $\frac{X}{X} \text{Morphological Adaptations}^1 (\text{Provide supporting data in Notes})$ $\frac{X}{X} \text{Problematic Hydrophytic Vegetation}^1 (\text{Explain})$ $\frac{1}{X} \text{Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.}$ $\frac{0}{X} \% \text{ Bare Ground}$ $\frac{\sqrt{5}}{\sqrt{5}} \% \text{ Cover of Wetland Bryophytes}$ $\frac{\sqrt{5}}{\sqrt{5}} \% \text{ Cover of Bryophytes}$
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>ZG'</u>) 1. Equise tum arvense 2. Drosera rotundifalia 3. Rubus Chamaemorow 4. Pedicularis labridorica 5. Carex microglochin 6. Carex limosa 7. 8.	38 20 Absolute % Cover 7 1 7 40 3 40 3	Dominant Species?	Indicator Status FAC OBL FACW FACW OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. Ø % Bare Ground Ø % Cover of Wetland Bryophytes 85 Total Cover of Bryophytes

SOIL PROF	LE DESCRIPTION:	(Describe	e to the depth nee	ded to doc	ument the i	indicator or co	onfirm the absence	e of indicators.)	
Depth	Matrix		Redox Features						
(inches)	Color (moist) %		Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-22							Histe	organics	
							Fibric	V	
		_							
	-	-		_		-			
	-	-				-			
		-	-			-			
¹ Type: C=C	oncentration, D=Depl	letion, RI	I M=Reduced Matrix	, CS=Cov	ered or Coa	ated Sand Gr	ains. ² Location	: PL=Pore Lining, M=Matrix.	
HYDRIC SO	IL INDICATORS						INDICATORS	FOR PROBLEMATIC HYDRIC SOILS	
Histosol or H	listel (A1)		Alaska Gle	/ed (A13)			Alaska Color C	Change (TA4) ⁴	
	don (A2)		Alaska Rec				Alaska Alpine	Swales (TA5)	
Black Histic	(A3)		Alaska Gle	Alaska Gleyed Pores (A15)			Alaska Redox	with 2.5Y Hue	
Hydrogen Su	ulfide (A4)	_					Alaska Gleyed Layer	without 5Y Hue or Redder Underlying	
Thick Dark S	urface (A12)						Other (Explain in Notes)		
disturbed or ⁴ Give details	problematic.	otes						ape position must be present unless	
Restrictive L	ayer (if present): Typ	pe:		_ Depth (i	nches):				
Hydric Soil	Present (Y/N):	7							
Notes:									

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)				
Surface Water (A1) X	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)			
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)			
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)			
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:				
Algal Mat or Crust (B4)	Other (Explain in Notes):					
Iron Deposits (B5)						
when a start her dies	and the second sec		and the second second			
Surface Water Present (Y/N):	Depth (in): Z" between h	ummsdes	Y			
Water Table Present (Y/N):	Depth (in): 3	Wetland Hydrology Present (Y/N):				
Saturation Present (Y/N): (includes capillary fringe)	Depth (in): Du force					
Notes:						

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Persistent Persistent Aquatic Bed Action Content of the second content
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall) 20 Tall shrub (2-6m) O Short shrub (0.5-2m) 21 Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water // 25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover 7/% Peripheral Cover >75% Scattered or Peripheral Cover N/A 26-75% Scattered or Peripheral Cover 26-75%
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A _X
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional 🔀 Riverine Estaurine Fringe
Soil VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial I
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) X Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading 4.6
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) X High Gradient (≥2%)
Evidence of Seeps and Springs (P): No Seeps or Springs X Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)

Wetland Juxtaposition: Only Connected Above_			Only Connected Below
Wetland Land Use:	High Intensity (i.e., ag.) Moderate	Intensity (i.e., forestry)	Low Intensity (i.e. open space)
Watershed Land Use:	0-5% Rural 5-25% Urbanized	25-50% Urbanized	>50% Urbanized
Size: Small (<10 ac	res) Medium (10-100 acres)	Large (>100 acres)	

Crew Chief QA/QC check:

GPS Technician QA/QC check:

m

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: WGOHTOOH Field Target: 133 Date: 06-10-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- D Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- ☑ Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- ☑ Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Ø Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- I Two photos were taken for each Observation Point (vegetation/site overview)?

Zoe Meade

Х meade 9.00

Wetland Scientist (print)

Signature / Date

APIANA

Field Crew Chief (print)

Signature / Date

Х

- WA -

SITE DESCRIPTION				
Survey Type: Centerline Acces	ss Road (explain) Other (explain)	ain) <u>X</u> Fiel	ld Target: <u>136</u>	Map #: <u>99</u> Map Date: <u>5/2-1/1</u> 4
Date: () () - () - i-	Project Name & No.: Alaska LNG	6 26221306	Feature Id:	W60HT 005
Investigators: Dan La Pla	int, Zoe Meade			Team No.: W60
State: Alaska	Region: Alaska	Milepost: 12L	-	
Latitude: 062°26'43.8	354" Longitude	150°16'8	709"	Datum: WGS84
Logbook No.: 0 () 2	Logbook Page No.: 00 6	Picture No.: P_	N.E. pi	t, plug

SITE PARAMETERS			
Subregion: Interior	Landform (hillslope, terrace, hummocks, etc.):		
Slope (%): 0 - 3	Local relief (concave, convex, none):		
Pre-mapped Alaska LNG/NWI classification: yp/kmd	Soil Map Unit Name:		
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (if no explain in Notes)	Are "Normal Circumstances" present: Yes_XNo (If no, explain in Notes.)		
Are Vegetation, Soil, or Hydrology Significantly Disturbed	? No χ (If yes, explain in Notes)		
Are Vegetation, Soil, or Hydrology Naturally Problematic?	No \mathcal{X} (If yes, explain in Notes.)		
SUMMARY OF FINDINGS			
Hydrophytic Vegetation Present? YesX No Is	s the Sampled Area within a Wetland? Yes No		
Hydric Soil Present? Yes X No No	Wetland Type: PSSI3		
Wetland Hydrology Present? Yes No A	Alaska Vegetation Classification (Viereck):		

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

See skitch in togbook DOZ page 006

VEGETATION (use scientific names of plants)				
Tree Stratum (Plot sizes:)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: <u>2</u> Total Number of Dominant Species Across All Strata: <u>2</u>
1.				% Dominant Species that are OBL, FACW, or FAC: 100
2.	-			
3.				1 th
4.				Prevalence Index worksheet:
Total Cover:				Total % Cover of: Multiply by:
50% of total cover:	20	% of total cov	er:	OBL species: $0 \times 1 = 0$ FACW species: $5 \times 2 = 10$
Sapling/Shrub Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FAC species 178 $x_3 = 534$
. Salax alaxensis	80	У	FAC	
AINUS SSP.	3	1	FAC	Column Totals:(A)(B)
Niburnum edule	3		FACU	Column Totals: 200 (A) Column (B) PI = B/A = 3 · 1 (B)
4. Rubus parviflorus	3		FACU	
5.				
6.				-
7.				
			-	
8.				
9. Total Cover:			10.0	
9.		0% of total cov	ver: 18.2	
). Total Cover: 50% of total cover:	45.5 20)% of total cov	ver: <u>18, 2</u>	
D. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants	45.5 20	Dominant Species?	rer: <u>18,2</u> Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
). Total Cover: 50% of total cover: /EGETATION (use scientific names of plants Herb Stratum ()) Absolute % Cover	Dominant	Indicator	_X Dominance Test is > 50% Prevalence Index is ≤ 3.0
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1.Calamagrostis Canadensis	45.5 ₂₀) Absolute % Cover 90	Dominant Species?	Indicator Status FAC	_X Dominance Test is > 50%
2. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1:Calamagrostis Canadensis 2:Chamerion angustofolium	45.5 ₂₀) Absolute % Cover 90	Dominant Species?	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1.Calamagrostis Canadensis 2.Chamerion angustofolium 3.Viola coinceta palustris	45.5 ₂₀) Absolute % Cover 90	Dominant Species?	Indicator Status FAC FACU FACW	_X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1.Calamagrostis Canadensis 2.Chamerion angustofolium 3.Viola coinceta palustris 4.Equisetum arvense	45.5 ₂₀ Absolute % Cover 90 1 5 5	Dominant Species?	Indicator Status FAC FACU FACW FAC	X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1.Calamagrostis Canadensis 2.Chamerion angustofolium 3.Viola coincreta palustris 4.Equisetum arvense 5.Mertensia paniculata	45.5 ₂₀ Absolute % Cover 90 1 5 5 2	Dominant Species?	Indicator Status FAC FACU FACW FAC FACU	X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle
Total Cover: 50% of total cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1.Calamagrostis Canadensis 2.Chamerion angustofolium 3.Viola coipseta palustris 4.Equisetum arvense 5.Mertensia paniculata 6.Echimopana Mi Horridum	45.5 ₂₀ Absolute % Cover 90 1 5 5 2	Dominant Species?	Indicator Status FAC FACU FACW FAC	X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1.Calamagrostis Canadensis 2.Chamerion angustofolium 3.Viola coincreta palustris 4.Equisetum arvense 5.Mertensia paniculata	45.5 ₂₀ Absolute % Cover 90 1 5 5 2	Dominant Species?	Indicator Status FAC FACU FACW FAC FACU	_X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle disturbed or problematic.
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Calamagrostis Canadensis 2. Chamerion angustofolium 3. Viola epipereta palustris 4. Equisetum arvense 5. Mertensia paniculata 6. Echimo panax 8.	45.5 ₂₀ Absolute % Cover 90 1 5 5 2	Dominant Species?	Indicator Status FAC FACU FACW FAC FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle disturbed or problematic.
9. Total Cover: 50% of total cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1.Calamagrostis Canadensis 2.Chamer ion angustofolium 3.Viola coinceta palustris 4.Equisetum arvense 5.Mert ensi a paniculata 6.Echino panax 8. 9.	45.5 ₂₀ Absolute % Cover 90 1 5 5 2	Dominant Species?	Indicator Status FAC FACU FACW FAC FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle disturbed or problematic.
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Calamagrostis Canadensis 2. Chamerion angustofolium 3. Viola epipodela palustris 4. Equisetum arvense 5. Mertensia paniculata 6. Echtropanax 8.	45.5 ₂₀ Absolute % Cover 90 1 5 5 2 8	Dominant Species?	Indicator Status FAC FACU FACW FAC FACU	X

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SOIL		-	Date Fea	ature I	DWGDH	1005		Soil Pit Required (Y/N)
SOIL PROFIL	LE DESCRIPTION: (Describe	to the depth needed	to doc	ument the	indicator or o	confirm the absence	
Depth	Matrix		Redox Features	Redox Features				
(inches)	Color (moist)	%	Color (moist)	color (moist) % Type ¹ Loc ²		Texture	Notes	
0-2				-			Fibric	organi es
2-9	107R 4/1						Silt loam	<i>d</i>
9-22	107R 518	50	GIEVILY 561	50	G	M	Silt Clay	
			56Y 4/1/				1	
			'			-		
						1		
				-		1		
		etion, RN	I=Reduced Matrix, CS	S=Cov	ered or Co	ated Sand G		PL=Pore Lining, M=Matrix.
	L INDICATORS		10	-			INDICATORS F	OR PROBLEMATIC HYDRIC SOILS ³
Histosol or Hi	stel (A1)		Alaska Gleyed	(A13)	X		Alaska Color Ch	nange (TA4) ⁴
Histic Epiped	on (A2)		Alaska Redox (A14) _	X		Alaska Alpine S	wales (TA5)
	A3)		Alaska Gleyed	Pores	(A15)		Alaska Redox w	vith 2.5Y Hue
Hydrogen Su	lfide (A4)						Alaska Gleyed v LayerX	without 5Y Hue or Redder Underlying
Thick Dark St	urface (A12)		1				Other (Explain i	n Notes)
disturbed or p ⁴Give details	problematic. of color change in No	otes.						pe position must be present unless
Restrictive La	iyer (if present): Typ	e:	De	epth (i	nches):			
Hydric Soil F	Present (Y/N):	Y						
Notes:								

HYDROLOGY PRIMARY INDICAT	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)			
High Water Table (A2)	Inundation Visible on Aerial Imag (B7)	ery Drainage Patterns (B10)	Geomorphic Position (D2)			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)			
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)			
Drift Deposits (B3) Dry-Season Water Table (C2)		Notes:				
Algai Mat or Crust (B4)	Other (Explain in Notes):					
Iron Deposits (B5)						
Surface Water Present (Y/N):	MO Depth (in):		X			
Water Table Present (Y/N): Ve Depth (in): 13"		Wetland Hydrology Present (Y/N)):			
Saturation Present (Y/N):	G Depth (in):					
	Depth (in):					

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) ② Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Moderately even Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Every High Density (80-100%) Ever
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a> <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover <a>N/A <a> <a> <a> <
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perenninlet/Perennial Inlet/Perennial Inlet/Perennin
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed V Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Created
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Poorly Developed (000000000000000000000000000000000000
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Poorly Developed Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Created Microrelief of Wetland Surface (P): AbsentPoorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrs Degree of Outlet Restriction (P): No OutflowRestricted OutflowUnrestricted Outflow Water pH (P): No surface waterCircumneutral (5.5-7.4)Alkaline (>7.4)Acid (<5.5)pH Reading
Created Microrelief of Wetland Surface (P): AbsentPoorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrs Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading

LANDSCAPE VARIABL	ES (M)	and the second second	and the second s	the second second	
Wetland Juxtaposition: Only Connected Above_		Wetlands within tream & Downstream	400m, Not Connected Unknown	Only Connected Below	
Wetland Land Use:	High Intensity (i.e., ag.)	Moderate Inte	ensity (i.e., forestry)	_ Low Intensity (i.e. open space)	<u></u>
Watershed Land Use:	0-5% Rural	5-25% Urbanized	25-50% Urbanized	>50% Urbanized	
Size: Small (<10 ac	res) Medium (10	0-100 acres)	Large (>100 acres)	_	

Crew Chief QA/QC check:

2

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Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT005 Field Target: # 136 Date: 06-10-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?

A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- D, Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- D Appropriate hydrology indicators are marked?
- ☑ Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- ☑ Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- Ø Wetland boundaries have been corrected if necessary?
- Ø Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Z Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

Signature / Date ormade

6/18/14

25

Field Crew Chief (print)

Signature / Date

soil check

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			Contraction of the statement of the stat		Contraction of the Contract	#T004		Soll Plt Required (Y/N)
SUIL PROFIL	E DESCRIPTION: (I	Describe	to the depth needed	to doc	ument the	indicator or	confirm the absence	e of indicators.)
Depth	Matrix		Redox Features				1	
inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-5		10					Fibric	organic
5-10		60					Fibri c	organic
	10 YR 2/2	40					Silt loam	5
0-16	5 Y 4/1	80	2.5 YR 3/6	20	C	PL	silt loam	
6-20	10YR 5/2	50	10YR 416	50	С	PL		6
		1				1		
		1				1		
Type: C=Cor	ncentration, D=Deple	etion, R	M=Reduced Matrix, CS	S=Cov	ered or Co	ated Sand (PL=Pore Lining, M=Matrix.
IYDRIC SOIL	INDICATORS				-		INDICATORS F	FOR PROBLEMATIC HYDRIC SOILS ³
listosol or His	stel (A1)		Alaska Gleyed				Alaska Color C	hange (TA4) ⁴
listic Epipedo	on (A2) X		Alaska Redox (A14)	× ma	V	Alaska Alpine S	Swales (TA5)
	\3)		Alaska Gleyed	Pores	(A15)		Alaska Redox v	with 2.5Y Hue
	fide (A4)						Alaska Gleyed Layer	without 5Y Hue or Redder Underlying
Thick Dark Su	urface (A12)						Other (Explain	in Notes)
listurbed or p Give details o	roblematic. of color change in No	otes.						pe position must be present unless
Restrictive La	yer (if present): Typ	e:	D	epth (i	nches):			
Hydric Soil P	resent (Y/N):	Y						
Notes:								

HYDROLOGY PRIMARY INDICATORS (any one indicator is sufficient)		SECONDARY INDICATORS (2 or more required)		
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)	
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)	
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)		
Drift Deposits (B3)	Dry-Season Water Table (C2) X	Notes:		
Algal Mat or Crust (B4)	Other (Explain in Notes):			
Iron Deposits (B5)				
Surface Water Present (Y/N): Depth (in):			V	
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N):		
Saturation Present (Y/N): (includes capillary fringe) Depth (in): O				
Notes:				

SITE DESCRIPTION					
Survey Type: Centerline Access Road (explain) Other (explain)_X Field Targe			Target: <u>135</u>	Map #: <u>94</u> Map Date: <u>5</u>]27	
Date: 06 - 10 - 14	Project Name & No.: Alaska LNG 26221306 Feature lo		: W60 HT 006		
Investigators: Dan La Plant, Zoe Meade Team No.: W60					Team No.: W60
State: Alaska	Region: Alaska Milepost: 124				
Latitude: 62 26 48.485 Long		Longitude: 150	ide: 150° 16' 9.867*		Datum: WGS84
Logbook No.: 002 Logbook Page No.: 007 Picture No.: P_S, SW, pit, pluq					

SITE PARAMETERS				
Subregion: interior	Landform (hillslope, terrace, hummocks, etc.): depression			
Slope (%): () - 3	Local relief (concave, convex, none): Con cんv ん			
Pre-mapped Alaska LNG/NWI classification:	Soil Map Unit Name:			
Are climatic/hydrologic conditions on the site typical for this time of year? Yes λ No (if no explain in Notes)	Are "Normal Circumstances" present: Yes_XNo(If no, explain in Notes.)			
Are Vegetation, Soil, or Hydrology Significantly Disturbed? NoX(If yes, explain in Notes)				
Are Vegetation, Soil, or HydrologyNaturally Problematic? No_X_ (If yes, explain in Notes.)				
SUMMARY OF FINDINGS				
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area within a Wetland? Yes X No No			
Hydric Soil Present? YesX No	Netland Type: PEML F			
Wetland Hydrology Present? Yes X No	Alaska Vegetation Classification (Viereck): III. A 3			

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor. See Sketch in logbook 802 MAJ 007

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Image: Tree Stratum (Plot sizes:)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC: <u>2</u>
1.	5			Total Number of Dominant Species Across All Strata: 2
2.				% Dominant Species that are OBL, FACW, or FAC: <u>↓○ ○</u>
3.		-		Man
4.				Prevalence Index worksheet:
Total Cover	: 0			Total % Cover of: Multiply by:
50% of total cover)% of total cov	er: 0	OBL species: <u>75</u> X 1 = <u>75</u>
Sapling/Shrub Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 0X 2 = 0FAC species3 5X 3 = 10 5FACU speciesX 4 = 16
1. Salex glaxensis	25	У	FAC	UPL speciesX 5 =
2.				Column Totals: 114 (A) 196 (B)
3.				PI = B/A = 1.72
4.			1.1	
5.			1.0.0	
6.				
7.			1	
8.				
9.				
Total Cover				7
50% of total cover	: 12,5 20	0% of total cov	er: <u>5</u>	
		0% of total cov	rer: <u>5</u>	
VEGETATION (use scientific names of plants		0% of total cov Dominant Species? (Y/N)	rer: 5 Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Provolation Indicators 2.0
VEGETATION (use scientific names of plants Herb Stratum ()	s) Absolute	Dominant Species?	Indicator Status	<u>X</u> Dominance Test is > 50% <u>X</u> Prevalence Index is ≤ 3.0
VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equisetum fluviatire	Absolute % Cover	Dominant Species?	Indicator	XDominance Test is > 50%
VEGETATION (use scientific names of plants	Absolute % Cover 75 10	Dominant Species?	Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
VEGETATION (use scientific names of plants Herb Stratum () 1. Equisetum fluviatire 2. Calamagrostis Canadensis 3.Gymnocarpium drypoteris	Absolute % Cover 75 10 3	Dominant Species?	Indicator Status OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equisetum fluviatire 2. Calamagrostis Canadensis	Absolute % Cover 75 10 3	Dominant Species?	Indicator Status OBL FAC FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations' (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equisetum fluviatire 2. Calamagrostis Canadensis 3. Gymnocarpium drypteris 4. Streptopus amplexifori	Absolute % Cover 75 10 3	Dominant Species?	Indicator Status OBL FAC FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equisetum fluviatire 2. Calamagrostis Canadensis 3.Gymnocarpium drypteris 4. Streptopus amplexifori 5. 6.	Absolute % Cover 75 10 3	Dominant Species?	Indicator Status OBL FAC FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equisetum fluviatire 2. Calamagrostis Canadensis 3. Gymnocarpium drypteris 4. Streptopus amplexiforio 5. 6. 7.	Absolute % Cover 75 10 3	Dominant Species?	Indicator Status OBL FAC FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlead disturbed or problematic.
VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. Equisetum fluviatire 2. Calamagrostis Canadensis 3. Gymnocarpium drypteris 4. Streptopus amplexifoli 5.	Absolute % Cover 75 10 3	Dominant Species?	Indicator Status OBL FAC FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. 0% Bare Ground
VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equisetum fluviatire 2. Calamagrostis Canadensis 3. Gymnocarpium drygoteris 4. Streptopus amplexiforio 5. 6. 7. 8. 9.	Absolute % Cover 75 10 3	Dominant Species?	Indicator Status OBL FAC FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlead disturbed or problematic. O % Bare Ground O % Cover of Wetland Bryophytes
VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equisetum fluviatire 2. Calamagrostis Canadensis 3. Gymnocarpium drypteris 4. Streptopus amplexiforio 5. 6. 7. 8. 9. 10.	Absolute % Cover 75 10 3 5 1	Dominant Species?	Indicator Status OBL FAC FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O% Bare Ground O% Cover of Wetland Bryophytes OTotal Cover of Bryophytes
VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Equisetum fluviatire 2. Calamagrostis Canadensis 3. Gymnocarpium drygoteris 4. Streptopus amplexiforiu 5. 6. 7. 8. 9.	Absolute % Cover 75 10 3 5 1	Dominant Species? (Y/N)	Indicator Status OBL FAC FACU FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlead disturbed or problematic. 0 % Bare Ground 0 % Cover of Wetland Bryophytes 0 % Cover of Bryophytes 0 % Cover of Water

SOIL	Non-		Date 06 - 10-14 Fe				-	Soil Pit Required (Y/N) <u>N</u>
SOIL PROF	ILE DESCRIPTION: (D	escribe	to the depth needed	to doc	ument the	indicator or	confirm the absence	e of indicators.)
Depth	Matrix	_	Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
			/	1				
		/					1	
				1				
	X		8					
	1	1						
	1							
¹ Type: C=C	oncentration, D=Depleti	ion, RM	I=Reduced Matrix, C	S=Cov	ered or Coa	ated Sand G	Brains. ² Location:	: PL=Pore Lining, M=Matrix.
HYDRIC SO	IL INDICATORS			-			INDICATORS	FOR PROBLEMATIC HYDRIC SOILS
Histosol or H	listel (A1)		Alaska Gleyed	(A13)			Alaska Color C	Change (TA4)⁴
Histic Epiped	don (A2)		Alaska Redox	(A14) _			Alaska Alpine	Swales (TA5)
Black Histic	(A3)		Alaska Gleyed	Pores	(A15)		Alaska Redox	with 2.5Y Hue
Hydrogen Si	ulfide (A4)						Alaska Gleyed Layer	without 5Y Hue or Redder Underlying
Thick Dark S	Surface (A12)						Other (Explain	in Notes) X
disturbed or								ape position must be present unless
Restrictive L	ayer (if present): Type		D	epth (ii	nches):	A		
Hydric Soil	Present (Y/N):	У						
Notes:	wood in a	tous	of whether	1 .	an al		h sizestinte	
10	urget in cen	1er-	OF WEEICUN	er l	70/1 SI -	no pi	t possible	

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3)X	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N): Y	Depth (in): 10 -12 //	the encodered	V		
Water Table Present (Y/N):	Depth (in): ()	Wetland Hydrology Present (Y/N): _	/		
Saturation Present (Y/N); (includes capillary fringe)	Depth (in):				
Notes: target in cer	nter of wetland por	id - inundation of	oser ved		

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VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Every High Density (80-100%) Ever
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered StemsX_ 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional 🤽 Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs X Return Interval 2-5 yrs
Return Interval >5 yrs
Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Return Interval >5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading

LANDSCAPE VARIABLE	:S (M)	and the state of the	and the second s		
Wetland Juxtaposition: Only Connected Above	Wetland Isolated X	Wetlands witl am & Downstream	nin 400m, Not Connected Unknown	Only Connected Below	
Wetland Land Use:	High Intensity (i.e., ag.)	Moderate I	ntensity (i.e., forestry)	Low Intensity (i.e. open space) X	
Watershed Land Use:	0-5% Rural5	25% Urbanized	25-50% Urbanized	>50% Urbanized	
Size: Small (<10 acro	es) Medium (10-	100 acres)	_ Large (>100 acres)		

Crew Chief QA/QC check:

GPS Technician QA/QC check:

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Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID: WGOHT006
 Field Target: 135
 Date: 06-10-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

 \Box Soil profile is complete? $N^{0.5}$

O)	P ^a	+
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Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
 Each logbook page is initialed and dated?

7. Maps

Wetland boundaries have been corrected if necessary?
 Maps are initialed and dated?

8. Photos

N

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)? え veg photos (No Soil pit dug)
 Two photos were taken for each Observation Point (vegetation/site overview)?

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Wetland Scientist (print)

XA amal Signature / Date

6/10/14

hr

Field Crew Chief (print)

Signature / Date

Х

SITE DESCRIPTION		-1-21	Off b	tighway, map	ac
Survey Type: Centerline A	ccess Road (explain)	Other (exp			Map #: <u>94</u> Map Date: 5/27
Date: 06-10-14	Project Name & No	.: Alaska LNC	G 26221306	Feature lo	1: W60 HT 007
Investigators: pdn La Pla	nt, Zoe Mea	de			Team No.: W60
State: Alaska	Region: Alaska		Milepost:	124	
Latitude: 62° 26' 55,	82 "	Longitude	100°	16' 17.45"	Datum: WGS84
Logbook No.: 00 2	Logbook Page No.:	00 8	Picture No.:	P_S, N, pit	plug
SITE PARAMETERS	and the second	1	12.00		and the second sec
Subregion: Intevior			Landform (hi	illslope, terrace, hummocl	(s, etc.): terrace
Slope (%): 3 - 5			Local relief (concave, convex, none):	Concavé
Pre-mapped Alaska LNG/NWI class	ification: upland		Soil Map Uni	it Name:	
Are climatic/hydrologic conditions o Yes No (if no	n the site typical for this tim explain in Notes)	ie of year?		lormal Circumstances" pro	
Are Vegetation, Soil, or	Hydrology Significa	ntly Disturbed?	? No <u>×</u>	(If yes, explain in Notes	5)
Are Vegetation, Soil, or	Hydrology Naturally	Problematic?	No <u>×</u>	(If yes, explain in Note	s.)
SUMMARY OF FINDINGS					
Hydrophytic Vegetation Present? Y	es NoX	Is	the Sampled	Area within a Wetland?	Yes No
Hydric Soil Present? Ye	es NoX	w	etland Type:	upland	
Wetland Hydrology Present? Ye	esΝοΧ	AI	aska Vegetatio	n Classification (Viereck)	IF B 1
Notes and Site Sketch: Please inclu corridor. Scc Sk	de Directional & North Arro	w, Centerline,	Length of featu	ure, Distances from Cente DAge 00 {	erline, Photo Locations, and Survey
	1			8.	

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot sizes:)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC:
1.	-	<u> </u>	· · · · · · · · · · · · · · · · · · ·	Total Number of Dominant Species Across All Strata:
2.				% Dominant Species that are OBL, FACW, or FAC: <u>25</u>
3.				1011-1
4.				Prevalence Index worksheet:
Total Cover:	0			Total % Cover of: Multiply by:
50% of total cover:	<u> </u>	% of total cov	er: <u>6</u>	OBL species: 0 X 1 = 0
Sapling/Shrub Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 0 $x 2 = 0$ FACW species: 93 $x 3 = 279$ FACU species: 165 $x 4 = 660$
1. Alnus SSP.	90	Y	FAC	UPL speciesOX 5 =O
2. Optopanax horridus	30	Y	FACU	Column Totals: 258 (A) 939 (B)
3.				PI = B/A = 3,64
4.				
5.				
6.				
7.				
· 64			· · · · · · · · · · · · · · · · · · ·	
8.				
8. 9. Total Cover:				
8. 9.)% of total cov	er:_24_	
8. 9. Total Cover:_ 50% of total cover:_	60 20)% of total cov	er:_24	
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants)	60 20	0% of total cov	er:_24_	Hydrophytic Vegetation Indicators:
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants)	60 20	Dominant Species?		No Dominance Test is > 50%
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (26')	60 20 Absolute % Cover	Dominant	Indicator Status	$\frac{N0}{N0}$ Dominance Test is > 50% $\frac{N0}{N0}$ Prevalence Index is < 3.0
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (26') 1.Streptoptus ample xifolio.	GO 20 Absolute % Cover 5	Dominant Species?	Indicator Status FACU	$\frac{N0}{N0}$ Dominance Test is > 50% $\frac{N0}{N0}$ Prevalence Index is < 3.0 $\underline{M0}$ Morphological Adaptations ¹ (Provide supporting data in
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (<u>26'</u>) 1. Streptoptus an ple xifolio. 2. Gymnocar pium dryop terris	<u>60</u> 20 Absolute % Cover 5 5 0	Dominant Species? (Y/N)	Indicator Status FACU FACU	N0 Dominance Test is > 50% N0 Prevalence Index is ≤ 3.0
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (<u>26'</u>) 1.Streptoptus amplexifolio. 2. Gymnocar pium dryop terris 3. Dry opteris expansa	<u>60</u> 20 Absolute % Cover 55 50 80	Dominant Species? (Y/N)	Indicator Status FACU FACU FACU	N0 Dominance Test is > 50% N0 Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (<u>26'</u>) 1.Streptoptus ample xifolio. 2. Gymnocar pivm dryop terris	<u>60</u> 20 Absolute % Cover 5 5 0	Dominant Species? (Y/N)	Indicator Status FACU FACU	N0 Dominance Test is > 50% N0 Prevalence Index is ≤ 3.0
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (<u>26'</u>) 1.Streptoptus amplexifolio. 2. Gymnocar pium dryopteris 3. Dryopteris expansa 4. Equisetum Sylvaticum	<u>60</u> 20 Absolute % Cover 55 50 80	Dominant Species? (Y/N)	Indicator Status FACU FACU FACU	N0 Dominance Test is > 50% N0 Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (<u>26'</u>) ^{1.} Streptoptus amplexifolio. ^{2.} Gymnocar pium dryopteris ^{3.} Dryopteris expansa ^{4.} Equisetum Sylvaticum 5.	<u>60</u> 20 Absolute % Cover 55 50 80	Dominant Species? (Y/N)	Indicator Status FACU FACU FACU	N0 Dominance Test is > 50% N0 Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
 8. 9. Total Cover: 50% of total cover: 50% of total cover: 50% of total cover: 10% of total cover: 50% of total cover: 10% of to	<u>60</u> 20 Absolute % Cover 55 50 80	Dominant Species? (Y/N)	Indicator Status FACU FACU FACU	N0 Dominance Test is > 50% N0 Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic.
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (<u>26'</u>) 1.Streptoptus amplexifolio. 2. Gymnocar pium dryopteris 3. Dryopteris expansa 4. Equisetum Sylvaticum 5. 6. 7.	<u>60</u> 20 Absolute % Cover 55 50 80	Dominant Species? (Y/N)	Indicator Status FACU FACU FACU	N0 Dominance Test is > 50% N0 Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O% Bare Ground
 8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (<u>26'</u>) 1.Streptoptus amplexifolio. 2. Gymnocar pium dryop terris 3. Dryopteris expansa 4. Equisetum Sylvaticum 5. 6. 7. 8. 9. 	<u>60</u> 20 Absolute % Cover 55 50 80	Dominant Species? (Y/N)	Indicator Status FACU FACU FACU	N0 Dominance Test is > 50% N0 Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O% Bare Ground % Cover of Wetland Bryophytes % Cover of Bryophytes % Cover of Water
 8. 9. Total Cover: 50% of total cover: 50% of total cover: 50% of total cover: VEGETATION (use scientific names of plants) Herb Stratum (26') 1.Streptoptus am plexifolio. 2. Gymnocar pium dryop terris 3. Dryop terris expansa 4. Equisetum Sylvaticum 5. 6. 7. 8. 	<u>60</u> 20 Absolute % Cover 50 80 3	Dominant Species? (Y/N)	Indicator Status FACU FACU FACU	N0 Dominance Test is > 50% N0 Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic.

SOIL			Date 06-10-14 Fe					Soil Pit Required (Y/N)
SOIL PROFILE	E DESCRIPTION: (D	escribe	to the depth needed	to doc	ument the in	ndicator or c	onfirm the absence	e of indicators.)
Depth	Matrix		Redox Features	-				1
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-2		-		-			Fibric	organics
2-9	10 YR 3/2	100		-			Silt loam	
9-22	10 YR 414	100					Silt loam	
							-	
				-		-		
				-		-		
1			Deduced Metric C		ared or Cor	tod Sand G	raine ² Location	PL=Pore Lining, M=Matrix.
	centration, D=Deplet		reduced Matrix, C	5=000	ered or Coa	ateu Sanu G		FOR PROBLEMATIC HYDRIC SOILS ³
	INDICATORS		Alaska Claused	(412)				Change (TA4) ⁴
	tel (A1)		Alaska Gleyed				-	
	n (A2)		Alaska Redox					Swales (TA5)
Black Histic (A	3)		Alaska Gleyed	Pores	(A15)			with 2.5Y Hue
Hydrogen Sulf	ide (A4)						Layer	without 5Y Hue or Redder Underlying
Thick Dark Su	face (A12)						Other (Explain	in Notes)
disturbed or pr ⁴ Give details o	oblematic. f color change in Not	es.					appropriate landsca	ape position must be present unless
Restrictive Lay	er (if present): Type			epth (i	nches):	A REAL PROPERTY.		
Hydric Soil Pi	resent (Y/N):	N						
Notes:								- Sue

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5) NA		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
		and a second	the second second		
Surface Water Present (Y/N): N	Depth (in): N R		3		
Water Table Present (Y/N):	Depth (in): 15	Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N): (includes capillary fringe)	Depth (in): 나나				
Notes: Saturation at Water table	14" at [5"				

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VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent- Persistent Aquatic Bed Scrub Shrub-Evergreen-Needle-leaved Emergent-
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Every High Density (80-100%) Ever
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
V
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perenni
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval >5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits
Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%)
LANDSCAPE YARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized

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Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID: W60HT007
 Field Target: 134
 Date: 06-10-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- $onumber \square$ A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

☑ Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- ☑ Each logbook page is initialed and dated?

7. Maps

- ☑ Wetland boundaries have been corrected if necessary?
- \square' Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)? Two photos were taken for each Observation Point (vegetation/site overview)?

Х Loe mende

Wetland Scientist (print)

nee Signature / Da

6/10/14

Field Crew Chief (print)

Signature / Date

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SITE DESCRIPTION	1	2000 Corridor				
Survey Type: Centerline Acces	ss Road (explain)	Other (expla	in)X	Field Targ	jet: <u>/42</u>	Map #: <u>98</u> Map Date: <u>5/27/1</u> 4
Date: 06-12-14	Project Name & No.:	Alaska LNG	26221306		Feature Id:	W60 HT008
Investigators: Dan La Plant	/				Team No.: ₩60	
State: Alaska	Region: Alaska		Milepost:	22.2		
Latitude: 62° 25' 15,0	3"	Longitude	150° 15	50.03	3 "	Datum: WGS84
Logbook No.: 002	Logbook Page No.:	013	Picture No.:	P-NW	, NE. F	pit, plug

SITE PARAMETERS	
Subregion: interior	Landform (hillslope, terrace, hummocks, etc.): valley bottom
Slope (%): 0 - 4	Local relief (concave, convex, none): nme
Pre-mapped Alaska LNG/NWI classification: Upland	Soil Map Unit Name:
Are climatic/hydrologic conditions on the site typical for this time of year Yes X No (if no explain in Notes)	r? Are "Normal Circumstances" present: Yes_XNo (If no, explain in Notes.)
Are Vegetation, Soil, or Hydrology Significantly Distu	urbed? No <u>X</u> (If yes, explain in Notes)
Are Vegetation, Soil, or Hydrology Naturally Problem	natic? No <u>X</u> (If yes, explain in Notes.)
SUMMARY OF FINDINGS	
Hydrophytic Vegetation Present? Yes NoX	Is the Sampled Area within a Wetland? Yes No
Hydric Soil Present? Yes NoX	Wetland Type: Upland
Wetland Hydrology Present? Yes NoX	Alaska Vegetation Classification (Viereck): J_C_2_

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

See sketch in Logbook 002 page 013.

VEGETATION (use scientific names of plan	ts)			
Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 2
1. Betula neoalaskana	30	Y	FACU	Total Number of Dominant Species Across All Strata: 6
^{2.} Picea glauca	35	У	FACU	- % Dominant Species that are OBL, FACW, or FAC: $\underline{33}$ (
3.		1		Martin
4.				Prevalence Index worksheet:
Total Cove	r:65	1	1	Total % Cover of: Multiply by:
50% of total cove	r: <u>32,5</u> 20	0% of total cov	ver: <u>13</u>	OBL species:X 1 =
Sapling/Shrub Stratum_(26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $0 x = 0$ FAC species $173 x = 519$ FACU species $147 x = 588$
1. Viburnum edule	40	Y	FACU	UPL species <u> </u>
2. Oplopanax horridus	25	У	FACU	Column Totals: 32.0 (A) 1107 (B)
3. Alnus SSp.	15		FAC	PI = B/A = 3,46
4. Sambucus racemosa	5		FACU	
5.			1	10
6.				
7.				
8.				
9.				
Total Cover	: 85			
50% of total cover	r: 42.5 20	% of total cov	er: <u> </u>]	
VEGETATION (use scientific names of plant	s)	-	-	
Herb Stratum(261))	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
1. Caldrage contin Canadaucio	80	(Y/N) Y	The	Prevalence Index is ≤ 3.0
 Calamagrostis Canadensis Athyrium cyclosorum 		Y	FAC	Morphological Adaptations ¹ (Provide supporting data in
3. Gymnocarpium dryopteri		/	FAC	Notes)
				Problematic Hydrophytic Vegetation ¹ (Explain)
⁴ Streptopus amplexifolius 5.r			FACU	¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
5. Equisetum sylvaticum	3		FAC	
6. Cornus canadensis 7.	T		FAC	
8.				% Bare Ground
9.				O Cover of Wetland Bryophytes
				O Total Cover of Bryophytes O % Cover of Water
10.			· · · · · · · ·	Hydrophytic Vegetation Present (Y/N):
Total Cover	170			Notes: (If observed, list morphological adaptations below):
50% of total cover	<u>. 85</u> 20	% of total cov	er: <u>34</u>	

OIL Date 06 - 12 - 14 Feature ID W60 H T 008 OIL PROFILE DESCRIPTION: (Describe to the depth needed to document the indicator or complete the depth needed						the second second	Soil Pit Required (Y/N)		
SOIL PROFILE	E DESCRIPTION: (I	Describe	to the depth needed	to doc	ument the i	ndicator or	confirm the absence	e of indicators.)	
Depth	Matrix		Redox Features		4				
inches)	Color (moist)	%	Color (moist)	noist) % Type ¹	Type ¹	Loc ²	Texture	Notes	
)-4	and the second second second second					organic			
- 5.5		-		-			,	Ash	
.5-8.5	2.5 YR 3/1	100		-			silt loam		
5-22	5YR 5/6	100	· · · · · · · · · · · · · · · · · · ·	+			silt loam		
						-			
		-		-					
							2		
		etion, RN	=Reduced Matrix, C	S=Cov	ered or Coa	ated Sand G		PL=Pore Lining, M=Matrix.	
HYDRIC SOIL	INDICATORS							FOR PROBLEMATIC HYDRIC SOILS	
Histosol or Hist	tel (A1)		Alaska Gleyed	(A13)			Alaska Color Change (TA4) ⁴		
listic Epipedor	n (A2)		Alaska Redox	(A14) _			Alaska Alpine Swales (TA5)		
Black Histic (A:	3)		Alaska Gleyed	Pores	(A15)		Alaska Redox with 2.5Y Hue		
-lydrogen Sulfi	ide (A4)			-			Alaska Gleyed without 5Y Hue or Redder Underlying Layer		
	rface (A12)	_					Other (Explain in Notes)		
disturbed or pro	oblematic. f color change in No	otes						pe position must be present unless	
Restrictive Lay	ver (if present): Typ	e:		epth (i	nches):				
Hydric Soil Pr	resent (Y/N):N								
Notes:									

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 0	r more required)
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:	
Algal Mat or Crust (B4)	Other (Explain in Notes):		
Iron Deposits (B5)			
Surface Water Present (Y/N): N	Depth (in):	and the Alexandrian sector	
Water Table Present (Y/N): N	Depth (in):	Wetland Hydrology Present (Y/N):	
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):	-	
Notes:			

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Emergent-Non-persistent Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) High Density (20-40%) High Density (40-60%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover Peripheral Cover >75% Scattered or Peripheral Cover N/A 26-75% Scattered or Peripheral Cover 100% Cover <
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg. Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches. Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet_
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Perennial Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Sediment Observed on Wetland Substrate Fluvaouent Soils Sediment
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Saturated
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Vet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
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OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence ObservedSediment Observed on Wetland SubstrateFluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): AbsentPoorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
OutletIntermittent Inlet/Intermittent Unlet/Intermittent Inlet/Intermittent Inlet/Intermittent OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
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Cutlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
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S.

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Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT008 Field Target: 142 Date: 06-12-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

- D Appropriate hydrology indicators are marked?
- D Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

D Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Dotes have been recorded at each site, including general description, sketch, and
- accuracy of pre-mapped wetland boundary as appropriate?
- 申 Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- ☐ Maps are initialed and dated?

8. Photos

- $\dot{\Phi}~$ Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

Х Zoe Meade

Wetland Scientist (print)

ocmade 6/12/14 Signature / Date

X

1º APLANT

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION		hulo -	200	o' cor	ridor	
Survey Type: Centerline Acces	ss Road (explain)	Other (expla	ain) <u>X</u>	Field Targ	jet: <u>///</u>	Map #: <u>98</u> Map Date: <u>5/27/</u> /14
Date: 06 - 12 - 14	Project Name & No.:	Alaska LNG	26221306		Feature Id	:W60HT009
Investigators: Dan Laplan	t, Zoe Mead	re				Team No.: W60
State: Alaska	Region: Alaska		Milepost:	22.2		
Latitude: 62°25′14.37	н	Longitude	:150° 15	'56.09	11	Datum: WGS84
Logbook No.: 002	Logbook Page No.:	014	Picture No.:	P.W. NV	V, pit,	plug

SITE PARAMETERS	
Subregion: interior	Landform (hillslope, terrace, hummocks, etc.): Unlice, bother
Slope (%): () - 2_	Local relief (concave, convex, none): Concave
Pre-mapped Alaska LNG/NWI classification: PSS 1 / EM1 B	Soil Map Unit Name:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes_XNo(if no explain in Notes)	Are "Normal Circumstances" present: Yes <u>X</u> No (If no, explain in Notes.)
Are Vegetation, Soil, or Hydrology Significantly Disturbe	d? No_X(If yes, explain in Notes)
Are Vegetation, Soil, or Hydrology Naturally Problematic	c? No X (If yes, explain in Notes.)
SUMMARY OF FINDINGS	
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area within a Wetland? Yes_X No
Hydric Soil Present? Yes X No	Wetland Type: PEMユF
Wetland Hydrology Present? Yes X No	Alaska Vegetation Classification (Viereck): TTT_A3

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

See skitch in Logtook OB2 page 015.

Image: Second of the secon	VEGETATION (use scientific names of plan	is)	1		
1. % Dominant Species that are OBL, FACW, or FAC: 101 2. % Dominant Species that are OBL, FACW, or FAC: 101 3. 4. 50% of total cover. Sapling/Shrub Stratum (2.0^{-1}) Absolute Dominant Indicator % Cover (YR) Status FACU species 0 x s = 3.0 1. FACU species 0 x s = 3.0 2. <	Tree Stratum (Plot sizes: <u>26</u>)		Species?		No. of Dominant Species that are OBL, FACW, or FAC: 2
2 3. Image: Second Statum Prevalence Index worksheet: Total Cover: O 20% of total cover: O OBL species: $10.5 \times 1 = 10.5$ Sabiling/Shrub Stratum.(20) Absolute Dominant Indicator % Cover Species $2.2 = 0$ PACU species $0 \times 3 = 30$ FACU species: $0 \times 3 = 30$ PACU species $0 \times 4 = 0$ UPL species $0 \times 4 = 0$ 1. Image: Dominant Indicator FACU species: $0 \times 3 = 30$ FACU species: $0 \times 4 = 0$ 2. Image: Dominant Image: Dominant Image: Dominant Image: Dominant FACU species: $0 \times 4 = 0$ 1. Image: Dominant	1.				
4. Total Cover: O 50% of total cover: O 20% of total cover: O Sapling/Shub Stratum (26^{-1}) Absolute Dominant Indicator % Cover Species? Indicator FACW species: 10^{-5} $x1 = -10^{-5}$ 1. Image: Image	2.				- % Dominant Species that are OBL, FACW, or FAC: <u>↓00</u>
Total Cover: O Total Cover: O Solve of total cover: O Solve of total cover: O Solve of total cover: O Sapling/Shrub Stratum (2.6°) Absolute Dominant Indicator Sapling/Shrub Stratum (2.6°) Absolute Dominant Indicator Sapling/Shrub Stratum (2.6°) Absolute Dominant Indicator Sapling/Shrub Stratum (2.6°) Absolute Column Totals: 115 (A) 135 (B) Total Cover: O Solve of total cover: O <th< td=""><td>3.</td><td></td><td></td><td></td><td>and the second sec</td></th<>	3.				and the second sec
50% of total cover. O Sapling/Shrub Stratum (2.6^{-1}) Absolute OBL species: $10.5 \times 1 = 10.5$ Sapling/Shrub Stratum (2.6^{-1}) Absolute OPEL species: $10.5 \times 1 = 10.5$ Sapling/Shrub Stratum (2.6^{-1}) Absolute OPEL species: $10.5 \times 1 = 10.5$ Absolute Species? Status FAC species: $10.5 \times 3 =0$ 1. Image:	4.				Prevalence Index worksheet:
Sapling/Shrub Stratum (26°) Absolute % Cover Soft of unitant % Cover Sapling/Shrub Stratum % Cover Colspan="2">ACV species: $10 \times 3 = 30$ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 </td <td>Total Cove</td> <td>r: 0</td> <td></td> <td></td> <td>Total % Cover of: Multiply by:</td>	Total Cove	r: 0			Total % Cover of: Multiply by:
% Cover Species? (Y/N) Status FAC species 10 $x_3 = \frac{30}{20}$ 4. Image: Species in the	50% of total cove	r: 20	% of total cov	er:	OBL species: <u>105</u> x 1 = <u>105</u>
1. Image: Constraint of the second seco	Sapling/Shrub Stratum (<u>26'</u>)		Species?		FAC species 10 X 3 = 30
2. Column Totals: 115 (A) 135 (B) 3. Column Totals: 115 (A) 135 (B) 4. Column Totals: 115 (A) 135 (B) 5. Column Totals: 115 (A) 135 (B) 7. Column Totals: 115 (A) 135 (B) 8. Column Totals: 115 (A) 135 (B) 9. Column Total Cover: 0 50% of total cover: 0 20% of total cover: 0 VEGETATION (use scientific names of plants) Herb Stratum (26') Absolute Species? (Y/N) 1. Comarvum palustree 15 2. Eq. uisetum fluv(atile 65 Y 3. un'dentified herb 5 — 4. Core x Quatilis 2.5 Y 6. Column or polytic Column or plants 10. FAC 8. Column or polytic Column or plants 10. FAC 7. Column or polytic column or plants 10. FAC 10. FAC 10. FAC 11. FAC 12. Column or plants 13. Column or plants 14. Core x 15. Core o	1.				
$PI = B/A = \frac{1 \cdot 1}{3}$ $PI = B/A = \frac{1 \cdot 1}$	2.				
4.	3.				
8. Image: Solution of the second	4.				
Z. Image: Constraint of the second secon	5.			· · · · · · · · · · · · · · · · · · ·	
B.	6.				
A. Total Cover: O 50% of total cover: 0 20% of total cover: 0 VEGETATION (use scientific names of plants) Herb Stratum (26') Absolute Dominant Indicator % Cover Species? Status (Y/N) Status X 1. Comarum palustre 15 0 B L 2. Equisetum fluv(atile 6.5 Y 0 B L 3. unidentified herb 5 4. Carex aquatilis 2.5 Y 0 B L 5. Calamagrostis canadensis 10 FAC Base Ground 8.	7.				
Total Cover: 0 50% of total cover: 0 20% of total cover: 0 50% of total cover: 0 20% of total cover: 0 VEGETATION (use scientific names of plants) Herb Stratum (2.6') Absolute % Cover % Cover Species? % Cover Species? 1. Comarum palvstre 15 2. Equisetum fluv(atile 65 3. unidentified her b 5 5. Calamagrostis canadensis 10 7. 0 8. 0 9. 0 10. Total Cover: 12.0	8.				
O 20% of total cover: O 0 20% of total cover: 0 0 20% of total cover: 0 1 Absolute Dominant Indicator % Cover: Species? Status X Dominance Test is > 50% 1. Comarum palvstre 15 0 B L Morphological Adaptations' (Provide supporting de Notes) 2. Equisation flux (atile 65 Y 0 B L Notes) 3. uni dentified herb 5	9.				
VEGETATION (use scientific names of plants) Herb Stratum (Total Cove	r: 0			
Herb Stratum () Absolute % Cover Dominant Species? (Y/N) Indicator Status Hydrophytic Vegetation Indicators: X Dominance Test is > 50% 1. Comarvm palvstre 15 0 B L X Prevalence Index is ≤ 3.0 2. Equisetum fluviative 65 Y 0 B L Morphological Adaptations' (Provide supporting data Notes) 3. unidentified herb 5 Problematic Hydrophytic Vegetation '(Explain) 4. Carex aquativis 25 Y 0 B L 5. Calamagrostis canadensis 10 FAC 6. 9.	50% of total cove	r: 20	% of total cov	er:_0	
Herb Stratum (_26') Absolute % Cover Dominant Species? (Y/N) Indicator Status Hydrophytic Vegetation Indicators: X Dominance Test is > 50% 1. Comarvm palvstre 15 0 B L X Prevalence Index is ≤ 3.0 2. Equisetum fluviatine 65 Y 0 B L Morphological Adaptations' (Provide supporting data Notes) 3. unidentified herb 5 Problematic Hydrophytic Vegetation 1 (Explain) 4. Carex aquatilis 2.5 Y 0 B L 5. Calamagrostis canadensis 10 FAC 6. % Bare Ground 2.5 Y OB L 10. Total Cover: 12.0 Notes: (If observed list morphological adaptations below	VEGETATION (use scientific names of plant	s)	10000		
1. Comarum palvstre 15 0 B L		Absolute	Species?		Dominance Test is > 50%
2: Equisetum fluviatiie 65 Y 08L Notes) 3: unidentified herb 5	1. Comarum palustre	15		OBL	
4. Carex aguatilis 2.5 Y OBL 1 Indicators of hydric soil and wetland hydrology must be present disturbed or problematic. 5. Cala mag rostis canadems/s 10 FAC 10 Image: constraint of the problematic. 6. 7. 0 % Bare Ground 2.5 % Cover of Wetland Bryophytes 9. 10. 10. 10. 10. 10. 10. 10. Total Cover: 12.0	² . Equisetum fluviatile	65	У	OBL	
4. Carex aguatilis 25 Y OBL 1 Indicators of hydric soil and wetland hydrology must be present disturbed or problematic. 5. Cala mag rostis canaderisis 10 FAC 1 Indicators of hydric soil and wetland hydrology must be present disturbed or problematic. 6. 7. 0 % Bare Ground 9. 2.5 % Cover of Wetland Bryophytes 10. 7.5 % Cover of Bryophytes 7. 7.5 % Cover of Wetland Bryophytes 9. 7.5 % Cover of Wetland Bryophytes 10. 7.5 % Cover of Water Hydrophytic Vegetation Present (Y/N): Y Notes: (If observed, list morphological adaptations below	3. unidentified herb	5			Problematic Hydrophytic Vegetation ¹ (Explain)
5. Calamag rostis canadensis 10 FAC disturbed or problematic. 6. 7. 0 % Bare Ground 8. 9. 2.5 % Cover of Wetland Bryophytes 10. 7.5 % Cover of Bryophytes 7. 7.5 % Cover of Wetland Bryophytes 9. 7.5 % Cover of Watland Bryophytes 10. 7.5 % Cover of Water Hydrophytic Vegetation Present (Y/N): Y Notes: (If observed, list morphological adaptations below	4. Carex aquatilis	25	У	OBL	¹ Indicators of hydric soil and wetland hydrology must be present unles
6. 7. 0 % Bare Ground 7. 2.5 % Cover of Wetland Bryophytes 9. 2.5 Total Cover of Bryophytes 10. 7.5 % Cover of Water Hydrophytic Vegetation Present (Y/N): Y	5. Calamagrostis canadensis	10		FAC	disturbed or problematic.
8. 2.5 % Cover of Wetland Bryophytes 9. 2.5 Total Cover of Bryophytes 10. 7.5 % Cover of Water Hydrophytic Vegetation Present (Y/N): Total Cover: 12.0					States and the second s
9. 10. Total Cover: 12.0 <u>2.5</u> Total Cover of Bryophytes <u>75</u> % Cover of Water Hydrophytic Vegetation Present (Y/N): <u>Y</u> Notes: (If observed, list morphological adaptations below	7.				% Bare Ground
10. 7.5 % Cover of Water Total Cover: 12.0 Notes: (If observed, list morphological adaptations below)	8.				
Total Cover: 12.0 Total Cover: 12.0 Notes: (If observed, list morphological adaptations below	9.				
Total Cover: 12.0 Notes: (If observed, list morphological adaptations below	10.				N
L Notes' (It observed list morphological adaptations below	and the second se	. 12 0			Hydrophytic Vegetation Present (Y/N):
50% of total cover: 60 20% of total cover: 24	Total Cove 50% of total cove		% of total cov	er:_24	Notes: (If observed, list morphological adaptations below):

SOIL	Date 06-12 Feature ID Wo									
SOIL PROFIL		Describe	to the depth needed	to docu	ument the	indicator or c	onfirm the absenc	e of indicators.)		
Depth	Matrix		Redox Features			-	-			
(inches)	Color (moist)	%	% Color (moist)		Type ¹	Loc ²	Texture	Notes		
0-3		-		-				organics		
3 - 14	2.5 YR 3/1	100		-			Silt loam	· · · · · · · · · · · · · · · · · · ·		
14 - 22+	7.5 YR 7/1	75	2.5YR 618	25	C	PLIM	Siltloam			
		-								
		-								
4							2			
		tion, RM	M=Reduced Matrix, CS	S=Cove	ered or Co	pated Sand Gr		: PL=Pore Lining, M=Matrix.		
	INDICATORS		T	1				FOR PROBLEMATIC HYDRIC SOILS ³		
	tel (A1)		Alaska Gleyed ((A13) _		#0.		Change (TA4)⁴_ <u>X</u>		
	n (A2)	_	Alaska Redox (/				-	Swales (TA5)		
Black Histic (A	3)	_	Alaska Gleyed F	Pores ((A15)			with 2.5Y Hue		
Hydrogen Sulf	ide (A4)						Alaska Gleyed	without 5Y Hue or Redder Underlying		
Thick Dark Su	rface (A12)		- 1				Other (Explain	in Notes)		
³ One indicator	of hydrophytic veget	tation, c	ne primary indicator o	f wetla	nd hydrol	ogy, and an a	ppropriate landsca	ape position must be present unless		
disturbed or pr	oblematic. f color change in No	toc								
Restrictive Lay	ver (if present): Type):	De	epth (ir	nches):					
Hydric Soil Pi	resent (Y/N):	Y								
Notes:			1				med to the			
72.5	YR 618 M	lotti	es are in th	e po	ire Sf	saces u	ny in the	matrix changed		
DC 5-YR-	518 molileo	, 7	5 YR TII Mai	trix	1	Veri	y large/	matrix. color of matrix changed when exposed to oxygen		
							Win first	5 minutes of exposure		
HYDROLOGY	PRIMARY INDICAT	FORS (a	any one indicator is su	fficient)	SECONDARY	INDICATORS (2	or more required)		
Surface Water	(A1) <u>X</u>	Su	rface Soil Cracks (B6)			Water-stained		Stunted or Stressed		
	((())	_				Leaves (B9)		Plants (D1)		
High Water Ta	ble (A2) <u>X</u>	(B	Indation Visible on Aer	rial Ima	igery	Drainage Patt	erns (B10)	Geomorphic Position (D2)X		
Saturation (A3	X		arsely Vegetated			Oxidized Rhiz	Shallow Aquitard (D3)			
Saturation (AS		Co	ncave Surface (B8)			Living Roots (C3)				
Water Marks (B1)X	Ma	url Deposits (B15)					Microtopographic Relief (D4)		
			drogen Sulfide							
Sediment Dep	osits (B2)		lor (C1)			Salt Deposits (C5) FAC-Neutral Test (D5)				
Drift Deposite	(B3)	Dr	y-Season			Notes:				
Drift Deposits	(03)	Wa	ater Table (C2)	_						
Algal Mat or C	rust (B4)	Ot	her (Explain in Notes);							
lese Deservite i	(B5) X	-								
Iron Deposits	(00) (00	_			-					
Curfage Mistor	Dragont (V/NI):	Y	Dopth (in)t		2	and the second				
Surrace vvater	Present (Y/N):	1	Depth (in):		2w	etland Hydrol	logy Present (Y/N	4): Y		
Water Table P	resent (Y/N):		Depth (in):			chana nyaroi	- a) . 100011 (1/1	-7		
Saturation Pre	sent (Y/NI):		Depth (in):							
(includes capil		\sim 1	Depth (in):							
Notes:					-					

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) High Density (20-40%) High Density (20-40%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings)_X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional X Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol:Sapric
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet
Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perenn
Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Outlet Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Inlet/Outlet Class (P): No Inlet/Outlet XNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No OutletNo Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial Inlet/Perenn
Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flovaquent Soils Sediment Observed on Wetland Substrate Flovaquent Soils Sediment Created
Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet
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Inlet/Outlet Class (P): No Inlet/Outlet XNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No Outlet
Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): No Evidence Observed Sediment Observed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent OutletNo Inlet/Perennial OutletNo Inlet/Perennial OutletNo Inlet/Perennial OutletPerennial Inlet/No OutletPerennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No Outlet
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Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent OutletNo Inlet/Perennial OutletNo Inlet/Perennial OutletNo Inlet/Perennial OutletPerennial Inlet/No OutletPerennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No Outlet

Crew Chief QA/QC check:

Watershed Land Use:

Size:

Small (<10 acres)_

0-5% Rural

Х

Х

GPS Technician QA/QC check:

25-50% Urbanized_

Large (>100 acres)

>50% Urbanized

5-25% Urbanized

Medium (10-100 acres)_

11

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT009 Field Target: 141 Date: 06 - @ 12 - 14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- ☑ Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Ø Vegetation names are entered legibly for all strata present?
- D Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- ☑ Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- ☑ Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- ☑ Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Z Two photos were taken for each Observation Point (vegetation/site overview)?

Х Zoe Meade

Wetland Scientist (print)

Х Meal Signature / Date

6/12/14

Field Crew Chief (print)

Signature / Date

Х

SITE DESCRIPTION	- Ma	101		Lond - P L.	1		
Survey Type: Centerline X Acces	ss Road (explain)	Other (expla	xplain) Field Target: 143			Map #: <u>98</u>	_Map Date: <u>5/27</u>
Date: 06 - 12 - 2014	Project Name & No.:	Alaska LNG	NG 26221306 Feature Id: W60HT010				
Investigators: Dan La Plant	t, Zoe Mead	e				Team No.:	W 60
State: Alaska		Milepost:	22				
Latitude: 62° 25' 05, 39	ri -	Longitude	:150'15'			Datum: WO	
Logbook No.: 062	Logbook Page No.:	016	Picture No.:	P_SE,	NW, pi	t, plug	
SITE PARAMETERS						,	
Subregion: interior			Landform (hillslope, terrace, hummocks, etc.): Valley bother				
Slope (%): () - 1			Local relief (concave, convex, none): CONCAVE				
Pre-mapped Alaska LNG/NWI classifica	ation: upland		Soil Map Unit Name:				
Are climatic/hydrologic conditions on the YesNo(if no exp		of year?			istances" pre (If no, ex	esent: plain in Notes	.)
Are Vegetation, Soil, or Hyd		tly Disturbed?	No <u>X</u>	_(If yes, exp	lain in Notes)	
Are Vegetation, Soil, or Hyd	drology Naturally F	Problematic?	No_X	(If yes, exp	plain in Notes	5.)	
SUMMARY OF FINDINGS		-115-	The second	1	1100	1000	
Hydrophytic Vegetation Present? Yes_	No <u>X</u>	Is	Is the Sampled Area within a Wetland? Yes NoX				
Hydric Soil Present? Yes_	w	Wetland Type: Upland					
Wetland Hydrology Present? Yes_	NoX	— Al	Alaska Vegetation Classification (Viereck):				

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

See sketch in Logbook 002 page 016.

7.6	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: 26)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC: 1
1. Betula neoalaskana	10	Y	FACU	Total Number of Dominant Species Across All Strata:
2.				- % Dominant Species that are OBL, FACW, or FAC: <u>25</u>
3.			-	
4.		1		Prevalence Index worksheet:
Total Cover:	10		4	Total % Cover of: Multiply by:
50% of total cover:	5 20	% of total cov	rer: <u>2</u>	OBL species:X 1 =O
Sapling/Shrub Stratum(261))	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 0 $x 2 = 0$ FAC species 114 $x 3 = 342$ FACU species 61 $x 4 = 244$
Sambucus racemona	2		FACU	UPL species O $X 5 = 0$
2. Oplopanax horridus	10	Y	FACU	Column Totals: 175 (A) 586 (B)
3. Rubus idaeus	3	Y	FACU	PI = B/A = 3,35
4.				
5.				
б.				
7.				
3.				
9.				
Total Cover:			7	
50% of total cover:	1,5 20	% of total cov	er: <u>3</u>	
EGETATION (use scientific names of plants)	1		1	
	Absolute	Dominant	Indicator	Hydrophytic Vegetation Indicators:
		Species?	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
ierb <u>Stratum</u> (<u>26')</u>	Absolute % Cover		Status	
lerb Stratum (<u>26')</u> 1. Calamagrostís canadensia	Absolute % Cover	Species?	Status FA C	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
<u>Herb Stratum (26')</u> 1. Calamagrostís canadensis 2. Chamarion angustofolium	Absolute % Cover	Species?	Status FAC FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
<u>terb Stratum (26')</u> 1. Calamagrostis canadensis 2. Chamarion angustofolium 3. Trientalis europaea	Absolute % Cover 90 5 T	Species?	Status FAC FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
<u>Herb Stratum (26')</u> 1. Calamagrostís canadensis ^{2.} Chamarion angustofolium 3. Trientalís europaea ^{4.} Gymnocarpium dryopteris	Absolute % Cover 90 5 T	Species?	Status FAC FACU FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
<u>Herb Stratum (26')</u> 1. Calamagrostís canadensis 2. Chamarion angustofolíum 3. Trientalís europaea 4. Gymnocarpium dryopteris 5. Equisetum sulvaticum	Absolute % Cover 90 5 T 2.5	Species?	Status FAC FACU FACU FACU FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
1. Calamagrostís canadensis 1. Calamagrostís canadensis 2. Chamarion angustofolium 3. Trientalís europaea 4. Gymnocarpíum dryopteris 5. Equisetum sylvaticum 3. Veratrum víride	Absolute % Cover 90 5 T 25 20	Species?	Status FAC FACU FACU FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
1. Calamagrostis canadensis 1. Calamagrostis canadensis 2. Chamarion angustofolium 3. Trientalis europaea 4. Gymnocarpium dryopteris 5. Equisetum sylvaticum 6. Veratrum viride 7. Streptopus amplexifolius	Absolute % Cover 90 5 T 25 20	Species?	Status FAC FACU FACU FACU FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic.
1. Calamagrostis canadensis 1. Calamagrostis canadensis 2. Chamarion angustofolium 3. Trientalis europaea 4. Gymnocarpium dryopteris 5. Equisetum sylvaticum 6. Veratrum viride 7. Streptopus amplexifolius 8. Dryopteris expansis	Absolute % Cover 90 5 7 25 20 2 1	Species?	Status FAC FACU FACU FAC FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O % Bare Ground 0 % Cover of Wetland Bryophytes 0 Total Cover of Bryophytes
Herb Stratum (<u>26'</u>) 1. Calamagrostis canadensis 2. Chamarion angustofolium 3. Trientalis europaea 4. Gymnocarpium dryopteris 5. Equisetum sylvaticum 6. Veratrum viride 7. Streptopus amplexifolius 8. Dryopteris expansis 9.	Absolute % Cover 90 5 7 25 20 2 1	Species?	Status FAC FACU FACU FAC FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O % Bare Ground 0 % Cover of Wetland Bryophytes
1. Calamagrostis canadensis 2. Chamarion angustofolium 3. Trientalis europaea 4. Gymnocarpium dryopteris 5. Equisetum sylvaticum	Absolute % Cover 90 5 7 25 20 2 1 5 5	Species?	Status FAC FACU FACU FAC FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O % Bare Ground O % Cover of Wetland Bryophytes O Total Cover of Bryophytes

SOL PROFILE DESCRIPTION: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth (inches) Matrix Redox Features Notes 0 - 2 0 (or (moist)) % Type1 Loc2 Texture Notes 0 - 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Required (Y/N)
Deprint (inches) Color (moist) % Color (moist) % Type1 Loc2 Texture Notes 0 - 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <t< th=""><th></th></t<>	
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2 4 Ash, voice 4-8 2.5 YR 2.5/1 160 3-22 10 YR 5/8 100 1 Silt loam Silt loam <th></th>	
4 - 8 2.5 YR 2.5/1 160 Silt loam 3 - 22 10 YR 5/8 100 Silt loam ¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, HYDRIC SOIL INDICATORS INDICATORS FOR PROBLEMA Histosol or Histel (A1) Alaska Gleyed (A13) Alaska Color Change (TA4) ⁴ Histic Epipedon (A2) Alaska Gleyed Pores (A15) Alaska Redox with 2.5Y Hue Hydrogen Sulfide (A4) Alaska Gleyed Pores (A15) Alaska Redox with 2.5Y Hue of Layer Thick Dark Surface (A12) Immode the primary indicator of wetland hydrology, and an appropriate landscape position must disturbed or problematic. *Give details of color change in Notes. *	S
3 - 2.2 10 YR 5/8 100 Silf 100 1 ¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, HYDRIC SOIL INDICATORS INDICATORS FOR PROBLEMA Histosol or Histel (A1) Alaska Gleyed (A13) Alaska Color Change (TA4) ⁴ Histic Epipedon (A2) Alaska Redox (A14) Alaska Alpine Swales (TA5) Black Histic (A3) Alaska Gleyed Pores (A15) Alaska Redox with 2.5Y Hue Hydrogen Sulfide (A4) Alaska Gleyed in Notes) Other (Explain in Notes) *One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must disturbed or problematic. Other (Explain in Notes)	uníc
Image: Second start Image: Second start<	
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HYDRIC SOIL INDICATORS INDICATORS FOR PROBLEMA Histosol or Histel (A1) Alaska Gleyed (A13) Alaska Color Change (TA4) ⁴ Histic Epipedon (A2) Alaska Redox (A14) Alaska Alpine Swales (TA5) Black Histic (A3) Alaska Gleyed Pores (A15) Alaska Redox with 2.5Y Hue Hydrogen Sulfide (A4) Alaska Gleyed Pores (A15) Alaska Gleyed without 5Y Hue of Layer Thick Dark Surface (A12) Other (Explain in Notes) Other (Explain in Notes) ³ One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must disturbed or problematic. Alaska Gleyed in Notes.	
HYDRIC SOIL INDICATORS INDICATORS FOR PROBLEMA Histosol or Histel (A1) Alaska Gleyed (A13) Alaska Color Change (TA4) ⁴ Histic Epipedon (A2) Alaska Redox (A14) Alaska Alpine Swales (TA5) Black Histic (A3) Alaska Gleyed Pores (A15) Alaska Redox with 2.5Y Hue Hydrogen Sulfide (A4) Alaska Gleyed Pores (A15) Alaska Gleyed without 5Y Hue of Layer Thick Dark Surface (A12) Other (Explain in Notes) Other (Explain in Notes) ³ One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must disturbed or problematic. Alaska Gleyed in Notes.	
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Histosol or Histel (A1) Alaska Gleyed (A13) Alaska Color Change (TA4) ⁴ Histic Epipedon (A2) Alaska Redox (A14) Alaska Alpine Swales (TA5) Black Histic (A3) Alaska Gleyed Pores (A15) Alaska Redox with 2.5Y Hue Hydrogen Sulfide (A4) Alaska Gleyed Pores (A15) Alaska Gleyed without 5Y Hue of Layer Thick Dark Surface (A12) Other (Explain in Notes) Other (Explain in Notes) 'One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must disturbed or problematic. Glive details of color change in Notes.	M=Matrix.
Histic Epipedon (A2) Alaska Redox (A14) Alaska Alpine Swales (TA5) Black Histic (A3) Alaska Gleyed Pores (A15) Alaska Redox with 2.5Y Hue Hydrogen Sulfide (A4) Alaska Gleyed Pores (A15) Alaska Gleyed without 5Y Hue of Layer Thick Dark Surface (A12) Other (Explain in Notes) Other (Explain in Notes) One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must disturbed or problematic. Give details of color change in Notes.	TIC HYDRIC SOILS
Histic Epipedon (A2) Alaska Redox (A14) Alaska Alpine Swales (TA5) Black Histic (A3) Alaska Gleyed Pores (A15) Alaska Redox with 2.5Y Hue Hydrogen Sulfide (A4) Alaska Gleyed Pores (A15) Alaska Gleyed without 5Y Hue of Layer Thick Dark Surface (A12) Other (Explain in Notes) Other (Explain in Notes) One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must disturbed or problematic. Glive details of color change in Notes.	
Black Histic (A3) Alaska Gleyed Pores (A15) Alaska Redox with 2.5Y Hue Hydrogen Sulfide (A4) Alaska Gleyed without 5Y Hue of Layer Thick Dark Surface (A12) Other (Explain in Notes) One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must disturbed or problematic. Other (Explain in Notes)	
Hydrogen Sulfide (A4) Alaska Gleyed without 5Y Hue of Layer Chick Dark Surface (A12) Other (Explain in Notes) One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must disturbed or problematic. Other (Explain in Notes) Give details of color change in Notes. Others.	
One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must listurbed or problematic. Give details of color change in Notes.	r Redder Underlying
One indicator of hydrophytic vegetation, one primary indicator of wetland hydrology, and an appropriate landscape position must listurbed or problematic. Give details of color change in Notes.	
Participius Lours (if progent); Tupo:	be present unless
Restrictive Layer (it present). Type Depth (incres)	
Hydric Soil Present (Y/N):N	
Notes	

ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Dry-Season	Notes:			
Other (Explain in Notes):				
Depth (in):		N		
Depth (in):	Wetland Hydrology Present (Y/N):			
Depth (in):				
	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 Notes): Depth (in): Depth (in):	Surface Soil Cracks (B6) Water-stained Leaves (B9) Inundation Visible on Aerial Imagery (B7) Drainage Patterns (B10) Sparsely Vegetated Concave Surface (B8) Oxidized Rhizospheres along Living Roots (C3) Marl Deposits (B15) Presence of Reduced Iron (C4) Hydrogen Sulfide Odor (C1) Salt Deposits (C5) Dry-Season Water Table (C2) Notes: Other (Explain in Notes): Wetland Hydrology Present (Y/N)		

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Emergent-Needle-leaved Emergent-Needle-leaved
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
X
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet
Inlet/Outlet Class (P): No Inlet/Intermittent Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perenninlet/Perennial Inlet/Perennial Inlet/Perenn
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet
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Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial QutletPerennial Inlet/No OutletPerennial Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (F): No Outflow Restricted Outflow
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/Intermittent OutletNo Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No Outlet
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Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Intermittent Inlet/Intermittent Inlet/Intermittent Outlet Perennial Inlet/No
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial OutletPerennial OutletPerennial Inlet/No Perennial Perennial Inlet/No Perennial Inlet/N
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/No Outlet Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/No Outlet Perennial Inlet/Intermittent Inlet/No Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Inlet/No Outlet Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Perennial Wet: Perm. Flooded, Intermittention (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow PH Reading Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Low Permeability Stratified Deposits Basin Topographic Gradient (M): Low Gradient (<2%)
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/INo Intermittent Inlet/INo OutletIntermittent Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No Perennial Inlet/Intermittent Inlet/No Wettand Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Fluvaquent Soils Sediment Created No Interview Cost Points Poorly Developed (6in.)
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletIntermittent Inlet/No Intermittent Inlet/Intermittent Inlet/No OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Intermittent Inlet/No WetLand Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/INo Intermittent Inlet/INo OutletIntermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Intermittent Inlet/Intermittent Inlet/No OutletPerennial Wettand Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated

Crew Chief QA/QC check

GPS Technician QA/QC check:

SM

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60 HT 010 Field Target: 143 Date: 06-12-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Dite description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct? All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Appropriate hydric soil indicators are marked?

4. Hydrology

Depropriate hydrology indicators are marked?

Difference water, water table, and saturation depths are recorded if present?

5. Functions and Values

U Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

In Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate? Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

06-12-14 X Signature / Date

/14

Wetland Scientist (print)

APANT 6/12/ Field Crew Chief (print) Signature / Date

Vegetation Classification Data Form

Site Description	Surger and the	- CAN	Bie CV	
Date: 06-13-14	Project Name & Alaska LNG 26	& #: 221306		Field Target:
Investigators:				Feature ID:
Dan La PI	ant, Zoe M	reade		WGOHTOII
Latitude: p2° 23' 44, 5	3 "	Longitude 150 1 5 5	7.64"	Datum: WGS84
Logbook #: 002	pq. 020	Logbook F	Page #: Picture #:	
Location Descriptio	on:	14.14		
Common Species C	bserved (Scienti	fic Name)		
Betula nec	Dalaskand	Ŕ	dryo	pteris expansa
Alnus ssp).		trien	talis europaea
Calamagro	stis canad	densis		
Sambucu				
Percent Cover of Dor Bet neo - 50°	minant Structure L ໃວ Atno <i>S</i>	evel: 55p 51	0%0	
Habitat Description				The state lie sh
upland	- Bich/spr	un forest	L	
Alaska Vegetation (6		
I	_	C		2
Notes:	All Malanak		12 4	and the second second second
Field target trail, easily	approxima acc <i>essa</i> ble	tely 3' and t	off of no sign	recreational ATV s of wetland features
Field Crew Chief:	Q21	r	Field Scienti	st/Technician
	gr	F		

Vegetation Classification Data Form

Lavel I	Level II	Level III
L Forest	A. Needleleaf (conifer) Forest	 Closed needleleaf (conifer) forest Open needleleaf (conifer) forest Needleleaf (conifer) woodland
	B Broadleaf forest	 Closed broadleaf forest Open broadleaf forest Broadleaf woodland
	C Mixed forest	 Closed mixed forest Open mixed forest Mixed woodland
IL Scrub	A. Dwarf tree scrub	 Closed dwarf tree scrub Open dwarf tree scrub Dwarf tree scrub woodland
	B. Tall scrub	(1) Closed tall scrub (2) Open tall scrub
	C Low scrub	(1) Closed low scrub (2) Open low scrub
	D Dwarf scrub	(1) Dryas dwarf scrub (2) Ericaceous dwarf scrub (3) Willow dwarf scrub
III Herbaceous	A Graminoid herbaceous	 Dry graminoid herbaceous Mesic graminoid herbaceous Wet graminoid herbaceous (emergent)
	B Forb herbaceous	 Dry forb herbaceous Mesic forb herbaceous Wet forb herbaceous (emergent)
	C Bryoid herbaceous	(1) Mosses (2) Lichens
	D Aquatic (nonemergent) herbaceous	 Freshwater aquatic herbaceous Brackish water aquatic herbaceous Marine aquatic herbaceous

II. Scrub

II, Se	crub
8a	Vegetation with at least 10 percent obver of dwarf trees crub 9
ðЬ	Vegetation with at least 25 percent cover of shrubs and less than 10 percent cover of dwarf trees10
9a	Dwarf tree canopy of 60-100 percent cover
9b.	Dwarf tree canopy of 25-59 percent
9c.	Dwarf tree canopy of 10-24 percent cover II A 3 Dwarf tree scrub woodland
10a	Shrubs more than 1.5 meters (5 ft) tall
10b	Shrubs less than 1.5 meters (5ft) tall
11 a	Shrub canopy cover greater than 75 percent
11 b	Shrub canopy cover of 25-74 percent II B 2 Open tall scrub
12a.	Shrubs 20 centimeters to 1.5 meters tall
12b	Shrubs under 20 centimeters in height
13a	Shrub canopy cover greater than 75 percent li C I Closed low scrub
13b	Shrub canopy cover of 25-74 percent, or as low as 2 percent if little or no other vegetation cover present
14a	Dryas species dominant in the dwarf shrub layer
14b	Ericaceous species dominant in the dwarf shrub layer
14c	Willow species dominant in the dwarf scrub layer
HL F	Herbaceous
15a	Terrestrial vegetation, or if growing in the water, dominated by emergent vegetation 16
15b	Dominant vegetation growing submerged in water or floating on the water surface, but not emerging above the water

Des	criptions of levels I, II, III, and IV follow	the classification table
la ,	Trees over 3 meters (10 ft) tall are present and have a canopy cover of 10 percent or more	1 Forest 2
1 b_	Trees over 3 meters (10 ft) tail are absent or neerly so, Less then 10 percent cover (Dwarf trees, less than 3 meters [10 ft ball may be present and abundant	
I Fo	prest	
2a	Over 75 percent of tree cover contributed by needlelesf (conifer) species	LA Needleleaf forest 3
2b	Less than 75 percent of tree cover contributed by needleleaf (conifer) species	
3a	Tree canopy of 60-100 percent cover	I A 1 Closed needleleaf forest
3b.	Tree canopy of 25-59 parcent cover	IA2 Open needleleaf fores
3c	Tree canopy of 10-24 percent cover	I.A.3 Needleleaf woodland
4a	Over 75 percent of tree cover contributed by broadleaf species	LB Broadleaf forest
4b	Broadleaf or needleleaf species contribute 25 to 75 percent of the tree cover	8
5a.	Tree canopy of 60-100 percent cover	I B 1 Closed broadleaf fores
5b.	Tree canopy of 25-59 percent cover	182 Open broadleaf forest
5ċ.	Tree canopy of 10-24 percent cover .	LB.3 Broadleaf woodland
68.	Tree canopy of 60-100 percent cover	I.C.1 Closed mixed fores
Øb.	Tree canopy of 25-59 percent cover.	I.C.2 Open mixed forest
6c.	Tree canopy of 10-24 percent cover	LC 3 Mixed woodland
7a.	Vegetation with at least 25 percent cover of erect to decumbent shrubs or with at least 10 percent cover of dwarf trees (less than 3 meters [10 t]tat]	
7b.	Vegetation herbaceous (may have up to 25 percent shrub cover)	15

16a	Grasses, sedges, or rushes (graminoid) plants dominant
16b	Forbs or bryophytes dominant 18
17a	Grasslands of well-drained, dry sites, such as south-facing bluffs, old beaches, and sand dunes Typically (but not always) dominated by <i>Elymus</i> spp, <i>Festuce</i> spp . and <i>Deschampsia</i> spp III A.I Dry graminoid herbaceous
17b.	On moist sites, but usually not with standing water. Usually dominated by <i>Calemagrostis</i> spp. <i>Carex</i> spp. or <i>Enophorum</i> spp. tussocks often present
17c	On wet sites, standing water present for part of the year; dominated by either sedges or grasses; includes wet tundra, bogs, marshes, and fens
18a	Vegetation dominated by forbs (broadleaf herbs, fems, or horsetails)
18b	Vegetation dominated by mosses or lichens
19a	On dry sites, usually rocky and well drained; mostly tundra sites
196	On moist sites but without standing water, mostly within forested areas
19c	On wet sites, usually with standing water for part of the year III B 3 Wet forb herbaceous.
20a	Vegetation cover dominated by mosses
20b	Vegetation cover dominated by lichens III C 2 Bryoid lichen
210	Vegetation submerged or floating in fresh water
21 b	Vegetation submerged or floating in brackish water III D 2 Brackish water aquatic herbaceous
210	Vegetation submerged or floating in salt water

Vegetation Classification Data Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: 144 Field Target: W60HT611 Date: 06-13-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. General Information

- Location data recorded?
- Photo taken and photo number recorded?

2. Location Description

Location of site recorded with enough detail to help relocate?

3. Common Species

- Scientific name of common species recorded?
- Percent cover of dominant structure level noted?

4. Habitat Description

Habitat described?

5. Classification

All three levels of classification recorded?

6. Field Log Book

- Field form entries consistent with log book?
- Logbook clearly identifies the Field Target ID and Feature ID?

Meade

Field Technician (print

Mead Signature

Field Crew Chief (print)

Tallant 6/13/14

SITE DESCRIPTION			2.5.2			
Survey Type: Centerline X Acce	ss Road (explain)	Other (expla	ain)	Field Targe	t: 145	Map #: 100 Map Date: 5/27
Date: 06 - 13 - 14	Project Name & No.:	Alaska LNG	26221306		Feature Id:	W60HTO12
Investigators: Dan La Plan	t, Zoe Mead	le				Team No.: W60
State: Alaska	Region: Alaska		Milepost:	119.2		
Latitude: 62° 22' 45.36"		Longitude	:150°16′10	0.02 "		Datum: WGS84
Logbook No.: 002	Logbook Page No.:	021	Picture No.:	P_W, e	E, pit,	plug
SITE PARAMETERS		1				
Subregion: interior		_	Landform (hil	Islope, terrace	e, hummocks	s, etc.): Stream bed
Slope (%): 0 - Z			1			Concave
Pre-mapped Alaska LNG/NWI classifica	tion: Upland		Soil Map Unit			
Are climatic/hydrologic conditions on the Yes_X No (if no expl	site typical for this time	of year?		ormal Circums		sent: blain in Notes.)
Are Vegetation, Soil, or Hyd	drology Significantl	ly Disturbed?	No X	_(If yes, expla	ain in Notes))
Are Vegetation, Soil, or Hyd	drology Naturally P	roblematic?	No_X	_ (If yes, expl	ain in Notes	.)
SUMMARY OF FINDINGS						
Hydrophytic Vegetation Present? Yes_	XNo	ls	the Sampled A	Area within a	Wetland?	Yes No
Hydric Soil Present? Yes_	XNo	w	Wetland Type: PSS1B			
Wetland Hydrology Present? Yes_	X No	Ala	aska Vegetatior	n Classification	n (Viereck):	IIBZ

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor

See Sketch in Logbook 002, Page 021.

VEGETATION (use scientific names of plant	ts)			
Tree Stratum (Plot sizes; 20')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet : No. of Dominant Species that are OBL, FACW, or FAC: $\frac{2}{44}$ (A
1.				Total Number of Dominant Species Across All Strata: $\frac{4}{50}$ (B
2,				% Dominant Species that are OBL, FACW, or FAC: 50 (A/I
3.	-			1
4.	-			Prevalence Index worksheet:
Total Cove	n: 0			<u>Total % Cover of:</u> Multiply by:
50% of total cove	er: 0 20	% of total cov	er:O	OBL species: 10 x 1 = 10
Sapling/Shrub Stratum (20 ')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $30 \times 2 = 60$ FAC species $155 \times 3 = 165 + $ FACU species $79 \times 4 = 316$
1. AINUS SSP.	50	Y	FAC	UPL speciesX 5 =
1. Ainus ssp. 2. spíraea stevenii	2		FACU	Column Totals: 274 (A) 551 (B)
3. Viburnum edule	5		FACH	PI = B/A = 2.01
4. Oplopanax horridus	15	Y	FACY	
5.				
6.				
7.				
			-	
8. 9.				
9. Total Cove				
9.)% of total cov	er: <u>14,4</u>	
9. Total Cove 50% of total cove	er: <u>36</u> 20)% of total cov	er: <u>14, 4</u>	
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan	er: <u>36</u> 20	0% of total cov Dominant Species? (Y/N)	er: <u>14,4</u> Indicator Status	Hydrophytic Vegetation Indicators:
D. Total Cove 50% of total cove VEGETATION (use scientific names of plant Herb Stratum (2 G ')	er: <u>36</u> 20 ts) Absolute	Dominant Species?	Indicator	X Dominance Test is > 50% $ywX Prevalence Index is ≤ 3.0$
Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (26') 1: Equisetum arvens	er: <u>36</u> 20 ts) Absolute % Cover 70	Dominant Species? (Y/N)	Indicator Status	Dominance Test is > 50%
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) <u>1. Equisetum arvens</u> 2. Gymnocarpium dryopteri	er: <u>36</u> 20 ts) Absolute % Cover 70	Dominant Species? (Y/N)	Indicator Status FAC	→ Dominance Test is > 50% ✓ X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equisetum arvens 2. Gymnocarpium dryopteri 3. Víola palustris	Absolute % Cover 70 20 30	Dominant Species? (Y/N)	Indicator Status FAC FACU	→ Dominance Test is > 50% vw X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equiset um arvens 2. Gymnocarpium dryopteri 3. Víola palustris ^{4.} Streptopus amplexifoliu	Absolute % Cover 70 30 30 75	Dominant Species? (Y/N)	Indicator Status FAC FACU FACW	→ Dominance Test is > 50% ✓ X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equiset um arvens 2. Gymnocarpium dryopteri 3. Víola palustris ^{4.} Streptopus amplexifoliu ^{5.} Calamagrostis Canader	Absolute % Cover 70 30 30 75	Dominant Species? (Y/N)	Indicator Status FAC FACU FACW FACU	→ Dominance Test is > 50% vw X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan <u>Herb Stratum (26')</u> 1. Equisetum arvens 2. Gymnocarpium dryopteri 3. Víola palustris ^{4.} Streptopus amplexifoliv ^{5.} Cal amagrostis Canader 6. Dryopteris expansa	Absolute 20 Absolute % Cover 70 2 30 2 30 30 45 Jos is 10 10	Dominant Species? (Y/N) Y	Indicator Status FAC FACU FACU FACU FACU	→ Dominance Test is > 50% vw X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
9. Total Cove 50% of total cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equiset um arvens 2. Gymnocarpium dryopteri 3. Viola palustris 4. Streptopus amplexifoliu 5. Calamagrostis Canader 6. Dryopteris expansa 7. Carex aquatilis	Absolute 20 Absolute % Cover 70 2 30 2 30 7 10 5 5 10 5 10	Dominant Species? (Y/N) Y	Indicator Status FAC FACU FACU FACU FACU FAC FACU	→ Dominance Test is > 50% yww → Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equisetum arvens 2. Gymnocarpium dryopteri 3. Víola palustris	Absolute 20 Absolute % Cover 70 2 30 2 30 7 10 5 5 10 5 10	Dominant Species? (Y/N) Y	Indicator Status FAC FACU FACU FACU FAC FACU OBL	→ Dominance Test is > 50% yww → Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
9. Total Cove 50% of total cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (26') 1. Equisetum arvens 2. Gymnocarpium dryopteri 3. Víola palustris 4. Streptopus amplexifoliu 5. Calamagrostis Canader 6. Dryopteris expansa 7. Carex aquatilis 8. Equisetum sylvaticum 9.	Absolute 20 Absolute % Cover 70 2 30 2 30 7 10 5 5 10 5 10	Dominant Species? (Y/N) Y	Indicator Status FAC FACU FACU FACU FAC FACU OBL	→ Dominance Test is > 50% Yww → Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. O% Bare Ground O% Cover of Wetland Bryophytes O% Cover of Bryophytes % Cover of Water
9. Total Cove 50% of total cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (26') 1. Equisetum arvens 2. Gymnocarpium dryopteri 3. Viola palustris 4. Streptopus amplexifoliv 5. Calamagrostis Canader 6. Dryopteris expansa 7. Carex aquatilis 8. Equisetum sylvaticum	$\begin{array}{c} \text{absolute} \\ \text{Absolute} \\ \text{\% Cover} \\ \hline \\ 10 \\ \text{\% Cover} \\ \hline \\ 10 \\ \text{\% S} \\ 2 \\ 30 \\ \text{\% S} \\ \hline \\ 10 \\ 55 \\ 10 \\ 55 \\ 10 \\ 10 \\ 10 \\ 10$	Dominant Species? (Y/N) Y	Indicator Status FAC FACU FACU FACU FAC FACU OBL	→ Dominance Test is > 50% yww → Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

m.

SOIL PROFIL					60H+012		Soil Pit Required (Y/N)
	E DESCRIPTION: (De	escribe		to documen	t the indicator or	confirm the absence	of indicators.)
Depth	Matrix		Redox Features			<u></u>	
(inches)	Color (moist)	%	Color (moist)	% Тур	e ¹ Loc ²	Texture	Notes
0-2						Histic	0
2-3	7.5 YR 3/1	100				¢	glacíal tíll
3-15+	aley 2-3/586	100				glacial till	
	586 3/1						
				-			
			A De due e d Metrice O		- Cooled Cond C	21 contions	DL-Dere Liping, M-Metrix
		on, RN	I=Reduced Matrix, C	S=Covered (or Coated Sand G		PL=Pore Lining, M=Matrix.
	LINDICATORS			(1.10) V			
	stel (A1)		Alaska Gleyed				nange (TA4) ⁴
	on (A2)	-	Alaska Redox		VIV		wales (TA5)
Black Histic (A	43)		Alaska Gleyed	Pores (A15)			vith 2.5Y Hue
Hydrogen Sul	fide (A4)					Layer	without 5Y Hue or Redder Underlying
Thick Dark Su	urface (A12)					Other (Explain i	n Notes)
		tion, o	ne primary indicator	of wetland hy	drology, and an	appropriate landsca	pe position must be present unless
disturbed or p	problematic. of color change in Note						
Restrictive La	ver (if present): Type:	glac	ial till	Depth (inches): 3t		
	gleyed	3					
Hydric Soil P	Present (Y/N):	Υ					
Notes:	LINE CARDON A	1 00	16135-114 -	S. Ch/isi	conen san	N-0-3 100000	C DOINT Q
Notes: Soil	I was rechecke	d or	14/25/14 De	Sichrist	ophen. See a	www-3 regisco	sk paye q me
Notes: Soil	4 Fibric org skith	d or	6/25/14 Du	s chrisi	ephen. See a	260-3 1091000 414 20 ⁰ 10 C	PL Refusal at 8" MC
Notes: Soil 	1 Was rechecked H Fibric org surtu S H/N Sattyse	d or ord	6/25/14 Do 8076 Will small	s chrisi gravelj	ephen, see (Redox 10 YR	260-3 reginae 4/4 20 ⁰ 10 C	AK paux q mer AK PL Refusal of 8" MC
4-	Y FIMARY INDICAT	nd	8070 with small	gravell	Edon 10 YR	260-3 199600 4/4 20 ⁰ 10 C Y INDICATORS (2	PL Refusal of 8"
HYDROLOG	Y PRIMARY INDICAT	ORS (a	8076 with small	gravelj	Redox 10 YR SECONDAR Water-staine	۲ <u>/۹</u> ۵۵۹۵ C Y INDICATORS (2 d	or more required)
HYDROLOG	8 4/N SATYS	ORS (a	3076 Colly Small any one indicator is s rface Soil Cracks (B6	g(려야리) ufficient))	SECONDAR Water-staine Leaves (B9)	۲ <u>۲</u> 2090 C	PL Refusal at S ⁿ¹ or more required) Stunted or Stressed Plants (D1)
HYDROLOG ¹ Surface Wate	Y PRIMARY INDICAT	ORS (a	any one indicator is s face Soil Cracks (Be ndation Visible on Ad	g(려야리) ufficient))	Krdox IO YR SECONDAR Water-staine Leaves (B9)	۲ <u>/۹</u> ۵۵۹۵ C Y INDICATORS (2 d	PL Refusal of S ¹¹ or more required) Stunted or Stressed Plants (D1)
HYDROLOG ^V Surface Wate High Water Ta	Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	ORS (a Sur Inu (B7	any one indicator is s face Soil Cracks (Be ndation Visible on Ad	g(려야리) ufficient))	SECONDAR Vater-staine Leaves (B9) Drainage Pa Oxidized Rhi	YH4 2000 C YINDICATORS (2 d	PL Refusal or S ^m or more required) Stunted or Stressed Plants (D1)
HYDROLOG ¹ Surface Wate High Water Ta	Y PRIMARY INDICATE (A1) X able (A2) X	ORS (a	any one indicator is s face Soil Cracks (Be ndation Visible on Ad	g מערון ufficient) (א) erial Imagery	Kitter Kitter SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots	YH 20010 C Y INDICATORS (2 d	PL Refusal cot S ⁿ¹ or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) X Shallow Aquitard (D3)
HYDROLOG ^Y Surface Wate High Water Ta Saturation (A:	Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	ORS (a Sui Inu (B7 Co	any one indicator is s face Soil Cracks (Be ndation Visible on Ad 7)X arsely Vegetated	g (מעלון ufficient) () erial Imagery	SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of	YH 2000 C YINDICATORS (2) d	PL Refusal cot S ⁿ¹ or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic
HYDROLOGY Surface Water High Water Ta Saturation (A: Water Marks	Y PRIMARY INDICATE or (A1) X able (A2) X 3) X (B1)	ORS (a Sun Inu (B7 Co Ma	Any one indicator is s frace Soil Cracks (Be ndation Visible on Ar)X arsely Vegetated ncave Surface (B8) rl Deposits (B15)	g (מעלון ufficient) () erial Imagery	SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4)	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced	PL Refusal or S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks	Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	ORS (a Sur Inu (B7 Co Ma Hyd	ACTO CONTRACTOR STREET	g (מעלון ufficient) () erial Imagery	SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4)	YH 2000 C YINDICATORS (2) d	PL Refusal cot S ⁿ¹ or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic
HYDROLOG ¹ Surface Wate High Water Ti Saturation (A: Water Marks Sediment Dep	Y PRIMARY INDICATION	ORS (a Sun Inu (B7 Co Ma Hyu Od	ACTOR CONTRACT IN STREET	gravelj ufficient)	SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4)	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced	PL Refusal or S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOG ¹ Surface Wate High Water Ti Saturation (A: Water Marks Sediment Dep	Y PRIMARY INDICATE or (A1) X able (A2) X 3) X (B1)	ORS (a Sun Inu (B7 Co Ma Hyu Od	Any one indicator is s frace Soil Cracks (Be ndation Visible on Ar) arsely Vegetated ncave Surface (B8) rl Deposits (B15) drogen Sulfide or (C1)	gravelj ufficient)	Krdox IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced	PL Refusal or S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits	Y PRIMARY INDICATION Y PRIMARY INDICATION Y PRIMARY INDICATION Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y A Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y </td <td>ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa</td> <td>ACTOR CONTRACT IN STREET</td> <td>gravelj ufficient)</td> <td>Krdox IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi</td> <td>Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced</td> <td>PL Refusal or S^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)</td>	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa	ACTOR CONTRACT IN STREET	gravelj ufficient)	Krdox IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced	PL Refusal or S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits Algal Mat or C	Y PRIMARY INDICATION	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa	ACTOR CONTRACTOR CONTR	gravelj ufficient)	Krdox IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced	PL Refusal or S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits Algai Mat or C	Y PRIMARY INDICATION Y PRIMARY INDICATION Y PRIMARY INDICATION Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y A Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y </td <td>ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa</td> <td>ACTOR CONTRACTOR CONTR</td> <td>gravelj ufficient)</td> <td>Krdox IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi</td> <td>Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced</td> <td>PL Refusal or S^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)</td>	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa	ACTOR CONTRACTOR CONTR	gravelj ufficient)	Krdox IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced	PL Refusal or S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOGY Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits Algai Mat or C Iron Deposits	Y PRIMARY INDICATOR (B1) Y PRIMARY INDICATOR Y PRIMARY INDICATOR (B1) Y PRIMARY INDICATOR Y PRIMARY IN	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa	ACTOR CONTRACTOR CONTR	gravelj ufficient) 5) erial Imagery):	Redox IOYR SECONDAR Uater-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced	PL Refusal or S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits Algai Mat or C Iron Deposits	Y PRIMARY INDICATION	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa	ACTOR CONTRACT IN STREET	gravelj ufficient)	Redex IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi Notes:	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced s (C5)	PL Refutal cot S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits Algai Mat or C Iron Deposits Surface Wate	Y PRIMARY INDICATION	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa	ACTO CONTACT IN STREET	gravelj ufficient) s) erial Imagery): 3 *	Redex IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi Notes:	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced	PL Refutal cot S th or more required)
HYDROLOG Surface Wate High Water Table F Saturation (A: Water Marks Sediment Dep Drift Deposits Algai Mat or C Iron Deposits	Y PRIMARY INDICATION Y PRIMARY INDICATION Y Y able (A2) X able (A2) X (B1) X (B1) Y (B1) Y (B1) Y (B1) Y (B1) Y Y Y Y Y Y Y Y Y Y Y Y Y	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa	ACTOR CONTRACTOR CONTR	gravelj ufficient) s) erial Imagery): 3 *	Redex IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi Notes:	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced s (C5)	PL Refutal cot S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits Algai Mat or C Iron Deposits Surface Wate Water Table F Saturation Pro	Y PRIMARY INDICATOR Y PRIMARY INDICATOR Y Y able (A2) X able (A2) X (B1) X (B2) X (B3) X (B5) X (B5) Y Present (Y/N): Y esent (Y/N): Y	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa	ACTO CONVERSION STREET	gravelj ufficient) s) erial Imagery): 3 *	Redex IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Depositi Notes:	Y INDICATORS (2 d d tterns (B10) zospheres along (C3) Reduced s (C5)	PL Refutal cot S ^m or more required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5)
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits Algai Mat or C Iron Deposits Surface Wate Water Table F Saturation Pro (includes cap	Y PRIMARY INDICATO Y PRIMARY INDICATO able (A2) X able (A2) X (B1) X (B1) Y (B1) Y (B1) Y (B1) Y (B1) Y Y Present (B4) (B5) Y Present (Y/N): Y esent (Y/N): Y esent (Y/N): Y	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa Oth	SC/C Coliny Struct/l any one indicator is s fface Soil Cracks (B6 ndation Visible on Ad ') X arsely Vegetated ncave Surface (B8) rl Deposits (B15) drogen Sulfide or (C1) /-Season ter Table (C2) mer (Explain in Notes) Depth (in): O Depth (in): O Depth (in):	gravelj ufficient) S) erial Imagery	Redex IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Deposits Notes: Wetland Hydre	YIA 20010 C Y INDICATORS (2 d tterns (B10) zospheres along (C3) Reduced s (C5) blogy Present (Y/N)	PL Refutal cot S ^M or more required)
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Surface Wate Water Table F Saturation Pro (includes cap	Y PRIMARY INDICATOR Y PRIMARY INDICATOR Y Y able (A2) X able (A2) X (B1) X (B2) X (B3) X (B5) X (B5) Y Present (Y/N): Y esent (Y/N): Y	ORS (a Sun Inu (B7 Co Ma Hyu Od Dry Wa Oth	SC/C Coliny Struct/l any one indicator is s fface Soil Cracks (B6 ndation Visible on Ad ') arsely Vegetated ncave Surface (B8) rl Deposits (B15) drogen Sulfide or (C1) /-Season ter Table (C2) mer (Explain in Notes) Depth (in): 0 Depth (in): 0 Depth (in): 0	gravelj ufficient) S) erial Imagery	Redex IOYR SECONDAR Water-staine Leaves (B9) Drainage Pa Oxidized Rhi Living Roots Presence of Iron (C4) Salt Deposits Notes: Wetland Hydre	YIA 20010 C Y INDICATORS (2 d tterns (B10) zospheres along (C3) Reduced s (C5) blogy Present (Y/N)	PL Refutal cot S th or more required)

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved X Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Persistent Persistent Aquatic Bed Action Action Action Action
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall) O Tall shrub (2-6m) O 7 Short shrub (0.5-2m) 5 Dwarf shrub (<0.5m)
Number of Wetland Types (M): Z Evenness of Wetland Type Distribution (M): Even X Highly Uneven Moderately even Moderately
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) X
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous CoverX
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine X Estaurine Fringe
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey_X
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inle
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Evidence of Sedimentation (P): No Evidence Observed
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Evidence of Sedimentation (P): No Evidence Observed
Evidence of Sedimentation (P): No Evidence Observed
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow / Unrestricted Outflow / Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Evidence of Sedimentation (P): No Evidence Observed
Evidence of Sedimentation (P): No Evidence Observed
Evidence of Sedimentation (P): No Evidence Observed

Crew Chief QA/QC check

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT01Z Field Target: 145

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete? A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- X Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Nydrology

Appropriate hydrology indicators are marked? Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- 1/2 Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

.

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)? Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

X 6/13/14 Indu Signature// Date

6/13/14

Oprit

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION			-outside 2000' corridor							
Survey Type: Centerline Acces	ss Road (explain)	Other (ex	xplain)_X Field Target: 1니&_			Map #: 101 Map Date: 5/27/14				
Date: 06 - 14 - 14	Alaska LN	NG 26221306		Feature Id	WGOHTO13					
Investigators: Dan LaPlant,	Zoe Meade					Team No.: W60				
State: Alaska	Region: Alaska	100	Milepost: 118, 2							
Latitude: 62° 21' 54, 69"		Longitu	de: 150° 15'	36.99	11	Datum: WGS84				
Logbook No.: 002					I, NW	, pit, plug				
SITE PARAMETERS										
Subregion: interior			Landform (hill	slope, terrac	e, hummock	s, etc.): hummocks				
Slope (%):		Local relief (c	oncave, con	vex, none):	concave					
Pre-mapped Alaska LNG/NWI classifica	tion: UP land		Soil Map Unit Name;							
Are climatic/hydrologic conditions on the Yes_X No(if no expl		of year?	Are "Normal Circumstances" present: Yes_X No (If no, explain in Notes.)							
Are Vegetation, Soil, or Hyd	Irology Significantl	ly Disturbe	d? No <u>X</u>	_(If yes, exp	lain in Notes)				
Are Vegetation, Soil, or Hyd	Irology Naturally P	roblematic	? No <u>X</u>	_ (If yes, exp	olain in Notes	i.)				
SUMMARY OF FINDINGS										
Hydrophytic Vegetation Present? Yes_	<u>X</u> No		Is the Sampled Area within a Wetland? Yes No							
Hydric Soil Present? Yes_	No	-	Wetland Type: PEMIB							
Wetland Hydrology Present? Yes	-	Alaska Vegetation Classification (Viereck): TTL A 1.								
Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.										

5

Total Cover: 132

Ø

2

50% of total cover: 66 20% of total cover: 26.4

N

Geocaulon lividicum

arvense.

palustre

Equisetum

viola

9.

10.

VEGETATION (use scientific names of plants	;)	100		
<u>Tree Stratum</u> (Plot sizes:)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 2(A) Total Number of Dominant Species Across All Strata: (B)
2.	-			- % Dominant Species that are OBL, FACW, or FAC: <u>50</u> (A/B)
3.				
4.				Prevalence Index worksheet:
Total Cover:	0			Total % Cover of: Multiply by:
50% of total cover:	0 20	% of total cov	rer: <u>0</u>	OBL species:X 1 =
Sapling/Shrub Stratum (こんのう)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $2 \times 2 = \frac{1}{2}$ FAC species $97 \times 3 = 291$ FACU species $54 \times 4 = 216$
1. Betola neoalaskana	10	Y	FACU	UPL species O x 5 = O
2. Rubus idaeus	4	Y	FACU	UPL species 0 x 5 = 0 Column Totals: 153 (A) 511 (B)
3. Salax alaxensis	5	Ý	FAC	PI=B/A= 3,34
4. Spirea steveníi	T		FACU	
5.				
6.				
7.				-
8.				
9,				
Total Cover: 50% of total cover:		0% of total cov	rer: <u>3 · 8</u>	
VEGETATION (use scientific names of plants)			
Herb Stratum(01)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3,0
1. Chamaerion angustofolium	10		FACU	 Morphological Adaptations¹ (Provide supporting data in
2 Equisetum sylvaticum	2		FAC	Notes)
3. Calamagrostis canadensis	85-	Y	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Streptopus amplexifolius	T		FACU	¹ Indicators of hydric soil and wetland hydrology must be present unless
5. Optopanax horridus		~	-	disturbed or problematic.
6. Rubus idae us			-	
7. Gymnocarpium dryopteri	r 15		FACU	% Bare Ground
8. Oniopteris expansa	15		FACU	% Cover of Wetland Bryophytes

FAC

HAC W

FACU

0

5

Hydrophytic Vegetation Present (Y/N): _

Total Cover of Bryophytes

Y

% Cover of Water

Notes: (If observed, list morphological adaptations below);

SOIL		1	Date 06 - 14 - 14 Feature	ID WO	OHT	113		Soil Pit Required (Y/N)	
SOIL PROFILI	E DESCRIPTION: (De	escribe	to the depth needed to do	cument	the inc	licator or co	onfirm the absence	of indicators.)	
Depth	Matrix		Redox Features						
(inches)	Color (moist)	%	Color (moist) %	lor (moist) % Type ¹ Loc ²				Notes	
0-1								organics	
1-7	10 YR 3/1	100					siltloam	•	
7-22	10 YR 4/3	70	5YR 4/6 30	C	,	Μ	silt loam		
				_					
					-				
1= 0.0			De due el Metrix 00-0e			d Cand Cr	aina ² l sentioni	PL-Dara Lipipa M-Matrix	
		on, Riv	=Reduced Matrix, CS=Co	ivered o	rCoate	d Sand Gr		PL=Pore Lining, M=Matrix,	
HYDRIC SOIL		_	Aleeke Cleved (A12)	\			101	hange (TA4) ⁴ X	
	tel (A1)		Alaska Gleyed (A13)			*	Aleeka Aleine C	wales (TA5)	
	n (A2)		Alaska Redox (A14)			24	-		
1	3) de (A4)		Alaska Gleyed Pores	s (A15)			Alaska Gleyed	vith 2.5Y Huewithout 5Y Hue or Redder Underlying	
Thick Dark Su	1			-			Layer Other (Explain i	n Notes)	
	· · ·	- tion or	ne primary indicator of wet	land hv	droloav	, and an ar		pe position must be present unless	
disturbed or pr	oblematic. Ecolor change in Note	25				7			
Restrictive Lay	er (if present): Type:	_	Depth	(inches)):	~			
Hydric Soil Pr	esent (Y/N):	У							
Notes: Soil	users rechecked	on	6/25/14 by 2. (h.	ristop	Nr.	See W	60-3 10gbook	prof 8.	
0-2 0100	YR 5/3 90% ;	Rede	× 7.5 YR 4/6 10%	PL		-	meets AX Red	lox indicator	
10-20 5	Y 4/1 85%	Rede	104R 4/6 154	OFC	_				
HYDROLOGY	PRIMARY INDICAT	ORS (a	ny one indicator is sufficie	ent)	SE	CONDARY	INDICATORS (2	or more required)	
Surface Water	(A1) X	Sur	face Soil Cracks (B6)			Water-stained Leaves (B9)		Stunted or Stressed Plants (D1)	
High Water Ta	ble (A2) <u>X</u>	Inu (B7	ndation Visible on Aerial Ir)	magery	Dra	iinage Patte	erns (B10)	Geomorphic Position (D2)	
Saturation (A3)_X		rsely Vegetated acave Surface (B8)		Oxi Livi	dized Rhizospheres along ng Roots (C3)		Shallow Aquitard (D3)	
Water Marks (I	31)	Ma	1 Deposits (B15)	_		Presence of Reduced Iron (C4)		Microtopographic Relief (D4)	
Sediment Dep	osits (B2)		Irogen Sulfide or (C1)		Sal	t Deposits	ts (C5) FAC-Neutral Test (D5)		
Drift Deposits	(B3)	Dry Wa	-Season ter Table (C2)		No	les:			
Algal Mat or C	Algal Mat or Crust (B4) Other (Explain in Notes):								
Iron Deposits (B5)		-	_					
0.1.1111	Descent Arthur N	r	Death (in):						
Surface Water	Present (Y/N): Y		Depth (in): O		Wotle	nd Hydrol	ogy Present (Y/N	<u>н</u> . У	
Water Table P	resent (Y/N):		Depth (in): 12		Wette		ogy Present (1/14)		
Saturation Pre (includes capil	sent (Y/N):		Depth (in): 5						
Notes:									

ver

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent- Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) High Density (80-100%) High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water 25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover 75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Peren
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading 5 - 59 Surficial Obside Description Description Description Description Description
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%)
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated X Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)

Crew Chief QA/QC check:

Small (<10 acres)_

X

Medium (10-100 acres)_

Size:

Large (>100 acres)_

NM

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID:
 N60HT013
 Field Target:
 146
 Date:
 06-14-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Z Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Ø Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- ☑/ Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

30 Fr

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

Х Meade al

Wetland Scientist (print)

gemeathe 6/14/14 Signature / Date

1,0

6/14

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION			2000' (orrido	r		
Survey Type: Centerline Acces	s Road (explain)	Other (expla	iin) <u>X</u>	Field Targ	jet: <u>147</u>	Map #: <u> 02_</u> Map Date: <u>5 27 </u> 14	
Date: () () - 1 - 4	Project Name & No.:	Alaska LNG	26221306		Feature Id:	NGOTHONT WEOHTOI	
Investigators: Dan La Plant	, Zoe Mean	de				Team No.: W 60	
State: Alaska	Region: Alaska		Milepost: }	18			
Latitude: 62°21'42.015"		Longitude:	150°15	28.7	01"	Datum: WGS84	
Logbook No.: 062	Logbook Page No.: (2 A A A A A A A A A A A A A A A A A A A	Picture No.:			, pluq	
SITE PARAMETERS		-16					
Subregion: interior			Landform (hills	slope, terrad	ce, hummock	s, etc.): Malsicox	
Slope (%): 5-10			Local relief (co			contaul	
Pre-mapped Alaska LNG/NWI classificat	ion: PEM1B		Soil Map Unit	Name:		A CALCULAR A	
Are climatic/hydrologic conditions on the Yes_XNo(if no expla	site typical for this time ain in Notes)	of year?			nstances" pre (If no, ex	sent: plain in Notes.)	
Are Vegetation, Soil, or Hyd	rology Significant	ly Disturbed?	No <u>X</u>	_(If yes, exp	olain in Notes)	
Are Vegetation, Soil, or Hyd	rology Naturally P	Problematic?	No <u>×</u>	_(If yes, ex	plain in Notes	·	
SUMMARY OF FINDINGS	1						
Hydrophytic Vegetation Present? Yes	X No	Is	the Sampled A	rea within	a Wetland?	Yes_X No	
Hydric Soil Present? Yes	X No	We	Wetland Type: PEMIB/PUBF				
Wetland Hydrology Present? Yes	Х No	— Ala	aska Vegetation		1	II AZ	
Notes and Site Sketch: Please include D	irectional & North Arrow	, Centerline,	Length of featur	e, Distance	s from Cente	rline, Photo Locations, and Survey	
corridor							
Several large boulders in the Pond/islands	PUBF PEMITS		uplan IC 4001	2	7 _N	Parks High way	

VEGETATION (use scientific names of plan	ts)	10 11		
Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 2 (/
1.				Total Number of Dominant Species Across All Strata: (E
2.				% Dominant Species that are OBL, FACW, or FAC: <u>100</u> (A/
3.			-	
4.				Prevalence Index worksheet:
Total Cove	r:O			Total % Cover of: Multiply by:
50% of total cove	r: O 20)% of total cov	ver: O	OBL species:X 1 =8
Sapling/Shrub Stratum(6)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $0 x 2 = 0$ FAC species $165 x 3 = 495$ FACU species $0 x 4 = 0$
1.				UPL speciesX 5 =
2.				Column Totals: 173 (A) 503 (B)
3.				PI = B/A =(A)(B)
l.				
j.				
).				
•				
J.				
).	1			
Total Cove	r:		-	
50% of total cove	r: <u> () 20</u>	% of total cov	er:_O	
EGETATION (use scientific names of plant	s)		-	
Herb Stratum (26)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
1. Carex aquatilis	8		OBL	X Prevalence Index is ≤ 3.0
2. Equisetum arvense	80	Y	FAC	Morphological Adaptations ¹ (Provide supporting data in Notes)
3. Calamagrostis Can.	85	Y	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
Viola palustris	T		FACW	¹ Indicators of hydric soil and wetland hydrology must be present unless
5.			1 7	disturbed or problematic.
3.				
7.			-	% Bare Ground
3.		1		% Date Oronia % Cover of Wetland Bryophytes
).				Total Cover of Bryophytes
				% Cover of Water
0,				Hydrophytic Vegetation Present (Y/N):
Total Cover				Notes: (If observed, list morphological adaptations below):
50% of total cover	<u>86-5</u> 20	% of total cov	er: <u>34.6</u>	

SOIL			Date 06-11-14 Fe	ature II	W601	104+ N	160HT014	Soil Pit Required (Y/N)	
SOIL PROFIL	E DESCRIPTION: (Describe	to the depth needed	to doc	ument the	indicator or c	onfirm the absence	of indicators.)	
Depth	Matrix		Redox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-2		-		-			-	organics	
2-8	10YR 3/1	-		-			Sílt loam	,	
2-8 8-22	10 yr 5/3	60	10 YR 5/8	30	С	M	clay loam		
				-		-			
¹ Type: C=Co	ncentration D=Deple	etion, RN	/ /=Reduced Matrix, C	S=Cov	ered or Co	ated Sand G	rains. ² Location:	PL=Pore Lining, M=Matrix.	
	LINDICATORS							OR PROBLEMATIC HYDRIC SOILS ³	
Histosol or Hi	Histosol or Histel (A1) Alaska Gleyed (A13)			Alaska Color Change (TA4) ⁴					
	on (A2)		Alaska Redox	(A14)_	X	*	Alaska Alpine Swales (TA5)		
	43)		Alaska Gleyed	Pores	(A15)		Alaska Redox with 2.5Y Hue		
Hydrogen Sul	Hydrogen Sulfide (A4)						Alaska Gleyed without 5Y Hue or Redder Underlying Layer		
	urface (A12)						Other (Explain in Notes)		
disturbed or p	oroblematic.							pe position must be present unless	
Restrictive La	of color change in No yer (if present): Typ	e:		Depth (i	nches):				
Hydric Soil F	Present (Y/N):	X							
Notes:	* Soil rechect	red on	n 7/8/14 bys Naska Ridox	Ch/	istophe	r. See con	gboch Well -	3.	
L									

HYDROLOGY PRIMARY INDICATO	ins (any one indicator is sufficient)	SECONDARY INDICATORS (2 of mole required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2) <u>X</u>		
Saturation (A3) <u>X</u>	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1) <u>X</u>	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
in the second se	and the second sec				
Surface Water Present (Y/N): Y	Depth (in): ()	Wetland Hydrology Present (Y/N):			
Water Table Present (Y/N):	Depth (in): N K	Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N):	Depth (in): 12				
Notes: Pit dug on	5-10°10 gradient	above depressiona	Pond.		
See site sk	cetch,				

Life!

VEGETATION VADIARIES DE DIAL ME Mateix
VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Persistent Aquatic Bed Emergent-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Ø Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even XHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <pre>25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A</pre>
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg. Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover_X 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional X Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Saprīc Mineral: Gravelly Mineral: Silty Mineral: Clayey
IT DI COGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Per
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent OutletPerennial Inlet/Perennial Outlet Perennial Inlet/Perennial OutletPerennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, SaturatedX Yetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, SaturatedX
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent Inlet/No OutletPerennial Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Perennial Inlet/Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flovaquent Soils Sediment Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Flovaquent Soils Sediment
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent Inlet/No OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent Inlet/No OutletPerennial Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Perennial Inlet/Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flovaquent Soils Sediment Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Flovaquent Soils Sediment
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent OutletPerennial Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Perennial Inlet/No OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): AbsentPoorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)_X pH Reading 5. 45
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent OutletPerennial Inlet/Perennial Outlet Perennial Inlet/No OutletPerennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Perennial Inlet/No OutletPerennial Inlet/Intermittent OutletPerennial Inlet/Perennial Outlet Perennial Inlet/Perennial OutletPerennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
OutletIntermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Wettand Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Evidence of Sedimentation (P): No Evidence ObservedSediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)X pH Reading 5. 4.5
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial WetLand Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
OutletIntermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Wettand Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Evidence of Sedimentation (P): No Evidence ObservedSediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)X pH Reading 5. 4.5
Outlet
Outlet
Outlet

Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

WOOHTOH Feature ID: NGO TI 041

Field Target: 14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

w

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Z- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

Soil profile is complete? Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked? De Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

Each logbook page is initialed and dated?

7. Maps

Wetland boundaries have been corrected if necessary?
 Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)? Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

lade Signature / Date

11

april

Field Crew Chief (print)

Signature / Date

Soils recheck WETLAND DETERMINATION DATA FORM

Soils Check FT 147

SOIL Date 7/8/14 Feature ID Soil Pit Required (Y/N) /										
SOIL PROFIL	E DESCRIPTION: (D	escribe	e to the depth neede	d to doc	ument the	indicator or	confirm the absence	of indicators.)		
Depth	Depth Matrix Redox Features									
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes		
0-1						C	Fibric	organics; dry		
1-8	10 YR 4/1						Siltloam			
8-12	10 YR 5/1	1.1.1				1.	siltioan			
12-20	5 Y 5/1	90	10 YR 4/6	10	С	PL	siltloam			
					1					
			140							
						-	11			
¹ Type: C=Co	ncentration, D=Deplet	tion, R	A=Reduced Matrix,	CS=Cov	ered or Co	ated Sand G	Grains. ² Location:	PL=Pore Lining, M=Matrix.		
HYDRIC SOI	LINDICATORS	CT-T-		1	1		INDICATORS I	FOR PROBLEMATIC HYDRIC SOILS ³		
Histosol or Hi	stel (A1)		Alaska Gleye	d (A13)			Alaska Color C	hange (TA4) ⁴		
	on (A2)		Alaska Redox	(A14)	X		Alaska Alpine Swales (TA5)			
	A3)		Alaska Gleye				Alaska Redox with 2.5Y Hue			
1	fide (A4)							Alaska Gleyed without 5Y Hue or Redder Underlying Layer		
Thick Dark St	urface (A12)	_					Other (Explain	in Notes)		
³ One indicato disturbed or p ⁴ Give details	r of hydrophytic veget	ation, o						pe position must be present unless		
T COULOUVE LO	ger (in procent). Type									
Hydric Soil F	Present (Y/N):	1								
Notes:										

HYDROLOGY PRIMARY INDICA	TORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)				
Surface Water (A1)	rface Water (A1) Surface Soil Cracks (B6)		Stunted or Stressed Plants (D1)			
High Water Table (A2)	- Inundation Visible on Aerial Imagery - (B7)	Drainage Patterns (B10)	Geomorphic Position (D2) χ			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)			
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)			
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:				
Algal Mat or Crust (B4)	_ Other (Explain in Notes):					
Iron Deposits (B5)						
Surface Water Present (Y/N):	Depth (in):		Y			
Water Table Present (Y/N): Depth (in):		Wetland Hydrology Present (Y/N):				
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):					

SITE DESCRIPTION			-	- 1		1	
Survey Type: Centerline_X_ Acce	_ Other (exp	explain) Field Target: 091		get: <u>091</u>	Map #: <u>63</u> Map Date: <u>5/27/</u> 14		
Date: 06 - 24 - 14	Project Name & No.	.: Alaska LNC	G 26221306		Feature Ic	W60 HT 015	
Investigators: Joe Christo	pher, Valerie	Watki	ns, Zoe	Mead		Team No.: WGO	
State: Alaska	Region: Alaska		Milepost:				
Latitude: 62°56'05,42"	Longitude: 62°56'05,42"					Datum: WGS84	
Logbook No.: 003	Logbook Page No.:		Picture No.:			t, plug	
SITE PARAMETERS				0			
Subregion: interior	-		Landform (hill	slope, terrac	e, hummock	s, etc.):	
Slope (%): 0 - 3			Local relief (co	oncave, con	vex, none):	Concarl	
Pre-mapped Alaska LNG/NWI classifica	tion: PSS1B		Soil Map Unit	1	4.	Lanca IIA	
Are climatic/hydrologic conditions on the Yes_X No (if no expl	e site typical for this time ain in Notes)	e of year?	Are "No Yes	rmal Circum	stances" pre (If no, ex	esent: blain in Notes.)	
Are Vegetation, Soil, or Hyd	lrology Significan	tly Disturbed?	No X	_(If yes, exp	lain in Notes		
Are Vegetation Soil X, or Hyd	Irology Naturally I	Problematic?	No	(If yes, exp	lain in Notes	.)	
SUMMARY OF FINDINGS		1					
Hydrophytic Vegetation Present? Yes_	<u>X No</u>	Is	the Sampled A	rea within a	Wetland?	YesX No	
Hydric Soil Present? Yes_	XNo	We	etland Type:	PSS1	B		
Wetland Hydrology Present? Yes	<u>Χ</u> Νο	— Ala	Alaska Vegetation Classification (Viereck): IB2, IC2				
Notes and Site Sketch: Please include D corridor. J.S.J. Hul W/M.J. - S.H. Sketch M	ot,	v, Centerline, I	∟ength of feature	e, Distances	from Center	line, Photo Locations, and Survey	

÷

> Burnet

Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: <u>4</u> Total Number of Dominant Species Across All Strata: <u>4</u>
1. Picea glauca	1		FACU	% Dominant Species that are OBL, FACW, or FAC: 10.0 (A
2. /	00.257			
3.				
4.				Prevalence Index worksheet:
Total Cover:_				Total % Cover of: Multiply by:
50% of total cover:_	20	% of total cove	er: <u>0</u>	OBL species: O X 1 = O FACW species: 13 X 2 = 2.6
Sapling/Shrub Stratum (G ')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 123 $x^2 = 369$ FAC species 10 $x^4 = 40$
1. Betula nana	70	Y	FAC	UPL speciesX 5 =0
2. Saléx fuscences	5		FAC	Column Totals: 146 (A) 435 (B)
3. Spirea stevenii	Ч		FACU	PI = B/A =2 . 9 g
4. Empetrum nignum	1		FAC	
5. Picea glauca	2		FACU	
B. Vaccinium uliginosum	35	Y	FAC	PICSIAN that DEDDE
. Salex pulchra	5		FACW	Picglan the Deded to Shous.
8. Betula neoalaskana	2		FACU	
9. Salex barclayi	2		FAC	
Total Cover:			25 4	
50% of total cover:	<u>65.5</u> 20	0% of total cov	ver: 2011	
VEGETATION (use scientific names of plants)	1			
Herb Stratum(26/)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
1. Chamerion angustofolium	1		FACU	Morphological Adaptations ¹ (Provide supporting data in
2. Calama giostis canadensi	57	Y	FAC	Notes)
3. Equisetion Arvense	3		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Trientalis europaca	T		FACU	¹ Indicators of hydric soil and wetland hydrology must be present unless
5. Sanguísorba canadensis	٦	Y	FACW	disturbed or problematic
6. Rubus chamaemorous	1		FACW	
7. Vaccinium uligino oum			FAC-	% Bare Ground
8. Equisetum sylvaticum	T		FAC	% Cover of Wetland Bryophytes
9. Rubus arcticas	Т		FAC	Total Cover of Bryophytes
10,				Cover of Water
Total Cover:	19	- 0% of total co	1	_ Hydrophytic Vegetation Present (Y/N):Υ Notes: (If observed, list morphological adaptations below);

SOIL			Date 06-24-14 Feature I	D W60	HT015		Soil Pit Required (Y/N) Y		
SOIL PROFILE DESCRIPTION: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth	Matrix		Redox Features		_				
(inches)	Color (moist)	%	Color (moist) %	Type ¹	Loc ²	Texture	Notes		
0-6						Fibric	organics		
6-8	10 YR 2/1	90				Silt loam	10% cobbles à gravels		
8-18	2.5 / 2/1	85	10 YR 4/4 15	C	PL	Siltloam	, g. a		
					*				
-									
1		tion, RM	=Reduced Matrix, CS=Cove	ered or (Coated Sand G	frains. ² Location:	PL=Pore Lining, M=Matrix.		
HYDRIC SOIL INDICATORS INDICATORS INDICATORS FOR PROBLEMATIC HYDRIC SOILS ³									
Histosol or Histel (A1) Alaska Gleyed (A			Alaska Gleyed (A13)						
	n (A2)		Alaska Redox (A14) _			Alaska Alpine Swales (TA5)			
Black Histic (A	3)		Alaska Gleyed Pores (Alaska Gleyed Pores (A15)			/ith 2.5Y Hue		
Hydrogen Sulfi	ide (A4)					Alaska Gleyed without 5Y Hue or Redder Underlying Layer			
Thick Dark Sur	face (A12)					n Notes)			
³ One indicator	of hydrophytic veget	ation, or	e primary indicator of wetla	nd hydr	ology, and an a		pe position must be present unless		
disturbed or pr	oblematic. f color change in Not								
Restrictive Lay	er (if present): Type		Depth (ir	nches):	NIA				
		M		-					
Hydric Soil Pr	esent (Y/N):	γ							
Notes:				-					
Satu	Notes: Saturated @ 5"								
ItAve	Primary H	1200 -	1412. 1185.						
			•						
HYDROLOGY PRIMARY INDICATORS (any one indicator is sufficient) SECONDARY INDICATORS (2 or more required)						or more required)			
Surface Water	(A1) <u>X</u>	Surf	ace Soil Cracks (B6)		Water-stained Leaves (B9)		Stunted or Stressed		
	· · · · · · · · · · · · · · · · · · ·		dation Visible on Aerial Ima				Plants (D1)		
High Water Tat		(B7)		gory		terns (B10)	_ Geomorphic Position (D2)		
Saturation (A3)	X	Spa	rsely Vegetated				Shallow Aquitard (D3)		
					Living Roots (C3) <u>V</u> Presence of Reduced		Microtopographic		
Water Marks (E	31)	Marl	Deposits (B15)	Iron (C4)		Relief (D4)			
Sediment Depo	osits (B2)	Hyd	rogen Sulfide	gen Sulfide Sal			FAC-Neutral Test (D5)		
			r (C1)			(C5)			
Drift Deposits (B3)		Season er Table (C2)		Notes:				
Algal Mat or Cr	uct (P4)								
Algar Wat of Cr	Algal Mat or Crust (B4) Other (Explain in Notes):						-		
Iron Deposits (I	35)					×			
					Later 1976				
Surface Water	Present (Y/N):	/ [Depth (in):				N		
Water Table Pr	esent (Y/N): V		Depth (in):	N	etland Hydrol	logy Present (Y/N):	<u>у</u>		
		-							
Saturation Pres (includes capilla			Depth (in): 5						
LOSA	lized Shad	ing H	20 Dy Low pr	CKUL	5 +0 EX	2 ST.			

VEGETATION VARIABLES P= Plot, M= Matrix		
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent- Persistent Aquatic Bed Image: Scrub Shrub-Evergreen-Needle-leaved Image: Scrub Shrub-Evergreen-Needle-leaved Image: Scrub Shrub-Evergreen-Needle-leaved		
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Tall shrub (2-6m) Dwarf shrub (<0.5m)		
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even		
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%)		
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A <25% Scattered/Peripheral Cover 26-75% Scattered or 26-75% Scattered or Open Water X		
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)		
Presence of Islands (M): Absent (none) One or Few Several to Many N/A		
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1		
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)		
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) V		
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe		
SOIL VARIABLES		
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey		
HYDROLOGIC VARIABLES		
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Outlet _		
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated		
Evidence of Sedimentation (P): No Evidence Observed <u>X</u> Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created		
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)		
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs		
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow		
Water pH (P): No surface water Circumneutral (5.5-7.4) X Alkaline (>7.4) Acid (<5.5) pH Reading 6.1		
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable		
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs X Seeps Observed Intermittent Spring Perennial Spring		
Lendence of deeps and opinings (r.). No deeps of opinings deeps observed monnition opining reconnici opining		
LANDSCAPE VARIABLES (M)		
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below		
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space) X		
Watershed Land Use: 0-5% Rural X 5-25% Urbanized 25-50% Urbanized >50% Urbanized		

Small (<10 acres) Crew Chief QA/QC check;

P

Size:

GPS Technician QA/QC check:

Large (>100 acres)

Medium (10-100 acres)

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: Woo HT015 Field Target: 9

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked? Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

□[/] Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

Each logbook page is initialed and dated?

7. Maps

Wetland boundaries have been corrected if necessary? Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1

soil pit, 1 soil plug)?

X Joe

4/24/14

Wetland Scientist (print)

Signature / Date

X Zoe Meade

Field Crew Chief (print)

olle 6/24/14

÷ 1

Signature / Date

Vegetation Classification Data Form

Date: 06-24-14	Project Name & #:			Field Target:
Investigators:				HT091 Feature ID:
Joe Christop	ner, Zoe Mec	ade, Valer	ie Watkir	WGOHTOIG
Latitude: @2° 56'0	4.24"	Longitude	: 3.92"	Datum: WGS84
Logbook #: Logbook F		Page #: ୦୦ 2	Picture #:	
Location Descrip	tion:	-1-1		
South o	F WOOH	1015		
Common Species	s Observed (Scien	tific Name)		
Betula na	na		Vaccini	um vitis - idaea
Picea		Empetrum nigrum		
Rhododena	dron tome	ntosum		<i></i>
Geocaulon	lividum			
Percent Cover of D	Dominant Structure	Level: 30	010	
Habitat Descriptio	on:			
Spruce	birch for	rest		
	Classification: L		, Level III	
IC2		II C 2		
Notes:			- 181	A CARACTER AND
Opland Kno	oll Adj to F	-191		
/	\sim			
Field Crew Chief:	k	F	ield Scientist/T	echnician pelmee
				V

Vegetation Classification Data Form

Level	Level II	Level III		
I. Forest	A Needleteaf (conifer) forest	 Closed needleleaf (conifer) forest Open needleleaf (conifer) forest Needleleaf (conifer) woodland 		
	B. Broadleaf forest	 Closed broadleaf forest Open broadleaf forest Broadleaf woodland 		
	C Mixed forest	 Closed mixed forest Open mixed forest Mixed woodland 		
II Scrub	A. Dwarf tree scrub	 Closed dwarf tree scrub Open dwarf tree scrub Dwarf tree scrub woodland 		
	B Tail scrub	(1) Closed tall scrub (2) Open tall scrub		
	C. Low scrub	(1) Closed low scrub (2) Open low scrub		
	D Dwarf scrub	 Dryas dwarf scrub Ericaceous dwarf scrub Willow dwarf scrub 		
III Herbaceous	A Graminoid herbeceous	 Dry graminoid herbaceous Mesic graminoid herbaceous Wet graminoid herbaceous (emergent) 		
	B Forb herbaceous	 Dry forb herbaceous Mesic forb herbaceous Wet forb herbaceous (emergent) 		
	C. Bryoid herbaceous	(1) Mosses (2) Lichens		
	D Aquatic (nonemergent) herbaceous	 Freshwater aquatic herbaceous Brackish water aquatic herbaceous Marine aquatic herbaceous 		

II. Scrub Vegetation with at least 10 percent cover of dwarf trees 8a II A Dwarf tree scrub 9 Vegetation with at least 25 percent 8b cover of shrubs and less than 10 percent cover of dwarf trees 10 9a Dwarf tree canopy of 60-100 percent cover Dwarf tree canopy of 25-59 percent 9bILA.2 Open dwarf tree scrub cover 9c Dwarf tree canopy of 10-24 percent II A 3 Dwarf tree scrub woodland cover 10a Shrubs more than 1.5 meters II B Tall scrub 11 (5 ft) tall 10b. Shrubs less than 1.5 meters (5ft)tall.... 11 a Shrub canopy cover greater than II.8 1 Closed tall scrub 75 percent II B 2 Open tali scrub 11 b Shrub canopy cover of 25-74 percent 12b Shrubs under 20 centimeters in height II.D Dwarf scrub 14 13a Shrub canopy cover greater than 75 percent II C I Closed low scrub 13b Shrub canopy cover of 25-74 percent, or as low as 2 percent if little or no other vegetation cover present II C 2 Open low scrub 14a Dryas species dominant in the dwarf shrub layer . II D 1 Dryas dwarf scrub 14b Ericaceous species dominant in 14c. Willow species dominant in the dwarf II D 2 Willow dwarf scrub scrub layer III. Herbaceous 15a Terrestrial vegetation, or if growing in the water, dominated by emergent vegetation 16 15b Dominant vegetation growing submerged in water or floating on the water surface, but not emerging above the water 21 III D Aquatic herbaceous

2

Desc	riptions of levels I, II, III, and IV follow th	e classification table
in.	Trees over 3 meters (10 ft) tall are present and have a canopy cover of 10 percent or more	I Forest 2
1 b.	Trees over 3 meters (10 ft) tall are absent or nearly so, Less than 10 percent cover (Dwarf trees, less than 3 meters [10 ft) tall may be present and abundant	
I Fo	rest	
20	Over 75 percent of tree cover contributed by needlelesf (conifer) species	I A Needleleaf forest 3
2b	Less than 75 percent of tree cover contributed by needleleaf (conlifer) species	
3a	Tree canopy of 60-100 percent cover	I.A.1 Closed needleleaf forest
3b.	Tree canopy of 25-59 percent cover	LA 2 Open needleleaf forest
3c	Tree canopy of 10-24 percent cover	I A.3 Needleleaf woodland
4a	Over 75 percent of tree cover contributed by broadleaf species	IB Broadleaf forest 5
4b.	Broadleaf or needleleaf species contribute 25 to 75 psrcent of the tree cover	
5a.	Tree canopy of 60-100 percent cover	LB 1 Closed broadleaf forest
5b.	Tree canopy of 25-59 percent cover	I B 2 Open broadleaf forest
5c.		I.B.3 Broadleaf woodland
6a.		I.C 1 Closed mixed forest
6b.		I.C.2 Open mixed forest
6c.	Tree canopy of 10-24 percent cover .	LC.3 Mixed woodland
7a.	Vegetation with at least 25 percent cover of erect to decumbent shrubs or with at least 10 percent cover of dwarf trees (less than 3 meters	
	[10 ft] tal)	
7b	Vegetation herbaceous (may have up to 25 percent shrub cover)	15
16a	Grasses, sedges, or rushes (graminoid) plants dominant	.III.A Graminoid herbaceous 17
16b	Forbs or bryophytes dominant	
17a	Grasslands of well-drained dry	

	(Brenning) have a second
16b	Forbs or bryophytes dominant
17a	Grasslands of well-drained dry sites, such as south-facing bluffs, old beaches, and sand dunes Typically (but not always) dominated by <i>E/mus</i> spp. <i>Fesfuces</i> spp. and <i>Deschampsia</i> spp
17b	On moist sites, but usually not with standing water. Usually dominated by <i>Calemegrostis</i> spp. <i>Carex</i> spp. or <i>Eriophorum</i> spp.; tussocks often present
17c	On wet sites, standing water present for part of the year; dominated by either sedges or grasses; includes wet tundra, bogs, marshes, and fens
1 8a	Vegetation dominated by forbs (broadleaf herbs, ferns, or horsetails)
18b	Vegetation dominated by mosses or lichens
19a	On dry sites, usually rocky and well drained: mostly tundra sites
19b	On moist sites but without standing water, mostly within forested areas
19c	On wet sites, usually with standing water for part of the year III B 3 Wet forb herbaceous
20a	Vegetation cover dominated by mosses
20b	Vegetation cover dominated by lichens . III C 2 Bryoid lichen
21a	Vegetation submerged or floating in fresh water aquatic herbaceous
21 k	 Vegetation submerged or floating in brackish water
21c	Vegetation submerged or floating in salt water

Vegetation Classification Data Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: 091 Field Target: WG0HT016 Date: 06-24-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. General Information

- ✓ Location data recorded?
- Photo taken and photo number recorded?

2. Location Description

 $ot\!\!\!/$ Location of site recorded with enough detail to help relocate?

3. Common Species

- Scientific name of common species recorded?
- Percent cover of dominant structure level noted?

4. Habitat Description

Habitat described?

5. Classification

All three levels of classification recorded?

6. Field Log Book

- Field form entries consistent with log book?
- Logbook clearly identifies the Field Target ID and Feature ID?

Zoe Meade

Field Technician (print)

emeade

'Sal Christophy

Field Crew Chief (print)

Vegetation Classification Data Form

Alask Investigators: Joe Christopher, Latitude: J° 32'04,71 Logbook #: 003 Location Description: FTLD West Common Species Observed Alnus ssp. Veratrum virid		21306	ins, ZM : 11,73'' Page #:	Field Target: HTIQO Feature ID: WGOHTOIT Datum: WGS84		
Investigators: Joe Christopher, Latitude: (2) 32 04,71 Logbook #: 003 Location Description: FTLZD West Common Species Observed Alnus ssp. Veratrum virid	Valerie	2 Wat Ku Longitude	ins, ZM	Datum: WGS84		
Logbook #: 003 Location Description: FTLD West Common Species Observed Alnus ssp. Veratrum virid		Longitude 150 14 Logbook F	······································	Datum: WGS84		
Logbook #: 003 Location Description: FTLD West Common Species Observed Alnus ssp. Veratrum virid		150°14 Logbook F	//,73'' Page #:			
Location Description: FTLD West Common Species Observed Alnus ssp. Veratrum virid		Logbook F	Page #:			
FTLD West Common Species Observed Alnus ssp. Veratrum virid	AR THERE		003	Picture #: P-W_E_E		
Common Species Observed Alnus ssp Veratrum virid						
Alnus ssp. Veratrum virid	of PArk	e Hw	Y			
Veratrum virid	d (Scientific	Name)				
			Oplopar	nax horrídus		
ha i	Veratrum viride			Ribes triste		
Mertensia paniculata Gymnocarpium dryopteris				carpium dryopteris		
Athyrium Cyclosorum Streptopus amplexifoliu Percent Cover of Dominant Structure Level: 700						
Habitat Description:		Cleading				
Tall birch, alde	r thic	ket wi	th devi	1s club		
Alaska Vegetation Classifica	ation: Leve	II, Level II,	Level III	the first state of the state		
IC2	II	BZ				
Notes:	A SHORE		1 State	Survey and survey of the		
TAN Birch n/Alnus	Si Fern, D	. club un	leistury, D	eprussion pemilie pos to mean.		
	X	/		echnician MMade		

Vegetation Classification Data Form

Level I	Level II	Level III
I. Forest	A Needleleaf (conifer) forest	 Closed needleleaf (conifer) forest Open needleleaf (conifer) forest Needleleaf (conifer) woodland
	B. Broadleaf forest	 Closed broadleaf forest Open broadleaf forest Broadleaf woodland
	C Mixed forest	 Closed mixed forest Open mixed forest Mixed woodland
II. Scrub	A. Dwarf tree scrub	 Closed dwarf tree scrub Open dwarf tree scrub Dwarf tree scrub woodland
	B. Tall scrub	(1) Closed tall scrub (2) Open tall scrub
	C. Low scrub	(1) Closed low scrub (2) Open low scrub
	D Dwarf scrub	 Dryas dwarf scrub Ericaceous dwarf scrub Willow dwarf scrub
III Herbaceous	A Graminoid herbaceous	 Dry graminoid herbaceous Mesic graminoid herbaceous Wet graminoid herbaceous (emergent)
	B. Forb Herbaceous	 Dry forb herbaceous Mesic forb herbaceous Wet forb herbaceous (emergent)
	C Bryoid herbaceous	(1) Mosses (2) Lichens
	D. Aquatic (nonemergent) herbaceous	 Freshwater aquatic herbaceous Brackish water aquatic herbaceous Marine aquatic herbaceous

II. Sc	rub
6a.	Vegetation with at least 10 percent cover of dwarf trees crub 9
8b	Vegetation with at least 25 percent cover of shrubs and less than 10 percent cover of dwarf trees 10
9a	Dwarf tree canopy of 60-100 percent cover
9b	Dwarf tree canopy of 25-59 percent cover
9c	Dwarf tree canopy of 10-24 percent cover
10a	Shrubs more than 1.5 meters (5 ft) tall II B Tall scrub 11
	Shrubs less than 1.5 meters (5ft) tall
	Shrub canopy cover greater than 75 percent
11 b	Shrub canopy cover of 25-74 percent II B 2 Open tall scrub
12a	Shrubs 20 centimeters to 1 5 meters tall
12b	Shrubs under 20 centimeters in height
13a	Shrub canopy cover greater than 75 percent II C I Closed low scrub
13b	Shrub canopy cover of 25-74 percent, or as low as 2 percent if little or no other vegetation cover present
14a	Dryas species dominant in the dwarf shrub layer
14b	Ericaceous species dominant in the dwarf shrub layer
14c	. Willow species dominant in the dwarf scrub layer II D 2 Willow dwarf scrub
11	Herbaceous
15a	Terrestrial vegetation, or if growing in the water, dominated by emergent vegetation
155	Dominant vegetation growing submerged in water or floating on the water surface, but not emerging above the water III D Aquatic herbaceous 21

_		An address of the second second
Desc	riptions of levels I, II, III, and IV follow th	e classification table
la.	Trees over 3 meters (10 ft) tall are present and have a canopy cover of 10 percent or more	I Forest 2
1 b.	Trees over 3 meters (10 fi) tall are absent or nearly so, Less than 10 percent cover. (Dwarf trees, less than 3 meters [10 fi) tall may be present and abundant	
I Fo	rest	
2n	Over 75 percent of tree cover contributed by needleleaf (conifer) species	I A Needleleaf forest 3
2b	Less than 75 percent of tree cover contributed by needleleaf (conifer) species .	
38,	Tree canopy of 60-100 percent cover .	IA 1 Closed needleleaf forest
3b.	Tree canopy of 25-59 percent cover	IA.2 Open needleleaf forest
3c.	Tree canopy of 10-24 percent cover	I.A.3 Needleleef woodland
4a.	Over 75 percent of tree cover contributed by broadlesf species	I B Broadleef forest 5
4b.	Broadleaf or needleleaf species contribute 25 to 75 percent of the tree cover	
5a.	Tree canopy of 60-100 percent cover	I B 1 Closed broadleaf forest
5b.	Tree canopy of 25-59 percent cover .	IB2 Open broadleaf forest
5c.	Tree canopy of 10-24 percent cover	I.B.3 Broadleaf woodland
6a:	Tree canopy of 60-100 percent cover	
6b.	Tree canopy of 25-59 percent cover	I.C.2 Open mixed forest
6c	Tree canopy of 10-24 percent cover	. I C.3 Mixed woodland
7a	Vegetation with at least 25 percent cover of erect to decumbent shrubs or with at least 10 percent cover of dwarf trees (less than 3 meters (10 t] tal)	
7b	Vegetation herbaceous (may have up to 25 percent shrub cover)	15
-		
16a	Grasses, sedges, or rushes (graminoid) plants dominant	.III A Graminoid herbaceous 17
16b	Forbs or bryophytes dominant	
17a	Gresslands of well-drained, dry sites, such as south-facing bluffs, old beaches, and sand dunes Typically (but not always) dominated	

	Grasalands of well-drained, dry sitas, such as south-facing bluffs, old beaches, and sand dunes Typically (but not always) dominated by <i>Elymus</i> spp, <i>Festuca</i> spp, and <i>Deschampsia</i> spp	III A I Dry graminoid herbaceous
	On moist sites, but usually not with standing water Usually dominated by <i>Calamagrosits</i> spp <i>Carex</i> spp; or <i>Enophorum</i> spp; tussocks often present	III A 2 Mesic graminoid herbaceous
17c	On wet sites, standing water present for part of the year; dominated by either sedges or grasses, includes wet tundra, bogs, marshes, and fens	III A.3 Wet graminoid herbaceous
1 8a	Vegetation dominated by forbs (broadleaf herbs, ferns, or horsetails)	III 8 Forb herbaceous 19
18b	Vegetation dominated by mosses or lichens	
19a	On dry sites, usually rocky and well drained, mostly tundra sites	III B 1 Dry forb herbaceous
19b	On moist sites but without standing water, mostly within forested areas	III.B.2 Mesic forb herbaceous
19c	On wet sites, usually with standing water for part of the year	III B 3 Wet forb herbaceous
20a	Vegetation cover dominated by mosses	
206	Verentrian cover dominated by	III C 2 Bryoid lichen
21a	Vegetation submerged or floating in fresh water.	. III.D.1 Freshwater aquatic herbaceous
21 b	Vegetation submerged or floating in brackish water	III D 2 Brackish water aquatic herbaceous
21c	Vegetation submerged or floating in salt water	. III.D 3 Marine aquatic herbaceous

Vegetation Classification Data Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: W60,H117

Field Target: 120 Date: 6/24/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. General Information

- Location data recorded?
- Photo taken and photo number recorded?

2. Location Description

Location of site recorded with enough detail to help relocate?

3. Common Species

Scientific name of common species recorded?

- Percent cover of dominant structure level noted?
- 4. Habitat Description

Habitat described?

5. Classification

All three levels of classification recorded?

6. Field Log Book

- Field form entries consistent with log book?
- Logbook clearly identifies the Field Target ID and Feature ID?

X Zoe Meade

Field Technician (print)

Signature 1

Field Crew Chief (prin

Signatur

SITE DESCRIPTION			Cor	ridor a	100'	
Survey Type: Centerline	Access Road (explain)	Other (exp				Map #: <u>85</u> Map Date: <u>5/27/</u> 14
Date: 06-24-14	Project Name & No.:	Alaska LN	G 26221306		Feature Id:	W60HT 018
Investigators: Valerie Wa	atkins, Joe Chris	rtense	n. Zoer	neade		Team No.: WGO
State: Alaska	Region: Alaska		Milepost:			
Latitude: 62° 32'03.3	2 ''	Longitud	e: 150°14'	10.84"		Datum: WGS84
Logbook No.: 003	Logbook Page No.:	4	Picture No.:	P-N	, 5 ,	pit plug
SITE PARAMETERS	all a second	1)
Subregion: interior			Landform (hil	llslope, terrace	, hummocks	s, etc.): hill slope
Slope (%): 40			Local relief (concave, convex, none): CONVEX			
Pre-mapped Alaska LNG/NWI classification: UPland			Soil Map Unit Name:			
Are climatic/hydrologic conditions o Yes_X No (if no	n the site typical for this time explain in Notes)	of year?	Are "No Yes_	ormal Circums		sent: Dain in Notes.)
Are Vegetation, Soil, o	r Hydrology Significant	ly Disturbed	? No X	_(If yes, expla		
Are Vegetation, Soil, o	r Hydrology Naturally F	Problematic?	No X	_ (If yes, expla	ain in Notes.	.)
SUMMARY OF FINDINGS		1				
Hydrophytic Vegetation Present? Y	Is	Is the Sampled Area within a Wetland? Yes No				
Hydric Soil Present? Yo	w	Wetland Type: Upland				
Wetland Hydrology Present? Y	es NoX	— A	laska Vegetation	Classification	(Viereck):	IC2, II B2
Notes and Site Sketch: Please inclu	de Directional & North Arrow	Centerline	l ength of featur	re. Distances fi	rom Centerl	ine Photo Locations, and Suprav

corridor.

- BAVE/Open Areas In MAPPIN Approv to BI Show Early season photo

I Have not Gruened up tet.

SU PAS 3 for Diagram

VEGETATION (use scientific names of plants)		1		
Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: <u>J</u> (A) Total Number of Dominant Species Across All Strata: <u>G</u> (B)
1. Betula neoalaskana	75	Y	FACU	% Dominant Species that are OBL, FACW, or FAC: 50 (A/B)
² . Picea glauca	1		FACU	
3.				
4.				Prevalence Index worksheet:
Total Cover: 50% of total cover:		% of total cov	er: 15.2	Total % Cover of: Multiply by: OBL species: 0 X 1 = 0
Sapling/Shrub Stratum (2.6/)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $0 \\ X 2 = 0$ FAC species $65 \\ X 3 = 195$ FACU species $124 \\ X 4 = 496$
1. Vaccinium uliginosum	15	Y	FAC	UPL speciesX 5 =
2 Oplopanax horridus	15	Y	FACU	Column Totals: 189 (A) 691 (B)
3. Alnus SSP.	25	Y	FAC	PI = B/A = 3.67
4. picea glauca	1		FACU	
5.				
6.				
7.				
8.				
9.	PI			
Total Cover:			11.2	
50% of total cover	20 20	J% of total cov	er:	
VEGETATION (use scientific names of plants)			
Herb Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3.0
1. Streptopus amplexifolius	10		FACU	Morphological Adaptations ¹ (Provide supporting data in
2. Dryopteris expansa	15	У	FACU	Notes)
3. Gymnocarpium drypten	- 5		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Athyrium cyclosorum	15	Y	FAC	¹ Indicators of hydric soil and wetland hydrology must be present unless
5. Calamagrostis ranadensis	10		FAC	disturbed or problematic.
6. Equisetum sylvaticum	1		FACU	
7 Cornus canadensis	1		FACU	% Bare Ground
8.				0 % Cover of Wetland Bryophytes
9.				Total Cover of Bryophytes
10.				% Cover of Water Hydrophytic Vegetation Present (Y/N):
Total Cover	51			Notes: (If observed, list morphological adaptations below):
50% of total cover		0% of total co	ver: 11.4	Notes. (II observed, list morphological adaptations below).

SOIL PROFI			Date 06-24-14 Feature ID VV(Soil Pit Required (Y/N)	
	LE DESCRIPTION: (D	Describe	to the depth needed to document	t the indicator or	confirm the absence	of indicators.)	
Depth	Matrix	_	Redox Features	p.			
(inches)	Color (moist)	%	Color (moist) % Typ	e ¹ Loc ²	Texture	Notes	
0-4		-			- Fibric	dry, organics	
1-19	10 YR 4/3	100			- Silt loam	J U	
19-21	2.5 7 5/1	100			- SANDY Silt	small gravels	
						-	
		-					
Type: C=Cc		tion RM:	Reduced Matrix, CS=Covered o	r Coated Sand C	Crains ² Leastion		
	IL INDICATORS		-itedaced Matrix, CS-Covered 0	Coaled Sand G		PL=Pore Lining, M=Matrix.	
			Alaska Gleyed (A13)			ange (TA4) ⁴	
		Alaska Redox (A14)			wales (TA5)		
	k Histic (A3) Alaska Redux (A14)			Alaska Redox w			
	gen Sulfide (A4)					vithout 5Y Hue or Redder Underlying	
Thick Dark Surface (A12)					Layer		
			o primary indicator of watland hu	drology and an	Other (Explain in	n Notes) re position must be present unless	
Hydric Soil F	Present (Y/N):N	-	Depth (inches)	: <u>N</u> K			
	- NO hydric	Soils	obsques				
				SECONDAR	Y INDICATORS (2 o	r more required)	
HYDROLOG		ORS (an	y one indicator is sufficient)	Water-staine		Stunted or Stressed	
HYDROLOG	Y PRIMARY INDICAT	ORS (an	y one indicator is sufficient)	Water-stainer Leaves (B9)	d	Stunted or Stressed Plants (D1)	
HYDROLOG [*] Surface Wate High Water Ta	Y PRIMARY INDICAT	ORS (an Surfa Inuno (B7) Spar	y one indicator is sufficient) ace Soil Cracks (B6)	Water-stainer Leaves (B9) Drainage Pat	d terns (B10) zospheres along	Stunted or Stressed Plants (D1)	
HYDROLOG Surface Wate High Water Ta Saturation (A:	Y PRIMARY INDICAT	ORS (an Surfa Inune (B7) Spar Conc	y one indicator is sufficient) ace Soil Cracks (B6) dation Visible on Aerial Imagery sely Vegetated	Water-stainer Leaves (B9) Drainage Pat	d terns (B10) zospheres along (C3)	Stunted or Stressed Plants (D1) Geomorphic Position (D2)	
HYDROLOG Surface Wate High Water Ta Saturation (A: Vater Marks	Y PRIMARY INDICAT er (A1) able (A2) 3)	ORS (an Surfa Inun (B7) Spar Cond Marl Hydr	y one indicator is sufficient) ace Soil Cracks (B6) dation Visible on Aerial Imagery sely Vegetated cave Surface (B8)	Water-staine Leaves (B9) Drainage Pat Oxidized Rhiz Living Roots Presence of I Iron (C4)	d terns (B10) zospheres along (C3)	Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic	
HYDROLOG Surface Wate High Water Ta Saturation (A: Vater Marks Sediment Dep	Y PRIMARY INDICAT er (A1) able (A2) 3) (B1)	ORS (an Surfa Inun (B7) Spar Cond Marl Hydr Odor	y one indicator is sufficient) ace Soil Cracks (B6) dation Visible on Aerial Imagery sely Vegetated cave Surface (B8) Deposits (B15) ogen Sulfide	Water-staine Leaves (B9) Drainage Pat Oxidized Rhiz Living Roots Presence of I Iron (C4)	d terns (B10) zospheres along (C3) Reduced	Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)	
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits	Y PRIMARY INDICAT er (A1) Table (A2) 3) (B1) posits (B2)	ORS (an Surfa Inun (B7) Spar Cond Marl - Hydr Odor Dry-S Wate	y one indicator is sufficient) ace Soil Cracks (B6) dation Visible on Aerial Imagery sely Vegetated cave Surface (B8) Deposits (B15) ogen Sulfide (C1) Season	Water-stainer Leaves (B9) Drainage Pat Oxidized Rhiz Living Roots Presence of I Iron (C4) Salt Deposits	d terns (B10) zospheres along (C3) Reduced	Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)	
HYDROLOG Surface Wate High Water Ta Saturation (A: Water Marks Sediment Dep Drift Deposits	Y PRIMARY INDICAT er (A1) Table (A2) 3) (B1) posits (B2) (B3)	ORS (an Surfa Inun (B7) Spar Cond Marl - Hydr Odor Dry-S Wate	y one indicator is sufficient) ace Soil Cracks (B6) dation Visible on Aerial Imagery sely Vegetated cave Surface (B8) Deposits (B15) ogen Sulfide (C1) Season r Table (C2)	Water-stainer Leaves (B9) Drainage Pat Oxidized Rhiz Living Roots Presence of I Iron (C4) Salt Deposits	d terns (B10) zospheres along (C3) Reduced	Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)	
HYDROLOG Surface Wate High Water Ta Saturation (A: Nater Marks Sediment Dep Drift Deposits Algal Mat or C ron Deposits	Y PRIMARY INDICAT er (A1) Table (A2) 3) (B1) posits (B2) (B3) Crust (B4)	ORS (an Surfa (B7) Spar Cond Marl Hydr Odor Dry-S Wate Othe	y one indicator is sufficient) ace Soil Cracks (B6) dation Visible on Aerial Imagery sely Vegetated cave Surface (B8) Deposits (B15) ogen Sulfide (C1) Season r Table (C2)	Water-stainer Leaves (B9) Drainage Pat Oxidized Rhiz Living Roots Presence of I Iron (C4) Salt Deposits	d terns (B10) zospheres along (C3) Reduced	Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4)	

(includes capillary fringe) Notes:

Saturation Present (Y/N):

N

N

Depth (in):

Depth (in):

NA

NA

1

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Emergent-Needle-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Every High Density (80-100%) Ever
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a> <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover <a>N/A <a> <a> <a>
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0.25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inl
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Degree of Outlet Restriction (P); No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%)
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE YARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres)
Crew Chief QA/QC_check: GPS Technician QA/QC check:
Cft Page 4 of

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID: W60HT018
 Field Target: 121
 Date: 06 - 24 - 14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Ø Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Z Two photos were taken for each Observation Point (vegetation/site overview)?

Х Zoe Meade Meale 06-24-14 Signature / Date Wetland Scientist (print) 9/24/19 00

Field Crew Chief (print)

. .

Signature/Date

SITE DESCRIPTION			30	O'corr	idor	
Survey Type: Centerline Acces	ss Road (explain)	Other (expl	ain) <u>X</u>	Field Targe	et: 122	Map #: <u>85</u> Map Date: <u>5/27/</u> //
Date: 06-24-14	Project Name & No.:	Alaska LNG	6 26221306		Feature Id	: W60HT019
Investigators: Joe Christop	her Valerie V	Natkins	, Zoe M.	ead e		Team No.: W60
State: Alaska	Region: Alaska		Milepost:			
Latitude: 62 32 03. 52	11	Longitude	1500 14	1 06.4	7 "	Datum: WGS84
Logbook No.: 003	Logbook Page No.:					N-S-SURACE
SITE PARAMETERS			N.	10-00		
Subregion: interior			Landform (hill	Islope, terrace	, hummock	s, etc.): 1=6+
Slope (%): 0 - 3					ronwol	
Pre-mapped Alaska LNG/NWI classificat		Soil Map Unit		LA	0 60.0	
Are climatic/hydrologic conditions on the Yes No (if no expla	site typical for this time in in Notes)	of year?	Are "No Yes_X	ormal Circums	tances" pre (If no, exp	sent: blain in Notes.)
Are Vegetation, Soil, or Hyd	ology Significantl	No X	_(If yes, expla			
Are Vegetation, Soil, or Hyd	ology Naturally P	roblematic?		_ (If yes, expla		
SUMMARY OF FINDINGS						
Hydrophytic Vegetation Present? Yes	+ No	Is 1	the Sampled A	rea within a \	Wetland?	YesNo
Hydric Soil Present? Yes	No	We	etland Type:	Pem	P	
Wetland Hydrology Present? Yes	No	— Ala	ska Vegetation	Classification	(Viereck):	ITA 3
Notes and Site Sketch: Please include Di corridor.	AL 3	~			rom Centeri	line, Photo Locations, and Survey

Tree Stratum (Plot sizes: 26')	Absolute	Dominant	Indicator	
	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC:(Total Number of Dominant Species Across All Strata:(
1.				% Dominant Species that are OBL, FACW, or FAC:(A
2.				
3.				
4.				Prevalence Index worksheet:
Total Cover:	0			Total % Cover of: Multiply by:
50% of total cover:	0 20	% of total cov	er:_O	OBL species: $1 \times 1 = 1$
Sapling/Shrub Stratum(261))	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $2 \circ x = 4 \circ$ FAC species $9 \circ x = 28 \circ$ FAC species $0 x = 2$ X 4 = 0
1Alnus ssp.	~		FAC	UPL species X 5 =
2. Salex pulchra	20	Y	FACW	Column Totals: 122 (A) 332 (B) PI = B/A = 2.72
3.				PI = B/A =
4.				
5.				Salex up on moundo all other regetation @ plot site lower in marshy waters
6.				all other regetation @ plat
7.				Site lowe
8.				- marshy waters
9.				
いいをつけること	0.0			
Total Cover			Ч	
Total Cover 50% of total cover		% of total cov	ver: <u>4</u>	
50% of total cover	<u>10</u> 20	% of total cov	ver: <u>4</u>	
50% of total cover	<u>10</u> 20	Dominant	Indicator	Hydrophytic Vegetation Indicators:
50% of total cover	<u>, 0</u> 20	Dominant Species?		Dominance Test is > 50%
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26 ')	Absolute % Cover	Dominant	Indicator	<u>X</u> Dominance Test is > 50% <u>X</u> Prevalence Index is ≤ 3.0
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Comarum palustre	() Absolute % Cover	Dominant Species?	Indicator Status	 X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Comarum palustre 2. Equisetum arvense	$\frac{10}{20}$	Dominant Species?	Indicator Status OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Comarum palustre 2. Equisetum arvense 3. Carex utriculata	$\frac{10}{20}$	Dominant Species?	Indicator Status OBL FAC OBL	 X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26') 1. Comarum palustre 2. Equisetum arvense 3. Carex utriculata 4. Calamagrostis canadensi	$\frac{10}{20}$	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Comarum palustre 2. Equisetum arvense 3. Carex utriculata 4. Calamagrostis canadensi 5. Viola palustris	$\frac{10}{20}$	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26') 1. Comarum palustre 2. Equisetum arvense 3. Carex utriculata 4. Calamagrostis canadense 5. viola palustris 6.	$\frac{10}{20}$	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Comarum palustre 2. Equisetum arvense 3. Carex utriculata 4. Calamagrostis canadense 5. viola palustris 6. 7.	$\frac{10}{20}$	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26') 1. Comarum palustre 2. Equisetum arvense 3. Carex utriculata 4. Calamagrostis canadense 5. Viola palustris 6.	$\frac{10}{20}$	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26') 1. Comarum palustre. 2. Equisetum arvense 3. Carex utriculata 4. Calamagrostis canadensi 5. Viola palustris 6. 7. 8. 9.	$\frac{10}{20}$	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26') 1. Comarum palustre 2. Equisetum arvense 3. Carex utriculata 4. Calamagrostis canadense 5. Viola palustris 6. 7. 8.	$\frac{10}{20}$	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. Ø % Bare Ground Ø % Cover of Wetland Bryophytes IO Total Cover of Bryophytes

SOIL			Date 06-24-14 F	eature I	D W60	HT019		Soil Pit Required (Y/N) N
SOIL PROF	ILE DESCRIPTION: (Describe					confirm the abser	nce of indicators.)
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
1		1						/
1	/				/			
		-		/	-			
	X	-	/	\times		-		
-/					-			
/			/	-				
Type: C=C	oncentration, D=Deple	etion, RN	I=Reduced Matrix, 0	S=Cove	I ered or Coa	ated Sand Gr	ains. ² Locatio	n: PL=Pore Lining, M=Matrix.
	IL INDICATORS		1					S FOR PROBLEMATIC HYDRIC SOILS ³
listosol or H	listel (A1)		Alaska Gleyed	(A13)			Alaska Color	Change (TA4) ⁴
listic Epipedon (A2)		Alaska Redox (A14)				Alaska Alpine Swales (TA5)		
lack Histic	(A3)		Alaska Gleyed	Pores ((A15)			x with 2.5Y Hue
	ulfide (A4)						Alaska Gleye Layer	d without 5Y Hue or Redder Underlying
	urface (A12)	_					Other (Explai	n in Notes) 🗙
Give details	of color change in No	ites						cape position must be present unless
Restrictive La	ayer (if present): Type	BI	[Depth (in	iches):	NIN		· · ·
ydric Soil I	Present (Y/N):	У						
lotes:	soil pit	dug	due to in	unda	ation	- hyd	hic soils	assumed.

	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 0	r more required)	
Surface Water (A1) X	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)	
High Water Table (A2) X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)		
Saturation (A3) <u>X</u>	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)	
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)	
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)	
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:		
Algal Mat or Crust (B4)	Other (Explain in Notes):			
Iron Deposits (B5)		_		
Surface Water Present (Y/N): V	Depth (in): 2 - 3			
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N):	У	
Saturation Present (Y/N):	Depth (in):			

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Persistent Aquatic Bed Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m)_2 2 Dwarf shrub (<0.5m)
Number of Wetland Types (M); Evenness of Wetland Type Distribution (M): Even Highly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
Soil VARIABLES Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Silty Mineral: Gravelly Mineral: Silty
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No
Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Y Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding K Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading 4.5 2
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) Y High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs Y Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetland Juxtaposition: Wetland Isolated <
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below

Crew Chief QA/QC check:

GPS Technician QA/QC check

Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: WGOHT019 Field Target: 122 Date: 06-24-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

□ Soil profile is complete? - no Pit dug due to inundation □ Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- ☑ Wetland boundaries have been corrected if necessary?
- ♀ Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- I Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

emande 06-24/14 Х Signature// Date

6/24

Х hrister In

Field Crew Chief (print)

Signature / Date

Х

SITE DESCRIPTION		-	300	o' stud	y	
Survey Type: Centerline Acc	ess Road (explain)	_ Other (exp	plain)X	Field Targ		Map #: 86 Map Date: 5/27/1
Date: 06 - 25 - 14	Project Name & No.	.: Alaska LN	G 26221306		Feature Id:	W60 HT 0 2 0
Investigators: Joe Christon	pher, Zoe M	Neade				Team No.: W60
State: Alaska	Region: Alaska		Milepost:	130		
Latitude: 62°31'41. 9-	7 ''	Longitud		~	(Datum: WGS84
Logbook No.: 003	Logbook Page No.:	005	Picture No.:	P_N,	S, pi	t, plug
SITE PARAMETERS		107				
Subregion:			Landform (hill	islope, terrace	, hummocks	s, etc.):
Slope (%): interior 0-	- 3		Local relief (c	oncave, conv	ex, none):	Concave
Pre-mapped Alaska LNG/NWI classifica	ation: PEM1C.	4	Soil Map Unit	Name:	NA	
Are climatic/hydrologic conditions on th Yes_ λ No (if no exp	e site typical for this time lain in Notes)	e of year?	Are "No Yes_X	ormal Circums	tances" pres	sent: Ilain in Notes.)
Are Vegetation, Soil, or Hy	drology Significan	tly Disturbed		_(If yes, expla		
Are Vegetation, Soil, or Hy	drology Naturally	Problematic?	No X	(If yes, expl	ain in Notes.)
SUMMARY OF FINDINGS		1.1		1		
Hydrophytic Vegetation Present? Yes_	X No	Is	the Sampled A	rea within a	Wetland?	Yes No_X
Hydric Soil Present? Yes_	NoX	w	etland Type:	upland	1	
Wetland Hydrology Present? Yes_	No <u>X</u>	— AI	aska Vegetation	Classificatior	(Viereck):	IG1 IBQ, IAQ
Notes and Site Sketch: Please include E corridor.	Directional & North Arrow					
field	sketch or	n pag	ye 00	5 06	log	600K 003

the Field myset breack cove of IFB2, III A2 is correct and the polygon Kerock Loke 3 ICZ, IIBZ is also Correct. The polygon represents a much larger area then The Field Argust Site.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
ree Stratum (Plot sizes:)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC: 3
				% Dominant Species that are OBL, FACW, or FAC: $10\overline{0}$ (A
*				
3.				
1.				Prevalence Index worksheet:
Total Cover:	0			Total % Cover of: Multiply by:
50% of total cover:	<u> </u>	% of total cov	er: <u>0</u>	OBL species:X 1 =
Sapling/Shrub Stratum (2.01)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 0 $X = 0$ FAC species $163 X = 489$ FACU species $0 X = 0$
1. Salex bebbiana	10	Y	FAC	UPL speciesX 5 =
2.				Column Totals:(A)(B)
3.				Column Totals:(A)(B) PI = B/A =3, O
4.				7
5,				Domof all FAC
6.	2 <u>-</u>			Domof all FAL Veg.
7. •				1009
8.				-
9.	10			-
9. Total Cover: 50% of total cover:	5 20)% of total cov	/er:	-
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants	5_ 20	Dominant Species? (Y/N)	rer: Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50%
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (6')	52() Absolute % Cover	Dominant Species?	Indicator	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Calamagrostis Canadensi	52() Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50%
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Calamagrostis Canadensi	Absolute % Cover	Dominant Species?	Indicator Status FA C	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum ()	Absolute % Cover 90 3	Dominant Species?	Indicator Status FA C FA C	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (6') 1. Calamagrostis Canadensi	Absolute % Cover 90 3	Dominant Species?	Indicator Status FA C FA C	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Calamagrostis Canadensis 2. Equisetum sylvaticum 3. Equisetum arvense 4.	Absolute % Cover 90 3	Dominant Species?	Indicator Status FA C FA C	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Ca lamagrostis Canadensis 2. Equisetum Sylvaticum 3. Equisetum Arvense 4. 5.	Absolute % Cover 90 3	Dominant Species?	Indicator Status FA C FA C	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% _X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Ca lamagrostis Canadensi 2. Equisetum sylvaticum 3. Equisetum arvense 4. 5. 6.	Absolute % Cover 90 3	Dominant Species?	Indicator Status FA C FA C	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Ca lamagrostis Canadensis 2. Equisetum sylvaticum 3. Equisetum arvense 4. 5. 6. 7.	Absolute % Cover 90 3	Dominant Species?	Indicator Status FA C FA C	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Ca lamagrostis Canadensi 2. Equisetum sylvaticum 3. Equisetum arvense 4. 5. 6. 7. 8.	Absolute % Cover 90 3	Dominant Species?	Indicator Status FA C FA C	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is < 3.0
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Calamagrostis Canadensi 2. Equisetum sylvaticum 3. Equisetum arvense 4. 5. 6. 7. 8. 9.	5 20 Absolute % Cover 90 3 60	Dominant Species?	Indicator Status FA C FA C	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

WETLAND I	DETERMINATION DATA FORM
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SOIL			Date 062414 Fea					Soil Pit Required (Y/N)
SOIL PROF	LE DESCRIPTION: (E	escribe		to doc	ument the	indicator or	confirm the absence	of indicators.)
Depth	Matrix	_	Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
1-4							Fibric	organics
4 - 8	10YR 313						Silt loam	<i></i>
8-20	10 YR 513						Silt loam	
				-				
		-		-			1	
		-		-			1	(
						-		
	oncentration, D=Deple	tion, RN	A=Reduced Matrix, CS	S=Cov	ered or Coa	ated Sand G	Brains ² Location:	PL=Pore Lining, M=Matrix.
IYDRIC SO	L INDICATORS	_		-			INDICATORS F	OR PROBLEMATIC HYDRIC SOILS
listosol or H	istel (A1)		Alaska Gleyed	(A13)			Alaska Color Ch	ange (TA4) ⁴
listic Epiped	lon (A2)		Alaska Redox (A14) _			Alaska Alpine S	wales (TA5)
Black Histic	A3)		Alaska Gleyed	ores	(A15)		Alaska Redox w	ith 2.5Y Hue
lydrogen Su	lfide (A4)						Alaska Gleyed v Layer	vithout 5Y Hue or Redder Underlying
hick Dark S	urface (A12)	_					Other (Explain in	n Notes)
listurbed or Give details	oroblematic_ of color change in Not	es.						e position must be present unless
Restrictive La	ayer (if present): Type	-	D	epth (ir	nches):^	JAA.		
ydric Soil	Present (Y/N):N							
Notes:	1.2							
No	hydric s.	sils	Alasoniad	Re	:11 1	ich Chuo	ina spils A	VO Redinka

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 0	r more required)
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)
Dry-Season Water Table (C2) Igal Mat or Crust (B4) Other (Explain in Notes):		Notes:	H.
Iron Deposits (B5)			
Surface Water Present (Y/N): N	Depth (in):		A /
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N):	/\/
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):		
Depressional Are	a within tall mited G	cresk.	
- Holles Charly Pa	cle for extended Durs!	lian.	

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent- Persistent Aquatic Bed Forested Strub Shrub-Evergreen-Needle-leaved Emergent-
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very Nigh Density (80-100%) Environmentation Non- No
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg. Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
Soil VARIABLES Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Sitty Mineral: Gravelly Mineral: Sitty
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/No
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Pe
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm, Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 vrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Integrity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres)
Crew Chief QA/QC check GPS Technician QA/QC check:

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: WGO HT 620 Field Target: 125 Date: 06-25-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- $\not \square$ A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland? Not we transf

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Metland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Z Two photos were taken for each Observation Point (vegetation/site overview)?

Dente 06-25-14 X zoe meade Х Signature/Date Wetland Scientist (print) (15/14 lophy Signature / Date Field Crew Chief (print)

SITE DESCRIPTION	A CARLEND AND A	30		-1-2-2	
Survey Type: Centerline X Acces	ss Road (explain) Other (explain)	(plain)	Field Target	126	Map #: 86 Map Date: 5/27/14
Date: 06 - 25 - 14	Project Name & No.: Alaska Ll	NG 26221306	F	eature Id	WGOHT 021
Investigators: Joe Christop	pher, Zoe Meade				Team No.: W60
State: Alaska	Region: Alaska	Milepost:	130		
Latitude: 62° 31' 39.96"	Longitu	de: 150 014	1 19-14'	9	Datum: WGS84
Logbook No.: 00 3	Logbook Page No.: 006		P_N,S		, pluq
SITE PARAMETERS					,
Subregion: interior		Landform (hill	slope, terrace,	hummocks	s, etc.): Depressively
Slope (%): 0 ~ 3		Local relief (co	oncave, convex	, none):	CONCAVE,
Pre-mapped Alaska LNG/NWI classificat	lion: PEM1F	1.1	Name: N		
Are climatic/hydrologic conditions on the YesX No (if no expla	site typical for this time of year? ain in Notes)	Are "No	rmal Circumsta	inces" pre	
Are Vegetation, Soil, or Hyd	rology Significantly Disturbe		_(If yes, explain		
Are Vegetation, Soil, or Hyd	rology Naturally Problematic	? <u>No X</u>	_ (If yes, explai	n in Notes	.)
SUMMARY OF FINDINGS				1	
Hydrophytic Vegetation Present? Yes	No I	s the Sampled A	rea within a W	etland?	Yes No
Hydric Soil Present? Yes	No N	Wetland Type:	IPL	_	
Netland Hydrology Present? Yes				Viereck):	ICI, ICZ, T
Notes and Site Sketch: Please include Di corridor.	irectional & North Arrow, Centerline	e, Length of feature	e, Distances fro	om Center	ine, Photo Locations, and Survey
PASE	nob q los	Sook S	fer 1	1/19:	All
See 1	ook on Ft Same is		Into I M	-orm	

VEGETATION (use scientific names of plants)		r		
Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 2 Total Number of Dominant Species Across All Strata:
1. Betula neoalaskaria	3	X	FACY	% Dominant Species that are OBL, FACW, or FAC: 30% (A
2. Pic GLAUCH	3	X	FACU	
3.				D. I he down we de beede
4.	1.			Prevalence Index worksheet: Total % Cover of:Multiply by:
Total Cover: 50% of total cover:		% of total cov	er: 1, 7	OBL species: O X 1 = O
Sapling/Shrub Stratum (261)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $2 \times 2 = 2$ FAC species $3 \times 2 = 2 \times 4$ FAC species $9 \times 4 = 76$
1. Salex bebbiona	20	V	FAC	UPL speciesX 5 =
2. Rosa asícularis	3		FACU	Column Totals: 108 (A) 347 (B)
3.				PI = B/A = <u>5.2</u>
4.				
5.				
6.				
7.				
8.				
9.				
Total Cover	7.2	-		
		00/ - 6 + c + - 1 -	11.10	
50% of total cover		0% of total cov	ver: <u>4,6</u>	
	11.5 20	0% of total cov	ver: <u>4,6</u>	
50% of total cover	11.5 20	D% of total cov Dominant Species? (Y/N)	rer: L), C	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3.0
50% of total cover) Absolute	Dominant Species?	Indicator Status FA C	Dominance Test is > 50% Prevalence Index is ≤ 3.0
50% of total cover	Absolute % Cover /D 3	Dominant Species?	Indicator Status	Dominance Test is > 50%
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Vera trum viride	11.5 20 Absolute % Cover 1D 3	Dominant Species?	Indicator Status FA C	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Vera trum viride 2. Streptopus amplexifolius 3. Calamagrastis canadensis ^{4.} Equise tum arvens e	11.5 20 Absolute % Cover 1D 3 90 5	Dominant Species?	Indicator Status FAC FACM	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Vera trum viride 2. Streptopus amplexifolius 3. Calamagrastis canadensis ^{4.} Equise tum arvens e	11.5 20 Absolute % Cover 1D 3 90 5	Dominant Species?	Indicator Status FAC FACM FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26') 1. Veratrum viride 2. Streptopus amplexifolius 3. Calamagnastis canadensis	11.5 20 Absolute % Cover 1D 3 90 5	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC UPL	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations' (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (_26') 1. Veratrum viride 2. Streptopus amplexifolius 3. Calamagrastis canadensis ^{4.} Equisetum arvense ^{5.} Sanguisorba canadensis	11.5 20 Absolute % Cover 1D 3 90 5	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic % Bare Ground
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26') 1. Veratrum viride 2. Streptopus amplexitolius 3. Calamagnostis canadensis 4. Equisetum arvense 5. Sanguisorba canadensis 6. Fragaria Virginiana	II.5 20 Absolute % Cover ID 3 GO 5 I 1	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC UPL	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic Ø % Bare Ground Ø % Cover of Wetland Bryophytes
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (_26') 1. Veratrum viride 2. Streptopus amplexifolius 3. Calamagrostis canadensis 4. Equisetum arvense 5. Sanguisorba canadensis 6. Fragaria Virginiana 7. Dry opteris expansa	II.5 20 Absolute % Cover ID 3 GO 5 I 1 I 1 I 1	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC UPL FACV	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic % Bare Ground % Cover of Wetland Bryophytes Total Cover of Bryophytes
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26') 1. Veratrum viride 2. Streptopus amplexifolius 3. Calamagrastis canadensis 4. Equisetum arvense 5. Sanguisorba canadensis 6. Fragaria Virginiana 7. Dry opteris expansa 8. Geranium crianthum 9. Equisetum Sylvaticum	$\frac{11.5}{20}$ Absolute % Cover $\frac{10}{3}$ $\frac{90}{5}$ $\frac{1}{1}$ $\frac{1}{4}$ $\frac{4}{3}$	Dominant Species?	Indicator Status FAC FAC FAC FAC FACW UPL FACV FACY	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic 0 % Bare Ground 0 % Cover of Wetland Bryophytes 0 % Cover of Bryophytes 0 % Cover of Water
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (_26') 1. Veratrum viride 2. Streptopus amplexifolius 3. Calamagrastis canadensis 4. Equisetum arvense 5. Sanguisorba canadensis 6. Fragaria Virginiana 7. Dry opteris expansa 8. Geranium crianthum	$\begin{array}{c c} & 1 & 5 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 3 & 7 \\ \hline & 1 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 3 & 7 \\ \hline & 1 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 3 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 3 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 3 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 3 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 3 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 3 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 1 & 7 \\ \hline & 1 & 7 \\ \hline & 2 & 7 \\ \hline & 1 $	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic Ø % Bare Ground Ø % Cover of Wetland Bryophytes Ø % Cover of Bryophytes Ø % Cover of Water Hydrophytic Vegetation Present (Y/N):
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (_26') 1. Veratrum viride 2. Streptopus amplexifolius 3. Calamagrastis canadensis 4. Equisetum arvense 5. Sanguisorba canadensis 6. Fragaria Virginiana 7. Dry opteris expansa 8. Geranium crianthum 9. Equisetum sylvaticum 10. Thalictrum sparsiflorum	$ \begin{array}{c c} $	Dominant Species? (Y/N)	Indicator Status FAC FAC FAC FAC FACW UPL FACV FACU FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic Ø % Bare Ground Ø % Cover of Wetland Bryophytes Ø % Cover of Bryophytes Ø % Cover of Water

SOIL			Date 062614 F	eature l	DWGOI	1021		Soil Pit Required (Y/N)
SOIL PROF	ILE DESCRIPTION: ([Describe	to the depth neede	d to doc	ument the	indicator or	confirm the absence	e of indicators.)
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
)-4							Fibric	organics
- 6		40					Fibric	organics
	10 YR 4/3	60					silt loam	0
- 20	10 YR 514	100					Siltioam	few large rocks
						1	1.1.4	9
				1.0				
Type: C=C	oncentration, D=Deple	tion, RM	I=Reduced Matrix, (CS=Cove	ered or Coa	ated Sand G	Grains. ² Location:	PL=Pore Lining, M=Matrix.
YDRIC SO	IL INDICATORS						INDICATORS F	OR PROBLEMATIC HYDRIC SOILS
	listel (A1)		Alaska Gleyed	d (A13) _		_	Alaska Color Ch	nange (TA4) ⁴
istic Epiped	don (A2)		Alaska Redox				Alaska Alpine S	wales (TA5)
lack Histic	(A3)		Alaska Gleyed	d Pores ((A15)		Alaska Redox w	/ith 2.5Y Hue
ydrogen Su	ulfide (A4)						Alaska Gleyed v Layer	without 5Y Hue or Redder Underlying
	urface (A12)	_					Other (Explain in	
Give details	problematic. of color change in Not	es.		of wetla	nd hydrolo	gy, and an a	appropriate landscap	pe position must be present unless
estrictive L	ayer (if present): Type			Depth (ir	nches):	N/A		
ydric Soil	Present (Y/N):	N						
otes: N	o Kuldriz Soi	15 0	bserved					

HYDROLOGY PRIMARY INDICA	TORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or	more required)
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2) X
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)
Sediment Deposits (B2)	Hydrogen Sulfide — Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:	
Algal Mat or Crust (B4)	_ Other (Explain in Notes):		
Iron Deposits (B5)			
Surface Water Present (Y/N):	Depth (in):		1
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N): _	$\mathcal{N}_{$
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):		
Notes: NO Hydulog	i) obsende, Low Are	A Hulds show	-

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Emergent-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) Very High Density (80-100%) Every Hig
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a> <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover <a>N/A
Plant Species Diversity (R): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flooded
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent OutletPerennial Inlet/Perennial Outlet Perennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/Perennial Inlet/Perennial OutletPerennial Inlet/Perennial Inlet/Perennial OutletPerennial Inlet/Perennial Inlet/
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Perennial Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial Outlet Perennial Inlet/No OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): No Evidence Observed Sediment Observed on Wetland Substrate Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
OutletIntermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial Inlet/Perennial OutletPerennial Inlet/Perennial I
OutletIntermittent Inlet/Intermittent OutletPerennial Inlet/Intermittent Intervitee Wetland Water Regime (P): No Evidence ObservedSediment Observed on Wetland Substrate
OutletIntermittent Intet/Intermittent OutletPerennial OutletPerennial Intet/No OutletPerennial Perennial Intet/No OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
OutletIntermittent Inlet/Intermittent OutletPerennial Inlet/Intermittent Intervited Intermittent Interviteent Inte
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily, Flooded, Saturated
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Intel/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Sprinperm. Flooded
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily, Flooded, Saturated
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Wetland Water Regime (P): Drier: Seasonally Flooded Temporarily Flooded, Saturated Perennial Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Pooled (6in.) Frequency of Overbank Flooding (P): No Evidence Observed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Perennial Interval >5 yrs
OutletIntermittent Intet/Intermittent Untet/

YV

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: <u>W6 011 T 0 2 1</u> Field Target: <u>126</u> Date: <u>06 - 25 -14</u>

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- D Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Z Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- Z All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- C Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- I Two photos were taken for each Observation Point (vegetation/site overview)?

Malle 06-25-14 Х Х Zoe Made Signature / Date Wetland Scientist (print) Signature / Date Field Crew Chief (print)

Vegetation Classification Data Form

Site Description		134.2	
Date:Project Name &06 - 25 - 14Alaska LNG 262	#: 21306		Field Target:
Joe Christopher, Zoe			Feature ID: WG0HT022
Latitude: (2° 31' 22, 46"	Longitude: 150° 14' 25	. 84"	Datum: WGS84
Logbook #: 003	Logbook Page	#:	Picture #: P_N, S
Location Description:		1	
Approx MP 129.5, We	ost of H	ighwa	У
Common Species Observed (Scientifi	c Name)	1212	
Equisetum arvense	0	Picea	glauca
Calamagrostis canadensis			neoalaskana
Salex bebbiana			
Percent Cover of Dominant Structure Lev (00°10 Forrester) Habitat Description:	vel: 40º10 t	all shr	n b
upland mixed Fr	orrest		
Alaska Vegetation Classification: Leve	el I, Level II, Lev	vel III	
IC2 I	EBI II	·B2	4
Notes:		100	
	Field	Scientist/Te	echnician

Vegetation Classification Data Form

Level	Level It	Level III
I. Forest	A Needleleaf (conifer) forest	 Closed needleleaf (conifer) forest Open needleleaf (conifer) forest Needleleaf (conifer) woodland
	B. Broadleef forest	 Closed broadleaf forest Open broadleaf forest Broadleaf woodland
	C. Mixed forest	(1) Closed mixed forest (2) Open mixed forest (3) Mixed woodland
II Scrub	A. Dwarf tree scrub	 Closed dwarf tree scrub Open dwarf tree scrub Dwarf tree scrub woodland
	B Tali scrub	(1) Closed tail scrub (2) Open tail scrub
	C. Low scrub	(1) Closed low scrub (2) Open low scrub
	D Dwarf scrub	 Dryas dwarf scrub Ericaceous dwarf scrub Willow dwarf scrub
III Herbaceous	A Graminoid herbeceous	 Dry graminoid herbaceous Mesic graminoid herbaceous Wet graminoid herbaceous (emergent)
	B. Forb herbaceous	 Dry forb herbaceous Mesic forb herbaceous Wet forb herbaceous (emergent)
	C Bryoid herbaceous	(1) Mosses (2) Lichens
	D. Aquatic (nonemergent) herbaceous	 Freshwater aquatic herbaceous Brackish water aquatic herbaceous Marine aquatic herbaceous

II. So	rub	
8a	Vegetation with at least 10 percent cover of dwarf trees	II A Dwarf tree scrub 9
8b_	Vegetation with at least 25 percent cover of shrubs and less than 10 percent cover of dwarf trees	
9a	Dwarf tree canopy of 60-100 percent cover	
9b.	Dwarf tree canopy of 25-59 percent cover	. ILA.2 Open dwarf tree scrub
9c.	Dwarf tree canopy of 10-24 percent cover	ILA 3 Dwarf tree scrub woodland
	Shrubs more than 1.5 meters (5.ft) tail	II B Tall scrub II
	Shrubs less than 15 meters (5ft)tall	
	Shrub canopy cover greater than 75 percent	
	Shrub canopy cover of 25-74 percent	
12a.	Shrubs 20 centimeters to 1.5 meters tall	II.C Low scrub 1
12b	Shrubs under 20 centimeters in height	II.D Dwarf scrub 1
	Church approve access associate that	II C Closed low scrut
13b	Shrub canopy cover of 25-74 parcent, or as low as 2 parcent if little or no other vegetation cover present	II.C 2 Open low scrub
14a	Dryas species dominant in the dwarf shrub layer	II.D.1 Dryas dwarf scru
	Ericaceous species dominant in the dwarf shrub layer	II D 2 Ericaceous dwarf scrub
14c	. Willow species dominant in the dwarf scrub layer	II D 2 Willow dwarf scrub
III.	Herbaceous	
15a	Terrestrial vegetation, or if growing in the water, dominated by emergent vegetation	1
155	 Dominant vegetation growing submerged in water or floating on the water surface, but not emerging above the water 	III D Aquatic herbaceous 2

Des	oriptions of levels I, II, III, and IV follow t	he classification table.
la,	Trees over 3 meters (10 ft) tail are present and have a canopy cover of 10 percent or more	i Forest 2
1 b.	Trees over 3 meters (10 ft) tail are absent or nearly so, Less than 10 percent cover. (Dwarf trees, less than 3 meters (10 ft) tail may be present and abundant	
I, Fo	prest	
20	Over 75 percent of tree cover contributed by needleleaf (conifer) species	I A Needleleaf forest 3
2b	Less than 75 percent of tree cover contributed by needleleaf (coniter) species	
38	Tree canopy of 60-100 percent cover	LA.1 Closed needleleaf forest
3b	Tree canopy of 25-59 percent cover .	Commence IA.2 Open needleleaf forest
3c.	Tree canopy of 10-24 percent cover	I.A.3 Needleleaf woodland
4a	Over 75 percent of tree cover contributed by broadleaf species	I B Broadleaf forest 5
4b	Broadleaf or needleleaf species contribute 25 to 75 percent of the tree cover	
5e.	Tree canopy of 60-100 percent cover	LB.1 Closed broadleaf forest
5b		IB.2 Open broadleaf forest
5c.	Tree canopy of 10-24 percent cover	I.B.3 Broadleaf woodland
6a	Tree canopy of 60-100 percent cover.	LC.1 Closed mixed forest
6b.	Tree canopy of 25-59 percent cover.	I.C.2 Open mixed forest
6c.	Tree canopy of 10-24 percent cover	
7a	Vegetation with at least 25 percent cover of erect to decumbent shrubs or with at least 10 percent cover of dwarf trees (less than 3 meters [10 ti] tail)	
7b	Vegetation herbaceous (may have up to 25 percent shrub cover)	

_		
	Grasses, sedges, or rushes (graminoid) plants dominant .	
16b	Forbs or bryophytes dominant	18
	Grasslands of weil-drained, dry sites, such as south-facing bluffs, old beaches, and sand dunes Typically (but not always) dominated by E/ymus spp., Festuca spp. and Deschampsia spp.	III A.I Dry graminoid herbaceous
	On moist sites, but usually not with standing water Usually dominated by <i>Calamegrostis</i> spp , <i>Carex</i> spp or <i>Eriophorum</i> spp ; tussocks often present	III A 2 Mesic graminoid herbaceous
17c	On wet sites, standing water present for part of the year; dominated by either sedges or grasses; includes wet fundra, bogs, marshes, and fens	III A.3 Wet graminoid herbeceous
18a	Vegetation dominated by forbs (broadleaf herbs, ferns, or horsetails)	III 8 Forb herbaceous 19
18b	Vegetation dominated by mosses or lichens	
19a	On dry sites, usually rocky and well drained; mostly tundra sites	III B 1 Dry forb herbaceous
19b	On moist sites but without standing water, mostly within forested areas	
19c	On wet sites, usually with standing water for part of the year	III B.3 Wet forb herbaceous
20a	Vegetation cover dominated by mosses	III C.1 Bryoid moss
20b	Vegetation cover dominated by lichens	. III C 2 Bryoid lichen
21a	Vegetation submerged or floating in fresh water	III.D 1 Freshwater aquatic herbaceous
21 b	Vegetation submerged or floating in brackish water	III D 2 Brackish water aquatic herbaceous
21c	Vegetation submerged or floating in salt water	III.D 3 Marine aquatic herbaceous

Vegetation Classification Data Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: W60 HT 0 2 2 Field Target: 12 7 Date: 06-25-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. General Information

- ☑ Location data recorded?
- Photo taken and photo number recorded?

2. Location Description

Location of site recorded with enough detail to help relocate?

3. Common Species

- Scientific name of common species recorded?

4. Habitat Description

J Habitat described?

5. Classification

All three levels of classification recorded?

6. Field Log Book

- Field form entries consistent with log book?
- Logbook clearly identifies the Field Target ID and Feature ID?

X Zoe Meade

Field Technician (print)

Simahure

Field Crew Chief (print)

Signature

SITE DESCRIPTION			30	oft study	
Survey Type: Centerline Acc	cess Road (explain)	Other (exp			Map #: <u>88</u> Map Date: <u>5/27/</u> /4
Date: 06 - 25 -	Project Name & No.	.: Alaska LNO	G 26221306	Feature Id	WGOHT 023
Investigators: Joe Christop	oher, Zoe Mead	te			Team No.: W60
State: Alaska	Region: Alaska		Milepost:	129	
Latitude: (42, 5153		Longitude	150	2521	Datum: WGS84
Logbook No.: 00 3	Logbook Page No.:			P_N,S, PI	itplug
SITE PARAMETERS	1000		E CONTRACT		1)
Subregion: Interior		. /	Landform (hil	Islope, terrace, hummock	s, etc.): hummocks
Slope (%): 3 - 5		1		oncave, convex, none):	
Pre-mapped Alaska LNG/NWI classifi	cation: upland		Soil Map Unit	1	
Are climatic/hydrologic conditions on t YesXNo (if no ex		e of year?	Are "No Yes	ormal Circumstances" pre	
Are Vegetation, Soil, or H		ntly Disturbed?		(If yes, explain in Notes	
Are Vegetation, Soil, or H	1		1	(If yes, explain in Notes	
SUMMARY OF FINDINGS		1.1			
Hydrophytic Vegetation Present? Yes		Is	the Sampled A	rea within a Wetland?	Yes No
Hydric Soil Present? Yes	No	w	etland Type:	IC2, IIC2	weland
Wetland Hydrology Present? Yes	No			Classification (Viereck):	Y
Notes and Site Sketch: Please include	Directional & North Arrow	w, Centerline,	Length of featu	re, Distances from Center	line, Photo Locations, and Survey
corridor.					
		1 15			
	100 miles	D			
	- 6M	. 1			
	Dianom	14			
	2 0	3			
	- 10				

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
ree Stratum (Plot sizes: <u>26'</u>)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, F.	
Betula neoglaskang	5	X	FACU	Total Number of Dominant Species Acros % Dominant Species that are OBL, FACV	
Picea glauca	15	×	FACE	% Dominant Species that are OBL, FACV	/v, or r
U.				THE HE I	
				Prevalence Index worksheet:	
Total Cover:	20			Total % Cover of:	Multip
50% of total cover	10 20	% of total cov	er:	OBL species:X 1 =	_
pling/Shrub Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: X 2 = FAC species X 3 = FACU species 7 X 4 = 2	20
Betula neoalaskana	25	X	FACU	UPL speciesX 5 =	
Vaccinium uliginosum	15	X	FAC	Column Totals: / 6 3 (A) 3	
Rosa asícularis	8		FACU	PI = B/A = 3.70	
Spirea stevenii	1		FACU		
Ribes triste	10		FAC	1	
				1	
	59				
Total Cover: 50% of total cover		0% of total cov	ver: <u>//.%</u>	-	
50% of total cover	<u>29.5</u> 20	0% of total cov	ver: <u>//.</u>	-	
50% of total cover	<u>}9.5</u> 20				
50% of total cover	<u>29.5</u> 20	Dominant Species?	rer: <u>//. 8</u> Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%	
50% of total cover GETATION (use scientific names of plants b Stratum (26/)) Absolute	Dominant	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0	
50% of total cover GETATION (use scientific names of plants b Stratum () Geranium erithrium) Absolute	Dominant Species?	Indicator Status FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provid	ide supp
50% of total cover GETATION (use scientific names of plants rb Stratum (<u>26'</u>) <u>Seranium erithrium</u> Veratrum virid e) Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provid Notes)	
Total Cover 50% of total cover CETATION (use scientific names of plants orb Stratum (<u>26'</u>) Geranium erithrium Veratrum viride Cornus canadensis	9.9.5 20 Absolute % Cover 1 4 5 5	Dominant Species?	Indicator Status FACU FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provid	on ¹ (Exp
Total Cover: 50% of total cover EGETATION (use scientific names of plants erb Stratum (<u>26'</u>) Geranium erithrium Veratrum viride Cornus canadensis Streptopus amplexifolius	9.9.5 20 Absolute % Cover 1 4 5 5	Dominant Species? (Y/N)	Indicator Status FACU FAC FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provid Notes) Problematic Hydrophytic Vegetation	on ¹ (Exp
Total Cover: 50% of total cover EGETATION (use scientific names of plants and Stratum (<u>26'</u>) Geranium erithrium Veratrum viride Cornus canadensis Streptopus amplexifolius Gymnocarpium dryoptens	99.5 20 Absolute % % Cover 1 1 4 5 8 10 0	Dominant Species? (Y/N)	Indicator Status FACU FAC FACU FACU FACV	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provid Notes) Problematic Hydrophytic Vegetation ¹ Indicators of hydric soil and wetland hydrology	on ¹ (Exp
50% of total cover GETATION (use scientific names of plants <u>rb Stratum ()</u> <u>Geranium erithrium</u> <u>Veratrum viride</u> <u>Cornus canadensis</u> <u>Streptopus amplexifolius</u> <u>Streptopus amplexifolius</u> <u>Gymnocarpium dryoptens</u> <u>Calamagiostis canadensis</u>	99.5 20 Absolute % % Cover 1 1 4 5 8 10 0	Dominant Species? (Y/N)	Indicator Status FACU FAC FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provid Notes) Problematic Hydrophytic Vegetation ¹ Indicators of hydric soil and wetland hydrology	on ¹ (Exp
GETATION (use scientific names of plants rb Stratum () Geranium erithrium Veratrum viride Cornus canadensis Streptopus amplexifolius Symnocarpium dryoptens Calamagiostis canadensis	99.5 20 Absolute % % Cover 1 1 4 5 8 10 0	Dominant Species? (Y/N)	Indicator Status FACU FAC FACU FACU FACV	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide Notes) Problematic Hydrophytic Vegetations ¹ Indicators of hydric soil and wetland hydrology disturbed or problematic.	on ¹ (Exp ay must b
50% of total cover GETATION (use scientific names of plants <u>rb Stratum ()</u> <u>Geranium erithrium</u> <u>Veratrum viride</u> <u>Cornus canadensis</u> <u>Streptopus amplexifolius</u> <u>Gymnocarpium dryoptens</u> <u>Calamagiostis canadensis</u>	99.5 20 Absolute % % Cover 1 1 4 5 8 10 0	Dominant Species? (Y/N)	Indicator Status FACU FAC FACU FACU FACV	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provid Notes) Problematic Hydrophytic Vegetatio ¹ Indicators of hydric soil and wetland hydrology disturbed or problematic% Bare Ground	on ¹ (Exp yy must b d Bryopl
50% of total cover GETATION (use scientific names of plants <u>rb Stratum ()</u> <u>Geranium erithrium</u> <u>Veratrum viride</u> <u>Cornus canadensis</u> <u>Streptopus amplexifolius</u> <u>Gymnocarpium dryoptens</u> <u>Calamagrostis canadensis</u>	99.5 20 Absolute % % Cover 1 1 4 5 8 10 0	Dominant Species? (Y/N)	Indicator Status FACU FAC FACU FACU FACV	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide Notes) Problematic Hydrophytic Vegetation ¹ Indicators of hydric soil and wetland hydrology disturbed or problematic. % Bare Ground % Cover of Wetland	on ¹ (Exp yy must b d Bryopi
Total Cover: 50% of total cover EGETATION (use scientific names of plants and Stratum () Geranium erithrium Veratrum viride Cornus canadensis Streptopus amplexifolius Gymnocarpium dryoptens Calamagrostis canadensis	99.5 20 Absolute % Cover 1 4 5 8 10 1	Dominant Species? (Y/N)	Indicator Status FACU FAC FACU FACU FACV	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provident Notes) Problematic Hydrophytic Vegetation ¹ Indicators of hydric soil and wetland hydrology disturbed or problematic. O % Bare Ground O % Cover of Wetland Total Cover of Bryon	on ¹ (Exp yy must b d Bryopi phytes
50% of total cover EGETATION (use scientific names of plants erb Stratum (<u>26'</u>) • <u>Geranium erithrium</u> • Veratrum viride	99.5 20 Absolute % Cover 1 4 5 8 10 1 2 1 3 2	Dominant Species? (Y/N)	Indicator Status FACU FACU FACU FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provident in the image of	on ¹ (Exp yy must b d Bryopl uphytes :

SOIL			Date 6-25-14 Fe	ature	D W60	HT023		Soil Pit Required (Y/N)
SOIL PROF	ILE DESCRIPTION: (D	escribe	to the depth needed	d to doc	ument the	indicator or	confirm the absence	
Depth	Matrix		Redox Features			10	1	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-3							Fibric	organics
3 - 5	2.5 Y 5/1			1	-		Ash	0
5-14	10 YR 4/4						Silt loam	N INI
14-16	10YR 3/2					1	silt loam	DM
	1							1. I
		1				1		
Type: C=C	oncentration, D=Deplet	ion, RM	I=Reduced Matrix, C	S=Cov	ered or Co	ated Sand G	Grains. ² Location:	PL=Pore Lining, M=Matrix.
HYDRIC SO	IL INDICATORS		IF A		10-		INDICATORS I	FOR PROBLEMATIC HYDRIC SOILS ³
Histosol or H	listel (A1)		Alaska Gleyed	(A13)			Alaska Color C	hange (TA4) ⁴
Histic Epiped	lon (A2)		Alaska Redox	(A14) _				Swales (TA5)
Black Histic	(A3)		Alaska Gleyed	Pores	(A15)			with 2.5Y Hue
Hydrogen Su	ulfide (A4)						Alaska Gleyed Layer	without 5Y Hue or Redder Underlying
	urface (A12)	_					Other (Explain	
disturbed or Give details	problematic. of color change in Not	es.					appropriate landsca	pe position must be present unless
Sestinctive L	ayer (if present): Type:			eptn (II	nches):	N/A		
lydric Soil	Present (Y/N):							
Notes:								
Refus	al at 16"	, lar	ge rocks	pres	ent			

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or	r more required)
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4) X
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:	
Algal Mat or Crust (B4)	Other (Explain in Notes)		
Iron Deposits (B5)			
Surface Water Present (Y/N):	Depth (in):		
Water Table Present (Y/N):		Wetland Hydrology Present (Y/N):	
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):		
Notes:	1	4	
Plot taken IM L	Ow point of Area	1. S	

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Emergent-Non-persistent Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Event
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg. Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <td< td=""></td<>
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
X
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perenn
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (<2%) Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Rerennial Spring
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetlands within 400m, Not Connected Only Connected Below
Only Connected Above Connected Upstream & Downstream Unknown
Wetland Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized

Crew Chief QA/QC check:

In

GPS Technician QA/QC check:

Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60 HT 023 Field Target: 128 Date: 6-25-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

☐ Site description, site parameters and summary of findings are complete? ☐ A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- D Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- D Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- D Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?-upland

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- D Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

X yamedle 6-25-14 Signature/Date

Х hristopher ner 1

Field Crew Chief (print)

Signature / Date

4.5

SITE DESCRIPTION		THE CONTRACT	30	oft stud	4	and share and
Survey Type: Centerline Acces	ss Road (explain)	Other (exp		Field Target: 10		Map #: 73 Map Date: 5/27///
Date: 06-26-14	Project Name & No.:	Alaska LNC	6 26221306	Fea	ture Id	WGOHTO24
Investigators: Joe Christop	her, Zoe m	reade.				Team No.: W60
State: Alaska	Region: Alaska	16	Milepost: /	50.5		
Latitude: 62° 46' 22#		Longitude	:150°02'	43.05"		Datum: WGS84
Logbook No.: 00 3	Logbook Page No.:			P_ N, S,	pit	, pluq
SITE PARAMETERS		Str. C	1		-	
Subregion: interior			Landform (hil	Islope, terrace, hur	nmocks	s, etc.): depressional
Slope (%): 0 - 7				oncave, convex, n		
Pre-mapped Alaska LNG/NWI classificat	ion: \$\$\$4/1.8	3		Name: N/A	_	
Are climatic/hydrologic conditions on the Yes No (if no expla	site typical for this time ain in Notes)	of year?	Are "No Yes_>	ormal Circumstanc		sent: blain in Notes.)
Are Vegetation, Soil, or Hyd	rology Significant	tly Disturbed?	No_X	_(If yes, explain in	Notes))
Are Vegetation, Soil, or Hyde	rology Naturally I	Problematic?	No_X	_ (If yes, explain ir	Notes	.)
SUMMARY OF FINDINGS		121		1 1	1	- I was a light
Hydrophytic Vegetation Present? Yes	<u>X</u> No	Is	the Sampled A	rea within a Wetl	and?	Yes No
Hydric Soil Present? Yes_	X No	w	etland Type:	PSS4/1	B	
Wetland Hydrology Present? Yes	X No	— Ala	aska Vegetatior	Classification (Vie	ereck):	IA2,1182,1162
Notes and Site Sketch: Please include Di	rectional & North Arrow	, Centerline,	Length of featu	e, Distances from	Center	line, Photo Locations, and Survey
corridor.	All Such UPL		-HTO'S	ye must	A . WI / WL	Sups by Sups

ree Stratum (Plot sizes: 2.6')	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC:
		(Y/N)	Encur	Total Number of Dominant Species Across All Strata:
·Picea maniana	25	7	FACW	% Dominant Species that are OBL, FACW, or FAC: 100 (A
· conyo The + Shop	-			
e ster		-		
				Prevalence Index worksheet:
Total Cover:				Total % Cover of: Multiply by:
50% of total cover:	20	% of total cov	er:	OBL species: $26 \times 1 = 36$
iapling/Shrub Stratum (<u>2 @)</u>	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 3 X 2 = 74 FAC species: 10 X 3 = 30 FACU species: 2 X 4 = 8
·Betula nana	5		FAC	FACU species X 4 = 0
. Rhododendron tomentosum	2		FACW	Column Totals: <u>85</u> (A) <u>148</u> (B)
Empetrum nigrum	2		FAC	PI = B/A = (-,
Vaccinium oxycoccus	1		OBL.	
Vaccinium uliginosum	2	10000	FAC	
Vaccinium vitis-idaea		1	FAC	
3.	1	1		
	38			-
9.		0% of total cov	ver: <u>7,6</u>	
9. Total Cover: 50% of total cover.	: 20)% of total cov	/er:6	
D. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants	: 20	0% of total cov	ver: 7.6	Hydrophytic Vegetation Indicators:
Total Cover: 50% of total cover. /EGETATION (use scientific names of plants	: <u>19</u> 20	Dominant Species?	1	Hydrophytic Vegetation Indicators:
ک. Total Cover: 50% of total cover: /EGETATION (use scientific names of plants Herb Stratum ((ه `)	Absolute % Cover	Dominant	Indicator Status	
רסנמו Cover: 50% of total Cover: לבפבדאדוסא (use scientific names of plants Herb Stratum (<u>26'</u>) 1. געטעג כהסייטעג	Absolute % Cover	Dominant Species?	Indicator Status FAC W	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
Total Cover: 50% of total cover: /EGETATION (use scientific names of plants Herb Stratum () 1. Rubus cnamalmorous 2. Cornus canadensis	Absolute % Cover	Dominant Species?	Indicator Status FAC W FAC U	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
Total Cover: 50% of total cover /EGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. Rubus chamaemorous 2. Cornus canadensis 3. Carex utriculata	Absolute % Cover	Dominant Species?	Indicator Status FAC W	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
3. Total Cover: 50% of total cover VEGETATION (use scientific names of plants VEGETATION (use scientific names of plants VEGETATION (use scientific names of plants Herb Stratum (26') 1. Rubus cnamaemorous 2. Cornus cnamaemorous 2. Cornus canademorous 3. Carex utriculata 4.	Absolute % Cover	Dominant Species?	Indicator Status FAC W FAC U	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
3. Total Cover: 50% of total cover VEGETATION (use scientific names of plants VEGETATION (use scientific names of plants VEGETATION (use scientific names of plants Herb Stratum (6') 1. Rubus cnamaemorous 2. Cornus canademorous 2. Cornus canademorous 3. Carex utrículata 4.	Absolute % Cover	Dominant Species?	Indicator Status FAC W FAC U	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
Total Cover: 50% of total cover: /EGETATION (use scientific names of plants Herb Stratum () 1. Rubus chamaemorous 2. Cornus chamaemorous 2. Cornus canadensis 3. Carex utriculata 4. 5. 6.	Absolute % Cover	Dominant Species?	Indicator Status FAC W FAC U	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
 Total Cover: 50% of total cover: 50% of total cover. VEGETATION (use scientific names of plants Herb Stratum (<u>2.6</u>) 1. RUBUS Chamaemorous 2. Cornus chamaemorous 2. Cornus chamaemorous 2. Cornus chamaemorous 3. Carex utriculata 4. 5. 6. 7. 	Absolute % Cover	Dominant Species?	Indicator Status FAC W FAC U	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground
 Total Cover: 50% of total cover: 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. RUBUS CHAMAEMOROUS 2. CONUS CHAMAEMOROUS 2. CONUS CANAdensis 3. Carex Utriculata 4. 5. 6. 7. 8. 	Absolute % Cover	Dominant Species?	Indicator Status FAC W FAC U	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes
 Total Cover: 50% of total cover: 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. RUBUS CHAMAEMOROUS 2. CONUS CHAMAEMOROUS 2. CONUS CANAdensis 3. Carex Utriculata 4. 5. 6. 7. 8. 	Absolute % Cover	Dominant Species?	Indicator Status FAC W FAC U	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) <u>1. Rubus cnamaemorous</u> <u>2. Cornus canadensis</u> <u>3. Carex utriculata</u>	Absolute % Cover	Dominant Species?	Indicator Status FAC W FAC U	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes

Iron Deposits (B5)

SOIL				Feature ID_				Soll Pit Required (Y/N)	
SOIL PROFI	LE DESCRIPTION: (Describe			nent the	indicator or	confirm the absend	ce of indicators.)	
Depth	Matrix	-	Redox Features						
(inches)	Color (moist)	%	Color (moist)	% -	Type ¹	Loc ²	Texture	Notes	
0 - 20							Fibrio -	organics Saturated	
Type: C=Co	ncentration, D=Deple	etion, RM	Reduced Matrix	, CS=Covere	d or Coa	ated Sand G	arains. ² Location	PL=Pore Lining, M=Matrix.	
HYDRIC SOI	L INDICATORS							FOR PROBLEMATIC HYDRIC SOILS	
	istel (A1) <u>X</u>		Alaska Gley	ed (A13)				Change (TA4) ⁴	
	on (A2)		Alaska Redo					Swales (TA5)	
	A3)		Alaska Gley	ed Pores (A1	15)		Alaska Redox with 2.5Y Hue		
	lfide (A4)						Alaska Gleyed without 5Y Hue or Redder Underlying Layer		
	urface (A12)						Other (Explain in Notes) y, and an appropriate landscape position must be present unless		
Hydric Soil P	Or color change in No ayer (if present): Type Present (Y/N): C	у			ies):				
TYDROLOG		TORS (ar	v one indicator is	sufficient)	e	ECONDAR	INDICATORS (2		
Surface Wate	r (A1) <u>X</u>		ace Soil Cracks (E		— Le	Water-stained Leaves (B9)		Stunted or Stressed Plants (D1)	
ligh Water Ta	able (A2) $\underline{\hspace{0.5cm}}^{\hspace{0.5cm} \hspace{0.5cm} \hspace{0.5cm}} \hspace{0.5cm} 0c$	Inundation Visible on Aerial Imagery (B7)		ry D	Drainage Patterns (B10)				
Saturation (A3	3) Sparsely Vegetated Concave Surface (B8)		O Li	Oxidized Rhizospheres along Living Roots (C3)		Shallow Aquitard (D3)			
Vater Marks ((B1)				Presence of Reduced Iron (C4)		Microtopographic Relief (D4)		
Sediment Dep	oosits (B2)		rogen Sulfide r (C1)					FAC-Neutral Test (D5)	
Drift Deposits (B3) Dry-Season Water Table (C2)			N	otes:		4.5			
Algal Mat or C	crust (B4)	Other (Explain in Notes):							

Surface Water Present (Y/N): Y	ent (Y/N): Y Depth (in): 1.5				
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):				
- Stressed/Sfunded	Black Sprace	Cocalized pockets of 1420			

VEGETATION VARIABLES P= Plot, M= M	atrix
Forested-Evergreen-Needle-leaved Scr Scrub Shrub-Evergreen-Broad-leaved Persistent Aquatic Bed	gForested-Deciduous-Needle-leavedForested-Deciduous-Broad-leaved ub Shrub-Deciduous-Needle-leavedScrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Needle-leavedEmergent-Non-persistentEmergent-
Percent Cover (P): Tree (>5 dbh, >6m tall) Dwarf shrub (<0.5m)	Sapling (<5 dbh, <6m tall) 2.5 Tall shrub (2-6m) O Short shrub (0.5-2m) 7 O Short herb (<1m)
	enness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
80%) Very High Density (80-100%)	0%) Low Density (20-40%) Medium Density (40-60%)X High Density (60-
Interspersion of Cover & Open Water (P): 10 Peripheral Cover >75% Scattered or	0% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species	ies) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none)	One or Few Several to Many N/A_X
Cover Distribution of Dominant Layer (P): No Open Small Scattered PatchesX	Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Continuous Cover
Dead Woody Material (P): Low Abundance (0-2 Abundant (>50% of surface)	5% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large pate High (small groupings, diverse and interspersed)_	ches, concentric rings) Moderate (broken irregular rings)
HGM Class (P): Slope Flat L	acustrine Fringe Depressional Riverine Estaurine Fringe
Soil VARIABLES Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Sandy	tosol:FibricXHistosol:HemicHistosol: Sapric Mineral: SiltyMineral: Clayey
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet Outlet Intermittent Inlet/Intermittent Outlet Inlet/Intermittent Outlet Perennial Inlet/	No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No tlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Perennial Outlet
	ily Flooded, Temporarily Flooded, Saturated
Evidence of Sedimentation (P): No Evidence (Dbserved Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Created Microrelief of Wetland Surface (P): Absent	Poorly Developed (6in.) Well Developed (6-18in.)_X Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Over Return Interval >5 yrs	bank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow	X Restricted Outflow Unrestricted Outflow
	mneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) X pH Reading 3.90
Surficial Glacial Deposit Under Wetland (P): H Glacial Till/Not Permeable	ligh Permeability Stratified Deposits Low Permeability Stratified Deposits
Basin Topographic Gradient (M): Low Gra Evidence of Seeps and Springs (P): No Seeps	dient (<2%)High Gradient (≥2%) or SpringsSeeps ObservedIntermittent SpringPerennial Spring
LANDSCAPE VARIABLES (M)	
Wetland Juxtaposition: Wetland Isolated	Wetlands within 400m, Not Connected Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural	5-25% Urbanized 25-50% Urbanized >50% Urbanized

Crew Chief QA/QC check:

Small (<10 acres)

Size:

GPS Technician QA/QC check:

Medium (10-100 acres)_

Large (>100 acres)_

NV

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID: W60 H T 02 4
 Field Target: 10 4
 Date: 06 - 26 - 14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Z Site description, site parameters and summary of findings are complete?
- \square A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Ø Vegetation names are entered legibly for all strata present?
- L Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

☑ Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Z Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Z Two photos were taken for each Observation Point (vegetation/site overview)?

Zoe Meade

Wetland Scientist (print)

nmath Х Signature //Date

Adice

6/26/14

stoply,

Field Crew Chief (print)

Signature / Date

FID: WGOHTO25

SITE DESCRIPTION		200	10' (orn	dor				
Survey Type: Centerline Acces	ain) <u>X</u>	Field Target: <u>) 식 </u>		Map #: 103_Map Date: 5/27/14				
Date: 7/9/14	Project Name & No.: Alaska LNG	ne & No.: Alaska LNG 26221306			1460T10 51 W60HTO61			
Investigators: Joe Christop	ner, Zoe Meade, Abi	gayle Fi	Team No.: W60					
State: Alaska	Milepost: 661.7							
Latitude: $62^{\circ}20'4/.4$	5" Longitude: /50° /5' 50.77"			Datum: WGS84				
Logbook No.: 003	Picture No.:	P_ N.S.	, pit, p	Ng				
				_				
SITE PARAMETERS								
		Londform (hill)	alana tarrasa	hummook	and in the area of an			

Subregion: South central	Landform (hillslope, terrace, hummocks, etc.): depression			
Slope (%): 0 - 3	Local relief (concave, convex, none): Concave			
Pre-mapped Alaska LNG/NWI classification: PSS 4/1/EM 1 C	Soil Map Unit Name: N/A			
Are climatic/hydrologic conditions on the site typical for this time of year? YesXNo(if no explain in Notes)	Are "Normal Circumstances" present: Yes_XNo (If no, explain in Notes.)			
Are Vegetation, Soil, or Hydrology Significantly Disturbed	d? No X (If yes, explain in Notes)			
Are Vegetation, Soil, or Hydrology Naturally Problematic	c? No <u>X</u> (If yes, explain in Notes.)			
SUMMARY OF FINDINGS	lught is a second se			
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area within a Wetland? Yes No			
Hydric Soil Present? Yes X No	Wetland Type: PEMIXC 2017.			
Wetland Hydrology Present? Yes X No	Alaska Vegetation Classification (Viereck): $\cancel{HT} A 3$, $\cancel{IT} C 2$.			

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

See MJ 49 for skerr

-7 GPS data recorded in the HT spread.

2.4.1	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot sizes: 26')	% Cover	Species?	Status	No. of Dominant Species that are OBL, FACW, or FAC:		
1.		(11184-		Total Number of Dominant Species Across All Strata:		
2.			1	% Dominant Species that are OBL, FACW, or FAC:0 &		
	h					
3.						
4.	4			Prevalence Index worksheet:		
Total Cover	•		0	$\begin{array}{c c} \hline Total \% Cover of: & Multiply by: \\ \hline OBL species: & 46 & X1 = 46 \\ \hline \end{array}$		
50% of total cover	1	0% of total cov				
Sapling/Shrub Stratum(26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 1^{2} X 2 = 2^{2} FAC species: 4 X 3 = 1^{2} FACU species: 0 X 4 = 0		
Chamaedaphne calyculata	5	Y	FACW	UPL species $0 \times 5 = 0$		
2. Picea mariana	2		FACW	Column Totals: 62 (A) 82 (B)		
3. Andromeda polífolia	5	Y	FACW	PI = B/A = (b)		
4. Betula nana	4 -	У	FAC			
5. Vaccinium Oxycoccus	1.		OBL.			
3.						
7.	1	1				
3.	6			-		
9,				-		
Total Cover:	_ 17			-		
50% of total cover	8.5 20	0% of total cov	er: 3,4			
VEGETATION (use scientific names of plants	1	1				
<u>Herb Stratum</u> (<u>26'</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50%		
1. Carex aquatilis	35	Y	OBL	Prevalence Index is ≤ 3.0		
2. Carex microglochin	10	Y	OBL	Morphological Adaptations ¹ (Provide supporting data in Notes)		
3.		1		Problematic Hydrophytic Vegetation ¹ (Explain)		
4.				¹ Indicators of hydric soil and wetland hydrology must be present unless		
5.				disturbed or problematic.		
6.						
7.		-				
8,	-			% Bare Ground		
9.	-		-	% Cover of Wetland Bryophytes Total Cover of Bryophytes		
3.						
				% Cover of Water		
0.				Hydrophytic Vegetation Present (Y/N):		
10. Total Cover:	45			Materia (If charge and link manufactor to the test of the test		
10. Total Cover: 50% of total cover:		% of total cov	er:	Notes: (If observed, list morphological adaptations below):		

SOIL			Date_7/9/14_ Fe	ature I	D WGO T	1051		Soil Pit Required (Y/N)
SOIL PROFIL	LE DESCRIPTION: (Describe	e to the depth needed	to doc	ument the	indicator or	confirm the abser	nce of indicators.)
Depth	Matrix		Redox Features	-	-			
(inches)	Color (moist) %		Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-20				-			Fibric	organics
		-		-		-	-	
							_	
		-						
		-		-				
Type: C=Co	oncentration, D=Depl	etion, RM	/=Reduced Matrix, C	S=Cov	ered or Co	ated Sand C	Grains. ² Locatio	on: PL=Pore Lining, M=Matrix.
HYDRIC SOI	L INDICATORS	-			1.1		INDICATOR	S FOR PROBLEMATIC HYDRIC SOILS
-listosol or Hi	istel (A1)X		Alaska Gleyed	(A13)			Alaska Color	Change (TA4)⁴
	on (A2)		Alaska Redox				Alaska Alpin	e Swales (TA5)
	A3)		Alaska Gleyed	Pores	(A15)		Alaska Redo	x with 2.5Y Hue
Hydrogen Su	lfide (A4)	_					Alaska Gleye Laver	ed without 5Y Hue or Redder Underlying
Thick Dark S	urface (A12)						Other (Expla	in in Notes)
disturbed or p Give details	oroblematic. of color change in N	otes.						cape position must be present unless
Restrictive La	ayer (if present): Typ	e:	C	epth (i	nches):			
Hydric Soil F	Present (Y/N):	У						
Notes:								

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Stunted or Stressed Leaves (B9) Plants (D1)			
High Water Table (A2) X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3) Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N): N	Depth (in):		V		
Water Table Present (Y/N):	5 Depth (in): 2	Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N): $\gamma \in S$ (includes capillary fringe)	Depth (in): 7				
Notes:					

Page 3 of 4

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Emergent-Needle-leaved Emergent-Needle-leaved
Percent Cover (P): Tree (>5 dbh, >6m tall) 0 Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven X Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) X High Density (60- 80%) 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none)
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover X
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional X Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Peren
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow X Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) X High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs × Seeps Observed Intermittent Spring Perennial Spring
Evidence of Seeps and Springs (P): No Seeps or Springs X Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream V Unknown V
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space) X

 Watershed Land Use:
 0-5% Rural_____
 5-25% Urbanized_____
 25-50% Urbanized_____

 Size:
 Small (<10 acres)_____</th>
 Medium (10-100 acres)_____
 Large (>100 acres)_____

Crew Chief QA/QC check

Page 4 of 4

>50% Urbanized

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

W60HT025 00 Feature ID: W6071051

Field Target: 148 ____ Date: 7/9/14__

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Z Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- D Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?Appropriate hydric soil indicators are marked?

4. Hydrology

- ✓ Appropriate hydrology indicators are marked?
- Ø Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

 \not Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Z Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- D Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Z Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe meade

Wetland Scientist (print)

Х 14 1 Signature// Date

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION		1	-	1			
Survey Type: Centerline X Acce	ss Road (explain)	Other (exp	ain)	n) Field Target: 106		Map #: 75	Map Date: 5/2.7/14
Date: 06 - 26 - 14	Project Name & No.:	Alaska LNC	E 26221306 Feature Id			: W60HT026	
Investigators: Joe Christopr	ier, Zoe Mead	de				Team No.:	W60
State: Alaska	Region: Alaska		Milepost: /	49.7			
Latitude: 62° 45' 56 51''		Longitude	: 150° 04'	07 56	ц	Datum: WG	\$84
Logbook No.: 003	Logbook Page No.:	13	Picture No.:	P-N,	S, pit	, pluq	
SITE PARAMETERS			-	1			
Subregion: interior	-	ŕ	Landform (hill	slope, terrac	e, hummock	s, etc.): terr	race
Slope (%): () - 3			Local relief (concave, convex, none): CON CQVE				
Pre-mapped Alaska LNG/NWI classifica	ition: upland		Soil Map Unit	Name:	NA	L	
Are climatic/hydrologic conditions on the Yes No (if no expl	e site typical for this time lain in Notes)	of year?		rmal Circum <no< td=""><td></td><td>sent: plain in Notes.)</td><td></td></no<>		sent: plain in Notes.)	
Are Vegetation, Soil, or Hyd	drology Significant	ly Disturbed?	No <u>X</u>	_(If yes, expl	lain in Notes))	
Are Vegetation, Soil, or Hyd	drology Naturally P	Problematic?	No_X	_ (If yes, exp	lain in Notes	s.)	
SUMMARY OF FINDINGS		1 200	14	A. Frank			
Hydrophytic Vegetation Present? Yes_	NoX	Is	the Sampled A	rea within a	Wetland?	Yes	NoX
Hydric Soil Present? Yes_	<u>No X</u>	_ w	etland Type:	upland	d	10.2.0	3
Wetland Hydrology Present? Yes_	NoX	— Al	aska Vegetation	Classificatio	n (Viereck):	-IB-3,	IIB1

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

PASE 13

Site data Correct, but the greater polygon is currect also. WTG.

Tree Stratum (Plot sizes: <u>26 '</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata:
1. Betula neoalaskana	80	Y	FACU	% Dominant Species that are OBL, FACW, or FAC: 25
2. Picea glauca	B		FACV	
3.				and the second sec
4.				Prevalence Index worksheet:
Total Cover;			1000	Total % Cover of: Multiply by:
50% of total cover:	44 20	% of total cov	er: 17, 6	OBL species:X 1 =
Sapling/Shrub Stratum (_ 26' _)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species:0 $X 2 = 0$ FAC species19 $X 3 = 57$ FACU species132 $X 4 = 528$
1. Sanguisorba canadensis			FACAL	
2 Alnus SSP.	15	У	FAC	UPL speciesX 5 = Column Totals:(A)585(B)
2. Alnus ssp. 3. Picea glauca	3		FACU	PI=B/A= 3.87
4. Betula neoalaskana	3		FACU	
5. Fraximis SEP	T		WPE.	
6. Borbus scopulina	T		FACU.	FRAJUNUS NOA EN UES LIST. (Comme ASh)
7.				FRANKER
8.				(Cover Mas
9.				l l
Total Cover:	21			
Total Cover: 50% of total cover:)% of total cov	er: <u>4.2</u>	
	10,5 20	0% of total cov	er: <u>4-2</u>	
50% of total cover: VEGETATION (use scientific names of plants	10,5 20	0% of total cov Dominant Species? (Y/N)	er: <u>4.2</u> Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
50% of total cover: VEGETATION (use scientific names of plants	<u>10 , う</u> 20) Absolute	Dominant Species?	Indicator	Dominance Tést is > 50% Prevalence Index is ≤ 3.0
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Gymnocarpium drygoteris	10,5 20) Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (($2 - \varphi^i$)	10,5 20) Absolute % Cover	Dominant Species?	Indicator Status FACU	Dominance Tést is > 50% Prevalence Index is ≤ 3.0
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Gymnocarpium dryapteris 2. Chamerion angus to foli um	10,5 20 Absolute % Cover	Dominant Species?	Indicator Status FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) <u>1. Gymno carpium dry opteris</u> 2. Chamerion angus to foli um 3. Dry opteris expansa	10,5 20 Absolute % Cover 10 1 2,5	Dominant Species?	Indicator Status FACU FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. Gymnocarpium dryopteris 2. Chamerion angusto folium 3. Dryopteris expansa 4. Equisetum sylvaticum	10,5 20 Absolute % Cover 10 1 2,5 1	Dominant Species?	Indicator Status FACU FACU FACU FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. Gymnocarpium dryopteris 2. Chamerion angusto folium 3. Dryopteris expansa 4. Equisetum sylvaticum 5. Cal amagrostis can.	10,5 20 Absolute % Cover 10 1 2,5 1 3	Dominant Species?	Indicator Status FACU FACU FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (24') 1. Gymnocarpium dryopteris 2. Chamerion angusto folium 3. Dryopteris expansa 4. Equisetum sylvaticum 5. Cal amagrostis can. 6. Cornus canademsis	10,5 20 Absolute % Cover 10 1 2,5 1 3	Dominant Species?	Indicator Status FACU FACU FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlead disturbed or problematic.
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (26') 1. Gymnocarpium drygpteris 2. Chamerion angusto foli um 3. Dryopteris expansa 4. Equisetum sylvaticum 5. Calamagrostis can. 6. Cornus canademsis 7.	10,5 20 Absolute % Cover 10 1 2,5 1 3	Dominant Species?	Indicator Status FACU FACU FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unleadisturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes Total Cover of Bryophytes
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (24') 1. Gymnocarpium dryopteris 2. Chamerion angusto folium 3. Dryopteris expansa 4. Equisetum sylvaticum 5. Cal amagrostis can. 6. Cornus canadomsis 7. 8.	10,5 20 Absolute % Cover 10 1 2,5 1 3	Dominant Species?	Indicator Status FACU FACU FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes

SOIL			Date 06 -26-14Fe		the second s		132-	Soll Pit Required (Y/N)
SOIL PROF	ILE DESCRIPTION: (Describe	to the depth needed	d to doc	ument the	indicator or	confirm the absence	e of indicators.)
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0 - 5							Fibric	organics, dry
5-7		1						Rock/cobble
7-9	10 YR 5/1	100	C			1		Ash
9-20	10 YR 3/3	100					Bilt loam	DA
			1				*	
	oncentration, D=Depl	etion, RM	1=Reduced Matrix, C	CS=Cov	ered or Co	ated Sand (11	PL≕Pore Lining, M=Matrix.
	IL INDICATORS			_	-12			FOR PROBLEMATIC HYDRIC SOILS ³
	listel (A1)		Alaska Gleyed				Alaska Color Cl	hange (TA4)⁴
Histic Epipeo	lon (A2)		Alaska Redox	(A14) _			Alaska Alpine S	Swales (TA5)
Black Histic	(A3)		Alaska Gleyed	Pores	(A15)			vith 2.5Y Hue
	ulfide (A4)						Alaska Gleyed Layer	without 5Y Hue or Redder Underlying
	Surface (A12)						Other (Explain i	
⁴ Give details	problematic. of color change in No	otes.					appropriate landsca	pe position must be present unless
Restrictive L	ayer (if present): Typ	e:		Depth (ii	nches):	VA		
Hydric Soil	Present (Y/N):	N						
Notes:	hydric s	0115	06 serva	ed				

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)					
Iron Deposits (B5)		+			
Surface Water Present (Y/Ń): N	Depth (in):				
Water Table Present (Y/N): Depth (in):		Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):				
Notes:					
No hydrology in	ndicators present				

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Persistent Aquatic Bed Emergent-Non-persistent Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Event State E
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover >75% Scattered or Peripheral Cover N/A 26-75% Scattered or
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm, Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land, Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres)
Crew Chief QA/QC check: GPS Technician QA/QC check:
Page 4 of 4

Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT026 Field Target: 106 Date: 06-26-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- D Site description, site parameters and summary of findings are complete?
- \square A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Ø Vegetation names are entered legibly for all strata present?
- Ø Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland? Up (cmp)

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- Ø Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

Х ormade 06-26-14 Signature / Date

c/24/14

1.2

christophe

Field Crew Chief (print)

Signature / Date

· · · · · · · · · · · · · · · · · · ·							
SITE DESCRIPTION		-		and the second			
Survey Type: Centerline 🖌 Acce	ss Road (explain)	Other (expl	ain)	Field Target: 107		Map #: 🐴 🗖	p Date: <u>5127</u>
Date: (0)26/14	Project Name & No.: Alaska LNG			G 26221306 Feature Id			27
Investigators: SC/ZM						Team No.: L	160
State: Alaska	Region: Alaska		Milepost:	149.7			
Latitude: 62° 45 '56.25"		Longitude	: 150004	'09-80'		Datum: WGS8	4
Logbook No.: 003	Logbook Page No.:	014	Picture No.:	P_N, S. F	pit, p	olvg	
SITE PARAMETERS							
Subregion: In Jerra			Landform (hillslope, terrace, hummocks, etc.): TRIVICE DEANSSION				
Slope (%): 0-1			Local relief (concave, convex, none): Cou cave				
Pre-mapped Alaska LNG/NWI classifica	ation: pemilssiB		Soil Map Unit Name:				
Are climatic/hydrologic conditions on the Yes No (if no exp		of year?	Are "Normal Circumstances" present: Yes No (If no, explain in Notes.)				
Are Vegetation, Soil, or Hy	drology Significantl	ly Disturbed?	? No 🖌	_(If yes, explain i	in Notes)		
Are Vegetation, Soil, or Hy	drology Naturally P	Problematic?	No No	(If yes, explain	in Notes.)		
SUMMARY OF FINDINGS	1			1-2-3			
Hydrophytic Vegetation Present? Yes_	<u>X</u> No	Is	the Sampled A	Area within a We	tland?	Yes_X	No
Hydric Soil Present? Yes_	w	Wetland Type: PEM1/5515					
Wetland Hydrology Present? Yes_	X No	— AI	Alaska Vegetation Classification (Viereck):				IC2

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

Sue pase 14.

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2.0

Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
	70 COVEI	(Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC:
Picea mariana	2		FACW	Total Number of Dominant Species Across All Strata: 45
2.	-			∽ % Dominant Species that are OBL, FACW, or FAC: <u>/OO</u>
3.				
4.	1			Prevalence Index worksheet:
Total Cove				
50% of total cove)% of total cov	er:	OBL species:X 1 =7
Sapling/Shrub Stratum (26')	Absolute	Dominant	Indicator	FACW species: 13 X 2 = 26
	% Cover	Species?	Status	FAC species8X 3 =54
		(Y/N)		FACU species 3 X 4 = 12_
Picea mariana	3	1	FREW	UPL species0X 5 =O
Betula nana		Y	FAC	Column Totals: 151 (A) 209 (B)
3. empetrum nigrum	10	Y	FAL	PI = B/A = 1 - 38
Vaccinium uliginosum	3	·	FAG	
Vaccinium oxycoccus	2		OBL	
ð.				
· .				
B				
3. 9. Total Cover	. 25			
l,		0% of total cov	er:_5	
D. Total Cove 50% of total cove	r: <u>12.5</u> 20)% of total cov	er:_5	
). Total Cover 50% of total cover /EGETATION (use scientific names of plant	r: <u>12,5</u> 20 s)		1	Hydronhytic Venetation Indicators:
Total Cover 50% of total cover /EGETATION (use scientific names of plant	r: <u>12.5</u> 20	Dominant Species?	er: <u>5</u> Indicator Status	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cove /EGETATION (use scientific names of plant Herb Stratum ()	r: <u>12,5</u> 20 s) Absolute	Dominant	Indicator Status	$\frac{X}{X}$ Dominance Test is > 50% $\frac{X}{X}$ Prevalence Index is < 3.0
Total Cover 50% of total cove /EGETATION (use scientific names of plant Herb Stratum (G') 1. Rubus Chamaemorous	r: <u>12,5</u> 20 s) Absolute % Cover	Dominant Species?	Indicator Status FA.CW	$\frac{X}{X}$ Dominance Test is > 50% $\frac{X}{X}$ Prevalence Index is < 3.0 $\frac{X}{X}$ Morphological Adaptations ¹ (Provide supporting data i
Total Cover 50% of total cove /EGETATION (use scientific names of plant Herb Stratum () 1. Rubus chamaemorous 2. Carex aquatitis	r: <u>12.5</u> 20 s) Absolute % Cover 7 15	Dominant Species?	Indicator Status FACW OBL	$\frac{X}{X}$ Dominance Test is > 50% $\frac{X}{X}$ Prevalence Index is < 3.0 $\frac{X}{X}$ Morphological Adaptations ¹ (Provide supporting data in Notes)
Total Cover 50% of total cover /EGETATION (use scientific names of plant Herb Stratum () 1. Rubus chamaemorous 2. Carex aquatitis 3. Pedicu taris lobridorico	r: <u>12,5</u> 20 s) Absolute % Cover 7 15 15	Dominant Species? (Y/N)	Indicator Status FACW OBL FACW	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
Total Cover 50% of total cover /EGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. RUPUS Chamaemorous 2. Carex aquatitis 3. Pedicu I aris lobridorico 4. Trichophorum caespitos	r: <u>12.5</u> 20 s) Absolute % Cover 7 15 15 1 1 40	Dominant Species?	Indicator Status FACW OBL FACW OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data i Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
Total Cover 50% of total cove /EGETATION (use scientific names of plant Herb Stratum () 1. RUPUS Chamaemorous 2. Carex aquatitis 3. Pedicularis lobridorica 4. Trichophorum caespitos 5. Cornus canadensis	r: <u>12.5</u> 20 s) Absolute % Cover 7 15 15 15 1 40 3	Dominant Species? (Y/N)	Indicator Status FACW OBL FACW OBL FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unleperturbed
Total Cover 50% of total cover /EGETATION (use scientific names of plant <u>Herb Stratum</u> (<u>26'</u>) 1. <u>Rubus chamaemorous</u> 2. <u>Cavex aquatifis</u> 3. <u>Pedicu Ianis Iobridorico</u> 4. <u>Trichophorum caespitos</u> 5. <u>Cornus canadensis</u> 6. <u>Carex Magellanica</u>	r: <u>12.5</u> 20 s) Absolute % Cover 7 15 15 1 1 40	Dominant Species? (Y/N)	Indicator Status FACW OBL FACW OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle disturbed or problematic.
Total Cover 50% of total cover /EGETATION (use scientific names of plant Herb Stratum () 1. RUPUS Chamaemorous 2. Carex aquatitis 3. Pedicularis lobridorica 4. Trichophorum caespitos 5. Cornus canadensis 6. Carex Magellanica 7.	r: <u>12.5</u> 20 s) Absolute % Cover 7 15 15 15 1 40 3	Dominant Species? (Y/N)	Indicator Status FACW OBL FACW OBL FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data i Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle disturbed or problematic.
Total Cover 50% of total cover /EGETATION (use scientific names of plant <u>Herb Stratum</u> (<u>26'</u>) 1. <u>Rubus chamaemorous</u> 2. <u>Cavex aquatifis</u> 3. <u>Pedicu Ianis Iobridorico</u> 4. <u>Trichophorum Caespitos</u> 5. <u>Cornus canadensis</u> 6. <u>Carex Magellanica</u> 7. 8.	r: <u>12.5</u> 20 s) Absolute % Cover 7 15 15 15 1 40 3	Dominant Species? (Y/N)	Indicator Status FACW OBL FACW OBL FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data i Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle disturbed or problematic. O% Bare Ground O% Cover of Wetland Bryophytes
Total Cover 50% of total cover /EGETATION (use scientific names of plant Herb Stratum () 1. RUPUS Chamaemorous 2. Carex aquatitis 3. Pedicularis lobridorica 4. Trichophorum caespitos 5. Cornus canadensis 6. Carex Magellanica 7.	r: <u>12.5</u> 20 s) Absolute % Cover 7 15 15 15 1 40 3	Dominant Species? (Y/N)	Indicator Status FACW OBL FACW OBL FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data i Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle disturbed or problematic.
Total Cover 50% of total cover /EGETATION (use scientific names of plant <u>Herb Stratum</u> (<u>26'</u>) 1. <u>Rubus chamaemorous</u> 2. <u>Cavex aquatifis</u> 3. <u>Pedicu Ianis Iobridorico</u> 4. <u>Trichophorum Caespitos</u> 5. <u>Cornus canadensis</u> 6. <u>Carex Magellanica</u> 7. 8.	r: <u>12.5</u> 20 s) Absolute % Cover 7 15 15 15 1 40 3	Dominant Species? (Y/N)	Indicator Status FACW OBL FACW OBL FACU	
Total Cover 50% of total cover /EGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Rubus chamaemorous 2. Cavex aquatilis 3. Pedicularis lobridorica 4. Trichophorum caespitos 5. Cornus canadensis 6. Carex Magellanica 7. 8. 9.	r: <u>12.5</u> 20 s) Absolute % Cover 7 15 15 15 10 40 3 60	Dominant Species? (Y/N)	Indicator Status FACW OBL FACW OBL FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unled disturbed or problematic.

SOIL			Date 6/26/14 Fea	ature l	DHTOL	16		Soli Pit Required (Y/N)
SOIL PROFI	LE DESCRIPTION: (Describ	e to the depth needed	to doc	ument the	indicator or	confirm the absen	ce of indicators.)
Depth Matrix			Redox Features					
(inches) Color (moist) %		Color (moist)	% Type ¹	Loc ²	Texture	Notes		
0-16			1			Fibrit	Sint	
							1.000	
		1.1						
					1			
ype: C=Co	oncentration, D=Depl	etion, RI	M=Reduced Matrix, CS	S=Cov	ered or Co	ated Sand G	Grains. ² Location	a: PL=Pore Lining, M=Matrix.
YDRIC SO	LINDICATORS				-		INDICATORS	FOR PROBLEMATIC HYDRIC SOILS
istosol or H	istel (A1) <u>X</u>		Alaska Gleyed	(A13)			Alaska Color	Change (TA4) ^₄
istic Epiped	on (A2)		Alaska Redox (A14) _			Alaska Alpine	Swales (TA5)
lack Histic (A3)		Alaska Gleyed	Pores	(A15)		Alaska Redox	with 2.5Y Hue
lydrogen Su	lfide (A4)						Alaska Gleyed Layer	d without 5Y Hue or Redder Underlying
	urface (A12)						Other (Explain	
isturbed or p Give details	r of hydrophytic vege problematic. of color change in Ne ayer (if present): Typ	otes.				gy, and an a		ape position must be present unless
lydric Soil F	Present (Y/N):	/						
lotes:	ce at 16"	r						

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation/Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3) <u>X</u>		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Dry-Season Water Table (C2)		Notes: 4-5" Standing 120.			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N):	Depth (in): 4 - 5				
Water Table Present (Y/N): Depth (in):		Wetland Hydrology Present (Y/N):	_ 		
Saturation Present (Y/N): γ (includes capillary fringe)	Depth (in): ()				
Notes:					

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VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Image: Scrub Shrub-Evergreen-Needle-leaved Image: Scrub Shrub-Evergent-Non-Persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) ⊕ ⊋ Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Low Density (20-40%) Medium Density (40-60%) High Density (60-
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a> <25% Scattered/Peripheral Cover <a> 26-75% Scattered or Peripheral Cover <a>N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few 🖌 Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover_ X
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional 📈 Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Interview No Inlet/Outlet X No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Image: Comparison of
Evidence of Sedimentation (P): No Evidence Observed <u>Sediment Observed on Wetland Substrate</u> Fluvaquent Soils Sediment
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Vell Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding A Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Degree of Outlet Restriction (1), No Outlion Restricted Outlion On Outlion Outlion
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading <u>5.12</u> Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%)
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading <u>5.12</u> Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%)

Size: Small (<10 acres)

Crew Chief QA/QC check:

GPS Technician QA/QC check:

Large (>100 acres)

Medium (10-100 acres)

Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: Ubo HT037 Field Targe

Field Target: 107

Date: 9

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete? A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

Each logbook page is initialed and dated?

7. Maps

Wetland boundaries have been corrected if necessary?Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

Х Val 6/26/14 Signature / Date

6/20/14

popla

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION						
Survey Type: Centerline X Acc	ess Road (explain)	Other (expl	ain)	Field Targe	et: 092	Map #: <u>64</u> Map Date: <u>5/27/14</u>
Date: 06 - 27 - 14 Project Name & No.: Alaska			LNG 26221306 Feature Id			W60HT028
Investigators: Joe Christo	pher, Zoe Mi	eade				Team No.: W60
tate: Alaska Region: Alaska			Milepost: / 66, 9			
Latitude: () 55'45.2	s ''	Longitude	1490	41'48	5900	Datum: WGS84
Logbook No.: 00 3	Logbook Page No.:	15	Picture No.:	- 17	S, pit,	pluq
SITE PARAMETERS		11-17-1	197 A.	-		FL.C.
Subregion: interior			Landform (hil	Islope, terrace	e, hummock	s, etc.): 11;115;22
Slope (%): 7-5 do	11-5			oncave, conv		Conver
Pre-mapped Alaska LNG/NWI classific	ation: Upland -		Soil Map Unit	Name:	-4	Contract
Are climatic/hydrologic conditions on the Yes_XNo (if no example.	ne site typical for this tim	e of year?	Are "No Yes	ormal Circums		sent: blain in Notes.)
Are Vegetation, Soil, or H	ydrology Significar	ntly Disturbed?	No <u>X</u>	_(If yes, expla	ain in Notes)
Are Vegetation, Soil, or Hy	ydrology_X_ Naturally	Problematic?	No	_ (If yes, expl	ain in Notes) * see putes
SUMMARY OF FINDINGS		In I was			11-1-	Contraction of the second
Hydrophytic Vegetation Present? Yes	NoX	Is	the Sampled A	rea within a	Wetland?	Yes NoX
Hydric Soil Present? Yes_	NoX	w	etland Type:	Upland	I	
Wetland Hydrology Present? Yes_	<u>No X</u>	— Al	aska Vegetatior	n Classification	n (Viereck):	IC2
Notes and Site Sketch: Please include corridor.	Directional & North Arrow	w, Centerline,	Length of featu	re, Distances	from Center	line, Photo Locations, and Survey
SU PZ.	15			•		

* nearly rains with biased hydrology indicators Flood WArnings for 6457 2 DATS.

VEGETATION (use scientific names of plants)	- Yall		
Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC:
1. Betula neoalaskana	4	K	FACU	Total Number of Dominant Species Across All Strata: <u>6</u> % Dominant Species that are OBL, FACW, or FAC: <u>5</u> つ(
2. Picea glauca	15	X	FACU	% Dominant Species that are OBL, FACW, or FAC: <u>370</u> (
3.		-	Tites	
4.				Prevalence Index worksheet:
Total Cover: 50% of total cover:)% of total cov	ver: 3, 8	Total % Cover of: Multiply by: OBL species: X 1 =
Sapling/Shrub Stratum (6 ')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: X 2 = FAC species 53 X 3 = 159 FACU species 71 X 4 = 284
1. viburnum edule	3		FACU	UPL speciesX 5 =
2. Sorbus scopulina	T		FACU	Column Totals: 174 (A) 143 (B)
3. Alnus SSP.	5	Х -	FAC	PI=B/A=
4. Vaccinium uliginosum	3		FAC	
5. Saléx barclayii	5	X	FAC	
6. picea glauca	1		FACU	-
7.				1.0
8.		0.		
9.			×	
Total Cover:			3.4	
50% of total cover:	\$,5 20	% of total cov	er: 3.2	
VEGETATION (use scientific names of plants	-		vw	
Herb Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3.0
1. Geranium erithrium	2		FACU	Morphological Adaptations ¹ (Provide supporting data in
2. Chamerion angustofolium	3		FACU	Notes)
3. Gymnocarpium dryapters		×	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Calamagrostis canodensis	35	X	FAC	¹ Indicators of hydric soil and wetland hydrology must be present unless
5. Veratrum viride	Т		FAC	disturbed or problematic.
6. Equisetum arvense	1		FAC	
7. Rubus pedatus	3		FAC	% Bare Ground
8. Streptopus amplexifolius	1		FAC	% Cover of Wetland Bryophytes
9. Dryopteris expansa	T		FACU	Total Cover of Bryophytes
10. Cornus canadensis	3		FACU	% Cover of Water
Total Cover:	88			Hydrophytic Vegetation Present (Y/N):
50% of total cover:		% of total cov	er. 7.6	Notes: (If observed, list morphological adaptations below):

SOIL		1	Date 062714 Feature IL	W60	HTO28		Soll Pit Required (Y/N)		
SOIL PROFI	LE DESCRIPTION: (D	Describe	to the depth needed to docu	ument the	indicator or	confirm the absen	ce of indicators.)		
Depth	Matrix		Redox Features						
(inches)	Color (moist)	%	Color (moist) %	Type ¹	Loc ²	Texture	Notes		
0 - 1						Fibric	organics; dry		
1-3							large rock		
3-17	10 YR 4/3	10				Coarse san	d - Sandy loam, coarse		
		90				gravel + co	arse sand		
				1					
					_	_			
1									
		tion, RM	=Reduced Matrix, CS=Cove	ered or Co	bated Sand G		n: PL=Pore Lining, M=Matrix.		
					a Kilon		FOR PROBLEMATIC HYDRIC SOILS ³		
	istel (A1)	_	Alaska Gleyed (A13) _		-		Change (TA4) ⁴		
	lon (A2)		Alaska Redox (A14)				Swales (TA5)		
Black Histic (A3)		Alaska Gleyed Pores ((A15)			with 2.5Y Hue		
Hydrogen Su	lfide (A4)					Layer	d without 5Y Hue or Redder Underlying		
Thick Dark S	urface (A12)					Other (Explain	n in Notes)		
³ One indicato	or of hydrophytic veget	ation, on	e primary indicator of wetla	nd hydrol	ogy, and an a	appropriate landso	ape position must be present unless		
disturbed or p ⁴ Give details	of color change in Not	es.		1.					
Restrictive La	ayer (if present): Type	:	Depth (in	iches):	NIA				
	٨	1		-					
Hydric Soil F	Present (Y/N):	V							
Notes:	ile catherat	ed a	due to heavy	Kalin	¢				
00				rairi	S OV CV	past tew	days		
	- F10 02 h	Arnic	nss poskd						
HYDROLOG			ny one indicator is sufficient)		SECONDAD		2 or more required)		
					Water-staine		Stunted or Stressed		
Surface Wate	er (A1)	Surf	ace Soil Cracks (B6)		Leaves (B9)		Plants (D1)		
High Water T	able (A2) X	Inun (B7)	dation Visible on Aerial Ima	igery	Drainage Patterns (B10)		Geomorphic Position (D2)		
Saturation (A	3) <u>X</u>		rsely Vegetated cave Surface (B8)		Oxidized Rhizospheres along Living Roots (C3)		Shallow Aquitard (D3)		
Water Marks	(B1)	-	Deposits (B15)		Presence of Reduced Iron (C4)		Microtopographic Relief (D4)		
Sediment De	posits (B2)		rogen Sulfide r (C1)		Salt Deposits (C5)		FAC-Neutral Test (D5)		
Drift Deposits	s (B3)	Dry-	Season er Table (C2)		Notes:				
Algal Mat or (Crust (B4)		er (Explain in Notes):						
	(B5)			-					
1 Constantin		1							
Surface Wate	er Present (Y/N): N		Depth (in): NA	_			N *		
Water Table	Present (Y/N):		Depth (in): 4		euand Mydro	logy Present (Y/	N);		
Saturation Pr (includes cap			Depth (in): 3		. à.				
Notes:	Iter absence	1 dr	amine into	. wit	0.0-	Alexandra	who we have the		
A THE	alow from	hoo	WW KONGO	110	percol	outing do	woward into pit Coarse Sants/ Stavels		
	0 .	. ULU	j ruma, si	1113 6	the We	II DUANED	COAVER SANNY FEAULIS		

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Every High Density (80-100%) Ever
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) Fight (small groupings, diverse and interspersed) Fight (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial In
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semigerm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water/ Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Untler Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%)
Basin Topographic Grádient (M): Low Gradient (<2%) High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring LANDSCAPE VARIABLES (M)
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Only Connected Above Vetland Isolated Wetlands within 400m, Not Connected Only Connected Below

Size: Small (<10 acres)_ Crew Chief QA/QC check:

GPS Technician QA/QC check:

yun

16

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT028 Field Target: W092 Date: 06-27-14For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

 \square Site description, site parameters and summary of findings are complete? \square A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Ø Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

14 - 3

Z Two photos were taken for each Observation Point (vegetation/site overview)?

Х Zoe Meade

Wetland Scientist (print)

ameade 6/27/14 Signature /Date

6/2-/14 hristole

- 0.

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION							
Survey Type: Centerline X Acces	ss Road (explain)	Other (expla	ain)	n) Field Target: 093		Map #: 65 Map Date: 367	
Date: 06-27-14	Project Name & No.:	Alaska LNG	26221306 Feature lo			WGOHT029	
Investigators: Joe Christo	pher, Zoe M.	eade				Team No.: W60	
State: Alaska	Region: Alaska Milepost: 144						
Latitude: 62°53'53.95"		Longitude	1490 44	19.45	- 11	Datum: WGS84	
Logbook No.: 003	Logbook Page No.:	16	Picture No.:	PM	S.P	10	
SITE PARAMETERS	and the second second			,	, , ,		
Subregion: Interior			Landform (hill	slope, terrac	e, hummocks	s, etc.): terrace	
Slope (%): plot 0-3 mg4+1	* 20-309	10	Local relief (concave, convex, none):				
Pre-mapped Alaska LNG/NWI classifica	tion: upland		Soil Map Unit Name:				
Are climatic/hydrologic conditions on the site typical for this time of year? Are "Normal Circumstances" Yes_X No(if no explain in Notes) Yes_X No(If no.							
Are Vegetation, Soil, or Hyd	drology Significantl	y Disturbed?	No <u>X</u>	_(If yes, expl	lain in Notes)		
Are Vegetation, Soil, or Hyd	drologyNaturally P	roblematic?	No	(If yes, exp	lain in Notes	.)	
SUMMARY OF FINDINGS	2	N	STR.	1	1421		

Hydrophytic Vegetation Present? Yes No	Is the Sampled Area within a Wetland? Yes No
Hydric Soil Present? Yes No	Wetland Type: Up land
Wetland Hydrology Present? Yes No	Alaska Vegetation Classification (Viereck): IC2, IIC1

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

Recent HEAVY NAIMS & Flood WANNigs

PASE 16

Sil

15.4

Tree Stratum (Plot sizes: 26)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata:
1. Picea Clauca	7	X	EACU	% Dominant Species that are OBL, FACW, or FAC: 40
2. Betula neoa laskana	3	Χ.	FACU	50
3.9		194		and the second sec
4.				Prevalence Index worksheet:
Total Cove 50% of total cove))% of total cov	2 er: 20	Total % Cover of: Multiply by: OBL species: X 1 =
Sapling/Shrub Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species:
1. Saléx pulchra	5	X	FACW	LIPL species X 5 =
2.				Column Totals: 12.7 (A) 400 (B)
3.				PI = B/A = / 4/
4.				
5.				
6.				
7.				
		-		-
8.				
8. 9.				
8. 9. Total Cove 50% of total cove	er: <u>)</u> 5 20	D% of total cov	/er:	
8. 9. 50% of total Cove 50% of total cove VEGETATION (use scientific names of plan	er: <u>)</u> 5 20		-	
8. 9. 50% of total Cove 50% of total cove VEGETATION (use scientific names of plan	er: <u>)</u> 5 20	Dominant Species? (Y/N)	ver: Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
8. 9. 50% of total Cove 50% of total cove VEGETATION (use scientific names of plan	er: <u>.)</u> <u>2</u> tts) Absolute % Cover	Dominant Species?	Indicator	Dominance Test is > 50% Prevalence Index is ≤ 3.0
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum () 1.Calamagros tis Canadensis	er: <u>.)</u> <u>2</u> tts) Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test is > 50%
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (て_b)	er: <u>.)</u> <u>5</u> 20 tts) Absolute % Cover 5 % O 1	Dominant Species?	Indicator Status FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>7b</u>) 1.Calamagrostis Canadensis 2. Viratrum viride	er: <u>.)</u> 5 20 tts) Absolute % Cover 5 80 1 m 15	Dominant Species?	Indicator Status FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>7b</u>) 1.Calamagrostis Canadensis 2. Viratrum viride 3. Chamerion angustofoliv 4. Equisetum sylvaticum	er: <u>.)</u> 5 20 tts) Absolute % Cover 5 80 1 m 15	Dominant Species?	Indicator Status FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum () 1.Calamagrostis Canadensis 2. Vira trum virid e 3. Chamerion angustofoliv	er: <u>.2</u> 5 20 tts) Absolute % Cover 5 8 0 1 m 1 5 6 18 10	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>76</u>) 1.Calamagrostis Canadensis 2. Viratrum viride 3. Chamerion angustofoliv 4. Equisetum sylvaticum 5. Equisetum Arvense 6. Mertensia paniculato	$\begin{array}{c c} \text{er:} \underline{,2} \leq 2t \\ \hline \text{ts} \\ \hline \\ \text{Absolute} \\ \% \text{ Cover} \\ \hline \\ 5 & 80 \\ \hline \\ 1 \\ m & 15 \\ \hline \\ 6 & 18 \\ \hline \\ 10 \\ \hline \\ 1 \\ 10 \\ \hline \\ 1 \\ 10 \\ \hline \end{array}$	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
8. 9. Total Coverses 50% of total coverses VEGETATION (use scientific names of plan Herb Stratum (<u>76</u>) 1. Calamagrostis Canadensis 2. Viratrum viride 3. Chamerion angustofoliv 4. Equisetum sylvaticum 5. Equisetum Arvense 6. Mertensia paniculato 7. Sanguisor ba Canadensi	$\begin{array}{c c} \text{er:} \underline{,2} \leq 2t \\ \hline \text{ts} \\ \hline \\ \text{Absolute} \\ \% \text{ Cover} \\ \hline \\ 5 & 80 \\ \hline \\ 1 \\ m & 15 \\ \hline \\ 6 & 18 \\ \hline \\ 10 \\ \hline \\ 1 \\ 10 \\ \hline \\ 1 \\ 10 \\ \hline \end{array}$	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes
 8. 9. Total Coverson 50% of total coverson 50% of total coverson 50% of total coverson of total coverson of total coverson 5. 1. Calamagrostis Canadensis 2. Viratrum viride 3. Chamerion angustofoliv 4. Equisetum sylvaticum 5. Equisetum sylvaticum 5. Equisetum Arvense 6. Mertensia paniculato 7. Sanguisorba canadensi 8. Viola palvstujs 	$\begin{array}{c c} \text{er:} \underline{,2} \leq 2t \\ \hline \text{ts} \\ \hline \text{Absolute} \\ \% \text{ Cover} \\ \hline \% \text{ Cover} \\ \hline 5 & 80 \\ \hline 1 \\ \hline m & 15 \\ \hline 18 \\ \hline 10 \\ \hline 10 \\ \hline 5 & 2 \\ \hline 1 \\ \hline 1 \\ \hline 5 & 2 \\ \hline 1 \\ \hline \end{array}$	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC FAC FACU FACW	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes Total Cover of Bryophytes
 8. 9. Total Coversion 50% of total coversion 50% of total coversion of the stratum (<u>76</u>) 1. Calamagrostis Canadensis 2. Viratrum viride 3. Chamerion angusto-folive 4. Equisetum sylvaticum 5. Equisetum Arvense 6. Mertensia paniculato 7. Sanguisorba Canadensis 	$\begin{array}{c c} \text{er:} \underline{,2} \leq 2t \\ \hline \text{ts} \\ \hline \text{Absolute} \\ \% \text{ Cover} \\ \hline \% \text{ Cover} \\ \hline 5 & 80 \\ \hline 1 \\ \hline m & 15 \\ \hline 18 \\ \hline 10 \\ \hline 10 \\ \hline 5 & 2 \\ \hline 1 \\ \hline 1 \\ \hline 5 & 2 \\ \hline 1 \\ \hline \end{array}$	Dominant Species?	Indicator Status FAC FAC FAC FAC FAC FACU FACW FACW	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes

SOIL		-	Date 051/	Feature I	D W 60	HT029		Soil Pit Required (Y/N)	
SOIL PROFIL	E DESCRIPTION: (I	Describe							
Depth	Matrix Redox Features								
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-5						-	Fibric		
5-9	10 YR 4/3	98	P				silt 10am		
		2						Sm. gravels	
1-14	10 YR 4/4	70	·				Sandy silt	Sm. gravels	
		30					1	medium gravels	
12 -								9.00	
3									
¹ Type: C=Coi	centration, D=Deple	tion, RM	Reduced Matrix,	CS=Cov	ered or Co.	ated Sand C	Grains. ² Location:	PL=Pore Lining, M=Matrix.	
HYDRIC SOIL	INDICATORS				-		INDICATORS I	FOR PROBLEMATIC HYDRIC SOILS	
Histosol or His	tel (A1)		Alaska Gleye	ed (A13)			Alaska Color C	hange (TA4) ⁴	
Histic Epipedo	n (A2)		Alaska Redo	x (A14) _			Alaska Alpine Swales (TA5)		
	.3)		Alaska Gleye	d Pores	(A15)		Alaska Redox v	with 2.5Y Hue	
Hydrogen Sulf	ide (A4)							without 5Y Hue or Redder Underlying	
Thick Dark Su	rface (A12)	_					Other (Explain in Notes)		
disturbed or pi	of hydrophytic vege oblematic. f color change in No		ne primary indicato	r of wetla	ind hydrolo	gy, and an	appropriate landsca	pe position must be present unless	
Restrictive Lay	ver (if present): Type	e:R	ucks.	Depth (ir	nches):	19			
Hydric Soil P	resent (Y/N):			i					
Notes: No	hydric soils	0.05	evued						
	900 01 0 0 0 1 1 0								

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)				
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)			
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)			
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)			
Drift Deposits (B3)	Day Season					
Algal Mat or Crust (B4) Other (Explain in Notes):						
Iron Deposits (B5)			-			
Surface Water Present (Y/N): N	Depth (in):					
Water Table Present (Y/N): N Depth (in):		Wetland Hydrology Present (Y/N):				
Saturation Present (Y/N): N Depth (in):						

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
X
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemlc Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/P
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No OutletPerennial Inlet/Perennial Inlet/Perennial Inlet/No OutletPerennial Inlet
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perenninlet/Perenninlet/Perennial Inlet/Perennial Inlet/Perenni
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perenninlet/Perennial Inlet/Perennial Inlet/Perennial
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Outlet Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennis Perennis Perennial Inlet/No Outlet
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial Perennial Perennial OutletPerennial Inlet/Perennial Perennial Observed on Wetland Substrate
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/Intermittent OutletNo Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial Inlet/Perennial OutletPerennial ObservedPer
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial Outlet Intermittent Inlet/No Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial.Outlet Perennial Inlet/No Outlet Perennial Inlet/Ne Outlet Perennial Outlet Perennial Outlet Perennial Inlet/Ne Outlet Perennial Outlet Perennial Inlet/Ne Outlet Perennial Inlet/Ne Outlet Perennial Outlet Perennial Outlet Perennial Inlet/Ne Outlet Perennial Outlet Perennial Outlet Perennial Inlet/Ne Outlet Perennial Outlet Perennial Outlet Perennial Inlet/Ne Outlet Perennial Inlet/Ne Outlet Perennial Outlet Perennial OutletPerennial OutletPerennial Outlet
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletIntermittent Inlet/No Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Intet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Inlet/Perennial Outlet Perennial Inlet/No Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Intet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Inlet/Perennial Outlet Perennial Inlet/No Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletNo Inlet/Perennial OutletPerennial Inlet/No Intermittent Inlet/No OutletIntermittent Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Spring Evidence of Sedimentation (P): No Overbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrsReturn Interval 2-5 yrs

pr

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: WYOHT 029

Field Target:_13

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Ste description, site parameters and summary of findings are complete? A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked? Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?Each logbook page is initialed and dated?

7. Maps

Wetland boundaries have been corrected if necessary?

☐ Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoc meade

Wetland Scientist (print)

Signature/Date

Field Grew Chief (print)

Х Christophan E

Signature / Date

SITE DESCRIPTION	all'		300	ft study	and the second second			
Survey Type: Centerline Acces	ss Road (explain)	Other (exp			Мар #:Мар Date: <u>5/27/</u> /4			
Date: 06 - 27 - 14	Project Name & No.:	Alaska LN	G 26221306	Feature Id	: W60HT030			
Investigators: Joe Christophe	er, Zoe Meo	ide			Team No.: YV 60			
State: Alaska	Region: Alaska		Milepost: 161					
Latitude: 62°52' 43.05"		Longitud	itude: 149°49'32.25" Datum: WGS84					
Logbook No.: 00 3	Logbook Page No.:	017	Picture No.:	P_N,S, gro	und			
SITE PARAMETERS				1 4 1 1				
Subregion: interior			Landform (hill	slope, terrace, hummock	s, etc.):			
Slope (%): PSS1 BC MIL	0-2%	Local relief (c	oncave, convex, none):	Concare				
Pre-mapped Alaska LNG/NWI classification			Soil Map Unit					
Are climatic/hydrologic conditions on the Yes No(if no expla		of year?	Are "No Yes_>	ormal Circumstances" pre				
Are Vegetation, Soil, or Hyd	Irology Significant	ly Disturbed	? No <u>X</u>	_(If yes, explain in Notes)			
Are Vegetation, Soil, or Hyd	Irology Naturally I	Problematic?	No <u>X</u>	_ (If yes, explain in Notes	s.)			
SUMMARY OF FINDINGS		-			a home and			
Hydrophytic Vegetation Present? Yes_	X No	Is	the Sampled A	rea within a Wetland?	Yes No			
Hydric Soil Present? Yes_	X No	v	etland Type:	PSSI/EM1B				
Wetland Hydrology Present? Yes	<u>X</u> No	— A	laska Vegetation	Classification (Viereck):	Шс2, ШАЗ			
Notes and Site Sketch: Please include D corridor.	irectional & North Arrow	, Centerline,	Length of featur	re, Distances from Center	rline, Photo Locations, and Survey			
Birch	DAS DAS	1	F CA ACM/IFC ASSER 1+117	Bira () () ()	ch/spruce Aldr			

-

	5)			
<u>Tree Stratum</u> (Plot sizes:) 1, 2.	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata: % Dominant Species that are OBL, FACW, or FAC:
3.				
4.				Prevalence Index worksheet:
Total Cover:	0			Total % Cover of: Multiply by:
50% of total cover	: 0 20)% of total cov	er: 0	OBL species:X 1 =
Sapling/Shrub Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 25 X 2 = 50 FAC species 3 X 3 = 9 FACU species X 4 =
1. Spirea Ebuglasii	10	X	FACW	UPL speciesX 5 =
2. Salex for	1.4	XD	FAC	
3. Salex fuscescens	15	X	FACW	Column Totals: 73 (A) 104 (B) PI = B/A = 114λ
4.		*~		
5.				Pemlissiis Inclusion
6.				VENTIS INCLOSING
7.				Survounding Maturn is
8.				
				And A AR I A
9.		1		Survounding mating is more of pempie, standing
Total Cover	/			HOQY"
	/	0% of total cov	rer:	HOCY"
Total Cover 50% of total cover	12.5 20	0% of total cov	rer: <u>5</u>	HOQY"
Total Cover 50% of total cover VEGETATION (use scientific names of plants	12.5 20	0% of total cov Dominant Species? (Y/N)	rer: <u>5</u> Indicator Status	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum ()	: <u>12,5</u> 20 3) Absolute	Dominant Species?	Indicator	Hydrophytic Vegetation Indicators: $\frac{K}{M}$ Dominance Test is > 50% $\frac{K}{M}$ Prevalence Index is < 3.0
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aquatilis	: <u>12,5</u> 20 a) Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum () 1. Carex aquatilis	$\frac{12.5}{20} = 20$ Absolute % Cover $\frac{15.5}{2.5}$	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aquatilis 2. Comarvm palvstre	$\frac{12.5}{20} = 20$ Absolute % Cover $\frac{15.5}{2.5}$	Dominant Species? (Y/N)	Indicator Status OBL OBL	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aquatilis 2. Comarvm palvstrc 3. Calamagrostis canadensis 4. Equisetum fluviatile 5.	$\frac{12.5}{20} = 20$ Absolute % Cover $\frac{15.5}{2.5}$	Dominant Species? (Y/N)	Indicator Status OBL OBL FAC	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aquatilis 2. Comarum palustre 3. Calamagrostis canadensis 4. Equisetum fluviatile	$\frac{12.5}{20} = 20$ Absolute % Cover $\frac{15.5}{2.5}$	Dominant Species? (Y/N)	Indicator Status OBL OBL FAC OBL	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aquatilis 2. Comarvm palvstrc 3. Calamagrostis canadensis 4. Equisetum fluviatile 5. 6. 7.	$\frac{12.5}{20} = 20$ Absolute % Cover $\frac{15.5}{2.5}$	Dominant Species? (Y/N)	Indicator Status OBL OBL FAC	Hydrophytic Vegetation Indicators: → Dominance Test is > 50% → Prevalence Index is < 3.0 → Morphological Adaptations ¹ (Provide supporting data in Notes) → Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aquatilis 2. Comarvm palvstrc 3. Calamagrostis canadensis 4. Equisetum fluviatile 5. 6.	$\frac{12.5}{20} = 20$ Absolute % Cover $\frac{15.5}{2.5}$	Dominant Species? (Y/N)	Indicator Status OBL OBL FAC OBL	Hydrophytic Vegetation Indicators: $ \frac{V}{M} $ Dominance Test is > 50% Prevalence Index is < 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. $ \underbrace{O}_{N} \% Bare Ground $
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum () 1. Carex aquatilis 2. Comarvm palvstrc 3. Calamagrostis canadensis 4. Equisetum fluviatile 5. 6. 7. 8. 9.	$\frac{12.5}{20} = 20$ Absolute % Cover $\frac{15.5}{2.5}$	Dominant Species? (Y/N)	Indicator Status OBL OBL FAC OBL	Hydrophytic Vegetation Indicators: $ \frac{V}{M} $ Dominance Test is > 50% $ \frac{V}{M} $ Prevalence Index is < 3.0 $ \underline{M} $ Morphological Adaptations ¹ (Provide supporting data in Notes) $ \underline{M} $ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. $ \underline{O} $ % Bare Ground $ \underline{A} $ % Cover of Wetland Bryophytes
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum () 1. Carex aquatilis 2. Comarvm palvstrc 3. Calamagrostis canadensis 4. Equisetum fluviatile 5. 6. 7. 8.	$\frac{12.5}{20}$	Dominant Species? (Y/N)	Indicator Status OBL OBL FAC OBL	Hydrophytic Vegetation Indicators: $\begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$

SOIL		C	Date 062714 Fea	ture	DW601	4030)	Soli Pit Required (Y/N)
SOIL PROF	ILE DESCRIPTION: (D	escribe 1	to the depth needed t	to doc	ument the i	ndicator or o	confirm the absence	e of indicators.)
Depth	Matrix		Redox Features	-				4
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
			~	1	11	1		
				1/	VI			
	-	1	///	11/	17			
			1U	1.				
		6	/	-				
17	Destation D. Desta		D. I. I.I.I.				2	
1	oncentration, D=Deple	tion, RM	Reduced Matrix, CS	S=Cov	ered or Coa	ated Sand G	-	: PL=Pore Lining, M=Matrix.
						and the		FOR PROBLEMATIC HYDRIC SOILS ³
	listel (A1) <u>X</u>		Alaska Gleyed (Change (TA4) ⁴
	lon (A2)		Alaska Redox (A					Swales (TA5)
	(A3)	-	Alaska Gleyed F	res	(A15)			with 2.5Y Hue
Hydrogen Su	ulfide (A4)						Layer	without 5Y Hue or Redder Underlying
	Surface (A12)						Other (Explain	
³ One indicate	or of hydrophytic veget	ation, on	e primary indicator of	f wetla	and hydrolog	gy, and an a	appropriate landsca	ape position must be present unless
disturbed or ⁴ Give details	of color change in Not	es.						
Restrictive L	ayer (if present): Type	:	De	epth (in	nches):			
Hydric Soil	Present (Y/N):	/		_				
Notes: as	sume histo	501-	due to ve	get	ation,	presens	te of grou	nd water
								50 to 16" (Blads bent
	Cracher		Shour the		I NU	Man	and had no	TO TO TO (ASING A FRIDA
HYDROLOG	Y PRIMARY INDICAT	ORS (an	y one indicator is suf	fficient	t) S	ECONDARY	Y INDICATORS (2	or more required)
Surface Wate	er (A1) <u>X</u>	Surfa	ace Soil Cracks (B6)			/ater-stained eaves (B9) _		Stunted or Stressed Plants (D1)
High Water 1	Table (A2)	Inun (B7)	dation Visible on Aer	ial Ima	agery D	rainage Pat	terns (B10)	Geomorphic Position (D2)
Saturation (A	(3) <u>X</u>		sely Vegetated cave Surface (B8)		0 	Oxidized Rhizospheres along Living Roots (C3)		Shallow Aquitard (D3)
Water Marks	(B1)	Marl	Deposits (B15)			Presence of Reduced Iron (C4)		Microtopographic Relief (D4) <u>X</u>
Sediment De	posits (B2)		ogen Sulfide r (C1)		S	alt Deposits	(C5)	FAC-Neutral Test (D5)
Drift Deposits	s (B3)		Season er Table (C2)		-	otes:	1 (
Algal Mat or	Crust (B4)	Othe	r (Explain in Notes):			>t4	nding Itzi	DIM Areas, dig perimeter al pens
Iron Deposits	s (B5)					4 M	SUUDU	tig perimeter al pens
Surface Mich	Propert (M/N)	1.	Conth (in):		1	1		
Surrace wate	er Present (Y/N): Y		Depth (in):		14/64	and Lludes	logy Brocont (M/N	n:
Water Table	Present (Y/N):	C	Depth (in):		vvet	iano nyoro	logy Present (1/N	ŋ:
Saturation Pr (includes cap			Depth (in): O					7
Notes: 4	" Shadiy	the	Dh perim	ne te				

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VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) ○ Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover26-75% Scattered or Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species)X High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional X Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: FibricX_ Histosol: Hemic Histosol: Sapric
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated (X) Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded (X ->>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Evidence of Sedimentation (P): No Evidence Observed <u>V</u> Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) X Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)X pH Reading
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)_X
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)_X
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)_X

 Wetland Land Use:
 High Intensity (i.e., ag.)_____
 Moderate Intensity (i.e., forestry)_____
 Low Intensity (i.e. open space)_

 Watershed Land Use:
 0-5% Rural_X
 5-25% Urbanized_____
 25-50% Urbanized_____
 >50% Urbanized_____

Size: Small (<10 acres) X Medium (10-100 acres)

Ľ

Crew Chief QA/QC check:

GPS Technician QA/QC check:

Large (>100 acres)_

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W40 HT 030 Field Target: 94

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

☑ Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

Each logbook page is initialed and dated?

7. Maps

U Wetland boundaries have been corrected if necessary?

Maps are initialed and dated?

8. Photos

- Soil pit, 1 soil plug)? No soil pit/plug due to standingware
- Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

Х Neces

4/21/14

Signature / Date

avis topl

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION							
Survey Type: Centerline X Acce	ss Road (explain)	Other (exp	olain)	Field Targ	et:095	Map #: 67 Map Date: 5/27/14	
Date: 06 - 28 -14	Project Name & No.:	Alaska LN	G 26221306		Feature Id	: W60HT 031	
Investigators: Joe Christo	pher, Zoel	Meade				Team No.: W60	
State: Alaska	Region: Alaska		Milepost:	60			
Latitude: 62 52 04, 83"		Longitud	e: 1490 K	1' 06.9	7"	Datum: WGS84	
Logbook No.: 003	gbook No.: 003 Logbook Page No.: 019 Picture No.: P-E, W. ground						
SITE PARAMETERS					0	,	
Subregion: Interiar			Landform (hill	lslope, terrac	e, hummock	s, etc.): flood plain	
Slope (%): 0-140 (2040	In (South)		Local relief (c				
Pre-mapped Alaska LNG/NWI classifica	tion: PSSIA		Soil Map Unit	Name:	NA	Read in	
Are climatic/hydrologic conditions on the Yes X No (if no expl		of year?		ormal Circum No		sent: plain in Notes.)	
Are Vegetation, Soil, or Hyd	trology Significant	ly Disturbed	? No X	_(If yes, expl	ain in Notes)	
Are Vegetation, Soil, or Hyd	frology Naturally F	Problematic?	No X	_ (If yes, exp	lain in Notes	s.)	
SUMMARY OF FINDINGS			21	-	-		
Hydrophytic Vegetation Present? Yes_	<u> </u>	Is	the Sampled A	rea within a	Wetland?	Yes NoX	
Hydric Soil Present? Yes	NoX	v	/etland Type:	upla	nd		
Wetland Hydrology Present? Yes_	NoX	— A	laska Vegetation	Classificatio	n (Viereck):	IB1, II C2	
Notes and Site Sketch: Please include E corridor.	irectional & North Arrow	r, Centerline,	Length of featur	re, Distances	from Center	line, Photo Locations, and Survey	

APP Sei PAR 19 N->	
IL SBRYC	
Cliss HTOSI	
Horseshor Creelc	

VEGETATION (use scientific names of plants	5)		n .	
<u>Tree Stratum</u> (Plot sizes: $2\varphi'$)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 3 (A)
1. Populus baisamifera	40	X	FACU	Total Number of Dominant Species Across All Strata: _5 (B) % Dominant Species that are OBL, FACW, or FAC: _60 (A/B)
2.	1.4			
3.				
4.		1.		Prevalence Index worksheet:
Total Cover 50% of total cover)% of total cov	ver:_8	Total % Cover of: Multiply by: OBL species: X 1 =
Sapling/Shrub Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: X 2 = FAC species 48 X 3 = 144 FACU species 72 X 4 = 288
1. Salex Alevensi S	25	×	FAL	LIPI species X 5 =
2. Picea glauca	TR		FALLA	Column Totals: 120 (A) 432 (B)
3. SAlid Barcharli	25	X	FAC	PI = B/A = 3.60
4. Schit			/	
5.				
6.				
7.				
8.				
9.				
Total Cover		6	. 7	
50% of total cover	25 20)% of total cov	/er: <u>///</u>	
VEGETATION (use scientific names of plants	3)			
Herb Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
1 Equisetum Arvense	20	X	FAL	Prevalence Index is ≤ 3.0
2. 240/0 00		1	1.1.0	Morphological Adaptations ¹ (Provide supporting data in Notes)
3. Chamaerion angustofoli	m 3.		FACH	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Arythrium cyclosorum	2:		FAC	¹ Indicators of hydric soil and wetland hydrology must be present unless
⁵ . Geranium erianthum	3.		FACU	disturbed or problematic.
6. Pyrola aserifolia	25	X	FACU	
7. Streptopus amplexiton	5 1 -		FACU	% Bare Ground
8. Galling Tri Storom	1.		FAC	% Cover of Wetland Bryophytes
9. HERACIEUM MANIMUM	TR		Yacu	Total Cover of Bryophytes
10	TR		FALL	C % Cover of Water
10. (upinius Aucticus Total Cover		5	Inger	Hydrophytic Vegetation Present (Y/N):
50% of total cove		0% of total cov	ver: 9.0	Notes: (If observed, list morphological adaptations below):
JVJ	27,5		11	

SOIL	and the second		Date 26-28-14 Feat	ure ID	1601	1031		Soll Pit Required (Y/N)		
SOIL PROFIL	E DESCRIPTION: (D	escribe	to the depth needed to	docu	ment the	indicator or o	confirm the absen			
Depth	Matrix		Redox Features							
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes		
0.5							Fishir.	OLLY OVERMIZ DUU		
~)	19.0			-				1 11		
154	Pl Su Sil	-		_	-			ROLK 1605 due lovauel		
		-		-	_		-			
		-		-						
1				-			*			
¹ Type: C=Cor	ncentration, D=Deplet	ion, RM	Reduced Matrix, CS=	Cover	red or Co	ated Sand G	rains. ² Location	n: PL=Pore Lining, M=Matrix.		
	INDICATORS		and the second second			-		FOR PROBLEMATIC HYDRIC SOILS ³		
Histosol or His	stel (A1)		Alaska Gleyed (A	.13)				Change (TA4) ⁴		
	on (A2)		Alaska Redox (A1					a Alpine Swales (TA5)		
	.3)	-	Alaska Gleyed Po	ores (A	A15)		Alaska Redox with 2.5Y Hue			
Hydrogen Sulf	īde (A4)		· · · · · ·				Alaska Gleyed without 5Y Hue or Redder Underlying Layer			
the second se	rface (A12)						Other (Explain			
³ One indicator disturbed or pr	of hydrophytic veget	ation, on	e primary indicator of v	vetlan	nd hydrolo	ogy, and an a	ppropriate landsc	cape position must be present unless		
⁴ Cive details a	f color obence in Net	es.				-11				
Restrictive Lay	/er (if present): Type	FOCI	C Dep	th (inc	ches):	,5				
Hydric Soil Pi	resent (Y/N):	N					· · ·			
ACHINE FIUL	od plam - 1	lock	, coshe unde	1	· 5 ⁻¹¹	Did or	55-			
	2 DAIS R				-					
HYDROLOGY	PRIMARY INDICAT	ORS (ar	y one indicator is suffic	cient)	5	BECONDAR	INDICATORS (2	2 or more required)		
Surface Water	(A1)	Surf	rface Soil Cracks (B6)			Vater-stained .eaves (B9) _		Stunted or Stressed Plants (D1)		
High Water Ta	ble (A2)	Inun (B7)	dation Visible on Aeria	l Imag	gery C	Drainage Patt	erns (B10)	Geomorphic Position (D2)		
Saturation (A3)	Spar Con	sely Vegetated cave Surface (B8)			Dxidized Rhiz iving Roots (cospheres along C3)	Shallow Aquitard (D3)		
Water Marks (I	B1)	Marl	Deposits (B15)			Presence of F ron (C4)	Reduced	Microtopographic Relief (D4)		
Sediment Dep	osits (B2)		ogen Sulfide r (C1)		s	Salt Deposits	(C5)	FAC-Neutral Test (D5)		
Drift Deposits ((B3)		Season er Table (C2)		N	lotes:				
Algal Mat or C	rust (B4)	Othe	r (Explain in Notes):	-						
Iron Deposits (B5)						1			
Surface Mater	Descet (V(h))	1.			- 1	malin	and the second			
Surface Water	Present (1/N):		Depth (in):		-	Hand Usedual	a ma Dreasant ()//b			
Water Table P	. ,	[Depth (in):		vve	Wetland Hydrology Present (Y/N):				
Saturation Pres (includes capill		0	Depth (in):	-	- 7		-			
Notes:	o phi du	losy	o haved.	T	01	of Slore on Flued Plain.				

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Emergent-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P) Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Every High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
X
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Perennial
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Created
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval >5 yrs Return Interval 2-5 yrs
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs
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Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
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Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID: <u>W60HT031</u>
 Field Target: <u>095</u>
 Date: <u>06-28-14</u>

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- D Vegetation names are entered legibly for all strata present?
- D Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- / Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

D Soil profile is complete? Unable to dig due to impermeable soils. D Appropriate hydric soil indicators are marked?

4. Hydrology

D Appropriate hydrology indicators are marked?

D Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- ✓ Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- D Each logbook page is initialed and dated?

7. Maps

- , Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

Two photos were taken for each Observation Point (vegetation/site overview)?

Meade 7.00

Wetland Scientist (print)

06-28-14 Х Signature / Date

6/28/14

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION			-	-		40
Survey Type: Centerline X Acce	ss Road (explain)	Other (expl	ain)	Field Targ	et: <u>47</u>	Map #: <u>67</u> Map Date: <u>5/27/</u> 14
Date: 06 - 28 - 14	Project Name & No.:	Alaska LNG	6 26221306		Feature Id:	W60HTO32
Investigators: Joe Christ	opher. Zoe	Meac	de			Team No.: ₩60
State: Alaska	Region: Alaska		Milepost:	160	-	
Latitude: 62° 52′ 04,	474	Longitude	: 149 5	1' 11.7	0'	Datum: WGS84
Logbook No.: OO3	Logbook Page No.:	20	Picture No.:	P_E,	W, pit,	P
SITE PARAMETERS						, <u> </u>
Subregion: interior			Landform (hill	slope, terrac	e, hummocks	s, etc.): LEWALL
	Surth) 70%	1000 TO				Convel
Pre-mapped Alaska LNG/NWI classifica	1 1	70001	Soil Map Unit		LA	
Are climatic/hydrologic conditions on the	e site typical for this time	of year?	Are "No	ormal Circum		
Yes X No (if no expl			Yes_X			olain in Notes.)
Are Vegetation, Soil, or Hyd		lly Disturbed?		_(If yes, expl		
Are Vegetation, Soil, or Hyd		Problematic?	N0	_ (If yes, exp	ain in Notes	.)
	No. 1		the Compled A		Matland 2	Yes No X
Hydrophytic Vegetation Present? Yes_		IS	the Sampled A	area within a	wetland	Yes NoX
Hydric Soil Present? Yes_	No	w	etland Type: (Spc		
Wetland Hydrology Present? Yes	NoX	Ala	aska Vegetation	l Classificatio	n (Viereck):	IC2, IC2
Notes and Site Sketch: Please include E	Directional & North Arrow N GOIST037 CIISE			1 or	from Center	line, Photo Locations, and Survey

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot sizes:)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC: 2 Total Number of Dominant Species Across All Strata: 65
1. Betula neoalaskana	25	X	FACU	 Number of Dominant Species Across All Strata: % Dominant Species that are OBL, FACW, or FAC: 33
2. Populus Balsamifera	5	-X Hu	FACU	
B. Picea glauca	1	·····	FACV	
l.				Prevalence Index worksheet:
Total Cover:			Ger	Total % Cover of: Multiply by:
50% of total cover:	13 152	0% of total cov	rer: <u>3-2</u>	OBL species:X 1 =
Sapling/Shrub Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species:X 2 =FAC species: $6/$ X 3 = $8-3$ FACU species: 49 X 4 = 196
Empetrum nigrum	35	X	FAC	UPL species $9 \times 5 = 45$
· vaccinium - vitis idaea	6		FAC	Column Totals: 119 (A) 414 (B)
· Betula nana	3		FAC	PI=B/A=
Picea glauca	4		FACU	
· Vaccinium uliginosum	5		FAC	
Sorbus Scopulina	3		FACU	
Alnus SSP.	12	X	FAC	1
Literature de la construcción de	9		120.	-
Lycopodium complamatum			UPL	
	-1		UPL	
			UPL	
	77	0% of total cov		.×
Total Cover: 50% of total cover:	77 38.5 20	0% of total cov		×
Total Cover: 50% of total cover: EGETATION (use scientific names of plants	77 38.5 20	1	er: <u>[5,4</u>	Hydrophytic Vegetation Indicators:
Total Cover: 50% of total cover: EGETATION (use scientific names of plants	77 38.5 20	0% of total cov Dominant Species?		Hydrophytic Vegetation Indicators: Dominance Test is > 50%
Total Cover: 50% of total cover: EGETATION (use scientific names of plants erb.Stratum ()	入り 3安・5 20 Absolute % Cover	Dominant	rer: <u>5.4</u> Indicator Status	
Total Cover: 50% of total cover: EGETATION (use scientific names of plants erb Stratum () • Cornus canadensis	<u>38,5</u> 20 <u>38,5</u> 20 <u>Absolute</u> % Cover <u>2</u>	Dominant Species? (Y/N)	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0
Total Cover: 50% of total cover: EGETATION (use scientific names of plants erb Stratum () Cornus canadensis Cornus canadensis	$\frac{2}{3}$	Dominant Species?	Indicator Status FACV FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0
Total Cover: 50% of total cover: EGETATION (use scientific names of plants erb Stratum () · Cornus canadensis · Lupinus arcticus · Trientalis Europaea	$\frac{2}{3}$	Dominant Species? (Y/N)	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data i
Total Cover: 50% of total cover: EGETATION (use scientific names of plants lerb Stratum () Cornus canadensis Cornus arcticus Lupinus arcticus Cornus arcticus Cornus canadensis Cornus canadensis Cornus canadensis Cornus canadensis Cornus canadensis Cornus canadensis Cornus canadensis Cornus canadensis Cornus canadensis Cornus canadensis	$\frac{2}{3} \frac{2}{5} \frac{5}{5} \frac{20}{20}$ Absolute % Cover $\frac{2}{3} \frac{3}{5} \frac{1}{5}$ T $\frac{2}{5} \frac{1}{5}$	Dominant Species? (Y/N)	Indicator Status FACV FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data i Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlet
Total Cover: 50% of total cover: EGETATION (use scientific names of plants lerb Stratum () Cornus canadensis Cornus arcticus Lupinus arcticus Trientalis Europaea Geocaulon lividium	$\frac{2}{3} \frac{2}{5} \frac{5}{5} \frac{20}{20}$ Absolute % Cover $\frac{2}{3} \frac{3}{5} \frac{1}{5}$ T $\frac{2}{5} \frac{1}{5}$	Dominant Species? (Y/N)	Indicator Status FACV FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data i Notes)
Total Cover: 50% of total cover: EGETATION (use scientific names of plants lerb <u>Stratum</u> () 1. Cornus canadensis 2. Lupinus arcticus 3. Trientalis Europaea 4. Geocaulon lividium 5. Gymhocarpium dryopteris	$\frac{2}{3} \frac{2}{5} \frac{5}{5} \frac{20}{20}$ Absolute % Cover $\frac{2}{3} \frac{3}{5} \frac{1}{5}$ T $\frac{2}{5} \frac{1}{5}$	Dominant Species? (Y/N)	Per: $\frac{5.4}{5.4}$ Indicator Status FACU FACU FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data i Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlet
Total Cover: 50% of total cover: /EGETATION (use scientific names of plants Herb Stratum () 1. Cornus canadensis 2. Lupinus arcticus 3. Trientalis Europaea 4. Geocaulon lividium 5. Gymnocarpium dryopteris 3.	$\frac{2}{3} \frac{2}{5} \frac{5}{5} \frac{20}{20}$ Absolute % Cover $\frac{2}{3} \frac{3}{5} \frac{1}{5}$ T $\frac{2}{5} \frac{1}{5}$	Dominant Species? (Y/N)	Per: $\frac{5.4}{5.4}$ Indicator Status FACU FACU FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
Total Cover: 50% of total cover: /EGETATION (use scientific names of plants Herb Stratum () 1. Cornus canadensis 2. Lupinus arcticus 3. Trientalis Europaea 4. Geocaulon lividium 5. Gymhocarpium dryopteris 6. 7.	$\frac{2}{3} \frac{2}{5} \frac{5}{5} \frac{20}{20}$ Absolute % Cover $\frac{2}{3} \frac{3}{5} \frac{1}{5}$ T $\frac{2}{5} \frac{1}{5}$	Dominant Species? (Y/N)	Per: $\frac{5.4}{5.4}$ Indicator Status FACU FACU FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data is Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unled disturbed or problematic.
	$\frac{2}{3} \frac{2}{5} \frac{5}{5} \frac{20}{20}$ Absolute % Cover $\frac{2}{3} \frac{3}{5} \frac{1}{5}$ T $\frac{2}{5} \frac{1}{5}$	Dominant Species? (Y/N)	Per: $\frac{5.4}{5.4}$ Indicator Status FACU FACU FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unle disturbed or problematic% Bare Ground
D. Total Cover: 50% of total cover: /EGETATION (use scientific names of plants -lerb Stratum () 1. Cornus canadensis 2. Lupinus arcticus 3. Trientolis Europaea 4. Geocaulon lividium 5. Gymnocarpium dryopteris 6. 7. 8.	$\frac{2}{3} \frac{2}{5} \frac{5}{5} \frac{20}{20}$ Absolute % Cover $\frac{2}{3} \frac{3}{5} \frac{1}{5}$ T $\frac{2}{5} \frac{1}{5}$	Dominant Species? (Y/N)	Per: $\frac{5.4}{5.4}$ Indicator Status FACU FACU FACU FACU	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unled disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes

SOIL		I.	ate (122/19 Fe	ature I	DHTO	32	1	Soil Pit Required (Y/N)
SOIL PROFIL	LE DESCRIPTION: (Describe	to the depth needed	to doc	ument the	indicator or	confirm the absence	of indicators.)
Depth	Matrix		Redox Features	-				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-2							Fibrit	141
71		80			-		Rock / group/	1×1
3-4	10-12-11/4	20					SANDY LOAM	LOAVER SANC
0								
						-		
-							2	
	ncentration, D=Deple	etion, RM	=Reduced Matrix, C	S=Cov	ered or Co	ated Sand (PL=Pore Lining, M=Matrix.
	LINDICATORS	_	1					OR PROBLEMATIC HYDRIC SOILS
	stel (A1)		Alaska Gleyed			-		ange (TA4) ⁴
	on (A2)		Alaska Redox	(A14) _				wales (TA5)
Black Histic (A3)		Alaska Gleyed	Pores	(A15)			ith 2.5Y Hue
Hydrogen Su	lfide (A4)	•			e e		Alaska Gleyed v Layer	vithout 5Y Hue or Redder Underlying
Thick Dark Si	urface (A12)						Other (Explain in	n Notes)
disturbed or p	problematic.						and the second second	e position must be present unless
Restrictive La	of color change in No ayer (if present): Typ	e:		Depth (i	nches):	LOCK	1 quant	
Hydric Soil F	Present (Y/N):	V						
Notes: //	10 Huldri	c 5	0.15 De	sei	nete			

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TIDIOLOGI I MIMARITI INDIOATO	to (any one indicator is sufficient)	OLOONDART INDIGATORO (LO	intere requiredy
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes: No Freld Ind.	rations of
Algal Mat or Crust (B4)	Other (Explain in Notes):	- HAGrology	ca co f
Iron Deposits (B5)	1	Precioi J.	
Surface Water Present (Y/N):	Depth (in):		17
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N):	<u>P</u>
Saturation Present (Y/N): (includes capillary fringe)	Depth (in);		
Notes: No Hydrolo	\$1 Observed		

OpenSmall Scattered PatchesContribuous Cover	
Forested Sherrigeen Needel-Beaved Sorth Shub-Dendous-Readel-Beaved Sorth Shub-Dendous-Readel-Beaved Sorth Shub-Dendous-Readel-Beaved Emargent-Needel-Beaved Sorth Shub-Dendous-Readel-Beaved Emargent-Needel-Beaved Emargent-Needel-Beaved Emargent-Needel-Beaved Emargent-Needel-Beaved Emargent-Needel-Beaved Emargent-Needel-Beaved Emargent-Needel-Beaved Floating Shut herb (21m) Moder-Lebra Floating Shut herb (21m) Floating Floa	VEGETATION VARIABLES P= Plot, M= Matrix
Dwarf shub (c0.5m) Tall heft (zfm) Shot hefts (zfm) Mose Lichen Floating Skibmerged Number of Wetland Type (k): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even Vegetation Density/Dominance (P): Spare (0.20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 30% Very High Density (60- Yes Cover 40 pen Water (P): Low (C 5 plant regetes) Medium (5-25 species) High (>25) Presence of Islands (M): Absent (none) One or Few Several to Many N/A Cover Distribution of Dominant Large (P): Low (C 5 plant regetes) Moderately Abundant (25/5%) of surface) Abundant (25/5%) of surface) Abaudant (-250% of surface) One or Few Several to Many N/A Over Distributions, Giverse and interspersion (P): Low (large patches, concentric ring) Moderately Abundant (25/5%) of surface) Abaudant (-250% of surface) Pilet Lacustrine Fringe Depressional Riverine Estaurine Fringe Solf Eactors (P): Solf Lacking Histosol Floric Histosol Floric Histosol Floric Histosol Floric Preennial Intel/Presenial Intel/Presenial Outlet Intermitent I	Forested Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent
Vegetation Density/Bominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (80-60%) High Density (80-60%) OWS Very High Density (80:100%) Low Density (80:100%) High Cest Interspersion of Cover & Open Mater (P): 100% Cover or Open Water -25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover >77% Scattered or Peripheral Cover NA -25% Scattered Peripheral Cover NA Plant Species Diversity (P): Low (< 5 plant species)	Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
80%Very High Densky (80,100%)	Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Peripheral Cover	Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Event State E
Presence of Islands (M): Absent (none) One or Few Several to Many N/A Cover Distribution of Dominant Layer (P): No Veg Solitary. Scattered Stems 1 of More Large Patches; Parts of Site Open Small Scattered Patches Contribueus Cover Solitary. Scattered Patches; Parts of Site Dead Woody Material (P): Dwoldnace (0-25% of surface) Moderately Abundant (25-50% of surface) Dead Woody Material (P): Dwol (large patches; concentric rings) Moderately Abundant (25-50% of surface) High (smail groupings, diverse and interspersion) File Lacustrine Fringe Depressional Soll VARIABLES Soll LAcking File Lacustrine Fringe Depressional Soll VARIABLES Soll LVARIABLES Mineral: Siny Mineral: Siny Mineral: Clayer HYDROLOGIC VARIABLES No Inlet/Intermittent Outlet No Inlet/Intermittent Inter/Int	Interspersion of Cover & Open Water (R): 100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Cover Distribution of Dominant Layer (P): No Veg. Solitary, Scattered Stems 1 of More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 of More Large Patches; Parts of Site Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (2550% of surface) Moderately Abundant (2550% of surface) Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupping, diverse and interspersed) HGM Class (P): Stop Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe Solit VARIABLES Mineral: Sandy Mineral: Silty /Mineral: Clayey HVDROLOGIC VARIABLES Inter/Outlet Intermittent Intel/Intermittent Outlet Intermittent Intel/Intermittent Outlet Perennial Outlet Perennial Intel/No Outlet Perennial Intel/No Outlet Perennial Intel/Outlet Class (P): No Intel/Outlet, No Intel/Intermittent Outlet Intermittent Intel/No Outlet Perennial Intel/No Outlet Perennial Intel/Outlet Class (P): No Intel/Outlet, Expect, Semperm, Flooded Sediment Observed on Wetland Subgrate Fluvaquent Soils Sediment Miner Miteroralled Off Wetland Surface (P): Absent Poorly Developed (6in) Wetland Water Regime (P): No Evidence Observed Wetland Surface (P): Absent Poorly	Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
OpenSmall Scattered PatchesContinuous Cover	Presence of Islands (M): Absent (none) One or Few Several to Many/N/A
Abundant (>50% of surface)	Cover Distribution of Dominant Layer (P): No Veg. Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1
High (small groupings, diverse and interspersed)	Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
SOIL VARIABLES Soil Factors (P): Soil Lacking Histosol:Fibric Histosol: Henric Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Sitty Minetal: Clayey HYDROLOGIC VARIABLES Intermittent Intel/Intermittent Outlet Intermittent Intel/No Intel/Outlet Intermittent Intel/Prennial Outlet No Intel/Intermittent Intel/No Outlet Intermittent Intel/Prennial Intel/Prennial Outlet Perennial Intel/No Intel/Intermittent Outlet Intermittent Intel/No Perennial Intel/No Wett and Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Flovaquent Soils Sediment Vettand Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Flovaquent Soils Sediment Vettand Water Regime (P): No Evidence Observed Sediment Observed on Welland Substrate Flovaquent Soils Sediment Created Microralist of Wetland Surface (P): Absent Poorly Developed (6in) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Surficial Glacial	
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hankc Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey HVDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Intermittent Intermittent Intermittent Outlet Intermittent Intermittent Intermittent Intermittent Intermittent Outlet Perennial Intermittent Outlet Perennial Intermittent Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Interviet Solis Sediment Observed on Wetland Substrate Fluvaquent Solis Sediment Created Microrelief of Wetland Surface (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Perguency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circomneutral (5 5-7.4) Alkaline (>7.4) Acid (<5.5)	HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
Soil Factors (P): Soil Lacking Histosci: Fibric Histosci: Henric Histosci: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey HVDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Wettand Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wettand Water Regime (P): No Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (Gin.) Well Developed (6-1@in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Untermetral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)	
Mineral: Gravelly	SOIL VARIABLES
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Intermittent Intervite I.2 yrs	Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Intermittent Intervite I.2 yrs	HYDROLOGIC VARIABLES
Outlet Intermittent United/Intermittent Outlet Intermittent Intervitent Intervitent Intervitent Intervitent Intervitent Intervitent Intervitent Outlet Perennial Intervicent Intervitent IntervitentIntervitent IntervitentIntervitent Intervitent	
Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded	Outlet Intermittent Inlet/Intermittent Outlet No Inlet/Intermittent Inlet/Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial
Created Microrelief of Wetland Surface (P): AbsentPoorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrs Degree of Outlet Restriction (P): No OutflowRestricted OutflowUnrestricted Outflow Water pH (P): No surface waterCircumneutral (5.5-7.4)Alkaline (>7.4)Acid (<5.5)PH Reading	Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Microrelief of Wetland Surface (P): AbsentPoorly Developed (6in.)Well Developed (6-18in.)Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank FloodingReturn Interval 1-2 yrsReturn Interval 2-5 yrs Degree of Outlet Restriction (P): No OutflowRestricted OutflowUnrestricted Outflow Water pH (P): No surface waterCircomneutral (5.5-7.4)Alkaline (>7.4)Acid (<5.5)PH Reading	Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Return Interval >5 yrs	Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)	Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable Basin Topographic Gradient (M): Low Gradient (<2%)	Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Glacial Till/Not Permeable High Gradient (<2%)	
Evidence of Seeps and Springs (P) No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space) Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres) Crew Chief OA/QC check: GPS Technician QA/QC check:	Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space) Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres) Crew Chief QA/QC check: GPS Technician QA/QC check:	
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space) Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres) Crew Chief QA/QC check: GPS Technician QA/QC check:	
Only Connected Above Connected Upstream & Downstream Unknown Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space) Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres) Crew Chief OA/QC check: GPS Technician QA/QC check:	LANDSCAPE VARIABLES (M)
Watershed Land Use: 0-5% Rural5-25% Urbanized25-50% Urbanized>50% Urbanized Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres) Crew Chief QA/QC check: GPS Technician QA/QC check:	
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres) Crew Chief QA/QC check: GPS Technician QA/QC check:	
Crew Chief QA/QC check: GPS Technician QA/QC check:	Only Connected Above Connected Upstream & Downstream Unknown
Zun	Only Connected Above Connected Upstream & Downstream Unknown Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
	Only Connected Above Connected Upstream & Downstream Unknown Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space) Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: 060147032 Field Target: 97 Date: 6/38/11

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete? A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked? \mathcal{N}/\mathcal{A} wo by \mathcal{S}
- 4. Hydrology

Appropriate hydrology indicators are marked? how Surface water, water table, and saturation depths are recorded if present?

- 5. Functions and Values
 - U Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

 \Box' Each logbook page is initialed and dated?

7. Maps

Wetland boundaries have been corrected if necessary?

Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

ristopher

Wetland Scientist (print)

Х remod 06/28/14 Signature / 24/18/14

Field Crew Chief (print)

Signature / Date

ñ.

SITE DESCRIPTION			30	0' Stud	4	
Survey Type: Centerline Acce	ss Road (explain)	Other (expla	ain) <u>X</u>	Field Targ	jet: 089	Map #: <u>6 /</u> Map Date: <u>6/26/</u> 14
Date: 07-01-2014	Project Name & No.:	Alaska LNG	26221306		Feature Id	: W60 HT 033
Investigators: Joe Christo	prier, Zoe M	ead e				Team No.: W60
State: Alaska	Region: Alaska		Milepost: 🏒	06.3 ((nG)	
Latitude: 62° 58'23.41"		Longitude	: 149° 37'			Datum: WGS84
Logbook No.: 603	Logbook Page No.:	24	Picture No.:	P_N,	- 5, -	- P/p
SITE PARAMETERS		-			1000	
Subregion: interior			Landform (hil	Islope, terrad	ce, hummock	s, etc.): Orpression
Slope (%): () - 3						CONCALR.
Pre-mapped Alaska LNG/NWI classifica	ation: Penolosi	12	Soil Map Uni		1/1	contraite.
Are climatic/hydrologic conditions on th	e site typical for this time				istances" pre	
YesXNo (if no exp Are Vegetation, Soil, or Hy		tly Disturbed?	Yes		(If no, ex plain in Notes	plain in Notes.)
Are Vegetation, Soil, or Hy					plain in Notes	
SUMMARY OF FINDINGS		Toblemater		_ (11) 00; 0,		,
Hydrophytic Vegetation Present? Yes_	X No	Is	the Sampled /	Area within a	a Wetland?	Yes No
Hydric Soil Present? Yes_	× No	w	etland Type:	PSS	IEV	NIR
Wetland Hydrology Present? Yes_	× No	— Ala	aska Vegetatio	n Classificati	on (Viereck):	IIC2, IIIA3
Notes and Site Sketch: Please include l corridor. Point collected The Data R	eresu of 3	ou co	widur	to sh	an off	RR property

NW

VEGETATION (use scientific names of plants	s)			
<u>Tree Stratum</u> (Plot sizes: $2(e^{1})$	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC:
1.				Total Number of Dominant Species Across All Strata:
2.	-			% Dominant Species that are OBL, FACW, or FAC: _///
3.				
4.	1	-		Prevalence Index worksheet:
Total Cover	. 0			Total % Cover of: Multiply by:
50% of total cover	r: <u>()</u> 20	% of total cov	er:	OBL species:66X1 =66
Sapling/Shrub Stratum (0')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 13 X 2 = 24 FAC species X 3 = $72 - 136$ FACU species X 4 =
1. Picea Mariana	2		FACW	UPL speciesX 5 =
2. Betula nana	5	-*-	FAC	Column Totals:(A)(A)(B)
3. Rhododendron tomentosum	1		FACW	$PI = B/A = \frac{1}{1.83} \frac{1}{1.83} \frac{1}{1.83}$
4. Empetrum niquem	新日	×	FAI	
5. Salex fuscenscens	T		FALW	
6. Vaccinium oxycoccus	5	×	OBL	Dasifora fruticosa T
7. Spirea stevenii	T		FALL	in the plot
B. Salex pulchra	1		FACN	Turne A laves has more
			FALCOV	- E-mergand car
9. Andiomeda polifolia	2			AFRINI Course had the shirts
9. Andiomeda polifolia laccinium Total Cover	2-204		FALW	AGRIMI Coverage but the shirts
9. Andiomeda polifolia laccinium Total Cover avalifolium 50% of total cover			FALW	Later Aprens to Be the DOMIN Later Aprens to Be the DOMIN
9. Andiomeda polifolia laccinium Total Cover OValifolium 50% of total cover 7 20 Y FAC	: <u>to20</u> 20		FALW	Dasifor a froticosa T In The plot - Emergand Late has more AERINI Coverage but the show "Later Appens to Bo the pomin Attain The Master to Master the
9. Andi omeda polifolia accinium Total Cover avalifolium 50% of total cover 20 Y FAC VEGETATION (use scientific names of plants	r: <u>t02</u> 020 s))% of total cov	FACW	an transferration prints
Andiomeda polifolia accinium Total Cover OValifolium 50% of total cover 1 20 Y FAC /EGETATION (use scientific names of plants	: <u>to20</u> 20		FALW	Hydrophytic Vegetation Indicators:
P. Andi omed a polifolia accinium Total Cover OValifolium 50% of total cover 20 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20')	r: <u>to2</u> 20 s) Absolute	0% of total cov Dominant Species?	FACW er: 4-8 Indicator	Hydrophytic Vegetation Indicators: → Dominance Test is > 50% → Prevalence Index is ≤ 3.0
9. Andiomeda polifolia accinium Total Cover avalifolium 50% of total cover 20 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20') 1. Carex vaginata	r: <u>tod</u> 20 s) Absolute % Cover	0% of total cov Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators:
 Andiomeda polifolia accinium Total Cover accinium 50% of total cover 20 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20') 1. Carex vaginata 2. Comarum palustre 	r: <u>tod</u> 20 s) Absolute % Cover	0% of total cov Dominant Species? (Y/N)	EALW er: 4-8 Indicator Status	Hydrophytic Vegetation Indicators: ▲ Dominance Test is > 50% ▲ Prevalence Index is ≤ 3.0 ▲ Morphological Adaptations ¹ (Provide supporting data)
9. Andiomeda polifolia laccinium Total Cover avalifolium 50% of total cover 20 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20') 1. Carex vaginata 2. Comarum palustre 3. Equise tum arvense	r: <u>to 20</u> 20 s) Absolute % Cover 4/0 1	0% of total cov Dominant Species? (Y/N)	Indicator Status OBL OBL	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes)
9. Andi omeda polifolia laccinium Total Cover Valifolium 50% of total cover 20 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20') 1. Carex Vaginata 2. Comarvin palustre	r: <u>to 20</u> 20 s) Absolute % Cover 4/0 1	0% of total cov Dominant Species? (Y/N)	Indicator Status OBL OBL	Hydrophytic Vegetation Indicators: ▲ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
9. Andiomeda polifolia laccinium Total Cover avalifolium 50% of total cover 120 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20') 1. Carex vaginata 2. Comarum palustre 3. Equisetum arvense 4. Viola	r: <u>to 20</u> 20 s) Absolute % Cover 4/0 1 1 10 T 2.0	Dominant Species? (Y/N)	Indicator Status OBL DBL FAL	Hydrophytic Vegetation Indicators: ★ Dominance Test is > 50% ★ Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present of
9. Andiomeda polifolia accinium Total Cover avalifolium 50% of total cover 4 20 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20') 1. Carex vaginata 2. Comarum palustre 3. Equise tum arvense 4. Viola 5. Carex microglochim	r: <u>to 20</u> 20 s) Absolute % Cover 4/0 1 1 10 T 2.0	Dominant Species? (Y/N)	Indicator Status OBL DBL FAL ORL	Hydrophytic Vegetation Indicators: ★ Dominance Test is > 50% ★ Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present of
9. Andiomeda polifolia Total Cover avalifolium 50% of total cover 20 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20') 1. Carex vaginata 2. Comarum palustre 3. Eauisetum arvense 4. VIOIQ 5. Carex microglochim 6. Calamagroshs Canadensis 7. Rubus arcticus	r: <u>to 20</u> 20 s) Absolute % Cover 4/0 1 1 10 T 2.0	Dominant Species? (Y/N)	FALW Indicator Status OBL OBL FAL ORL FAL FAL	Hydrophytic Vegetation Indicators: ▲ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present of disturbed or problematic.
9. Andiomeda polifolia laccinium Total Cover Vealifolium 50% of total cover 20 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20') 1. Carex vaginata 2. Comarum palustre 3. Equisetum arvense 4. Viola 5. Carex microglochin 6. Calamagrostis Canadans 7. Rubus arcticus 8. Carex ssp.	r: <u>to 20</u> 20 s) Absolute % Cover 4/0 1 1 10 T 2.0	Dominant Species? (Y/N)	FALW Indicator Status OBL OBL FAL ORL FAL FAL	Hydrophytic Vegetation Indicators: ▲ Dominance Test is > 50% ▲ Prevalence Index is < 3.0
9. Andi omeda polifolia laccinium Total Cover Ovalifolium 50% of total cover 20 Y FAC VEGETATION (use scientific names of plants Herb Stratum (20') 1. Carex vaginata 2. Comarum palustre 3. Equisetum arvense 4. Viola 5. Carex microglochin 6. Calamagroshs Canadensis 7. Rubus arcticus 8. Carex ssp.	r: <u>to 20</u> 20 s) Absolute % Cover 4/0 1 10 T 2 0 5 T 1 7 7 7	Dominant Species? (Y/N)	FACW Indicator Status OBL FAC FAC FAC FAC	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present of disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes

Depth (inches)	Matrix Color (moist)	_	to the depth needed Redox Features					
(inches)	Color (moist)	1					2	
		%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
10 - 20		-		-			Fibric	Organic
		-		-			hemic	Ordanic
		_				-		
		-				-		
		1		-		-		
				1			-	
¹ Type: C=Conc	centration, D=Deple	etion, RN	I=Reduced Matrix, C	S=Cov	ered or Coa	ated Sand Gra	ains. ² Location	PL=Pore Lining, M=Matrix.
HYDRIC SOIL I	INDICATORS		1.1	-	- Harris		1	FOR PROBLEMATIC HYDRIC SOILS
Histosol or Histe	el (A1) <u>X</u>		Alaska Gleyed	(A13)			Alaska Color (Change (TA4) ⁴
Histic Epipedon	(A2)		Alaska Redox	(A14) _				Swales (TA5)
Black Histic (A3	3)		Alaska Gleyed	Pores	(A15)			with 2.5Y Hue
Hydrogen Sulfid	de (A4)	-					Alaska Gleyed Layer	without 5Y Hue or Redder Underlying
Thick Dark Surfa		_					Other (Explain	
disturbed or proi ⁴ Give details of (blematic. color change in No	tes.						ape position must be present unless
Restrictive Laye	er (ir present): Type	9:	D	epth (ii	ncnes):			
	esent (Y/N):							
Notes: Ilul.	10 2(0)	cours	2, 1425	1	111			

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or	more required)
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10) <u> </u>	Geomorphic Position (D2)
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:	
Algal Mat or Crust (B4)	Other (Explain in Notes):		
Iron Deposits (B5)			
Surface Water Present (Y/N):	Depth (in):		V
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N): _	.)
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):		
Notes: LOCALIZE & SUNF	and water in polkets	, H2S Smell	

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VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m) Image: Construct of the shrub (2-1m) Short shrub (<1m) Short shrub (<1m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even X Highly Uneven <
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Environmentation Environmentation </td
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional 📈 Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perenninlet/Perenninlet/Perennial Inlet/Perennial Inlet/Perenn
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed // Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.)_X Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)X pH Reading 5.13 Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits_X
Basin Topographic Gradient (M): Low Gradient (<2%)
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & DownstreamX Unknown
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)

X _ 5-25% Urbanized_ 25-50% Urbanized_ >50% Urbanized Watershed Land Use: 0-5% Rural Medium (10-100 acres) X

Size: Small (<10 acres)_

Crew Chief QA/QC check: 50) ___ Large (>100 acres)_

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Field Target: 089 Feature ID: WG0HT033 Date: 07-01-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

☑ Site description, site parameters and summary of findings are complete? A detailed site sketch is included in logbook?

2. Vegetation

- I At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- ☑ Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Z Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Z Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- Ø Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Z Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

Made 07-01-14 Signature / Date

ristorhe

E7/1/14

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION		30	o'study	a superior
Survey Type: Centerline Acce	ess Road (explain) Other	r (explain) <u>X</u>	Field Target: 090	Map #: 67 Map Date: 4/14
Date: 07-01-14	Project Name & No.: Alask	a LNG 26221306	Feature lo	1: W60HT034
Investigators: Jae Christo	pher zoe meade			Team No.: W60
State: Alaska	Region: Alaska	Milepost: (107,6 (Ln6)	
Latitude: 62° 57' 23.34"	Long	gitude: 149°39	01.64"	Datum: WGS84
Logbook No.: 00 3	Logbook Page No.: 25	Picture No.:	P_N.S. pit	, plug
SITE PARAMETERS	-t-t-t-			
Subregion: Interior	÷	Landform (hi	llslope, terrace, hummoc	ks, etc.):
Slope (%): 0-3		Local relief (concave, convex, none):	convex
Pre-mapped Alaska LNG/NWI classification	ation: Upland	Soil Map Uni	t Name: MA	
Are climatic/hydrologic conditions on th Yes No (if no exp	e site typical for this time of yea blain in Notes)	r? Are "N Yes_;	ormal Circumstances" pr <u> <u> y</u> No (If no, examples)</u>	esent: kplain in Notes.)
Are Vegetation, Soil, or Hy	drology Significantly Dist		(If yes, explain in Note	s)
Are Vegetation, Soil, or Hy	drologyNaturally Problem	natic? No <u>X</u>	(If yes, explain in Note	s.)
SUMMARY OF FINDINGS		1	11	
Hydrophytic Vegetation Present? Yes_	<u>X</u> No	Is the Sampled	Area within a Wetland?	Yes No
Hydric Soil Present? Yes_	Х No	Wetland Type:	PSSI Em	113
Wetland Hydrology Present? Yes_	<u>Х</u> No	Alaska Vegetatio	n Classification (Viereck)	ILCO ILAXO
Notes and Site Sketch: Please include corridor.	JEm 1B sills h	u V i u	Ire, Distances from Center	erline, Photo Locations, and Survey
U	DH-TOSY	PArts		

VEGETATION (use scientific names of plants			1	The state of the second se
Tree Stratum (Plot sizes: <u>26'</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 3
Le.				Total Number of Dominant Species Across All Strata: 3 % Dominant Species that are OBL, FACW, or FAC: 100
2.				% Dominant Species that are OBL, FACW, or FAC:
3.				the state of the s
4.		1		Prevalence Index worksheet:
Total Cover:	0			Total % Cover of: Multiply by:
50% of total cover:	<u> </u>	% of total cov	er: <u>0</u>	OBL species:X 1 =
Sapling/Shrub Stratum (_ 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 5 $x 2 =$ 10 FAC species 110 $x 3 =$ 330 FACU species 1 $x 4 =$ 4
1. picea mariana glauca	3		FACH	UPL species O X 5 = O
Betula nana	70	Y	FAG	Column Totals: 118 (A) 346 (B)
3. vaccinium uliginosum	15		FAL	PI = B/A = 2.93
4. Rhododendion tomentosum	1		FALW	
Empetrum nigrum	3		FAL	
. Vaccinium oxycoccus	2		OBL	
Andromeda polifolia	1		FACW	
			1 0 0 0 0	_
8.				
9.				
9. Total Cover:				
9.		0% of total cov		
9. Total Cover: 50% of total cover:	47.5 20	0% of total cov		
D. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants	47.5 20	0% of total cov Dominant Species? (Y/N)		Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Dominance Leden is < 2.0
). Total Cover: 50% of total cover: /EGETATION (use scientific names of plants Herb Stratum (26^^)	<u>47.5</u> 20) Absolute	Dominant Species? (Y/N)	rer: <u>19</u> Indicator	$\frac{X}{X}$ Dominance Test is > 50% $\frac{X}{X}$ Prevalence Index is < 3.0
P. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (G') 1. Rubus chamaemacous	<u>41.5</u> 20)) Absolute % Cover	Dominant Species?	rer: <u>19</u> Indicator Status	X Dominance Test is > 50%
2. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Rubus chamaemocous 2. Calamagrostis canadensis	<u>41.5</u> 20)) Absolute % Cover	Dominant Species? (Y/N)	rer: 19 Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
2. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Rubus chamaemocous 2. Calamagrostis canadensis	<u>41.5</u> 20)) Absolute % Cover	Dominant Species? (Y/N)	Indicator Status FALW FAG	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Rubus chamaemorous 2. Calamagrostis canadensis 3. Equisetum Andany 4. Trientalis europaea	<u>47.5</u> 20) Absolute % Cover <u>3</u> 5 15 7 1 R	Dominant Species? (Y/N)	Indicator Status FALW FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Rubus chamaemorous 2. Calamagrostis canadensis 3. Equisetum Aruguy	<u>47.5</u> 20) Absolute % Cover <u>3</u> 5 15 7 1 R	Dominant Species? (Y/N)	Indicator Status FALW FAC FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Image: Morphological Adaptations ¹ (Provide supporting data in Notes) Image: Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Rubus chamaemorous 2. Calamagrostis canadensis 3. Equisetum Anney 4. Trientalis europaea 5. pedicularis labradorica	<u>47.5</u> 20) Absolute % Cover <u>3</u> 5 15 7 1 R	Dominant Species? (Y/N)	Indicator Status FALW FAC FACU FACU FACW	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unleadisturbed or problematic. O% Bare Ground
2. Total Cover: 50% of total cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (26°) 1. Rubus chamaemorous 2. Calamagrostis canadensis 3. Equisetum Androny 4. Thientalis europaea 5. pedicularis labradorica 6. cornus canadensis	<u>47.5</u> 20 Absolute % Cover <u>3</u> <u>5</u> <u>7</u> <u>1</u> <u>7</u> <u>1</u> <u>7</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u>	Dominant Species? (Y/N)	Indicator Status FAC FAC FACU FACW FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unleadisturbed or problematic.
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Rubus chamaemorous 2. Calamagrostis canadansis 3. Equisetum Arvany 4. Thentalis europaea 5. pedicularis labradorica 6. cornus canadensis 7. Rubus Archica	47.5 20 Absolute % Cover 35 5 7 1R 7 1R 1 7 1R 1 7	Dominant Species? (Y/N)	Indicator Status FALW FAC FACU FACU FACU FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unleadisturbed or problematic. O% Bare Ground N_P% Cover of Wetland Bryophytes
9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26</u> ') 1. Rubus chamaemorous 2. Calamagrostis canadensis 3. Equisetum Arugay 4. Trientalis europaea 5. pedicularis labradorica 6. comus canadensis 7. Rubus Arches 8. Pinguicula Villosa 9.	47.5 20 Absolute % Cover 35 5 7 1R 7 1R 1 7 1R 1 7	Dominant Species? (Y/N)	Indicator Status FALW FAC FACU FACU FACU FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unleadisturbed or problematic. O% Bare Ground N_P% Cover of Wetland Bryophytes O% Cover of Bryophytes % Cover of Water
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (26') 1. RUBUS Chamaemorous 2. Calamagrostis canadensis 3. Equisetum Arusny 4. Trientatis europaea 5. pedicularis labradorica 6. cornus canadensis 7. Puhus Arcticus 8. Pinguicula Villosa	47.5 20 Absolute % Cover 35 5 7 1R 7 1R 7 1R 7 TR	Dominant Species? (Y/N)	Indicator Status FALW FAC FACU FACU FACU FACU	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unleadisturbed or problematic. O% Bare Ground N_P% Cover of Wetland Bryophytes

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SOIL	-		Date 7-1-14 Fe	ature	DWGO	HT034	-	Soli Pit Required (Y/N)	
SOIL PROFI	LE DESCRIPTION: ([Describe	e to the depth needed	to doc	ument the	indicator or	confirm the absen	ce of indicators.)	
Depth	Matrix		Redox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-20	nyata da gan Mari ta bagi ngan yang			-			Fibric	organics	
		-		-	-	-			
	-	-		-		-			
		-		-		-	_		
				-	-	-		-	
						-			
¹ Type: C=Co	oncentration, D=Deple	tion, RI	M=Reduced Matrix, C	S=Cov	ered or Co	ated Sand G	Grains. ² Location	n: PL=Pore Lining, M=Matrix.	
HYDRIC SOI	L INDICATORS		and the	12-	1	100	INDICATORS	FOR PROBLEMATIC HYDRIC SOILS ³	
Histosol or H	istel (A1) <u>X</u>		Alaska Gleyed	(A13)			Alaska Color	Change (TA4)⁴	
Histic Epiped	on (A2)		Alaska Redox	Alaska Redox (A14)				Alaska Alpine Swales (TA5)	
Black Histic (A3)		Alaska Gleyed	Pores	(A15)		Alaska Redox	with 2.5Y Hue	
Hydrogen Su	lfide (A4)						Alaska Gleye Layer	d without 5Y Hue or Redder Underlying	
Thick Dark S	urface (A12)	_					Other (Explain	n in Notes)	
disturbed or p								ape position must be present unless	
Restrictive La	ayer (if present): Type):	- D	epth (i	nches):				
Hydric Soil F	Present (Y/N):	У							
Notes:	Eriz Soils	Ô.	Served						

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)		
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)	
High Water Table (A2) <u>X</u>	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)	
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)	
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)	
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)	
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:		
Algal Mat or Crust (B4)	Other (Explain in Notes);			
Iron Deposits (B5)	10			
	1 10			
Surface Water Present (Y/N): N	Depth (in): N/A		N	
Water Table Present (Y/N):	Depth (in): 3	Wetland Hydrology Present (Y/N):	<u> </u>	
Saturation Present (Y/N): (includes capillary fringe)	Depth (in): ()			
Notes:				

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even 🔀 Highly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) <
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) // Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) ✓ Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Stity Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial Inlet/P
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Net: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water X Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading N/
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) ✓ High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs ✓ Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated X Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Juxtaposition: Wetland Isolated X Wetlands within 400m, Not Connected Only Connected Below
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below

Crew Chief QA/QC cheek.

GPS Technician QA/QC check:

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Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: WOOHT034 Field Target: 090 Date: 7-1-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Degetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- ☑ Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

☑ Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- ☑ Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)? 0.12

Two photos were taken for each Observation Point (vegetation/site overview)?

Х Х Zoe Meade -14 Wetland Scientist (print) Signature / Date Signature / Date Field Crew Chief (print)

SITE DESCRIPTION			30	o'stud	y.	
Survey Type: Centerline Acce	ss Road (explain)	Other (expl	ain)_ Z	Field Targe	:098	Map #: <u>68</u> Map Date: <u>6/217</u> /14
Date: 07-01-14	Project Name & No.:	Alaska LNG	26221306		Feature lo	1: W60 HT 0 35
Investigators: Joe Christo,	pher, Zoe Mea	ide				Team No.: W60
State: Alaska	Region: Alaska		Milepost:	617.8	LNG	
Latitude: 62° 51' 47.16"		Longitude	: 149° 52'	2.0.80"		Datum: WGS84
Logbook No.: 00 3	Logbook Page No.:	026	Picture No.:	P_ N, S,	pit, 1	plug
SITE PARAMETERS				1		
Subregion: interior			Landform (hil	Islope, terrace,	hummock	ks, etc.): Depression
Slope (%): 0-1	1					Concard.
Pre-mapped Alaska LNG/NWI classifica	tion: PSS/EMI	B	Soil Map Unit	t Name:	IA	
Are climatic/hydrologic conditions on the Yes No (if no expl		of year?	Are "N Yes <u>X</u>	ormal Circumst No		esent: plain în Notes.)
Are Vegetation, Soil, or Hyd	Irology Significant	ly Disturbed?	Νο <u>Χ</u>	_(If yes, expla	n in Notes	3)
Are Vegetation, Soil, or Hyd	Irology Naturally F	Problematic?	No <u>X</u>	_ (If yes, expla	in in Note:	5.)
SUMMARY OF FINDINGS	11. 11. 11.	The second	I.			and the second
Hydrophytic Vegetation Present? Yes_	<u>X</u> No	ls t	the Sampled A	Area within a V	/etland?	Yes No
Hydric Soil Present? Yes	<u> </u>	We	etland Type:	PEMSÉ	B	(PEMI/SSIB)
Wetland Hydrology Present? Yes	No	— Ala	iska Vegetatior	Classification	(Viereck):	四 A3, 耳C2
Notes and Site Sketch: Please include D corridor. Tons of Bear Sign. Fresh sin + Bezzing ANNS Est. Sow + CUSS. Wore sompez From Here (FT98) AS We WAIKE Daub PAth Lega formand J=599 Did put 90 to 99-20		PAT 03 C	Storyers Storyers DAVES		om Cente	rline, Photo Locations, and Survey

VEGETATION (use scientific names of plant	s)	1		
Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: <u>2</u> Total Number of Dominant Species Across All Strata: <u>2</u>
1.				% Dominant Species that are OBL, FACW, or FAC: 100 (A
2.				
3.				No.
4.				Prevalence Index worksheet:
Total Cove	r:			Total % Cover of: Multiply by:
50% of total cove	r: <u>0</u> 20	% of total cov	ver:	OBL species: <u>103</u> X 1 = <u>103</u>
Sapling/Shrub Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $3 X 2 = 6$ FAC species $1 X 3 = 21$ FACU species $2 X 4 = 8$
1. Salex pulchra	3	Y	FACW	UPL species 0 X 5 = 0
2. Alnus SSP	1		FAC	Column Totals:(A)(38(B)
3. picea glauca	TR		FACV	PI = B/A = <u>1 + 2</u>
4. Spirea stevenii	TR		FACU	
5,				Plot Had Low Shrus
6.				Dominance by matrix of
7.				Dominance but matrix of Area Had Should Dominance
8.				19100 Jaros Shins Duminard
9.				7 pem/ss
Total Cove 50% of total cove	r: <u>2</u> 22	0% of total cov	ver:0,_8	
VEGETATION (use scientific names of plan	1	T	1	
Herb Stratum(<u>26</u> ′)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: <u> </u>
1. Comarum palustre	18		OBL	 _X Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in
2. Equisetum fluviatile	15		OBL	Notes)
3. Trientalis europaea	1		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Carex aquatilis	70	Y	OBL	¹ Indicators of hydric soil and wetland hydrology must be present unles
5. Mertensia paniculata	TR		FACU	disturbed or problematic.
6. Calamagrostis canadons	15 5		FAC	La and a second second
7. heracleum maximum	I		FAC4.	% Bare Ground
8. veratrum viride	1		FAC	\underline{N} \underline{N} \underline{N} \underline{N} Cover of Wetland Bryophytes
9. Chamerion angustofuliu	n TR		FACU	Total Cover of Bryophytes
10.				ろ % Cover of Water Hydrophytic Vegetation Present (Y/N):
Total Cove	r: 111		1	Notes: (If observed, list morphological adaptations below):
50% of total cove		0% of total co	ver: <u>22, 2</u>	Standing water in adjacent beaver pond = 100 ft.

SOIL			Date ///C Fe	eature I	outol	1052		Soll Pit Required (Y/N)
SOIL PROFIL	E DESCRIPTION: ((Describe	e to the depth neede	d to doc	ument the	indicator or c	onfirm the absen	ce of indicators.)
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0 - 20						1	Floric	Sha.
		_						
	1	_		_	-	-		
		-		-	-	_		
		-				-	-	-
		-		-			-	
	ncentration D=Depl	etion R	/ //=Reduced Matrix, C		ered or Co	ated Sand Gr	rains ² Location	n: PL=Pore Lining, M=Matrix.
	L INDICATORS			00-000				
Histosol or Hi	stel (A1)		Alaska Gleyed	(A13)				Change (TA4) ⁴
Histic Epiped	on (A2)		Alaska Redox					Swales (TA5)
Black Histic (/	A3)		Alaska Gleyed				Alaska Redox	with 2.5Y Hue
	fide (A4)						Alaska Gleyed Laver	d without 5Y Hue or Redder Underlying
Thick Dark Su	urface (A12)	-					Other (Explain	n in Notes)
disturbed or p ⁴ Give details Restrictive La	roblematic.	otes. be: <u>V</u>	ion				ppropriate landsc	cape position must be present unless
N1-4	1125 02	_						

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2) X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)	1		k j e		
Surface Water Present (Y/N):	Depth (in): a jacent pon c	1 ft(t)	V		
Water Table Present (Y/N):	Depth (in): 3	Wetland Hydrology Present (Y/N): _			
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):				

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) V
Interspersion of Cover & Open Water (P): 100% Cover or Open Water25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) X One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered PatchesX Continuous Cover 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <t< td=""></t<>
Dead Woody Material (P): Low Abundance (0-25% of surface) X Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional _X Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Sity
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed V Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Beauty Ag m
Water pH (P): No surface water X Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits_X Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%)
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
Evidence of Seeps and Springs (P): No Seeps or Springs X Seeps Observed Intermittent Spring Perennial Spring
Evidence of Seeps and Springs (P): No Seeps or Springs X Seeps Observed Intermittent Spring Perennial Spring LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below
Evidence of Seeps and Springs (P): No Seeps or Springs X Seeps Observed Intermittent Spring Perennial Spring LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream

Crew Chief QA/QC check:

GPS Technician QA/QC check:

YM

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT035 Field Target: 098 Date: 07-01-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

☑ Site description, site parameters and summary of findings are complete? A detailed site sketch is included in logbook?

2. Vegetation

16.6

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Use Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- 1 Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe meade

Wetland Scientist (print)

ristophe

Field Crew Chief (print)

Meall 7-1-14 Signature / Date Signature / Date

Vegetation Classification Data Form

Date:	Project Name Alaska LNG 2	e & #: 26221306	Field Target: ୦୩୪			
Investigators:			10	Feature ID:		
)oe (Latitude:	nnistopher,	Longitude		W 60 H T 0 3 6 Datum: WGS84		
62° 51' 46,	92''	149°52'	19.26"			
Logbook #:	03	Logbook Ó	Page #: 2つ	Picture #: P = N, S		
Location Descript	ion:					
SE of	FT 098	- hills	ide			
Common Species	Observed (Scien	tific Name)	Betula r	neoalastana		
Gymnocarp	ium dry	opterio	Viburr	num edule		
Picea q	llauca		Cornus	Cornus canidensis		
Veratrum	viride		Calamo	Calamagrostis canadensis		
Streptopus	amplexiti	ò/ius	Dryoph	Dryopteris expansa		
Percent Cover of D	ominant Structure	Level: 40 %	o forres	t		
Habitat Descriptio	n:	Suny Sul	19.11			
upland	mixed f	forvest, la	ow open	Shrub understory		
Alaska Vegetation	Classification: I	_evel I, Level I	I, Level III			
IC2		ITC2				
Notes:	NO. 4	A second second	1. 1. 1.			
10-15 010	SIPPE					
(IA			Technician_Zoe Meade		

Vegetation Classification Data Form

Lavel I	Level II	Level III
L Forest	A Needleleaf (conifer) forest	(1) Closed needleleaf (conifer) forest (2) Open needleleaf (conifer) forest (3) Needleleaf (conifer) woodland
	B Broadleef forest	 Closed broadleaf forest Open broadleaf forest Broadleaf woodland
	C. Mixed forest	(1) Closed mixed forest (2) Open mixed forest (3) Mixed woodland
II Scrub	A. Dwarf tree scrub	 Closed dwarf tree scrub Open dwarf tree scrub Dwarf tree scrub woodland
	B Tall scrub	(1) Closed tall scrub (2) Open tall scrub
	C. Low scrub	(1) Closed low scrub (2) Open low scrub
	D Dwarf scrub	 (1) Dryas dwarf scrub (2) Ericaceous dwarf scrub (3) Willow dwarf scrub
III. Herbaceous	A Graminoid herbeceous	 Dry graminoid herbaceous Mesic graminoid herbaceous Wet graminoid herbaceous (emergent)
	B Forb herbaceous	 Dry forb herbaceous Mesic forb herbaceous Wet forb herbaceous (emergent)
	C Bryoid herbaceous	(1) Mosses (2) Lichens
	D Aquatic (nonemergent) herbaceous	 Freshwater aquatic herbaceous Brackish water aquatic herbaceou Marine aquatic herbaceous

8a	Vegetation with at least 10 percent cover of dwarf trees	II A Dwarf tree scrub
8b	Vegetation with at least 25 percent cover of shrubs and less than 10 percent cover of dwarf trees	
9a	Dwarf tree canopy of 60-100 percent cover	II.A.1 Closed dwarf tree scrul
9b	Dwarf tree canopy of 25-59 percent cover	II.A.2 Open dwarf tree scn
9c		
10a	Shrubs more than 1.5 meters (5.ft) tail	II B Tall scrub
10b	Shrubs less than 1.5 meters (5ft)tall	
11 a	Shrub canopy cover greater than 75 percent	il 8 1 Closed tali scru
11 b	Shrub canopy cover of 25-74 percent	II B 2 Open tall scr
12a	Shrubs 20 centimeters to 1.5 meters tall	II C Low scrub
12b	Shrubs under 20 centimeters in height .	II.D Dwarf scrub
13a	Shrub canopy cover greater than 75 percent	II C I Closed low scr
13b	Shrub canopy cover of 25-74 percent, or as low as 2 percent if little or no other vegetation cover present	II C ? Open low scru
14a	Dryas species dominant in the dwarf shrub layer	
14b	Ericaceous species dominant in the dwarf shrub layer	
14c.	Willow species dominant in the dwarf scrub layer	. II D 2 Willow dwarf scru
III, F	lerbaceous	
15a	Terrestrial vegetation, or if growing in the water, dominated by emergent vegetation	
15b	Dominant vegetation growing submerged in water or floating on the water surface, but not emerging above the water	III D Aquatic herbaceous

Des	criptions of levels I, II, III, and IV follow the classification table
la.	Trees over 3 meters (10 ft) tall are present and have a canopy cover of 10 percent or more I Forest 2
1 b	Trees over 3 meters (10 ft) tall are absent or neerly so, Less than 10 percent cover, (Dwarf trees, less than 3 meters (10 ft) tall may be present and abundant
i Fo	prest
28	Over 75 percent of tree cover contributed by needleleaf (conifer) species
2b	Less than 75 percent of tree cover contributed by needleleef (confier) species
3a	Tree canopy of 60-100 percent LA 1 Closed needleleaf forest
3b.	Tree canopy of 25-59 percent cover IA.2 Open needleleaf fores
3c	Tree canopy of 10-24 percent LA.3 Needleleaf woodland
4a	Over 75 percent of tree cover contributed by broadleaf species
4b	Broadleef or needleleaf species contribute 25 to 75 percent of the tree cover
5a	Tree canopy of 60-100 percent cover
5b.	Tree canopy of 25-59 percent cover
5c	Tree canopy of 10-24 percent cover
6a.	Tree canopy of 60-100 percent cover I.C 1 Closed mixed fores
6b.	Tree canopy of 25-59 percent cover I.C.2 Open mixed fores
6c,	Tree canopy of 10-24 percent cover
7a,	Vegetation with at least 25 percent cover of erect to decumbent shrubs or with at least 10 percent cover of dwarf trees (less than 3 meters
7b.	[10 8] tail) * Vegetation herbaceous (may have up to 25 percent shrub cover) 15
_	
16a	Grasses, sedges, or rushes (graminoid) plants dominant
16b	Forbs or bryophytes dominant 18
17a	Grasslands of well-drained dry sites, such as south-facing bluffs, old beaches, and sand dunes. Typically (but not always) dominated by <i>Elymus</i> spp., <i>Festuca</i> spp. and <i>Deschampsia</i> spp.
17b	On moist sites, but usually not with standing water. Usually dominated by <i>Calemagnetic</i> spo

17b	On moist sites, but usually not with standing water. Usually dominated by Calemagrostis spp. Carex spp. or Eriophorum spp.; tussocks often present
17c	On wet stes, standing water present for part of the year; dominated by either sedges or grasses; includes wet tundra bogs, marshes, and fens
1 8a	Vegetation dominated by forbs (broadleaf herbs, ferns, or horsetails) III 8 Forb herbaceous 19
18b	Vegetation dominated by mosses or lichens N
19a	On dry sites, usually rocky and well drained; mostly tundra sites
19b	On moist sites but without standing water, mostly within forested areas
19c	On wet sites, usually with standing water for part of the year III 8 3 Wet forb herbaceous
20a	Vegetation cover dominated by mosses
20b	Vegetation cover dominated by lichens III C 2 Bryoid lichen
21a	Vegetation submerged or floating in fresh water aquatic herbaceous
21 b	Vegetation submerged or floating in brackish water III D 2 Brackish water aquatic herbaceous
360	Venetation submarined or Realing

21c Vegetation submarged or floating in salt water . . IN D 3 Marine aquatic herbaceous

Vegetation Classification Data Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: W60HT036 Field Target: 098 Date: 07-01-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. General Information

- Location data recorded?
- Delta Photo taken and photo number recorded?

2. Location Description

Location of site recorded with enough detail to help relocate?

3. Common Species

- ∠ Scientific name of common species recorded?
- Percent cover of dominant structure level noted?

4. Habitat Description

Habitat described?

5. Classification

- All three levels of classification recorded?
- 6. Field Log Book
 - Field form entries consistent with log book?
 - Logbook clearly identifies the Field Target ID and Feature ID?

Signature

Zoe Meade

Field Technician (print)

NVISAPL

Field Crew Chief (print)

SITE DESCRIPTION		1	2	000'study		
Survey Type: Centerline Acce	ss Road (explain)	Other (expla	ain) <u>X</u>	Field Target: 099	Map #: <u> </u>	
Date: 07-02-14	Project Name & No.:	Alaska LNG	26221306	Feature Id:	W60HT037	
Investigators: Joe Christophe	r, Zoe Meade	, Abigai I	Fisher		Team No.: ₩60	
State: Alaska	Region: Alaska		Milepost: (017.9		
Latitude: 62° 51' 47.01"		Longitude	149° 52'	27.05"	Datum: WGS84	
Logbook No.: 003	Logbook Page No.:	28	Picture No.:	P-N.S. pit, F	oluq	
SITE PARAMETERS		S-2.73	-			
Subregion: in terior			Landform (hil	Islope, terrace, hummock	s, etc.):	
Slope (%): 0 - 2			Local relief (c	oncave, convex, none):	concave	
Pre-mapped Alaska LNG/NWI classifica	ation: PEM 55 1./	B	Soil Map Unit	Name:		
Are climatic/hydrologic conditions on the Yes No (if no exp		e of year?	Are "No Yes <u>X</u>	ormal Circumstances" pre No (If no, ex		
Are Vegetation, Soil, or Hy	drology Significan	tly Disturbed?	No <u>X</u>	_(If yes, explain in Notes)	
Are Vegetation, Soil, or Hy	drology Naturally	Problematic?	NoX	_ (If yes, explain in Notes	.)	
SUMMARY OF FINDINGS				all provide the	1.	
Hydrophytic Vegetation Present? Yes_	X No	ls	the Sampled A	Area within a Wetland?	Yes No	
р ⁴	X No	4100	Wetland Type: PSSJ/EM1B			
Wetland Hydrology Present? Yes_	X No	— Ala	aska Vegetatior	n Classification (Viereck):	IBI, II. A \$2	
Notes and Site Sketch: Please include I corridor.	Directional & North Arrow	w, Centerline,	Length of featu	re, Distances from Center	line, Photo Locations, and Survey	
	sketch O	in po	. 28	in logbook	003	
		ن ۲	/	j	11	
20					A. 1	

	Abashda	Deminant	1	Bauring and Task under bask
Tree Stratum (Plot sizes: 26 ¹)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: $\frac{3}{2}$
1.		(111)		Total Number of Dominant Species Across All Strata: 3
				% Dominant Species that are OBL, FACW, or FAC: <u>100</u>
l.		-		
	-			Prevalence Index worksheet:
Total Cove				Total % Cover of: Multiply by:
50% of total cove)% of total cov	rer: Ô	OBL species: X 1 =
Sapling/Shrub Stratum (2.6')	Absolute	Dominant	Indicator	FACW species: 0 X 2 = 0
	% Cover	Species? (Y/N)	Status	FAC species 112 x 3 = 336 FACU species 2 x 4 = 8
. Salex barclayii	65	У	FAC	$\begin{array}{c c} \hline & & \\ \hline \\ \hline$
Picea glauca	128		FACU	Column Totals: 121 (A) 351 (B)
3.				PI = B/A = 7.90
k.				
i.				
S.				
3				
Э.				-
Total Cove	er: 67			-
50% of total cove)% of total cov	er: 13.4	
50% of total cove	er: <u>33.5</u> 20)% of total cov	ver: <u>13.4</u>	
50% of total cove	er: <u>33.5</u> 20 ts)	- 'a.º'	523	
50% of total cove	er: <u>33.5</u> 20	Dominant Species?	rer: <u>13.4</u> Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50%
50% of total coverage of total coverage of the scientific names of planes for the scientific names of planes of the science o	er: <u>33.5</u> 20 ts) Absolute % Cover	Dominant	Indicator Status	$\frac{X}{X}$ Dominance Test is > 50% $\frac{X}{X}$ Prevalence Index is < 3.0
50% of total cove EGETATION (use scientific names of plan <u>Herb Stratum</u> (<u>26'</u>) 1. Comarum palustre	er: <u>33.5</u> 20 ts) Absolute % Cover 7	Dominant Species?	Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
50% of total cove /EGETATION (use scientific names of plan Herb Stratum () 1. Comarvm palustre 2. Equisetum arvense	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12	Dominant Species? (Y/N)	Indicator Status OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
50% of total cove /EGETATION (use scientific names of plan Herb Stratum () 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis Canadensis	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12 35	Dominant Species? (Y/N)	Indicator Status 0 B L F A C F A C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cove /EGETATION (use scientific names of plan Herb Stratum (26') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis Canadansis 4. viola palustris	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12	Dominant Species? (Y/N)	Indicator Status OBL FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
50% of total cove /EGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Comarvm palustre 2. Equisetum arvense 3. Calamagrostis canadensis 4. viola palustris 5.	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12 35	Dominant Species? (Y/N)	Indicator Status 0 B L F A C F A C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
50% of total cove /EGETATION (use scientific names of plan Herb Stratum () 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis Canadensis 4. viola palustris 5. 6.	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12 35	Dominant Species? (Y/N)	Indicator Status 0 B L F A C F A C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic.
50% of total cove /EGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Comarvm palustre 2. Equisetum arvense 3. Calamagrostis canadensis 4. viola palustris 5. 6. 7.	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12 35	Dominant Species? (Y/N)	Indicator Status 0 B L F A C F A C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. 5% Bare Ground
50% of total cove /EGETATION (use scientific names of plan terb Stratum (_26' _) 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis Canadensis 4. viola palustris 5. 6. 7. 8.	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12 35	Dominant Species? (Y/N)	Indicator Status 0 B L F A C F A C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. 5 % Bare Ground NIA % Cover of Wetland Bryophytes
50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis <u>Canadensis</u> 4. viola <u>palustris</u> 5. 6. 7. 8.	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12 35	Dominant Species? (Y/N)	Indicator Status 0 B L F A C F A C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. 5% Bare Ground 71A% Cover of Wetland Bryophytes 7 7 Total Cover of Bryophytes
50% of total cover VEGETATION (use scientific names of plan Herb Stratum (26') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis Canadensis 4. viola palustris 5. 6. 7. 8. 9.	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12 35	Dominant Species? (Y/N)	Indicator Status 0 B L F A C F A C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. 5 % Bare Ground NIA % Cover of Wetland Bryophytes 2 Total Cover of Bryophytes 0 % Cover of Water
50% of total cover VEGETATION (use scientific names of plan Herb Stratum (26') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis Canadensis 4. viola palustris 5. 6. 7. 8. 9.	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12 35 T R 	Dominant Species? (Y/N)	Indicator Status 0 B L F A C F A C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. 5 % Bare Ground 1/A % Cover of Wetland Bryophytes 0 % Cover of Bryophytes 0 % Cover of Water Hydrophytic Vegetation Present (Y/N):
50% of total cover VEGETATION (use scientific names of plan Herb Stratum (G') 1. Comarum patustre 2. Equisetum arvense 3. Calamagrostis canadensis 4. viola patustris 5. 6. 7. 8. 9. 10.	er: <u>33.5</u> 20 ts) Absolute % Cover 7 12 35 T R 	Dominant Species? (Y/N)	Indicator Status 0 B L F A C F A C F A C F A C V	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. 5 % Bare Ground NIA % Cover of Wetland Bryophytes 2 Total Cover of Bryophytes 0 % Cover of Water

SOIL			Date 7-2-14 F	eature	D.WGO	HTO3-	1	Soli Pit Required (Y/N)	
SOIL PROFIL	E DESCRIPTION: (I	Describe	to the depth neede	ed to doc	ument the	indicator or	confirm the absence	e of indicators.)	
Depth (inches)	Matrix		Redox Features						
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture ,	Notes	
0-9		1		-			- Fibric	organics	
9-20	10 YR 2/2						silt loa m	organics wood/root fragments	
]			
		1.00		-	<u></u>			1. ST	
				_		-	4.1		
-		1				1			
	centration, D=Deple	tion, RM	A=Reduced Matrix,	CS=Cov	ered or Co	ated Sand (: PL=Pore Lining, M=Matrix.	
	INDICATORS	-	al and a second s	1000		-		FOR PROBLEMATIC HYDRIC SOILS ³	
	stel (A1)		Alaska Gleye	Alaska Gleyed (A13)			Alaska Color Change (TA4) ⁴		
Histic Epipedo	on (A2) X		Alaska Redox	Alaska Redox (A14)			Alaska Alpine	Swales (TA5)	
Black Histic (A	(3)		Alaska Gleye	Alaska Gleyed Pores (A15)			Alaska Redox	with 2.5Y Hue	
Hydrogen Sul	fide (A4)						Alaska Gleyed Layer_	without 5Y Hue or Redder Underlying	
Thick Dark Surface (A12)				* ·				Other (Explain in Notes)	
disturbed or p						151		ape position must be present unless	
Restrictive La	ver (if present): Type			Depth (i	nches):	N/A			
Hydric Soil P	resent (Y/N):	Y							
Notes:									
					_				

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2) X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3) <u>X</u>	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry Season				
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N): N	Depth (in): N/A		N		
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N):	y		
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):				
Notes:					

VEGETATION VARIABLES P= Piot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) 0 Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): 2 Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even X
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) X Very High Density (80-100%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water_X <25% Scattered/Peripheral Cover26-75% Scattered or Peripheral CoverN/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species)X High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site OpenX Small Scattered Patches Continuous Cover 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional 📈 Riverine Estaurine Fringe
SOIL VARIABLES
SOIL VARIABLES Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Silty Mineral: Silty Mineral: Silty
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric
Soil Factors (P): Soil LackingHistosol:FibricHistosol:HemicHistosol:Sapric Mineral: GravellyMineral: SandyMineral: SiltyXMineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/OutletXNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No Outlet Perennial Inlet/No OutletPerennial
Soil Factors (P): Soil Lacking
Soil Factors (P): Soil LackingHistosol:FibricHistosol:HemicHistosol: Sapric Mineral: GravellyMineral: SandyMineral: SiltyXMineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/OutletX No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, SaturatedX Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Soil Factors (P): Soil LackingHistosol:FibricHistosol:HemicHistosol: Sapric Mineral: GravellyMineral: SandyMineral: SiltyXMineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/OutletX No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, SaturatedX Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Fluvaquent Soils Sediment CostervedX Evidence of Sedimentation (P): No Evidence ObservedX Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Soil Factors (P): Soil Lacking
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty X Mineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty X Mineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Vet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty X Mineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Untet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty X Mineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/No Outlet Inlet/Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Wet: Perm. Flooded (Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow X Restricted Outflow Unrestricted Outflow Water pH (P): No surface water X Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty X Mineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Inlet/Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Wet Perm. Flooded (Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow X Restricted Outflow Unrestricted Outflow Water pH (P): No surface water X Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)

Only Connected Above_	Connected Upstream 8	Downstream Unknown	
Wetland Land Use:	High Intensity (i.e., ag.)	Moderate Intensity (i.e., forestry)	Low Intensity (i.e. open space) X
Watershed Land Use:	0-5% Rural <u>X</u> 5-25%	Urbanized 25-50% Urbanized	>50% Urbanized
Size: Small (<10 ac	res) <u>X</u> Medium (10-100 a	cres) Large (>100 acres)	_

Crew Chief QA/QC check:

GPS Technician QA/QC check:

N

m

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID: W60HT037
 Field Target: 099
 Date: 07-02-14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- ☑ Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- I Dominance Test and Prevalence Index have been completed?

3. Soil

- ∠ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- ☑ Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

☑ Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- I Two photos were taken for each Observation Point (vegetation/site overview)?

Х Zoe Meade -14 07-02 reid Wetland Scientist (print) Signature / Date Field Crew Chief (print) Signature / Date

SITE DESCRIPTION	- Stall				-	The second second
Survey Type: Centerline Acces	ss Road (explain)	Other (expla	ain) <u>X</u>	Field Targ	et: <u>100</u>	Map #: <u>70 Map Date: 5/3-/14</u>
Date: 7 /2/14	Project Name & No.:	Alaska LNG	6 26221306		Feature Id:	W60HT038
Investigators: Joe Christo	pher, Zoe Mean	de, Arb	igail F	Fisher		Team No.: W60
State: Alaska	Region: Alaska		Milepost: (19,4	(LMg)	
Latitude: 62° 50' 26.87"		Longitude	:149° 53	,' 21.=	12"	Datum: WGS84
Logbook No.: 003	Logbook Page No.:	29	Picture No.:	P-N,	s, pit,	Plug
SITE PARAMETERS		-		1.20-)
Subregion: Sputch Cent	nt		Landform (hil	Islope, terrac	e, hummocks	s, etc.): Darissium
Slope (%): 0 - 3			Local relief (c	concave, con	/ex, none): /	ancoul
Pre-mapped Alaska LNG/NWI classifica	tion: PEMJIS	S1B	Soil Map Unit		NIN	
Are climatic/hydrologic conditions on the		of year?			stances" pres	
YesXNo(if no expl Are Vegetation, Soil, or Hyd		ly Disturbed?				lain in Notes.)
Are Vegetation, Soil, or Hyd					lain in Notes) Iain in Notes.	
SUMMARY OF FINDINGS	Naturally P	-TODIematic?	NO	_ (II yes, exp	nam minotes.)
Hydrophytic Vegetation Present? Yes_	No	ls	the Sampled A	Area within a	Wetland?	Yes No
Hydric Soil Present? Yes_	L No	we	etland Type:	PEMI	15524	\$ F
Wetland Hydrology Present? Yes_	A No	— Ala	aska Vegetation	n Classificatio	on (Viereck):	IIA \$, IC2
Notes and Site Sketch: Please include D corridor.	irectional & North Arrow	, Centerline,	Length of featu	re, Distances	from Centerl	ine, Photo Locations, and Survey
comdor,	S	2 6	DA JO	29		÷
1						N.

VEGETATION (use scientific names of plants)			
<u>Tree Stratum</u> (Plot sizes: <u>ちô'</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet : No. of Dominant Species that are OBL, FACW, or FAC: (A) Total Number of Dominant Species Across All Strata: (H) (B)
1,		-		% Dominant Species that are OBL, FACW, or FAC: <u>100%</u> (A/B)
2.				
3.				
4.				Prevalence Index worksheet:
Total Cover		-		Total % Cover of: Multiply by:
50% of total cover	20	% of total cov	rer:	OBL species: $156 \times 1 = 158$
<u>Sapling/Shrub Stratum(50))</u>	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $3 \times 2 = 6$ FAC species $3 \times 3 = 69$ FACU species $3 \times 4 = 57$
1. Betula nana	15	Y	FAC	UPL speciesX 5 =
2. Myrica gale	35	У	OBL	Column Totals: 197 (A) 285 (B)
3. Dasaphora fruticosa	4		FAC	PI = B/A = 1.45
4. Picea glauca	8		FACU	
5. Vaccinium oxy coccuis	1		OBL	
6. Spirea stevenii	5		FACU	
7. Andromeda polifolia	TR	1	FACW	
8.				
9.	rd			
Total Cover 50% of total cover)% of total cov	ver: <u>13.6</u>	
VEGETATION (use scientific names of plants	5)		1	H
Herb Stratum (<u>50'</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
1. Equisetum arvense	2	14	FAC	Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
2. Carex aquatilis	40	Y	OBL	Notes)
3. Carex microglochin	80	Y	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Pedicularis labradorica	2		FACW	¹ Indicators of hydric soil and wetland hydrology must be present unless
5. Comarum palustre	2		OBL	disturbed or problematic.
6. Rubus chamaemorous	1		FACW	0
7. Trientalis europaea	TR		FACU	% Bare Ground
8. Drosa rotundifolia	TR		OBL	% Cover of Wetland Bryophytes
9. Rubus articus	2		PAC	_ <u></u>
10,				Cover of Water
Total Cover	129	1		Hydrophytic Vegetation Present (Y/N):
50% of total cover	64,5 20	0% of total co	ver: <u>25.8</u>	Notes: (If observed, list morphological adaptations below):

SOIL			Date 7-2-14 Fe	ature I	DWGOH	T038	-	Soll Pit Required (Y/N) /	
SOIL PROFI	LE DESCRIPTION:	(Describe	to the depth needed	to doc	ument the	indicator or	confirm the abser	A COLORADO A	
Depth	Matrix	-	Redox Features						
(inches)	Color (moist) %		Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-22			3				Fibric	organics	
		-		-	-	_		· .	
		-		-	-	-			
		-		-		-			
		-		-		-			
		-		1		-			
¹ Type: C=Cc	ncentration D=Depl	etion RN	I I≍Reduced Matrix_C	S=Cov	ered or Co	ated Sand (n: PL=Pore Lining, M=Matrix.	
	L INDICATORS			000		alea Gana e		S FOR PROBLEMATIC HYDRIC SOILS ³	
Histosol or H	istel (A1)		Alaska Gleyed	(A13)				Change (TA4) ⁴	
	on (A2)			Alaska Redox (A14)				e Swales (TA5)	
	A3)			Alaska Gleyed Pores (A15)				x with 2.5Y Hue	
	lfide (A4)							d without 5Y Hue or Redder Underlying	
Thick Dark S	urface (A12)						Other (Explain in Notes)		
disturbed or p ⁴ Give details	problematic. of color change in N	otes	ne primary indicator o					cape position must be present unless	
Hydric Soil F	Present (Y/N);	1							
Notes: ↓(,	Idiz Stoll 8	055	rvid					2	

HYDROLOGY PRIMARY INDICATO	RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2) <u>X</u>	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3)X	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4) (X		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3) Dry-Season Water Table (C2)		Notes:			
Algal Mat or Crust (B4)					
Iron Deposits (B5)	-	-			
Surface Water Present (Y/N):	Depth (in):				
Water Table Present (Y/N): γ	Depth (in):	Wetland Hydrology Present (Y/N):	<u> </u>		
Saturation Present (Y/N):	Depth (in):				
Notes:		lane on pervision			

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Image: Constant Structure Struc
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven X Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional X Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Perennial Inlet/No Outlet Perennial Inlet/No
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Evidence of Sedimentation (P): No Evidence Observed 🔀 Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) X Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval >5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading 4.75
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%)
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below

 \succ Medium (10-100 acres) 🗡 Small (<10 aeres) Large (>100 acres)

5-25% Urbanized_

0-5% Rural

Crew Chief QA/QC check:

Watershed Land Use:

Size:

GPS Technician QA/QC check:

25-50% Urbanized_

2 m

>50% Urbanized

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60H1038 Field Target: 100 Date: 7/2/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete? A detailed site sketch is included in logbook?

2. Vegetation

- \square At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- ゼ Vegetation names are entered legibly for all strata present?
- D Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- D Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?Appropriate hydric soil indicators are marked?

4. Hydrology

- D Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- ☑ Each logbook page is initialed and dated?

7. Maps

- . Wetland boundaries have been corrected if necessary?
- \square Maps are initialed and dated?

8. Photos

- ☑ Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- D Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Х 14

Wetland Scientist (print)

Signature / Date

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Field Crew Chief (print)

-12/14 Signature / Date

SITE DESCRIPTION						and the second second
Survey Type: Centerline Acces	ss Road (explain) Oti	her (expla	ain) <u>×</u>	Field Target:	00	Map #: <u>69</u> Map Date: <u>5/27/1</u> 4
Date: 7/2/14	Project Name & No.: Ala	aska LNG	26221306	Fea	ature Id:	WGO HT039
Investigators: Joe Christop	her, Zoe Meade	, Abigail Fisher				Team No.: W60
State: Alaska	Region: Alaska		Milepost: (19,5 (195) -1157.5 (Av			
State: Alaska Latitude: 62° 50' 24.91"	Le	ongitude	149° 53	19.85"		Datum: WGS84
Logbook No.: 00 3	Logbook Page No.: 24/3	30	Picture No.:	P. N.S. P	it, p	lucy
SITE PARAMETERS	1				-	5
Subregion: South Central			Landform (hill	slope, terrace, hu	mmocks	s, etc.): hillstope
Slope (%): 7-10		-		oncave, convex, r		
Pre-mapped Alaska LNG/NWI classification	tion: Vpland			Name: NA		
Are climatic/hydrologic conditions on the	site typical for this time of y	ear?	Are "No	rmal Circumstanc		
Yes X No (if no explanation No (if no explanation No		inturbod?	Yes_X			lain in Notes.)
Are Vegetation, Soil, or Hyd				_(If yes, explain ir		
SUMMARY OF FINDINGS	rology Naturally Prob	lematicr		_ (If yes, explain i	in Notes.)
Hydrophytic Vegetation Present? Yes_	NoX	ls t	he Sampled A	rea within a Wet	land?	Yes NoX
Hydric Soil Present? Yes	NoX	We	tland Type:	upland		
Wetland Hydrology Present? Yes	No <u></u>	Ala	ska Vegetation	Classification (Vi	ereck):	DC 3, II B2
Notes and Site Sketch: Please include D	f See,	X	e 2. 1 U	9 Avi)	ine, Photo Locations, and Survey

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Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata:	
1. Betula neoalaskana	65	Y	FACU	% Dominant Species that are OBL, FACW, or FAC: 33	
2. Populus balsamifera	2		FACU		
3.					
4,				Prevalence Index worksheet:	
Total Cover				Total % Cover of: Multiply by:	
50% of total cover	33,5 20	% of total cov	er: 13,4	OBL species:X 1 =	
Sapling/Shrub Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: \bigcirc X 2 = \bigcirc FAC species 50 X 3 = 150 FACU species 166 X 4 = 664	
1. Alnus ssp.	35	Y	FAC	UPL species 0 X 5 = 0	
2. Picea glauca	TR		FACU	Column Totals: 216 (A) 814 (B)	
3. Ribes triste	5		FRO -	PI=B/A=	
4.		1			
5.					
6,					
7.					
8.					
9.					
Total Cove 50% of total cove)% of total cov	ver: 8		

Herb Stratum (26')	Absolute	Dominant	Indicator	Hydrophytic Vegetation Indicators:
	% Cover	Species? (Y/N)	Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0
1. Gymnocarpium dryopter	s 75	У	FACV	Morphological Adaptations ¹ (Provide supporting data in
2. Dryopteris expansa	20		FACU	Notes)
3. Chamerion angustofolium	1		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Calamagrostis Canadensis	10	1	FAC	¹ Indicators of hydric soil and wetland hydrology must be present unless
5. Streptopus amplexifolius	3		FACV	disturbed or problematic.
6.				
7.				% Bare Ground
8.	1			% Cover of Wetland Bryophytes
9.		IF.		Total Cover of Bryophytes
10.			· · · · ·	% Cover of Water Hydrophytic Vegetation Present (Y/N):N
Total Cover: 50% of total cover		Notes: (If observed, list morphological adaptations below):		

SOIL			Date 7/2/14 F	eature	DWGOH	1039		Soll Pit Required (Y/N)
SOIL PROFIL	E DESCRIPTION: (Describe	to the depth neede	d to doc	ument the in	dicator or co	onfirm the absence	
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-2		-				a and a second second	Fibric	organic
2-20	10 YR 3/3	100		1			Coarse san	dy Joan
		_						
		-						
-		-		-				
		-		-				
¹ Type: C=Cor	∣ icentration, D≂Deple	ation PM	-Poducod Motrix (28-000	rod or Coat	ad Sand Ca	21	
	INDICATORS		-reduced Matrix, (ered of Coal	eu Sand Gr		PL=Pore Lining, M=Matrix.
Histosol or His	tel (A1)		Alaska Gleyed	d (A13)				hange (TA4) ⁴
	n (A2)		Alaska Redox					wales (TA5)
Black Histic (A	3)		Alaska Gleyed	Pores	(A15)		Alaska Redox w	ith 2.5Y Hue
Hydrogen Sulf	ide (A4)						Alaska Gleyed v Layer	vithout 5Y Hue or Redder Underlying
	face (A12)	_					Other (Explain in	n Notes)
⁴ Give details o	oblematic. f color change in No	tes.		of wetla	nd hydrolog	y, and an ap	propriate landscap	e position must be present unless
Restrictive Lay	ver (if present): Type	9:	-	Depth (ir	nches):	A		
Hydric Soil Pr	esent (Y/N):	N						
Notes: NO	Isychic Soil	5 06	served					

WETLAND DETER	MINATION	DATA	FORM
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HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 0	r more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)			
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)				
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Nater Marks (B1) Marl Deposits (B15)		Presence of Reduced Iron (C4)	Microtopographic Relief (D4)			
Sediment Deposits (B2)	ediment Deposits (B2) Hydrogen Sulfide Odor (C1)		FAC-Neutral Test (D5)			
Drift Deposits (B3) Dry-Season Water Table (C2)		Notes:				
Algal Mat or Crust (B4)						
Iron Deposits (B5)						
Surface Water Present (Y/N): N	Depth (in):					
Water Table Present (Y/N): N	Depth (in):	Wetland Hydrology Present (Y/N):				
Saturation Present (Y/N): N Depth (in):						

MP	land
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VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Emergent-Needle-leaved Emergent-Needle-leaved
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a> <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover <a>N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) Image: the second s
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
Soil VARIABLES Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Silty Mineral: Silty Mineral: Silty
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Peren
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Oùtflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Adid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres)
Crew Chief QA/QC check: GPS Technician QA/QC check:

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: <u>W60HT039</u> Field Target: <u>100</u> Date: <u>7/2/14</u>

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- \mathbb{Z}^{-} Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Divergetation names are entered legibly for all strata present?
- ☑ Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- ☑ Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

7. Maps

- Ø Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Х 14 Muk 2

7/2/14

Wetland Scientist (print)

Signature / Date

visiophe

Field Crew Chief (print)

Signature / Date

100

SITE DESCRIPTION				-	-		
Survey Type: Centerline X Acce	ss Road (explain)	Other (expl	ain)	Field Targ	et: /0	Map #: 5/27/14	
Date: 7/2/14	Project Name & No.:	Alaska LNG	G 26221306 Feature Id			: W60 HT 0 40	
Investigators: Joe Chrislep	le, Alor	Digayle Fisher Tes			Team No.: W60		
State: Alaska	Milepost: 6						
Latitude: 47,8324	Latitude: 42,8324 Longitude			8980		Datum: WGS84	
Logbook No.: 003	Logbook Page No.:	30	Picture No.:	P_N, 5,	pit, p	ilug	
SITE PARAMETERS							
Subregion: South Centra	1		Landform (hill	slope, terrac	e, hummock	s, etc.):	
Slope (%): 0 - 1			Local relief (concave, convex, none): Concave				
Pre-mapped Alaska LNG/NWI classifica	tion: PEM1\$51B		Soil Map Unit Name: MA				
Are climatic/hydrologic conditions on the Yes_X No (if no expl	site typical for this time ain in Notes)	of year?	Are "Normal Circumstances" present: Yes_X_ No (If no, explain in Notes.)				
Are Vegetation, Soil, or Hyd	trology Significantl	y Disturbed?					
Are Vegetation, Soil, or Hyd	trology Naturally P	roblematic?	No_X	_(If yes, exp	lain in Notes	.)	
SUMMARY OF FINDINGS	1	-		200			
Hydrophytic Vegetation Present? Yes_	ls	Is the Sampled Area within a Wetland? Yes No					
Hydric Soil Present? Yes	Wetland Type: PEM1/SS1BF 1A						
Wetland Hydrology Present? Yes	<u>X</u> No	— Ala	Alaska Vegetation Classification (Viereck):				
Notes and Site Sketch: Please include D	inactional 9 Marth Amou	Cantalina		D: 1		4	

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

2 . 1	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: 26')	% Cover	Species?	Status	No. of Dominant Species that are OBL, FACW, or FAC: 2
1.		(Y/N)		Total Number of Dominant Species Across All Strata:
2,	-			% Dominant Species that are OBL, FACW, or FAC: <u>100</u>
3,		1		
4.				Prevalence Index worksheet:
Total Cove	0			Total % Cover of: Multiply by:
50% of total cove	r: <u>0</u> 20	% of total cov		OBL species: $(\underline{143} \times 1 = \underline{143})$
Sapling/Shrub Stratum (261)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 2 $x 2 = 4$ FAC species13 $x 3 = 37$ FACU species0 $x 4 = 0$
1. Myrica gale	45	Y	OBL	UPL species 0 X 5 = 0
2. Betula nana	5		FAC	Column Totals: 158 (A) 186 (B)
3. Dasiphora fruticosa	1		FAC	PI = B/A = 1,18
4. Andromeda polífolia	PR 2		FACW	
5.				1
6.	1			1
7.	· · · · · · · · · · · · · · · · · · ·	1	1.0	
8.		12		
		1		
	r:_5 <u>3</u>			
9.		0% of total cov	er: <u>10 . 6</u>	
9. Total Cove 50% of total cove	r: <u>26.5</u> 20)% of total cov	er: 10 . 6	
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan	r: <u>26,5</u> 20	F	1	
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan	r: <u>26.5</u> 20	Dominant Species? (Y/N)	er: 10 .c	Hydrophytic Vegetation Indicators: <u>Y</u> Dominance Test is > 50% X Brevelence Index is < 3.0
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26′</u>)	er: <u>26 · 5</u> 20 ts) Absolute	Dominant Species?	Indicator	Dominance Test is > 50% Prevalence Index is ≤ 3.0
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex magellanica	r: <u>26.5</u> 20 ts) Absolute % Cover	Dominant Species?	Indicator Status	\underline{Y} Dominance Test is > 50%
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex magellanica 2. Comarum palvstre	r: <u>26.5</u> 20 ts) Absolute % Cover 20	Dominant Species?	Indicator Status OBL	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex magellanica 2. Comarum palustre 3. Viola SSP.	r: <u>26.5</u> 20 ts) Absolute % Cover <u>20</u> 5 TR	Dominant Species?	Indicator Status OBL OBL	
 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex magellanica 2. Comarum palustre 3. viola Ssp. 4. Trichophorum cespitosu 	r: <u>26.5</u> 20 ts) Absolute % Cover <u>20</u> 5 TR	Dominant Species?	Indicator Status OBL OBL FACW	 <u>X</u> Dominance Test is > 50% <u>X</u> Prevalence Index is ≤ 3.0 <u>Morphological Adaptations</u>¹ (Provide supporting data in Notes) <u>Problematic Hydrophytic Vegetation</u>¹ (Explain)
 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex magellanica 2. Comarum palustre 3. viola Ssp. 4. Trichophorum cespitosu 5. Trichalis arcticus 	$\begin{array}{c c} \text{rr}: \underline{26.5} & \underline{20}\\ \text{ts} \\ \hline \text{Absolute} \\ \% & \text{Cover} \\ \hline \underline{20} \\ 5 \\ \hline 5 \\ \hline 1R \\ \underline{1m} & \overline{10} \\ \hline 5 \\ \hline \end{array}$	Dominant Species?	Indicator Status OBL OBL FACW OBL	
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex magellanica 2. Comarum palustre 3. Viola Ssp. 4. Trichophorum cespitosu 5. Trichalis arcticus 6. Equisetum fluviable	$\begin{array}{c c} \text{r:} \underline{26.5} & \underline{20} \\ \hline \text{ts} \\ \hline \text{Absolute} \\ & & \text{Cover} \\ \hline \underline{20} \\ & \underline{5} \\ \hline \\ \hline \\ \underline{1m} & \underline{70} \\ \hline \\ \underline{5} \\ \hline \\ \underline{3} \\ \hline \end{array}$	Dominant Species?	Indicator Status OBL OBL FACW OBL FAC OBL	
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex magellanica 2. Comarum palustre 3. viola Ssp. 4. Trichophorum cespitosu 5. Trientalis arcticus 6. Equisetum fluviable 7. Equisetum pratense	$\begin{array}{c c} \text{rr}: \underline{26.5} & \underline{20}\\ \text{ts} \\ \hline \text{Absolute} \\ \% & \text{Cover} \\ \hline \underline{20} \\ 5 \\ \hline 5 \\ \hline 1R \\ \underline{1m} & \overline{10} \\ \hline 5 \\ \hline \end{array}$	Dominant Species?	Indicator Status OBL OBL FACW OBL FAC OBL FACW	
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex magellanica 2. Comarum palustre 3. viola Ssp. 4. Trichophorum cespitosu 5. Trichalis arcticus 6. Equisetum fluviable	$\begin{array}{c c} \text{r:} \underline{26.5} & \underline{20} \\ \hline \text{ts} \\ \hline \text{Absolute} \\ \% & \text{Cover} \\ \hline \underline{20} \\ 5 \\ \hline \text{TR} \\ \hline \underline{10} \\ 5 \\ \hline 3 \\ \hline \text{TR} \\ \end{array}$	Dominant Species?	Indicator Status OBL OBL FACW OBL FAC OBL	
9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex magellanica 2. Comarum palustre 3. viola Ssp. 4. Trichophorum cespitosu 5. Tricntalis arcticus 6. Equisetum fluviable 7. Equisetum pratense 8. Cal can. 9.	$\begin{array}{c c} \text{r:} \underline{26.5} & \underline{20} \\ \hline \text{ts} \\ \hline \text{Absolute} \\ \% & \text{Cover} \\ \hline \underline{20} \\ 5 \\ \hline \text{TR} \\ \hline \underline{10} \\ 5 \\ \hline 3 \\ \hline \text{TR} \\ \end{array}$	Dominant Species?	Indicator Status OBL OBL FACW OBL FAC OBL FACW	
50% of total cover VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Carex mage Hanica 2. Comarum palustre 3. viola Ssp. 4. Trichophorum cespitosu 5. Trientalis arcticus 6. Equisetum fluviable 7. Equisetum pratense 8. Cal can. 9. 10.	$\begin{array}{c c} \text{r:} \underline{26.5} & \underline{20} \\ \hline \text{ts} \\ \hline \text{Absolute} \\ \% & \text{Cover} \\ \hline \underline{20} \\ 5 \\ \hline \text{TR} \\ \hline \underline{10} \\ 5 \\ \hline 3 \\ \hline \text{TR} \\ \end{array}$	Dominant Species?	Indicator Status OBL OBL FACW OBL FAC OBL FACW	

SOIL			Date 7/2/14 F	eature	D.WGOH	+T 0 40		Soil Pit Required (Y/N)		
SOIL PROFI	LE DESCRIPTION: (Describe	e to the depth neede	d to doo	ument the	indicator or	confirm the absen			
Depth	Matrix		Redox Features							
(inches)	Color (moist)	%	Color (moist)	Color (moist) % Type ¹ Loc ²		Texture	Notes			
0-22							Fibric	organics SAT.		
	1						1			
		-				-				
		-		-						
		-		-						
		-		-		-	-			
¹ Type: C=Co	ncentration D=Depl	etion RM	I /I=Reduced Matrix, C	S=Cov	ered or Co	ated Sand C	Praine ² Legation	: PL=Pore Lining, M=Matrix.		
110-	LINDICATORS			0-000				FOR PROBLEMATIC HYDRIC SOILS ³		
	stel (A1) <u>X</u>		Alaska Gleyed	(A13)			Alaska Color Change (TA4) ⁴			
	on (A2)		Alaska Redox				Alaska Color Charlinge (TA4) Alaska Alpine Swales (TA5)			
	A3)		Alaska Gleyed				Alaska Redox with 2.5Y Hue			
	fide (A4)				. , _			d without 5Y Hue or Redder Underlying		
	arface (A12)	_					Other (Explain	n in Notes)		
⁴ Give details of	roblematic.	otes						ape position must be present unless		
Restrictive La	yer (if present): Typ	e:	[Depth (ii	nches):	N/A_				
Hydric Soil P	resent (Y/N):	У								
Notes:										
1										
1				_						

RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1) $\underline{\chi}$		
Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)			
Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Marl Deposits (B15)	Presence of Reduced	Microtopographic Relief (D4) <u>X</u>		
Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Dry-Season Water Table (C2)	Notes:	1.		
Other (Explain in Notes):	1			
Depth (in): 2		N		
ater Table Present (Y/N): Y Depth (in):]		
Depth (in):				
	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 Notes): Depth (in): 2 Depth (in): 0	Surface Soil Cracks (B6) Water-stained Leaves (B9) Inundation Visible on Aerial Imagery (B7) Drainage Patterns (B10) Sparsely Vegetated Concave Surface (B8) Oxidized Rhizospheres along Living Roots (C3) Marl Deposits (B15) Presence of Reduced Iron (C4) Hydrogen Sulfide Odor (C1) Salt Deposits (C5) Dry-Season Water Table (C2) Notes: Other (Explain in Notes): Wetland Hydrology Present (Y/N): Depth (in): O		

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) 53 Dwarf shrub (<0.5m)
Number of Wetland Types (M): Description Description Moderately even Moder
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) X Very High Density (80-100%) High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inl
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading 5.2.1
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%)
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below
Only Connected Above Connected Upstream & Downstream_X Unknown
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized >50% Urbanized

Size: Small (<10 acres)

GPS Technician QA/QC check:

_ Large (>100 acres)_

<u> X</u>

Medium (10-100 acres)_

Crew Chief QA/QC check

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT040 Field Target: 101 Date: 7/2/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

☑ Site description, site parameters and summary of findings are complete?
 ☑ A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- ☑ Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- ☑ Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade ollede 114 7 21 Signature / Date Wetland Scientist (print) 12/41 X Signature/Date Field Crew Chief (print)

SITE DESCRIPTION								
Survey Type: Centerline Access Road (explain) Other (explain) Field Target: 102 Map #: 71 Map Date: 5/37								
Date: 7/2/14	Project Name & No.: Alaska LN	G 26221306	Feature lo	1: WGOHTO41				
Investigators: 5 christo	pher ZMeade	2 AFis	Ner	Team No.: W60				
State: Alaska	Region: Alaska	Milepost:	521,4					
Latitude: 62 49 16.5	Longitud	e: 149 55	10.67"	Datum: WGS84				
Logbook No.: 003	Logbook Page No.: 3	Picture No.:	P_V160717041.	Rid, Aug, Nº, S				

SITE PARAMETERS			
Subregion: South central	Landform (hillslope, terrace, hummocks, etc.): +		
Slope (%): () -)	Local relief (concave, convex, none): Flat		
Pre-mapped Alaska LNG/NWI classification:	Soil Map Unit Name:		
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (if no explain in Notes)	Are "Normal Circumstances" present: Yes No (If no, explain in Notes.)		
Are Vegetation, Soil, or Hydrology Significantly Disturbed?			
Are Vegetation, Soil, or Hydrology Naturally Problematic?	? No \times (If yes, explain in Notes.)		
SUMMARY OF FINDINGS			
Hydrophytic Vegetation Present? Yes No Is	the Sampled Area within a Wetland? Yes No		
Hydric Soil Present? Yes Yo No	Wetland Type: PEM1/SSIF		
Wetland Hydrology Present? Yes No No Ala	aska Vegetation Classification (Viereck):		

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey DAL 3, IC2

.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: 26')	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC:
1.	1	/		Total Number of Dominant Species Across All Strata:
	/			% Dominant Species that are OBL, FACW, or FAC: //
/				A Company of the second s
				Prevalence Index worksheet:
Total Cover				Total % Cover of: Multiply by:
50% of total cover		% of total cov	er:	OBL species:X1 =
Sapling/Shrub Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $6 \times 2 = 12$ FAC species $36 \times 3 = 105$ FACU species $5 \times 4 = 20$
·Betula nana	20	X	FAC	UPL speciesX 5 =
Empetrum nigrum	05		FAL	Column Totals: 150 (A) 241 (B)
Naccinium oxycoccos	3		OBL	PI = B/A =6
· Picea glauca	5	-	FACU	
9.				
	-			
3.				
).				
Total Cove				
		0% of total cov	ver: <u>6,6</u>	
Total Cove 50% of total cove	r: <u>/(,5</u> 20	0% of total cov	/er: <u>6.6</u>	
Total Cove 50% of total cove EGETATION (use scientific names of plant	r: <u>/(,5</u> 20	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cover /EGETATION (use scientific names of plant therb Stratum (<u>26'</u>)	r: <u>/ (, </u>	Dominant	Indicator	Dominance Test is > 50% Prevalence Index is ≤ 3.0
Total Cover 50% of total cover FEGETATION (use scientific names of plant lerb Stratum (<u>26'</u>) 1. Drosa rotvndifalia	r: <u>/(, </u>	Dominant Species?	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting d
Total Cover 50% of total cove PEGETATION (use scientific names of plant lerb Stratum (<u>26'</u>) 1. Drosa rotundifalia 2 Carex mage) aníca	r: <u>/(, 5</u> 20 s) Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0
Total Cover 50% of total cover FEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Drosa rotundifalia 2. Carex mage) anica 3. Eriophorum vaginatum	r: <u>/(, 5</u> 20 s) Absolute % Cover	Dominant Species? (Y/N)	Indicator Status OFSI OBL FALM	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
Total Cover 50% of total cover /EGETATION (use scientific names of plant Herb Stratum (26') 1. Drosa rotundifalia 2 Carex mage)(anica 2 Carex mage)(anica 3. Eriophorum vaginatum 4. Pedicularis labradorica	r: <u>/(, 5</u> 20 s) Absolute % Cover (40 3 	Dominant Species? (Y/N)	Indicator Status OISI OBL FALM FALM	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting da Notes)
Total Cover 50% of total cover /EGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Drosa rotundifolia <u>2Carex mages</u>) anica <u>2Carex mages</u>) anica <u>3. Eriophorum vaginatum</u> 4. Pedicularis labradorica 5. Trichophorum cespitosum	r: <u>/(, 5</u> 20 s) Absolute % Cover (40 3 	Dominant Species? (Y/N)	Indicator Status OFSI OBL FALM	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present
Total Cover 50% of total cover 50% of total cover /EGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Drosa rotundifolia 2. Carex mage) anica 2. Carex mage) anica 3. Eriophorum vaginatum 4. Pediculavis labradorica 5. Trichophorum cespitosum 6. Rubus chamaemoro us	$\begin{array}{c c} r: / \zeta_{1} & \leq & 20 \\ \hline s) & \\ & Absolute \\ \% Cover \\ & & \zeta_{1} \\ & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & &$	Dominant Species? (Y/N)	Indicator Status OIZI OBL FACW IFACW OBI FACW	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present
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9. Total Cove 50% of total cove VEGETATION (use scientific names of plant	$\begin{array}{c c} r: / \zeta_{1} & \leq & 20 \\ \hline s) & \\ & Absolute \\ \% Cover \\ & & \zeta_{1} \\ & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & &$	Dominant Species? (Y/N)	Indicator Status OIZI OBL FACW IFACW OBI FACW	✓ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting d Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present disturbed or problematic.
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SOIL		1	Date 07/2/14 F	eature l	D WGOH	1041		Soli Pit Required (Y/N)	
SOIL PROF	ILE DESCRIPTION:	(Describe					confirm the abser	nce of indicators.)	
Depth									
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
1-20							Fisher	Sixten & Std	
de									
_									
		-			-		- L		
		-		_					
Type: C=C	anontration D-Dan	otion DA	An De dues d'Alletric				2		
	oncentration, D=Depl	etion, RN	A=Reduced Matrix,	S=Cov	ered or Co	ated Sand G		n: PL=Pore Lining, M=Matrix.	
	listel (A1)		Alaska Clava	4 (6 4 9)			an Marine and	FOR PROBLEMATIC HYDRIC SOILS	
	don (A2)		Alaska Gleye				Alaska Color Change (TA4) ⁴		
	(A3)		Alaska Redox				Alaska Alpine Swales (TA5)		
			Alaska Gleye	Pores	(A15)			with 2.5Y Hue d without 5Y Hue or Redder Underlying	
	lfide (A4)						Layer		
	Surface (A12)						Other (Explain	n in Notes)	
Give details	or of hydrophytic vege problematic. of color change in No ayer (if present): Typ	otes.	1.			egy, and an a	ppropriate landso	cape position must be present unless	
Controlive L	ayer (ii present). Typ	0	epiz -	Depth (I	icnes):	1-114			
Hydric Soil	Present (Y/N):								
lotes:									

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3) Dry-Season Water Table (C2)		Notes:			
Algal Mat or Crust (B4)					
Iron Deposits (B5)		-			
Surface Water Present (Y/N): V	Depth (in): 2 - 4 4		11		
Water Table Present (Y/N): Saturation Present (Y/N): (includes capillary fringe) Depth (in):		Wetland Hydrology Present (Y/N):			
Notes: for of	mornin				

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent- Persistent Aquatic Bed Image: Content of the second
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly Uneven XModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) Very High Density (80-100%) Image: Comparison of the comparison of t
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) X One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial
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Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial
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Crew Chief QA/QC check:

GPS Technician QA/QC check:

zm

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID:
 W60 HT 0 41
 Field Target:
 102
 Date:
 7/2/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

 \square Site description, site parameters and summary of findings are complete? \square A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Z Vegetation names are entered legibly for all strata present?
- Ø Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- D Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

Z Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

1.111.2

Two photos were taken for each Observation Point (vegetation/site overview)?

X Zormeade Х Zoe Meade 14 2

Wetland Scientist (print)

Signature / Date

bristophe

Field Crew Chief (print)

Signature / Date

See PAS 32

SITE DESCRIPTION				
Survey Type: Centerline X Acce	ess Road (explain) Other (ex	plain)	Field Target: 103	Map #: 72 Map Date: 5/27/14
Date: 07-03-14	Project Name & No.: Alaska LM	IG 26221306	Feature le	d: WOHTO 42
Investigators: Joe Christoph	er, Zoe Meade, Awi	gayle Fish	her	Team No.: W60
State: Alaska	Region: Alaska	Milepost: 6	23.25	
Latitude: 62°48′16.95	// Longitue	te: 149° 57'	58.76"	Datum: WGS84
Logbook No.: 003	Logbook Page No.: 32	Picture No.:	P_ N, S, pit	, piuq
SITE PARAMETERS	- Internet and a second			
Subregion: South central		Landform (hillslope, terrace, hummocks, etc.):		
Slope (%): 0 - 3		Local relief (concave, convex, none): CONCAVE		
Pre-mapped Alaska LNG/NWI classifica	ation: PSS 4/1 B	Soil Map Unit N	Jame: NA	
Are climatic/hydrologic conditions on the Yes No (if no exp	e site typical for this time of year? lain in Notes)		mal Circumstances" pr No (If no, ex	
Are Vegetation, Soil, or Hy	drology Significantly Disturbed	1? No_X	(If yes, explain in Note	s)
Are Vegetation, Soil, or Hy	drology Naturally Problematic	? No <u>X</u>	(If yes, explain in Note	s.)
SUMMARY OF FINDINGS	and the states	1000		Simological States
Hydrophytic Vegetation Present? Yes_	No I	s the Sampled Ar	ea within a Wetland?	YesX No
Hydric Soil Present? Yes_	XNoN	Vetland Type:	PS51B	

 Wetland Hydrology Present?
 Yes
 X
 No
 Alaska Vegetation Classification (Viereck):
 II C 2 , III A 3

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

	Absolute	Dominant	Indicator	Dominance Test worksheet:
ree Stratum (Plot sizes: <u>26'</u>)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC:
	-			Total Number of Dominant Species Across All Strata:
	-			% Dominant Species that are OBL, FACW, or FAC: <u>10</u>
				and the second se
				Prevalence Index worksheet:
Total Cove	r: 0			Total % Cover of: Multiply by:
50% of total cove)% of total cov	er: Ó	OBL species: 80 X 1 = 80
apling/Shrub Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species:10 $X 2 = 2.0$ FAC species2.9 $X 3 = 8.1$ FACU species15 $X 4 = 60$
. Myrica gale	80	Y	OBL	UPL species 0 X 5 = 0
Betula nana	10		FAC	Column Totals: 134 (A) 247 (B)
· Spiraea stevenii	15		FACU	$PI = B/A = 1 \cdot 8 + 1$
· Picea mariana	10		FACW	
. Empetrum nígrum	3		FAC	1
Vaccinium uliginosum	7		FAC	1
· Andromeda polífolia	TR		FACW	-
				1
				-
	10.5		1	
Total Cove	er: 125			1
Total Cove 50% of total cove		0% of total cov	ver: 25	
50% of total cove	er: <u>62.5</u> 20	0% of total cov	ver: <u>2.5</u>	
50% of total cove	er: <u>62.5</u> 20	0% of total cov	ver: 2.5	Hydrophytic Vegetation Indicators:
50% of total cove	er: <u>62.5</u> 20		1	Dominance Test is > 50%
50% of total cove	er: <u>62.5</u> 20 ts) Absolute	Dominant Species? (Y/N) V	Indicator	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
50% of total cover EGETATION (use scientific names of plan <u>lerb Stratum (26')</u> 1. Equise tum ar vense	Absolute % Cover	Dominant Species?	Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
50% of total cove ZEGETATION (use scientific names of plan lerb Stratum (<u>26'</u>) 1. Equise tum ar vense 2. Calamagrostis <i>canadens</i>	Absolute % Cover	Dominant Species? (Y/N) V	Indicator Status FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data)
50% of total cove /EGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equise tum arvense 2. Calamagrostis canadens 3. Comarum palustre	Absolute % Cover 4 5	Dominant Species? (Y/N) V	Indicator Status FAC FAC OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cove /EGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equise tum arvense 2. Calamagrostis canadens 3. Comarum palustre 4. Trientalis arcticus	Absolute % Cover 4 1 5 TR	Dominant Species? (Y/N) V	Indicator Status FAC FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equise tum ar vense 2. Calamagrostis canadens 3. Comarum palvstre 4. Trientalis arcticus 5.	Absolute % Cover 4 1 5 TR	Dominant Species? (Y/N) V	Indicator Status FAC FAC OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present
50% of total cove /EGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equise tum ar vense 2. Calamagrostis canadens 3. Comarum palustre 4. Trientalis arcticus 5. 6.	Absolute % Cover 4 1 5 TR	Dominant Species? (Y/N) V	Indicator Status FAC FAC OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present disturbed or problematic.
50% of total cove /EGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equise tum ar vense 2. Calamagrostis canadens 3. Comarum palvstre 4. Trientalis arcticus 5. 6. 7.	Absolute % Cover 4 1 5 TR	Dominant Species? (Y/N) V	Indicator Status FAC FAC OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present
50% of total cover VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equise tum ar vense 2. Calamagrostis canadens 3. Comarum palustre 4. Trientalis arcticus 5. 6. 7. 8.	Absolute % Cover 4 1 5 TR	Dominant Species? (Y/N) V	Indicator Status FAC FAC OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present disturbed or problematic. % Bare Ground
50% of total cover VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equise tum ar vense 2. Calamagrostis canadens 3. Comarum palustre 4. Trientalis arcticus 5. 6. 7. 8. 9.	Absolute % Cover 4 1 5 TR	Dominant Species? (Y/N) V	Indicator Status FAC FAC OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present disturbed or problematic. Q% Bare Ground NA% Cover of Wetland Bryophytes
50% of total cover VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equise turn ar vense 2. Calamagrostis canadens 3. Comarum palvstre	Absolute % Cover 4 1 5 TR	Dominant Species? (Y/N) V	Indicator Status FAC FAC OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present disturbed or problematic.

SOIL			Date 7 3/14 F	eature	D W60	HT042	-	Soli Pit Required (Y/N)
SOIL PROF	ILE DESCRIPTION:	(Describe	e to the depth neede	d to doc	ument the	indicator or	confirm the absen	
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-20							Fibric	organic
				_				U
		_						
		-			4	-		
	_	-				_		
17							2.	
	oncentration, D=Depl	etion, RI	M=Reduced Matrix,	CS=Cov	ered or Co	ated Sand C		n: PL=Pore Lining, M=Matrix.
			-					FOR PROBLEMATIC HYDRIC SOILS ³
	listel (A1) <u>X</u>		Alaska Gleye					Change (TA4) ⁴
	lon (A2)			Alaska Redox (A14)			Alaska Alpine Swales (TA5)	
Black Histic	(A3)		Alaska Gleye	d Pores	(A15)		Alaska Redox	with 2.5Y Hue
Hydrogen Su	ulfide (A4)	_					Alaska Gleyed Layer	d without 5Y Hue or Redder Underlying
	urface (A12)						Other (Explain	,
disturbed or ⁴ Give details	problematic. of color change in N	otes						ape position must be present unless
Restrictive L	ayer (if present): Typ	e:		Depth (i	nches):	NIA	/	
Hydric Soil	Present (Y/N):	Y						
Notes:			-					

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)				
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)			
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)			
Saturation (A3) X	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)			
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)			
Drift Deposits (B3)	Day Soosan					
Algal Mat or Crust (B4)	Other (Explain in Notes):					
Iron Deposits (B5)		1				
		101				
Surface Water Present (Y/N): N	Depth (in):		N			
Water Table Present (Y/N): Y Depth (in): 2_ Saturation Present (Y/N): Y Depth (in): () (includes capillary fringe) Y Depth (in): ()		Wetland Hydrology Present (Y/N):	1			
Notes:						

Page 3 of 4

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): 2 Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even X
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) X Very High Density (80-100%) High Density (20-40%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A X
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 Or More Large Patches; Parts of Site
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional X Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Histosol: Fibric X Histosol: Hemic Histosol: Sapric
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inter/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inl
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, SaturatedX Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) X Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow X Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water X Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%)
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & DownstreamX Unknown Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space) X
Watershed Land Use: 0-5% Rural_X 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) X Large (>100 acres)

Crew Chief QA/QC check:

GPS Technician QA/QC check:

zm

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: WGOHT042 Field Target: 103 Date: 7/3/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- ☑ Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Discrete Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- , Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

.

Z Two photos were taken for each Observation Point (vegetation/site overview)?

Х 7/3/14 Unde Zoe Meade Wetland Scientist (print) Signature //Date MStr Signature / Date Field Crew Chief (print)

Vegetation Classification Data Form

7/3/14 Alaska LNG 26221306 Investigators: JC, ZM, AF JC, ZM, AF Feature ID: Latitude: Longitude: 62° 149° Logbook #: 0 0 3 Location Description: Longitude: 500 fb Where for the second sec			
Latitude: Longitude: Datum: WGS84 62° 149° Datum: WGS84 Logbook #: 0 0 3 Logbook Page #: 33 Location Description: Picture #: Picture #:			
G2° I49° Datamin (1000) Logbook #: 0 0 3 Logbook Page #: 33 Location Description: Picture #:	•		
Location Description:			
Location Description:			
FOO ft what for the state of the	100		
500 ft W of HT 103 in upland mixed forre	st		
Common Species Observed (Scientific Name)			
Alnus SSP. Oplopanax horr	idus		
Betula neoglaskana Sambucus racen	Sambucus racemosa		
Arythrum cyclosorum			
Gymnocarpium dryopteris			
Percent Cover of Dominant Structure Level: 30% Bet neo.	-		
Habitat Description:			
Mixed forrest			
Alaska Vegetation Classification: Level I, Level II, Level III	1		
ICZ IIBI			
Notes:	1		

Vegetation Classification Data Form

Level I	Level II	Level III
I. Forest	A. Needleleaf (conifer) forest	(1) Closed needleleaf (conifer) forest (2) Open needleleaf (conifer) forest (3) Needleleaf (conifer) woodland
	B. Broadleaf forest	 Closed broadleaf forest Open broadleaf forest Broadleaf woodland
	C. Mixed forest	 Closed mixed forest Open mixed forest Mixed woodland
Il Scrub	A. Dwarf tree scrub	 Closed dwarf tree scrub Open dwarf tree scrub Dwarf tree scrub woodland
	B. Tall scrub	(1) Closed tall scrub (2) Open tall scrub
	C Low scrub	(1) Closed low scrub (2) Open low scrub
	D Dwarf scrub	 Dryas dwarf scrub Ericaceous dwarf scrub Willow dwarf scrub
III Herbecsous	A Graminoid herbeceous	 Dry graminoid herbaceous Mesic graminoid herbaceous Wet graminoid herbaceous (emergent)
	B Forb herbaceous	 Dry forb herbaceous Mesic forb herbaceous Wet forb herbaceous (emergent)
	C- Bryoid herbaceous	(1) Mosses (2) Lichens
	D Aquatic (nonemergent) herbaceous	 Freshwater aquatic herbaceous Brackish water aquatic herbaceous Marine aquatic herbaceous

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ļ	ł	٠	9	ĸ	a	1	u	٩,

II. Sc	rub
8a	Vegetation with at least 10 percent cover of dwarf trees
86	Vegetation with at least 25 percent cover of shrubs and less than 10 percent cover of dwarf trees
9a	Dwarf tree canopy of 60-100 percent cover
9b.	Dwarf tree canopy of 25-59 percent cover
9c	Dwarf tree canopy of 10-24 percent cover ILA.3 Dwarf tree scrub woodland
10a	Shrubs more than 1.5 meters (5 ft) tall
10b	Shrubs less than 1.5 meters
	Shrub canopy cover greater than 75 percent II.8.1 Closed tall scrub
11 b	Shrub canopy cover of 25-74 percent II B 2 Open tall scrub
12a	Shrubs 20 centimeters to 1.5 meters tall
12b	Shrubs under 20 centimeters in height
13a	Shrub canopy cover greater than 75 percent li C I Closed low scrub
13b	Shrub canopy cover of 25-74 percent, or as low as 2 percent if little or no other vegetation cover present
14a	Dryas species dominant in the dwarf shrub layer
14b.	Ericaceous species dominant in the dwarf shrub layer
14c.	Willow species dominant in the dwarf scrub layer
HI, F	ferbaceous
15a	Terrestrial vegetation, or if growing in the water, dominated by emergent vegetation 16
15b	Dominant vegetation growing submerged in water or floating on the water surface. but not emerging above the water

	riptions of levels I, II, III, and IV follow the classification table.
la .	Trees over 3 meters (10 ft) tall are present and have a canopy cover of 10 percent or more I Forest 2
16	Trees over 3 meters (10 ft) tail are absent or nearly so, Less than 10 percent cover. (Dwarf trees, less than 3 meters (10 ft) tail may be present and abundant
I Fo	rest
2a	Over 75 percent of tree cover contributed by needleleaf (conifer) species
2b	Less than 75 percent of tree cover contributed by needleleaf (confiler) species
38	Tree canopy of 60-100 percent cover
3b	Tree canopy of 25-59 parcent LA.2 Open needleleaf forest
3c	Tree canopy of 10-24 percent I A.3 Needleleef woodland
4a	Over 75 percent of tree cover contributed by broadleaf species
4b.	Broadleef or needleleef species contribute 25 to 75 percent of the tree cover
5a.	Tree canopy of 60-100 percent cover
5b	Tree canopy of 25-59 percent cover
5c.	Tree canopy of 10-24 percent cover
6a	Tree canopy of 60-100 percent cover
6b.	Tree canopy of 25-59 percent cover
6c.	Tree canopy of 10-24 percent cover I.C.3 Mixed woodland
7a;	Vegetation with at least 25 percent cover of erect to decumbent shrubs or with at least 10 percent cover of dwarf trees (less than 3 meters [10 []tail]
7b.	Vegetation herbaceous (may have up to 25 percent shrub cover) 15
16a	Grasses, sedges, or rushes
	(graminoid) plants dominant
16b	Forbs or bryophytes dominant
17a	Grasslands of well-drained, dry sites, such as south-facing bluffs, old beaches, and sand dunes Typically (but not always) dominated by <i>Elymus</i> spp., <i>Fesfuca</i> spp. and <i>Deschampsie</i> spp. III A I Dry graminoid herbaceous
17Ь	On moist sites, but usually not with standing water Usually dominated by <i>Calamagrostis</i> spp. <i>Carex</i> spp. or <i>Enophorum</i> spp.
17c	tussocks often present
	tussocks often present
16a	tussocks often present
	tussocks often present
18b	tussocks often present
18b 19a	tussocks often present
18b 19a 19b	tussocks often present
18b 19a 19b 19c	tussocks often present III.A.2 Mesic graminoid herbaceous On wet sites, standing water present for part of the year; dominated by either sedges or grasses; includes wet tundra, bogs, marshes, and fens. III.A.3 Wet graminoid herbaceous Vegetation dominated by forbs (broadleaf herbs, ferns, or horsetails) III.A.3 Wet graminoid herbaceous 19 Vegetation dominated by mosses or lichens III.C Bryoid herbaceous 20 On dry sites, usually rocky and well drained; mostly tundra sites III.B.1 Dry forb herbaceous 20 On moist sites but without standing water, mostly within forested areas III.B.2 Mesic forb herbaceous 00 On wet sites usually with standing 00 III.B.2 Mesic forb herbaceous
18b 19a 19b 19c 20a	tussocks often present
18b 19a 19b 19c 20a 20b	tussocks often present III.A.2 Mesic graminoid herbaceous On wet sites, standing water present for part of the year: dominated by either sedges or grasses; includes wet tundra. bogs, marshes, and fens. III.A.3 Wet graminoid herbaceous Vegetation dominated by forbs (broadleaf herbs, farns, or horsetails) III.A.3 Wet graminoid herbaceous 19 Vegetation dominated by mosses or lichens III.C Bryoid herbaceous 20 On dry sites, usually rocky and well drained; mostly tundra sites III.B.1 Dry forb herbaceous 20 On moist sites but without standing water, mostly within forested areas III.B.2 Mesic forb herbaceous 20 On wet sites, usually with standing water for part of the year III.B.2 Mesic forb herbaceous 20 On wet sites, usually with standing water for part of the year III.B.3 Wet forb herbaceous 20 On wet sites, usually ocky and well drained; mostly within forested areas III.B.3 Wet forb herbaceous 20 On wet sites, usually with standing water for part of the year III.B.3 Wet forb herbaceous 20 Vegetation cover dominated by mosses III.C.1 Bryoid moss
18b 19a 19b 19c 20a 20b 21a	tussocks often present III.A.2 Mesic graminoid herbaceous On wet sites, standing water present for part of the year; dominated by either sedges or grasses; includes wet tundra, bogs, marshes, and fens. III.A.3 Wet graminoid herbaceous Vegetation dominated by forbs (broadleaf herbs, ferns, or horsetails) III.A.3 Wet graminoid herbaceous 19 Vegetation dominated by mosses or lichens III.C.Bryoid herbaceous 20 On dry sites, usually rocky and well drained; mostly tundra sites III.B.1 Dry forb herbaceous 20 On moist sites but without standing water, mostly within forested areas III.B.2 Mesic forb herbaceous 20 On wet sites, usually with standing water for part of the year III.B.3 Wet forb herbaceous 20 On wet sites, usually with standing water for part of the year III.B.3 Wet forb herbaceous 20 Vegetation cover dominated by mosses III.C.1 Bryoid moss III.C.2 Bryoid lichen Vegetation submarged or floating III.C.2 Bryoid lichen III.C.2 Bryoid lichen

Vegetation Classification Data Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: <u>W00HT</u>043 Field Target: <u>103</u> Date: <u>7/3/14</u>

For all items not checked, please provide detailed explanation in the notes section of data form.

1. General Information

- ✓ Location data recorded?
- Department of the photo of the photo photo

2. Location Description

Location of site recorded with enough detail to help relocate?

3. Common Species

- Scientific name of common species recorded?
- Percent cover of dominant structure level noted?

4. Habitat Description

Habitat described?

5. Classification

All three levels of classification recorded?

6. Field Log Book

- Field form entries consistent with log book?
- Logbook clearly identifies the Field Target ID and Feature ID?

Zoe Made

Field Technician (print)

otmall

Field Crew Chief (print)

SITE DESCRIPTION 2000' corridor						
Survey Type: Centerline	s Road (explain)	Other (explain) X	Field Target: 1 98	Map #: <u>フル</u> Map Date: <u>パカ/ペ</u> 」		
Date: 7/2/14	1d: W60HT044					
Investigators: Joe Christopher	Team No.: W60					
State: Alaska	Region: Alaska	Milepost: (628.45			
Latitude: 62° 45' 29.	44"	Longitude: / 5 0 *	08' 34.91	[/] Datum: WGS84		
Logbook No.: 003	Logbook Page No.:	33 Picture No.:	P-N.S. pit	plug		

SITE PARAMETERS	
Subregion: South central	Landform (hillslope, terrace, hummocks, etc.): Depression / Meadow
Slope (%): (3-1	Local relief (concave, convex, none): Concave
Pre-mapped Alaska LNG/NWI classification: Port 155/13	Soil Map Unit Name:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (if no explain in Notes)	Are "Normal Circumstances" present: Yes_X No (If no, explain in Notes.)
Are Vegetation, Soil, or Hydrology Significantly Disturbed	d? No <u>X</u> (If yes, explain in Notes)
Are Vegetation, Soil, or Hydrology Naturally Problematic	? No χ (If yes, explain in Notes.)
SUMMARY OF FINDINGS	
	s the Sampled Area within a Wetland? Yes X No
Hydric Soil Present? Yes No V	Vetland Type: PSS 1 B -> PEMI/SSIB
Wetland Hydrology Present? Yes_X No A	Maska Vegetation Classification (Viereck): III A 3, II C 2

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

P:33 Ser Map

Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet : No. of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (
1			Total Number of Dominant Species Across All Strata: (
		FACW	Notal Number of Dominant Species Across All Strata: $\underline{-2}$ (% Dominant Species that are OBL, FACW, or FAC: $\underline{+00}$ (A
			Prevalence Index worksheet:
er:			Total % Cover of: Multiply by:
er: 20	% of total cov	er:	OBL species: $\frac{85}{5}$ X 1 = $\frac{85}{10}$
Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 5 $X_2 = 10$ FAC species 17 $X_3 = 51$ FACU species 0 $X_4 = 0$
10	У	FAC	UPL speciesOX 5 =O
5	У	FACW	Column Totals: 107 (A) 146 (B)
			PI = B/A = <u>I · 3 6</u>
			Tree stratum added to shrub stratu
			sing There werd i 5 % cont
	-1-7		
		2 . 5	~7
er: 1, 0 4 20	% of total cov	1-7-9	
its)	[0]	[J.a)	l vw
Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50% X Prevalence Index is ≤ 3.0
10, run 85	У	OBL	Morphological Adaptations ¹ (Provide supporting data in
TR		FAC	Notes)
y tr		FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
5 3		FAC	¹ Indicators of hydric soil and wetland hydrology must be present unless
TR		FACW	disturbed or problematic.
TR		OBL	All a la fin de la serie
TR		FACW	% Bare Ground
4		FAC	N € Cover of Wetland Bryophytes
			Total Cover of Bryophytes
			0 % Cover of Water
or: 92			Hydrophytic Vegetation Present (Y/N):
	% of total cov	ver: 18, 4	Notes: (If observed, list morphological adaptations below):
	Absolute % Cover 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 10 5 10 10 5 10 10 5 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17 17	er: $ 20\%$ of total cov Absolute Dominant % Cover Species? (Y/N) 10 γ 5 γ 10 γ 10 γ 5 γ 10 γ 10 γ 5 γ 10 γ 10 γ 10 γ 5 γ 10	er: $_$ 20% of total cover: $_$ $_$ $_$ $_$ $_$ $_$ $_$ $_$ $_$ $_$

SOIL			Date 7/3/14	Feature I	DW601	1044		Soll Pit Required (Y/N)
SOIL PROFI	LE DESCRIPTION:	(Describe	e to the depth nee	eded to doo	ument the	indicator or c	onfirm the absen	ce of indicators.)
Depth	Matrix		Redox Feature	Redox Features				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-22		-	-				Fibric	organics
		-		_	-	_		
		-						
		-				-	-	
		-				-		
		-					-	
¹ Type: C=Co	oncentration, D=Depl	letion, RM	I M=Reduced Matri	x, CS=Cov	ered or Co	ated Sand Gr	rains. ² Location	n: PL=Pore Lining, M=Matrix.
	L INDICATORS			Nº Sala	-	and the second second		FOR PROBLEMATIC HYDRIC SOILS ³
Histosol or H	istel (A1)		Alaska Gle	yed (A13)			Alaska Color	Change (TA4) ⁴
Histic Epiped	on (A2)		Alaska Red				Alaska Alpine Swales (TA5)	
Black Histic (A3)		Alaska Gle	yed Pores	(A15)		Alaska Redox with 2.5Y Hue	
Hydrogen Su	lfide (A4)	_				_	Alaska Gleyeo Layer	without 5Y Hue or Redder Underlying
	urface (A12)						Other (Explain	
disturbed or p	or of hydrophytic veg problematic. of color change in N ayer (if present): Typ							ape position must be present unless
Restrictive La	ayer (if present): Typ	be:		_ Depth (i	nches):			
Hydric Soil F	Present (Y/N):	Y						
Notes: Fre	16 Indian	ho vis	of holders	coil 0	bsever	4		

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)				
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)			
High Water Table (A2) X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)			
Saturation (A3) <u>X</u>	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4) <u> </u>			
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5) X			
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:				
Algal Mat or Crust (B4)	Other (Explain in Notes):					
Iron Deposits (B5)						
Surface Water Present (Y/N): N	Depth (in):					
		Wetland Hydrology Present (Y/N):				
Water Table Present (Y/N):	Depth (in):	3,,				
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):					
Notes: Depression	Q foe a sr	man some	4.			

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved / Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent- Persistent Aquatic Bed Scrub Shrub-Evergreen-Needle-leaved Emergent-
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even K Highly Uneven Moderately even Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) X
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a> <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover <a>N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) Y One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous CoverX 1
Dead Woody Material (P): Low Abundance (0-25% of surface) X Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Silty Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed k Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) X High Gradient (≥2%)
Evidence of Seeps and Springs (P): No Seeps or Springs Y Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below V Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below V
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres)

Crew Chief QA/QC check:

L

GPS Technician QA/QC check:

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: <u>W60HT044</u> Field Target: <u>108</u> Date: <u>7/3/14</u>

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- I At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- D Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Z Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Divide the second strain terms and strain terms are strain to second strain terms are strain terms accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- D, Wetland boundaries have been corrected if necessary?
- \square Maps are initialed and dated?

8. Photos

D' Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)? To Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade 7/3/14 Х Me Wetland Scientist (print) Signature// Date Signature / Date Field Crew Chief (print)

SITE DESCRIPTION		A REAL PROPERTY.					
Survey Type: Centerline X Acces	ss Road (explain) Oth	er (expla	ain)	Field Target: 109	Map #: <u>ヿヿ_</u> Map Date: <u>5/ 2ヿ //4</u>		
Date: 7/3/14		Project Name & No.: Alaska LNG 26221306 Feature Id					
Investigators: JC, ZM, A		_			Team No.: W60		
State: Alaska Region: Alaska			Milepost:	631			
Latitude: 62,73765	Lo	ngitude	: +150,14		Datum: WGS84		
Logbook No.: 003	Logbook Page No.: 34 -						
					p109		
SITE PARAMETERS Subregion: South centra	1		Landform (bill	lalana tamasa hummad			
Slope (%): 3 - 5					is, etc.): Reproce / Seeps		
Pre-mapped Alaska LNG/NWI classifica	tion: UDIAN d		Soil Map Unit	oncave, convex, none): Name: N P	Concaul		
Are climatic/hydrologic conditions on the Yes χ No (if no expl	e site typical for this time of ye	ear?		prmal Circumstances" pre			
Are Vegetation, Soil, or Hyd		sturbed?	No_X	_(If yes, explain in Notes			
Are Vegetation, Soil, or Hyd	rology Naturally Proble	ematic?	No_X	_ (If yes, explain in Notes	3.)		
SUMMARY OF FINDINGS	31	1	Line .	191	ALL'S ALL ALL ALL		
Hydrophytic Vegetation Present? Yes_	XNo	lst	Is the Sampled Area within a Wetland? Yes No				
Hydric Soil Present? Yes_	X No	We	etland Type:	PEMI/SSIB	(Sleps)		
Wetland Hydrology Present? Yes	× No	Ala	uska Vegetation	Classification (Viereck):	□ 1 2, , TI C2		
Notes and Site Sketch: Please include D corridor.	Directional & North Arrow, Cer	nterline, I	Length of featur	re, Distances from Cente	rline, Photo Locations, and Survey		
comuor.	Sel PS Notes	ζ	3-36	t fer			
	200/0	~					
	notes	4	DrAG	n'hs?			
AF PAPer birch	WAS SAI	.')	P				
- 1				nt			
	for groups In plut + mating						
	+4 MOUPLO	1071	al A	d Apta h	OLL (Changed to FAC		
to 90	Pains In	6	elp5	Pemi/s	SIB.		
* See W60HT	645-0P (ar	potes	en Adi.	245B		

Tree Stratum (Plot sizes: 26)Absol % Con# Betula neoalaskana32. Betula neoalaskana33. Picea glauca34.Total Cover: 11 50% of total cover: 5.5Sapling/Shrub Stratum (26)Absol % Cov1. Spiraea stevenii102. Alnus SSP.153.4.4.5.6.7.8.9.9.Total Cover: 2550% of total cover: 25.550% of total cover: 25.5<	er Species? (Y/N) y y y y y y y y y y y y y y y y y y y	Indicator Status FAC FACU FACU Ver: 2.2 Indicator Status FACU FAC FAC	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: $\frac{4}{57}$ Total Number of Dominant Species Across All Strata: 57 % Dominant Species that are OBL, FACW, or FAC: $\frac{80}{57}$ Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species: 29 X 1 = 29 FACW species: $1 X 2 = 7$ FACW species: $1 X 2 = 7$ FAC species $15 X 3 = 225$ FAC species $15 X 3 = 225$ FAC species $0 X 5 = 0$ Column Totals: 122 (A) 324 (B) PI = B/A = $2 \cdot 66$ # morphological adaptation - multiple trunks -7 Support March,
2. Betvia neoalaskana 3 3. Picea glauca 3 4. Total Cover: 11 50% of total cover: 5. 5 Sapling/Shrub Stratum (26) Absol % Cov 1. Spiraea stevenii 10 2. Ainus 5SP. 15 3. 4. 5. 6. 7. 8. 9. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (26) Absol % Co 1. Comarvin patustice 25 2. Equisetum sylvatice 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 45 5. Chamerion angustofolium 7 6. Carex mayellanica 4 7. Equisetum arvins e 3	20% of total co te Dominant Species? (Y/N) X	FACU FACU ver: 2,2 Indicator Status FACU	% Dominant Species that are OBL, FACW, or FAC: $\frac{80}{57}$ Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species: 29 X 1 = 29 FACW species: $1 X 2 = 2$ FAC species: 15 X 3 = 225 FAC species: 17 X 4 = 68 UPL species: 0 X 5 = 0 Column Totals: 122 (A) 324 (B) PI = B/A = 2.66 # morphological adaptation - multiple trunks
2. Betvia neoaiaskana 3 3. Picea glauca 3 4. Total Cover: 11 50% of total cover: 5. 5 Sapling/Shrub Stratum (26) Absol % Cov 1. Spiraea stevenii 10 2. Anus 88p. 15 3. 4. 5. 6. 7. 8. 9. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (26) Absol % Co 1. Comarvm patustre 25 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 45 5. Chamerion angustofonium 7 6. Carex mayellanica 4 7. Equisetum arvense 3	20% of total co te Dominant Species? (Y/N) X	FACU ver: 2.2 Indicator Status FACU	Frevalence Index worksheet: Total % Cover of: Multiply by: OBL species: $29 \times 1 = 29$ FACW species: $1 \times 2 = 2$ FAC species: $1 \times 2 = 2$ FAC species: $1 \times 2 = 2$ FAC species: $1 \times 4 = 68$ UPL species: $0 \times 5 = 0$ Column Totals: 122 (A) 324 (B) PI = B/A = 2.66 # morphological adaptation - multiple trunks
4. Total Cover: 11 50% of total cover: 5.5 Sapling/Shrub Stratum (_26_) Absol % Cov 1. Spiraea stevenii 2. Amus 55P. 3. 4. 5. 6. 7. 8. 9. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (_26_) Absol % Co 1. Comarvm patustre 2. Equisetum sylvaticum 3. Cornus canadensis 4. Calamagrostis canadonses 4. Calamagrostis canadonses 4. Calamagrostis canadonses 5. Chamerion angustofolium 5. Chamerion angustofolium 5. Chamerion angustofolium 6. Carex magellanica 4. 7. Equisetum arvense 3.	20% of total cc te Dominant r Species? (Y/N)	ver: 2.2 Indicator Status FACU	Total % Cover of:Multiply by:OBL species: 29 $x 1 = 29$ FACW species: $1 = 29$ FAC species: $1 = 225$ FAC species: 15 $x 3 = 225$ FAC species: 17 $x 4 = 68$ UPL species: 0 $x 5 = 0$ Column Totals: 122 (A) 324 (B)PI = B/A = $2 \cdot 66$ $#$ morphological adaptationmultiple trunk 5
4. Total Cover: 11 50% of total cover: 5.5 Sapling/Shrub Stratum (_26_) Absol % Cov 1. Spiraea stevenii 2. Alnus 58 p. 3. 4. 5. 5. 6. 7. 8. 9. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (_26_) Absol % Co 1. Comarum patustre 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 4: 5. Chamerion angustofolium T 6. Carex mayellanica 4 7. Equisetum arvense 3	te Dominant sr Species? (Y/N)	Indicator Status FACU	Total % Cover of:Multiply by:OBL species: 29 $x_1 = 29$ FACW species: $x_2 = 2$ FAC species 15 $x_3 = 225$ FAC species 17 $x_4 = 68$ UPL species 0 $x_5 = 0$ Column Totals: 122 (A) 324 (B)PI = B/A = $2 \cdot 66$ $\#$ morphological adaptation- multiple trunks
50% of total cover: 5.5 Sapling/Shrub Stratum (_26_) Absol % Cov 1. Spiraea stevenii 2. Amus 55p. 3. 4. 5. 6. 7. 8. 9. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (_26_) Absol % Cov 1. Comarvm patustre 2. Equisetum sylvaticum 1. Comarvm patustre 2. Equisetum sylvaticum 3. Cornus canadensis 1 4. Calamagrostis canadonsis 4. Calamagrostis canadonsis 5. Chamerion angustofolium 7. Equisetum arvinse 3. Cornus canadonsis 4. Calamagrostis canadonsis 5. Chamerion angustofolium 5. Chamerion angustofolium	te Dominant sr Species? (Y/N)	Indicator Status FACU	OBL species: 29 $x_1 = 29$ FACW species: 1 $x_2 = 2$ FAC species 75 $x_3 = 225$ FACU species 17 $x_4 = 68$ UPL species 0 $x_5 = 0$ Column Totals: 122 (A) 324 (B) PI = B/A = 2.66 # morphological adaptation - multiple trunks
Sapling/Shrub Stratum (te Dominant sr Species? (Y/N)	Indicator Status FACU	FACW species: $1 \times 2 = 2$ FAC species $75 \times 3 = 225$ FACU species $17 \times 4 = 68$ UPL species $0 \times 5 = 0$ Column Totals: 122 (A) 324 (B) PI = B/A = $2 \cdot 66$ # morphological adaptation - multiple trunks
* Cov * Spiraea stevenii 10 * Anus \$\$p. 15 * Anus \$\$p. 16 * Carex mayellanica 4 * Anus \$\$p. 3	r Species? (Y/N)	Status FACU	FACU species 17 $x 4 = 68$ UPL species 0 $x 5 = 0$ Column Totals: 122 (A) 324 (B) PI = B/A = 2.66 # morphological adaptation - multiple trunks
2. AINUS SSP. 15 3. 4. 5. 5. 6. 7. 8. 7. 8. 9. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (2C) Absol % Co 1. Comarum palustre 25 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 45 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Equisetum arvense 3			UPL species 0 x 5 = 0 Column Totals: 122 (A) 324 (B) PI = B/A = 2,66 * morphological adaptation - multiple trunks
3. 4. 5. 5. 6. 7. 8. 9. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (26) Absol % Co 1. Comarum palustre 25 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 45 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Equisetum arvense 3	У	FAC	PI=BA= 2,66 * morphological adaptation - multiple trunks
4. 5. 5. 6. 7. 8. 9. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (2C) Absol % Co 1. Comarvin palustre 25 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 45 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Equisetum arvense 3			PI=BA= 2.66 * morphological adaptation - multiple trunks
5. 5. 5. 5. 5. 5. 7. 3. 5. Total Cover: 25 50% of total cover: 12.5 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (26) Absol % Co 1. Comarvm palvstre 25 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 45 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Equisetum arvense 3			* morphological adaptation - multiple trunks
3. 7. 3. 3. 5. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (2C) Absol % Co 1. Comarum palustre 25 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 45 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Equisetum arvense 3			
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3. Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (_26_) Herb Stratum (_26_) Absol % Co 1. Comarum palustre 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 45 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Equisetum arvense 3			Front PASE,
Total Cover: 25 50% of total cover: 12.5 /EGETATION (use scientific names of plants) 			Fron PASE,
Total Cover: 25 50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (26) Absol % Co 1. Comarum palustre 25 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 45 5. Chamerion angustofolium T 6. Carex magellani ca 4 7. Equisetum arvense 3			
50% of total cover: 12.5 VEGETATION (use scientific names of plants) Herb Stratum (26) Absol % Co 1. Comarum palustre 25 2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 43 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Equisetum arvense 3			
VEGETATION (use scientific names of plants) Herb Stratum (<u>26</u>) Absol % Co 1. Comarum palustre 2. Equisetum sylvaticum 3. Cornus canadensis 4. Calamagrostis canadensis 4. Calamagrostis canadensis 5. Chamerion angustofolium 5. Chamerion angustofolium 6. Carex magellanica 4. 7. Equisetum arvense 3			
Herb Stratum (<u>26</u>) Absol % Co 1. Comarum palustre 2. Equisetum sylvaticum 3. Cornus canadensis 4. Calamagrostis canadensis 5. Chamerion angustofolium 6. Carex magellanica 4. 7. Equisetum arvense 3	20% of total co	ver: <u>5</u>	
Herb Stratum (26_)Absol % Co1. Comarum palustre252. Equisetum sylvaticum73. Cornus canadensis14. Calamagrostis canadensis45. Chamerion angustofoliumT6. Carex magellanica47. Equisetum arvense3	Printer and		0.000
% Co1. Comarum palustre252. Equisetum sylvaticum73. Cornus canadensis14. Calamagrostis canadensis455. Chamerion angustofoliumT6. Carex magellanica47. Equisetum arvense3	te Dominant	Indicator	Hydrophytic Vegetation Indicators:
2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 4: 5. Chamerion angustofolium T 6. Carex mayellanica 4 7. Equisetum arvense 3	er Species?	Status	Dominance Test is > 50%
2. Equisetum sylvaticum 7 3. Cornus canadensis 1 4. Calamagrostis canadensis 4: 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Equisetum arvense 3	(Y/N)		Prevalence Index is ≤ 3.0
3. Cornus canadensis 1 4. Calamagrostis canadonsis 4: 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Equisetum arvense 3	7	OBL	Morphological Adaptations ¹ (Provide supporting data
4. Calamagrostis canadonsis 4: 5. Chamerion angustofolium T 6. Carex magellanica 4 7. Eguisetum arvense 3		FAC	_ Notes)
5. Chamerion angustofolium T 6. Carex mayellanica 4 7. Equisetum arvense 3		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
6. Carex mayellanica 4 7. Equisetum arvense 3	Y	FAC	¹ Indicators of hydric soil and wetland hydrology must be present unle
7. Equisetum arvense 3		FAC	disturbed or problematic.
Equior formation		OBL	and the second second second
		FAC	% Bare Ground
8. RUBUS Chamaemorous 1		FACW	→ N A Cover of Wetland Bryophytes
9. Viola SSP. TR			Total Cover of Bryophytes
10.			0 % Cover of Water
Total Cover:86			Hydrophytic Vegetation Present (Y/N):7
50% of total cover: <u>43</u>		17 -	Notes: (If observed, list morphological adaptations below):

SOIL		-	Date 7/3/14 Fe	eature	DWGOH	T045		Soil Pit Required (Y/N)
SOIL PROFIL	E DESCRIPTION: (Describe	to the depth needed	to doc	ument the	indicator or	confirm the absence	e of indicators.)
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-9							Fibric	organics,
9-20	10 YR 2/2	100	-	_	1	_	Silt Ioam	
		-		-			-	
		-	1	-	-	-		
		-						
	ncentration, D=Deple	tion, RM	I=Reduced Matrix, C	S=Cov	ered or Co	ated Sand C		PL=Pore Lining, M=Matrix.
	LINDICATORS	- 1	- Aller all	10-22	-15-	and the		FOR PROBLEMATIC HYDRIC SOILS ³
listosol or Hi	stel (A1)		Alaska Gleyed	i (A13)			Alaska Color Cl	nange (TA4) ⁴
listic Epiped	on (A2)		Alaska Redox	(A14) _			Alaska Alpine S	wales (TA5)
Black Histic (/	A3)		Alaska Gleyed	Pores	(A15)		Alaska Redox v	vith 2.5Y Hue
lydrogen Sul	fide (A4)						Alaska Gleyed	without 5Y Hue or Redder Underlying
Thick Dark Su	urface (A12)						Other (Explain i	n Notes)
disturbed or p	roblematic.							pe position must be present unless
Restrictive La	of color change in No yer (if present): Type		(Depth (i	nches):	~		
⊣ydric Soil P	Present (Y/N):	Y						
Notes:								
					V			

RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or r	nore required)		
Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Dry-Season Water Table (C2)	Notes:	and BUTNO		
Algal Mat or Crust (B4) Other (Explain in Notes):				
	Standing HTC	/ ,		
Depth (in):		\checkmark		
Water Table Present (Y/N): V Depth (in):		Wetland Hydrology Present (Y/N):		
Depth (in):				
LAPHE But Stress	50 3.			
		- 1		
	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 Notes): Depth (in): Depth (in): Depth (in):	Surface Soil Cracks (B6) Water-stained Leaves (B9) Inundation Visible on Aerial Imagery (B7) Drainage Patterns (B10) Sparsely Vegetated Concave Surface (B8) Oxidized Rhizospheres along Living Roots (C3) Marl Deposits (B15) Presence of Reduced Iron (C4) Hydrogen Sulfide Odor (C1) Salt Deposits (C5) Dry-Season Water Table (C2) Notes: Other (Explain in Notes): Suffice Yets of Y		

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) 1 Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) 15 Short shrub (0.5-2m) 10 Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly Uneven XModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) 700 One or Few Several to Many N/A X
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) X
HGM Class (P): Slope Flat Lacustrine Fringe Depressional 🗶 Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty X Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed <u>Y</u> Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding V Return Interval 1-2 yrs Return Interval 2-5 yrs
Return Interval >5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow X
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Press Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Restricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Image: Restricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow R 45 Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Restricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Restricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow_X

Crew Chief QA/QC check:

GPS Technician QA/QC check:

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60 HT045 Field Target: 109 Date: 7/3/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Dite description, site parameters and summary of findings are complete?

2. Vegetation

- 1 At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Use the provide the provide the provided the problem is the problem of the pro
- D Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- 1 Notes have been recorded at each site, including general description, sketch, and
- accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- Daps are initialed and dated?

8. Photos

- 🖞 Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1

soil pit, 1 soil plug)? Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Me ade

Wetland Scientist (print)

3/14 Signature / Date

X Joe ri Aph

Field Crew Chief (print)

Signature / Date

M

SITE DESCRIPTION							
Survey Type: Centerline X Acces	Target: // ()	Map #: 77 Map Date: 5/27/14					
Date: 7/3/14	Project Name & No.: Ala	aska LNG 26221	106	Feature Id: W60HT046			
Investigators: Joe Christophi	Team No.: W60						
State: Alaska	Region: Alaska	Milepo	st: 63	ł			
Latitude: 62° 44' 14.46	// L	ongitude: /50	08'50	. 71"	Datum: WGS84		
Logbook No.: 003	Logbook Page No.: 36	137 Pictur	• No.: P _ /	N-5, P-	P		
SITE PARAMETERS							

Subregion: South central	Landform (hillslope, terrace, hummocks, etc.): Slope Terrace			
Slope (%): 0 - 5	Local relief (concave, convex, none): Convex			
Pre-mapped Alaska LNG/NWI classification: $PSSI/EMIB$	Soil Map Unit Name: N //			
Are climatic/hydrologic conditions on the site typical for this time of year? Yes_ \times _No (if no explain in Notes)	Are "Normal Circumstances" present: Yes No (If no, explain in Notes.)			
Are Vegetation, Soil, or Hydrology Significantly Disturbe	ed? No <u>χ</u> (If yes, explain in Notes)			
Are Vegetation, Soil, or Hydrology Naturally Problemati	ic? No X (If yes, explain in Notes.)			
SUMMARY OF FINDINGS				
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area within a Wetland? Yes_X No			
Hydric Soil Present? Yes <u>X</u> No	Wetland Type: PSSI/EMIB			
Wetland Hydrology Present? YesX No	Alaska Vegetation Classification (Viereck): 17C2, 117A2			

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

VEGETATION (use scientific names of plants	5)			
Tree Stratum (Plot sizes: <u>26′</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata:
1,				% Dominant Species that are OBL, FACW, or FAC:
2.				bommant Species mat are OBL, I ACW, OT AC.
3.				Terra La rest
4.				Prevalence Index worksheet:
Total Cover 50% of total cover		% of total cov	ver:_ Ø	Total % Cover of: Multiply by: OBL species: $1/0^3$ $x_1 = 10^3$
Sapling/Shrub Stratum (()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 0 X 2 = 2 FAC species 2 X 3 = 366 FACU species 5 X 4 = 27
1. myrica gale	60	X	OBL	UPL speciesX 5 = 0
1. myrica gale 2. Bétula nana	60		FAC	Column Totals: / 3 0 (A) 189 (B)
3. Spiraed Stevenii	5		FACU	PI = B/A =/. 4 5
4.		1		
5.				1
6.				1
7.				
8.	(
9.				-
Total Cover				-
50% of total cover	: <u>36</u> 20	% of total cov	ver: 14,4	
VEGETATION (use scientific names of plants	5)	N.I.	16.25	
	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators:
Herb Stratum (2.6)	Absolute % Cover	Species?		Dominance Test is > 50% Prevalence Index is ≤ 3.0
Herb Stratum (<u>26)</u> 1. Catamagrostis canadonsis	Absolute % Cover	Species?	Status	Dominance Test is > 50%
Herb Stratum (2.6)	Absolute % Cover	Species? (Y/N)	Status FA:C	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
Herb Stratum (<u>26</u>) 1. Calamagrostis Canadonsis 2. Carex microglochin 3. Equisetum Grvense	Absolute % Cover	Species? (Y/N)	Status FAIC OBL	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
Herb Stratum (<u>26</u>) 1. Calamagrostis canadonsis 2. Carex microglochin 3. Equisetum Grvense	Absolute % Cover 10 40 5	Species? (Y/N)	Status FA:C 0BL FAC	▲ Dominance Test is > 50% ▲ Prevalence Index is ≤ 3.0 ▲ Morphological Adaptations ¹ (Provide supporting data in Notes) ▲ Problematic Hydrophytic Vegetation ¹ (Explain)
Herb Stratum (<u>26</u>) 1. Calamagrostis Canadonsis 2. Carex microglochin 3. Equisetum Grvense 4. Comarum palustre	Absolute % Cover 10 40 5	Species? (Y/N)	Status FA:C 0BL FAC	 ▲ Dominance Test is > 50% ▲ Prevalence Index is ≤ 3.0 ▲ Morphological Adaptations¹ (Provide supporting data in Notes) ▲ Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
Herb Stratum (<u>26</u>) 1. Calamagrostis canadonsis 2. Carex microglochin 3. Equisetum Grvense 4. Comarum palustre 5.	Absolute % Cover 10 40 5	Species? (Y/N)	Status FA:C 0BL FAC	 ▲ Dominance Test is > 50% ▲ Prevalence Index is ≤ 3.0 ▲ Morphological Adaptations¹ (Provide supporting data in Notes) ▲ Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
Herb Stratum (<u>26</u>) 1. Calamagrostis Canadonsis 2. Carex microglochin 3. Equisetum Grvense 4. Comarum palustre 5. 6.	Absolute % Cover 10 40 5	Species? (Y/N)	Status FA:C 0BL FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic.
Herb Stratum (<u>26</u>) 1. Calamagrostis Canadonsis 2. Carex microglochin 3. Equisetum Grvense 4. Comarum palustre 5. 6. 7.	Absolute % Cover 10 40 5	Species? (Y/N)	Status FA:C 0BL FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic, % Bare Ground
Herb Stratum (<u>26</u>) 1. Calamagrostis Canadensis 2. Carex microglochin 3. Equisetum Grvense 4. Comarum palustre 5. 6. 7. 8. 9.	Absolute % Cover 10 40 5	Species? (Y/N)	Status FA:C 0BL FAC	▲ Dominance Test is > 50% ▲ Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes
1. Calamagrostis carradonsis 2. Carex microglochin 3. Equisetum Grvense 4. Comarum palustre 5. 6. 7. 8.	Absolute % Cover 10 40 5 3	Species? (Y/N)	Status FA:C 0BL FAC	▲ Dominance Test is > 50% ▲ Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic, % Bare Ground % Cover of Wetland Bryophytes % Total Cover of Bryophytes



SOIL			Date 07 13/14 Fea					Soll Pit Required (Y/N)	
SOIL PROFI	1	(Describe	to the depth needed t	o doc	ument the	indicator or	confirm the absen	ce of indicators.)	
Depth	Matrix		Redox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-20		_		-			Fibric	organics - wet	
		-							
¹ Type: C=Cc	ncentration, D=Depl	etion, R	I Reduced Matrix, CS	 =Cov	ered or Co	ated Sand G	Grains. ² Location	n: PL=Pore Lining, M=Matrix.	
HYDRIC SOI	L INDICATORS						INDICATORS	FOR PROBLEMATIC HYDRIC SOILS	
Histosol or Hi	stel (A1)		Alaska Gleyed (/	A13)	_		Alaska Color	Change (TA4) ⁴	
Histic Epiped	on (A2)	_	Alaska Redox (A					Swales (TA5)	
Black Histic (A3)		Alaska Gleyed P				Alaska Redox	with 2.5Y Hue	
Hydrogen Su	lfide (A4)	-					Alaska Gleye Layer_	d without 5Y Hue or Redder Underlying	
	urface (A12)							er (Explain in Notes)	
disturbed or p ⁴ Give details	problematic. of color change in N	otes.						cape position must be present unless	
Restrictive La	iyer (if present): Typ)e:	De	pth (i	nches):				
Hydric Soil F	Present (Y/N):	У							
Notes:									

HYDROLOGY PRIMARY INDICATORS (any one indicator is sufficient)		SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2) X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3) <u>X</u>	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N):	Depth (in):				
Vater Table Present (Y/N): Y Depth (in):		Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N): (includes capillary fringe)					
Notes:					

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed C
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even X Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) 80%) Very High Density (80-100%) High Density (60-
Interspersion of Cover & Open Water (P): 100% Cover or Open Water 25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover 75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) V Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Silty Mineral: Gravelly Mineral: Silty
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial I
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated V Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)

Size: Small (<10 acres) X Medium (10-100 acres)

GPS Technician QA/QC check:

Large (>100 acres)

Crew Chief QA/QC check

Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Date: 7/3/14 Field Target: // 0 Feature ID: W60 HT046

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- onumber for the second state of the second second second second state <math>
 onumber for the second se
- ☐ A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- U Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

D Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Dotes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- □ Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

0

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

Two photos were taken for each Observation Point (vegetation/site overview)?

X ZOP Meade

Wetland Scientist (print)

Х 3 4 Signature / Date

hrishph Х

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION					the second second second
Survey Type: Centerline Acce	ss Road (explain) Other (ex	(plain) <u>X</u>	Field Target:_	149	Map #: 131 Map Date: 5/11/14
Date: 7/9/14	Project Name & No.: Alaska Ll	NG 26221306 Feature Id:			W60T1052 W60HTC
Investigators: Joe Christoph	er, Zoe Meade, Abiga	le Fisher			Team No.: W60
State: Alaska	Region: Alaska	Milepost:	661.7		
Latitude: 610 JU 40.00	۲ Longitu	de: 150 16	1 11.8.	7 "	Datum: WGS84
Logbook No.: 003	Logbook Page No.: 050				ivg
SITE PARAMETERS		10.000		, ,	
Subregion: South central	Landform (hillslope, terrace, hummocks, etc.): hummuils				
Slope (%): 0 - 3	Local relief (concave, convex, none): かいいん				
Pre-mapped Alaska LNG/NWI classifica	Soil Map Unit Name: N/A				
Are climatic/hydrologic conditions on the Yes No (if no expl	Are "Normal Circumstances" present: Yes_X No (If no, explain in Notes.)				
Are Vegetation, Soil, or Hyd	Irology Significantly Disturbe	. /	_(If yes, explain		
Are Vegetation, Soil, or Hyd	Irology Naturally Problematic	? No <u>X</u>	(If yes, explain	in Notes.)	
SUMMARY OF FINDINGS					
Hydrophytic Vegetation Present? Yes	× × No I	s the Sampled A	rea within a We	etland?	YesX No
Hydric Soil Present? Yes	X No N	Wetland Type:	PFOHIS	51B	
Wetland Hydrology Present? Yes	XNo	Alaska Vegetation	Classification (V	/iereck):]	ГА2, ЦС2

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

site sketch on pg. 049 } Log book 003 data on pg. 50

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: <u>26'</u>)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC: <u>2</u> Total Number of Dominant Species Across All Strata: <u>2</u>
Picea mariana	50	7	FACW	% Dominant Species that are OBL, FACW, or FAC:
•				
ł.,				Prevalence Index worksheet:
Total Cover 50% of total cover		% of total cov	er: 10	Total % Cover of: Multiply by: OBL species: 5 X 1 = 5
Sapling/Shrub Stratum(261))	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 122 x 2 = 244 FAC species 44 x 3 = 132 FACU species 2 x 4 = 8
Vaccinium vitis-idaea	5.		FAC	UPL speciesX 5 =O
Vaccinivm oxycoccus	TR		OBL	Column Totals: 173 (A) 389 (B)
3. Betula nana	TR		FAC	PI = B/A = 2 - 2 - 5
A. Rhododendron tomentosum	4		FACW	
5. Empetrum nigrum	3		FAC	
3. Vaccinium uliginosum	35	Y	FAC	
Betula neoalas kana	1		FACV	
3. Picea mariama	3		FACW	
9,				
Total Cove				
FOO/ of total action	1:25.5 20)% of total cov	/er: 10 · L	
50% of total cove				
VEGETATION (use scientific names of plant		Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Brevalence Index is < 3.0
VEGETATION (use scientific names of plant	s) Absolute	Dominant Species?	Indicator Status FACW	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Rubus chamaemorous	s) Absolute % Cover	Dominant Species?	Indicator Status FACW	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Rubus chamaemorous 2. Geocauton lividum	s) Absolute % Cover (6 5 1 1	Dominant Species?	Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data)
VEGETATION (use scientific names of plant Herb Stratum (26') 1. Pubus chamaemorous 2. Geocauton lividum 3. Equise tum sylvaticum	s) Absolute % Cover	Dominant Species?	Indicator Status FACW FACY	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present up
VEGETATION (use scientific names of plant Herb Stratum(261)	s) Absolute % Cover (6 5 1 1	Dominant Species?	Indicator Status FACW FACY FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes)
VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) ^{1.} Rubus chamaemorous ^{2.} Geocauton lividum ^{3.} Equisetum sylvaticum ^{4.} Carex microglochin 5.	s) Absolute % Cover (6 5 1 1	Dominant Species?	Indicator Status FACW FACY FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present up
VEGETATION (use scientific names of plant Herb Stratum (26') 1. Pubus chamaemorous 2. Geocauton lividum 3. Equise tum sylvaticum 4. Carex microglochin 5. 6.	s) Absolute % Cover (6 5 1 1	Dominant Species?	Indicator Status FACW FACY FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present up
VEGETATION (use scientific names of plant Herb Stratum (26') 1. Pubus chamaemorous 2. Geocaulon lividum 3. Equisetum sylvaticum 4. Carex microglochin 5. 6.	s) Absolute % Cover (6 5 1 1	Dominant Species?	Indicator Status FACW FACY FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present u disturbed or problematic. 0_% Bare Ground % Cover of Wetland Bryophytes
VEGETATION (use scientific names of plant Herb Stratum (<u>26'</u>) 1. Pubus chamaemorous 2. Geocaulon lividum 3. Equisetum sylvaticum 4. Carex microglochin 5. 6. 7.	s) Absolute % Cover (6 5 1 1	Dominant Species?	Indicator Status FACW FACY FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present u disturbed or problematic. O % Bare Ground % Cover of Wetland Bryophytes % Total Cover of Bryophytes
VEGETATION (use scientific names of plant Herb Stratum (26') 1. Rubus chamaemorous 2. Geocauton lividum 3. Equisetum Sylvaticum 4. Carex microglochin 5. 6. 7. 8. 9.	s) Absolute % Cover (6 5 1 1	Dominant Species?	Indicator Status FACW FACY FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present undisturbed or problematic. 0% Bare Ground % Cover of Wetland Bryophytes
VEGETATION (use scientific names of plant Herb Stratum (26') 1. Pubus chamaemorous 2. Geocauton lividum 3. Equisetum sylvaticum 4. Carex microglochin 5. 6. 7. 8.	s) Absolute % Cover 6 5 1 1 5	Dominant Species?	Indicator Status FACW FACY FAC	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present ut disturbed or problematic. 0 % Bare Ground % Cover of Wetland Bryophytes % Total Cover of Bryophytes

SOIL			Date 7/9/14	To officer I	WLOH				
	E DESCRIPTION					100000	Constant Street	Soil Pit Required (Y/N)	
	E DESCRIPTION: (Describe	-	ed to doc	ument the I	ndicator or	confirm the abser	nce of indicators.)	
Depth	Matrix	1	Redox Features	1		1			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-15							Fibric	organics, wet	
5-20		-					Hemic	organics, wet Organics, wet	
		-		-		-			
	centration, D=Depl	etion, RN	=Reduced Matrix,	CS=Cove	ered or Coa	ted Sand C	Grains ² Locatio	n: PL=Pore Lining, M=Matrix,	
YDRIC SOIL	INDICATORS			_				S FOR PROBLEMATIC HYDRIC SOILS ³	
istosol or His	itel (A1) <u>X</u>	-	Alaska Gleye	ed (A13)			Alaska Color Change (TA4) ⁴		
istic Epipedo	n (A2)		Alaska Redo	x (A14) _			Alaska Alpine Swales (TA5)		
lack Histic (A	.3)		Alaska Gleye	d Pores ((A15)		Alaska Redox with 2.5Y Hue		
ydrogen Sulf	ide (A4)						Alaska Gleye Layer	d without 5Y Hue or Redder Underlying	
hick Dark Su	rface (A12)						Other (Explain in Notes)		
isturbed or pi Give details o	of hydrophytic vege oblematic. f color change in No ver (if present): Typ	otes.						cape position must be present unless	
lydric Soil Pi	resent (Y/N):	У							
lotes:									

HTDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2) X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3) X	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4) X		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N): N	Depth (in):		N		
/ater Table Present (Y/N); Y Depth (in): 2		Wetland Hydrology Present (Y/N):	/		

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Forested-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Image: Constant Cons
Percent Cover (P): Tree (>5 dbh, >6m tall) 50 Sapling (<5 dbh, <6m tall) 4 Tall shrub (2-6m) 0 Short shrub (0.5-2m) 42 Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenHoderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species)X High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flooded Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank FloodingX Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet Restriction (P): No OutflowX Restricted Outflow Unrestricted Outflow
Inlet/Intermittent OutletPerennial Inlet/Perennial Outlet
Inlet/Intermittent OutletPerennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence ObservedXSediment Observed on Wetland SubstrateFluvaquent Soils Sediment Created
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Inlet/Intermittent Outlet
Inlet/Intermittent Outlet
Inlet/Intermittent OutletPerennial Inlet/Perennial Outlet
Inter/Intermittent Outlet

nnician

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID

Field Target: 149 Date: 7/9/14

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For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

 \square Site description, site parameters and summary of findings are complete? \square A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Z Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Ø Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- ☑ Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Ø Wetland boundaries have been corrected if necessary?
- $\mathbf{\overline{D}}$ Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

Х Zoe Meade

Wetland Scientist (print)

Signature / Date

all

7/9

114

her style

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION							
Survey Type: Centerline Acc	ess Road (explain) Of	ther (explain)	Field Target: 112	Map #: 79 Map Date: 5/27/14			
Date: 7/5/14	Project Name & No.: Al	aska LNG 26221306	Feature I	d: W60HT048			
Investigators: Joe Christo	pher, Zoe Mead	e, Abigayle	Fisher	Team No.: W60			
State: Alaska	Region: Alaska	Milepost:	640.35				
Latitude: 62° 37' 34.6				Datum: WGS84			
Logbook No.: 003	Logbook Page No.: 3	Bicture No.	: P_ N, S. pit,	Plug			
SITE PARAMETERS							
Subregion: South centro	1	Landform (h	Landform (hillslope, terrace, hummocks, etc.): Flood plain				
Slope (%):			Local relief (concave, convex, none): CONCAVE				
Pre-mapped Alaska LNG/NWI classific	ation: PSSIA		Soil Map Unit Name: N A				
Are climatic/hydrologic conditions on the Yes_X No (if no exp	e site typical for this time of y plain in Notes)	/ear? Are "h	Are "Normal Circumstances" present: Yes_X No (If no, explain in Notes.)				
Are Vegetation, Soil, or Hy	drology Significantly D	visturbed? No_X	(If yes, explain in Note	us)			
Are Vegetation, Soil, or Hy	drology Naturally Prob	ematic? No X	(If yes, explain in Note	9S.)			
SUMMARY OF FINDINGS		and the second	1-20-20-20	1			
Hydrophytic Vegetation Present? Yes_	X No	Is the Sampled	Area within a Wetland?	Yes NoX			
Hydric Soil Present? Yes_	No_ X	Wetland Type:	Wetland Type: Upland				
Wetland Hydrology Present? Yes_	Νο <u>_</u> Χ	Alaska Vegetatio	Alaska Vegetation Classification (Viereck): TB1				

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

What Flood plan near Grave # ADDT Access # WATEr Source @ Thousesomy Creek

1A538.

VEGETATION (use scientific names of plan	ts)			
Tree Stratum (Plot sizes: <u>26)</u>	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 3 Total Number of Dominant Species Across All Strata: 4
1. Populus balsamifera	70	Y	FACU	% Dominant Species that are OBL, FACW, or FAC: $\underline{-75}$ (A
2.				
3.				
4.				Prevalence Index worksheet:
Total Cove	-			Total % Cover of: Multiply by:
50% of total cove	er: <u>35</u> 20	% of total cov	er: <u>14</u>	OBL species:X 1 =
Sapling/Shrub Stratum (26 ')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species:X 2 = 0FAC species:4X 3 = 123FACU species: 5 X 4 = 300
1. AINUS EEP.	4		FAC	UPL speciesX 5 =
2. Salex scouleriana	20	Y	FAC	Column Totals: 116 (A) 423 (B) PI = B(A = 3.65
3. Ribes triste	1		FAC	PI=B/A=3.65
4. Rosa asicularis	5		FACU	
5.				
6.				
7.		-		
8.	-			
8. 9.				
8.		0% of total cov	/er:	
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan	er: <u>15</u> 20	0% of total cov	ver: <u>6</u>	
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan	er: <u>15</u> 20	Dominant Species? (Y/N)	ver: <u>6</u> Indicator Status	Hydrophytic Vegetation Indicators: / _XDominance Test is > 50% Prevalence Index is < 3.0
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan	er: <u>15</u> 20 nts) Absolute	Dominant Species? (Y/N) X	Indicator Status FRC	Dominance Test is > 50% Prevalence Index is ≤ 3.0
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equisetum arvense	er: 15 20 nts) Absolute % Cover 6	Dominant Species? (Y/N)	Indicator Status	_X_ Dominance Test is > 50%
8. 9. Total Cove 50% of total cove VEGETATION (use scientific names of plan Herb Stratum (<u>26'</u>) 1. Equisetum arvense	er: <u>15</u> 20 nts) Absolute % Cover 6	Dominant Species? (Y/N) X	Indicator Status FRC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
 8. 9. Total Covers 50% of total covers 50% of total covers of total covers of total covers of the second secon	er: <u>15</u> 20 nts) Absolute % Cover 6	Dominant Species? (Y/N) X	Indicator Status FA C FA C	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
 8. 9. Total Covers 50% of total covers 50% of total covers of total covers of total covers of the scientific names of plant the stratum (<u>26'</u>) 1. Equisetum arvense 2. calamagrostis canadom 3. Chamaerion angustofoli 4. Galium triflorum 	er: 15 20 nts) Absolute % Cover 6 8/7 10 V N TR	Dominant Species? (Y/N) X	Indicator Status FRC FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
 8. 9. Total Covers 50% of total covers 50% of total covers of total covers of total covers of the second secon	er: 15 20 nts) Absolute % Cover 6 8% - 10 10 10 10 10 17 TP	Dominant Species? (Y/N) X	Indicator Status FR C FA C FA C FA C FA C	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
 8. 9. Total Coversion 50% of total covers 50% of total covers of total covers of total covers of total covers of the second second	er: 15 20 nts) Absolute % Cover 6 8% - 10 10 10 10 10 17 TP	Dominant Species? (Y/N) X	Indicator Status FR C FA C FA C FA C FA C	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
 8. 9. Total Covers 50% of total covers 50% of total covers of total covers of total covers of the second secon	er: 15 20 nts) Absolute % Cover 6 8% - 10 10 10 10 10 17 TP	Dominant Species? (Y/N) X	Indicator Status FR C FA C FA C FA C FA C	X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X
 8. 9. Total Covers 50% of total covers 50% of total covers of the second o	er: 15 20 nts) Absolute % Cover 6 8% - 10 10 10 10 10 17 TP	Dominant Species? (Y/N) X	Indicator Status FR C FA C FA C FA C FA C	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

SOIL SOIL PROF	ILE DESCRIPTION: (Describe	Date 7/5/14 Fea				confirm the abser	Soll Pit Required (Y/N)	
Depth	Matrix		Redox Features						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-3				-			Coarse sa	ind/gravel	
3+				-			- Large co	ind/gravel obble - refusal	
		-		-		-			
Type: C=C	oncentration, D=Depl	etion, RM	/-Reduced Matrix, C:	S=Cov	ered or Co	ated Sand G	Grains ² Locatio	n: PL=Pore Lining, M=Matrix.	
	IL INDICATORS							FOR PROBLEMATIC HYDRIC SOILS	
listosol or H	listel (A1)		Alaska Gleyed	(A13)			Alaska Color Change (TA4) ⁴		
listic Epipe	don (A2)		Alaska Redox (Alaska Alpine Swales (TA5)		
	(A3)		Alaska Gleyed	Pores	(A15)	_	Alaska Redox with 2.5Y Hue		
	ulfide (A4)	_					Alaska Gleye Layer_	d without 5Y Hue or Redder Underlying	
hick Dark S	Surface (A12)	_					Other (Explai	n in Notes)	
disturbed or Give details	problematic. of color change in No	otes.	ne primary indicator o					cape position must be present unless	
	Present (Y/N):	N							
Notes:									

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)				
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)			
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2) X			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)			
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)			
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:				
Algal Mat or Crust (B4)	Other (Explain in Notes):					
Iron Deposits (B5)						
Surface Water Present (Y/N): N	Depth (in):		NI			
Water Table Present (Y/N):	er Table Present (Y/N): N Depth (in):		Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N):	Depth (in):					
Notes:						

WETLAND DETERMINATION DATA FORM Upland

VÈGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) High Density (60-
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) Moderate (broken irregular rings)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
\wedge
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/Perennial
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%)
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below
Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres)
Crew Chief QA/QC check:
V

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: WGOHTO48 Field Target: 112 Date: 7/5/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Ø Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- \square / Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Z Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- ☑ Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- ☐ Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

X ZOE Meade

Wetland Scientist (print)

MILL 14 Signature / Date

nsteph hos

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION			300' study					
Survey Type: Centerline Acce	ss Road (explain)	Other (exp	lain) <u>X</u>	Field Target: 118	Map #: <u>84</u> Map Date: <u>5/27</u>			
Date: 7/5/14	Project Name & No.:	Alaska LNG	G 26221306	Feature Id	WGOHTO49			
Investigators: JC, Z.M.	AF				Team No.: 📢 🌀 0			
State: Alaska	Region: Alaska	d	Milepost: 🥢	,46.8				
Latitude: 62° 32' 45.40	11	Longitude	: 150° 15'	02.27"	Datum: WGS84			
Logbook No.: 003	Logbook Page No.:	39	Picture No.:	P-N, S, pit,	plug			
SITE PARAMETERS		11-13						
Subregion: South centra	[Landform (hill	lslope, terrace, hummock	s, etc.): Flat			
Slope (%): 0 - 3			Local relief (c	oncave, convex, none):	Nand			
Pre-mapped Alaska LNG/NWI classifica	ition: PF04155	1B		Name: N/A				
Are climatic/hydrologic conditions on the Yes_X No (if no exp		e of year?		ormal Circumstances" pre X No (If no, exp				
Are Vegetation, Soil, or Hy	drology Significan	tly Disturbed	? No <u>X</u>	_(If yes, explain in Notes)			
Are Vegetation, Soil, or Hy	drology Naturally	Problematic?	No_X	_ (If yes, explain in Notes	.)			
SUMMARY OF FINDINGS		-	5		and the second second			
Hydrophytic Vegetation Present? Yes_	X No	Is	Is the Sampled Area within a Wetland? Yes No					
Hydric Soil Present? Yes_	X No	w	Wetland Type: PFO 4/551B					
Wetland Hydrology Present? Yes_	XNo	— AI	Alaska Vegetation Classification (Viereck): IA3, IIB2					
Notes and Site Sketch: Please include I corridor. $AS 39$					The, Photo Locations, and Survey $A = \beta F = 4/(55113)$			

VEGETATION (use scientific names of plants)			
<u>Tree Stratum</u> (Plot sizes: $26'$)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 4 (A Total Number of Dominant Species Across All Strata: 4 (E
1. Picea mariana	15	Y	FACW	Number of Dominant Species Across All Strata:(E % Dominant Species that are OBL, FACW, or FAC:(DO(A/I
2.				W Dominant Species that are OBL, FACW, or FAC: (A)
3.		L		
4.				Prevalence Index worksheet:
Total Cover:	15	5		Total % Cover of: Multiply by:
50% of total cover:	7.5 20	% of total cov	er:3	OBL species: $60 \times 1 = 60$
Sapling/Shrub Stratum (2.6 ')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 32 $x_2 = 64$ FAC species: 46 $x_3 = 120$ FACU species: 0 $x_4 = 0$
1. Alnus 58p-	10	γ	FAC	UPL species 0 X 5 = 0
2. Betula nana	20	Y	FAC	Column Totals: 137 (A) 244 (B)
3. Empetrum nigrum	3		FAC	PI = B/A = / . \$5
4. vaccinium uliginosum	7		FAC	
5. Chamaedaphne calyculata	7		FACW	
6.				
7.				
8.				
9.				
Total Cover:				
)% of total cov	ver: <u>9,4</u>	
Total Cover:	23.5 20)% of total cov	//er: <u>9,4</u>	
Total Cover: 50% of total cover:	23.5 20	0% of total cov Dominant Species? (Y/N)	rer: <u>9,4</u> Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50%
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants <u>Herb Stratum</u> ($2\omega'$)	23.5 20	Dominant Species?	Indicator	X_ Dominance Test is > 50% X_ Prevalence Index is ≤ 3.0
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aqua tilis	23.5 20) Absolute % Cover	Dominant Species?	Indicator Status	_X Dominance Test is > 50% _X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants <u>Herb Stratum</u> ($2\omega'$)	23.5 20) Absolute % Cover 6 0	Dominant Species?	Indicator Status	X_ Dominance Test is > 50% X_ Prevalence Index is ≤ 3.0
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aqua tilis 2. Rubus chamaemorous	23.5 20) Absolute % Cover 6 0	Dominant Species?	Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aqua tilis 2. Rubus chamaemorous 3.	23.5 20) Absolute % Cover 6 0	Dominant Species?	Indicator Status	
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aqua tilis 2. Rubus chamaemorous 3. 4.	23.5 20) Absolute % Cover 6 0	Dominant Species?	Indicator Status	_X Dominance Test is > 50% _X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aqua tilis 2. Rubus chamaemorous 3. 4. 5.	23.5 20) Absolute % Cover 6 0	Dominant Species?	Indicator Status	_X Dominance Test is > 50% _X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aqua tilis 2. Rubus chamaemorous 3. 4. 5. 6.	23.5 20) Absolute % Cover 6 0	Dominant Species?	Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (26') 1. Carex aqua tilis 2. Rubus chamaemorous 3. 4. 5. 6. 7.	23.5 20) Absolute % Cover 6 0	Dominant Species?	Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes % Total Cover of Bryophytes
Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Carex aqua tilis 2. Rubus chamaemorous 3. 4. 5. 6. 7. 8.	23.5 20) Absolute % Cover 6 0	Dominant Species?	Indicator Status	_X Dominance Test is > 50% _X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

SOIL			Date 7/5/14	Feature	DW60	HT 040	1	Soll Plt Required (Y/N)	
SOIL PROF	ILE DESCRIPTION:	(Describe	to the depth need	ded to doc	ument the	indicator or	confirm the abser	nce of indicators.)	
Depth	Matrix	_	Redox Features	Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-18		_					FÍbric	organics saturated	
18								Refusal large roots	
								9	
		4					f		
	-					-		1 1 Taylor	
1									
	oncentration, D=Dep	etion, RN	A=Reduced Matrix	, CS=Cov	ered or Co	ated Sand (-	n: PL=Pore Lining, M=Matrix.	
	IL INDICATORS						and the second se	S FOR PROBLEMATIC HYDRIC SOILS ³	
	listel (A1) X		Alaska Gley				Alaska Color Change (TA4) ⁴		
Histic Epipe	don (A2)		Alaska Red	ox (A14) _			Alaska Alpine Swales (TA5)		
Black Histic	(A3)		Alaska Gley	ed Pores	(A15)		Alaska Redox with 2.5Y Hue		
Hydrogen S	ulfide (A4)	-					Alaska Gleye Layer	ed without 5Y Hue or Redder Underlying	
	Surface (A12)	_					Other (Explai		
disturbed or 4Give details	problematic. of color change in N	otes.						cape position must be present unless	
Restrictive L	ayer (if present): Typ	e: 10	rge ibola	Depth (I	ncnes):	10			
Hydric Soil	Present (Y/N):	У							
Notes:									

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3) <u>X</u>	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N): N	Depth (in);		21		
Water Table Present (Y/N):	Depth (in): 💪	Wetland Hydrology Present (Y/N): _	Y		
Saturation Present (Y/N): (includes capillary fringe)	Depth (in): 5				
Notes:					

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved X Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Emergent-Non-persistent Persistent Aquatic Bed Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) /≤ Sapling (<5 dbh, <6m tall) ○ Tall shrub (2-6m) /○ Short shrub (0.5-2m) 3 2 Dwarf shrub (<0.5m)
Number of Wetland Types (M): C Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Event Event
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A X
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) V High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric X Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet V No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) X Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval >5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water_X Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified DepositsX Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) X High Gradient (≥2%)
Evidence of Seeps and Springs (P): No Seeps or Springs X Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream X Unknown Only Connected Below

Low Intensity (i.e. open space) XWetland Land Use: High Intensity (i.e., ag.)____ Moderate Intensity (i.e., forestry)___ Х 0-5% Rural Watershed Land Use: 5-25% Urbanized 25-50% Urbanized_ >50% Urbanized X Medium (10-100 acres) Large (>100 acres) Small (<10 acres

Crew Chief QA/QC check:

Size:

GPS Technician QA/QC check:

Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: WG0HT049 Field Target: 118 Date: 7/5/14

For all items not checked, please provide detailed explanation in the notes section of data form,

1. Site Description

 \square Site description, site parameters and summary of findings are complete? \square A detailed site sketch is included in logbook?

2. Vegetation

- ☑ At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- ☑ Vegetation names are entered legibly for all strata present?
- ☑ Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

☑ Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

-

- ☑, Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- ☑ Two photos were taken for each Observation Point (vegetation/site overview)?

X zoc meado

Wetland Scientist (print)

14 lead Signature Date

nzigh

Field Crew Chief (print)

Signature / Date

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SITE DESCRIPTION	and the		20	00' corridor		
Survey Type: Centerline Acce	ss Road (explain)	Other (expla	ain)_ <u>X</u>	Field Target: <u>//9</u>	Map #: <u>84</u> Map Date: <u>5/27/14</u>	
Date: 7/5/14	Project Name & No.:	Alaska LNG	6 26221306	Feature I	d: W60HT0 50	
Investigators: Joe Christoph	er, Zoe Meade	, Abiqo	ayle Fish	ner	Team No.: W60	
State: Alaska	Region: Alaska		Milepost:	4.6.8(LnG)		
Latitude: (1 3)' 470	26"	Longitude	e: 150° 14' 58182 Datum: WGS84			
Logbook No.: 003	Logbook Page No.:	40	Picture No .: P_N, S, pit, plug			
SITE PARAMETERS						
Subregion: South central			Landform (hill	slope, terrace, hummoc	ks, etc.): FUT	
Slope (%): 0 - 3				oncave, convex, none):		
Pre-mapped Alaska LNG/NWI classifica	ition: upland		Soil Map Unit	Name: N/A		
Are climatic/hydrologic conditions on the Yes_XNo(if no exp		of year?	Are "No Yes_X	ormal Circumstances" pi No (If no, e		
Are Vegetation, Soil, or Hy	drology Significantly	y Disturbed?	No_X	_(If yes, explain in Note	s)	
Are Vegetation, Soil, or Hy	drology Naturally P	roblematic?	No	_ (If yes, explain in Note	es.)	
SUMMARY OF FINDINGS	C. Pressie		i i			
Hydrophytic Vegetation Present? Yes_	<u>X</u> No	ls	the Sampled A	rea within a Wetland?	Yes No	
Hydric Soil Present? Yes_	XNo	_ w	etland Type:	PF01/4/5511	3	
Wetland Hydrology Present? Yes_	X No	— Ala	Alaska Vegetation Classification (Viereck): IC 2, II B 2			
Notes and Site Sketch: Please include I corridor. Birch Do M AS.					5, Mostematic	

VEGETATION (use scientific names of plants	3)			
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: 26')	% Cover	Species?	Status	No. of Dominant Species that are OBL, FACW, or FAC:
1 D	5	(Y/N)	FACW	Total Number of Dominant Species Across All Strata:
1. Picea mariana		N		% Dominant Species that are OBL, FACW, or FAC: <u>75</u>
2. Betula ncoalaskana *	30	У	FACE	
3.				
4.				Prevalence Index worksheet:
Total Cover				Total % Cover of: Multiply by:
50% of total cover	: 17.5 20	% of total cov	ver:	OBL species:X 1 =
Sapling/Shrub Stratum (267)	Absolute	Dominant	Indicator	FACW species: $5 \times 2 = 10$
	% Cover	Species?	Status	FAC species $74 \times 3 = 222$ FACU species $2523 \times 4 = +0.0.92$
		(Y/N)		FACU species 2523 X 4 = +0.0.9 L
1. Alnus 55p.	25	У	FAC	UPL species 0 X 5 = 0
2. Spiraea stevenii	2		FACU	UPL species 0 X 5 = 0 Column Totals: $+0.8$ (0) (A) -3.36 (B)
3. Ribes triste	2		FAC	PI=B/A=
4.				
5.				Convesit Det 1100
6.				to FAC due to
7			-	
1.			-	TO FAC due to
				morph. DEAptitions
8.				morph. DEAptitions
8.	: 29			morph. Deaptitions
8. 9, Total Cover		0% of total cov	ver: 5.8	morph. DEAptitions
8. 9. Total Cover 50% of total cover	. 14,5 20)% of total cov	/er: <u>5.8</u>	morph. Deaptitions
8. 9. Total Cover 50% of total cover VEGETATION (use scientific names of plants	. 14,5 20)% of total cov	ver:_5.8	morph. DEAptitions
8. 9, Total Cover 50% of total cover VEGETATION (use scientific names of plants	:: <u>14,5</u> 20 s) Absolute	Dominant	Indicator	Hydrophytic Vegetation Indicators:
8. 9, Total Cover 50% of total cover VEGETATION (use scientific names of plants	: <u>14,5</u> 20	Dominant Species?	3710	morph. DEAptitions
8. 9, 50% of total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum ()	: <u>14,5</u> 20 3) Absolute % Cover	Dominant	Indicator	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% Prevalence Index is ≤ 3.0
 8. 9. Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum () 1. comarvm palustre 	: <u>14,5</u> 20 a) Absolute % Cover 4	Dominant Species?	Indicator Status OBL	Worph. DlAptitions Hydrophytic Vegetation Indicators: X Dominance Test is > 50% Prevalence Index is ≤ 3.0 X Morphological Adaptations ¹ (Provide supporting data in the support of the suppor
 8. 9. Total Cover 50% of total cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. comarum palustre 2. Gymno carpium dryopteris 	: <u>14,5</u> 20 a) Absolute % Cover 4 - 8	Dominant Species?	Indicator Status	Momb. $\Delta A p + t + lons$ Hydrophytic Vegetation Indicators: \underline{X} Dominance Test is > 50% Prevalence Index is ≤ 3.0 \underline{A} Morphological Adaptations ¹ (Provide supporting data in Notes)
 8. 9. Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. comarum palustre 2. <u>Gymno carpium dryopteris</u> 3. Cornus canadensis 	: <u>14,5</u> 20 a) Absolute % Cover 4 - 8 2	Dominant Species? (Y/N)	Indicator Status OBL FACU FACV	Workh. DiAptitions Hydrophytic Vegetation Indicators: X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
 8. 9. Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. comarum palustre 2. Gymno carpium dryopteris 3. cornus canadensis 4. Dryopteris expansa 	: <u>14,5</u> 20 a) Absolute % Cover 4 - 8	Dominant Species?	Indicator Status OBL FACU FACU FACU	Momb. $\Delta A p + t + lons$ Hydrophytic Vegetation Indicators: \underline{X} Dominance Test is > 50% Prevalence Index is ≤ 3.0 \underline{A} Morphological Adaptations ¹ (Provide supporting data in Notes)
 8. 9. Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>ZG</u>) 1. comarum palustre 2. Gymno carpium dryopteris 3. cornus canadensis 4. Dryopteris expansa 5. streptopus amplexifolius 	IH,5 20 Absolute % Cover 4 % 2 10 1	Dominant Species? (Y/N)	Indicator Status OBL FACU FACU FACU FACU	Momb. Dia pititions Hydrophytic Vegetation Indicators: X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unletered
 8. 9. Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>Z6</u>) 1. comarum palustre 2. Gymno carpium clryopteris 3. Cornus canadensis 4. Dryopteris expansa 5. Streptopus amplexifolius 6. Equisetum arvense 	IH,5 20 a) Absolute % Cover 4 % 2 10 1 15	Dominant Species? (Y/N)	Indicator Status OBL FACU FACU FACU FACU FAC	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% Prevalence Index is < 3.0
 8. 9. Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26) 1. comarum palustre 2. Gymno carpium dryopteris 3. cornus canadensis 4. Dryopteris expansa 5. Streptopus amplexifolius 6. Equisetum arvense 7. Equisetum sylvaticum 	IH,5 20 Absolute % Cover 4 % 2 10 1	Dominant Species? (Y/N)	Indicator Status OBL FACU FACU FACU FACU	Morph. DiAptitions Hydrophytic Vegetation Indicators: X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unled disturbed or problematic. 5% Bare Ground
 8. 9. Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26</u>) 1. comarum palustre 2. Gymno carpium chyopteris 3. cornus canadensis 4. Dryopteris expansa 5. Streptopus amplexifolius 6. Equisetum arvanse 7. Equisetum sylvaticum 8. 	IH,5 20 a) Absolute % Cover 4 % 2 10 1 15	Dominant Species? (Y/N)	Indicator Status OBL FACU FACU FACU FACU FAC	Morph. $\Delta A p + 140 nS$ Hydrophytic Vegetation Indicators: X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unled disturbed or problematic. $\frac{5}{$
 8. 9. Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26) 1. comarum palustre 2. Gymno carpium dryopteris 3. cornus canadensis 4. Dryopteris expansa 5. Streptopus amplexifolius 6. Equisetum arvense 7. Equisetum sylvaticum 	IH,5 20 a) Absolute % Cover 4 % 2 10 1 15	Dominant Species? (Y/N)	Indicator Status OBL FACU FACU FACU FACU FAC	Morph. $\Delta A p + 140 nS$ Hydrophytic Vegetation Indicators: X Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data i Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unled disturbed or problematic. $\frac{5}{2.6}$ % Bare Ground $\frac{2.6}{2.6}$ Total Cover of Bryophytes
9. Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (26) 1. comarum palustre 2. Gymnocarpium dryopteris 3. cornus canadensis 4. Dryopteris expansa 5. streptopus amplexifolius 6. Equisetum arvanse 7. Equisetum sylvaticum 8.	IH,5 20 a) Absolute % Cover 4 % 2 10 1 15	Dominant Species? (Y/N)	Indicator Status OBL FACU FACU FACU FACU FAC	Morph. $\Delta A p + 140 nS$ Hydrophytic Vegetation Indicators: X Dominance Test is > 50% Prevalence Index is < 3.0

SOIL			Date 7/5/14 Fe	eature l	DW60H	17050		Soli Pit Required (Y/N)
SOIL PROF	ILE DESCRIPTION: (Describe	e to the depth needed	d to doc	ument the	indicator or	confirm the abse	nce of indicators.)
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-20		-					- Fibric	Grganic
							1000	
					1	-		
				-				
	-	-		-		-	_	
17							21	DI Deve Linites M Metric
	oncentration, D=Depl	etion, RA	M=Reduced Matrix, C	5=000	ered or Co	ated Sand C		on: PL=Pore Lining, M=Matrix.
			Alasha Olaura	(640)				S FOR PROBLEMATIC HYDRIC SOILS ³
	listel (A1) X			(A13) Alaska Color Change (TA4) ⁴				
	don (A2)		Alaska Redox					e Swales (TA5)
	(A3)		Alaska Gleyed	Pores	(A15)			ex with 2.5Y Hue without 5Y Hue or Redder Underlying
Hydrogen Si	ulfide (A4)	-					Layer_	
Thick Dark S	Surface (A12)					_	Other (Expla	in in Notes)
disturbed or ⁴Give details		otes.	10		and hydrolc		appropriate lands	cape position must be present unless
Restrictive L	ayer (ii present). Typ	r	V 7"	Septir (i	nones)	- lot		
Hydric Soil	Present (Y/N):	У						
Notes:								

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)		
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)	
High Water Table (A2) X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)	
Saturation (A3)X	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)	
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)	
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)	
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:		
Algal Mat or Crust (B4)	Other (Explain in Notes):			
Iron Deposits (B5)				
Surface Water Present (Y/N):	- Depth (in):		V	
Water Table Present (Y/N): 🛛 🎽	Depth (in): 4	Wetland Hydrology Present (Y/N):		
Saturation Present (Y/N): (includes capillary fringe)	Depth (in): 3			
Notes:		~		

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) 3 5 Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) 2.5 Short shrub (0.5-2m) 6 4 Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) X High Density (60- 80%) 80%) Very High Density (80-100%) Low Density (20-40%) Medium Density (40-60%) X High Density (60-
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) _X High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A X
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat_X Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Histosol:Fibric_X Histosol:Hemic Histosol:Sapric
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No
Outlet Intermittent Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial In
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) X Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits X Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%)_X High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs_X Seeps Observed Intermittent Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & DownstreamX Unknown Only Connected Below

 Wetland Land Use:
 High Intensity (i.e., ag.)_____
 Moderate Intensity (i.e., forestry)_____
 Low Intensity (i.e. open space)_

 Watershed Land Use:
 0-5% Rural X
 5-25% Urbanized_____
 25-50% Urbanized_____
 >50% Urbanized_____

 Size:
 Small (<10 acres)_____</td>
 Medium (10-100 acres)_X
 Large (>100 acres)_____
 Large (>100 acres)______

Crew Chief QA/QC check:

GPS Technician QA/QC check:

X

Wetland Determination Form_QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT050 Field Target: 119 Date: 7/5/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

 \square Site description, site parameters and summary of findings are complete? \square A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- ☑ Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- (Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Z Two photos were taken for each Observation Point (vegetation/site overview)?

Х Х ZoeMiade 7/5/4 Wetland Scientist (print) Signature / Date NISOD Field Crew Chief (print) Signature //Date

5.

SITE DESCRIPTION		S. 1	31	00' cor	ridor	
Survey Type: Centerline Acce	ss Road (explain)	Other (expl	ain)X	Field Targ	et: 12 3	Map #: <u>85</u> Map Date: <u>5/27//</u> 4
Date: 7/5/14	Project Name & No.:	Alaska LNG	6 26221306		Feature Id	W60 HT 051
Investigators: Joe Christop	oher, Zoe Mec	ade, Ak	pigayle	Fish	er	Team No.: WGO
State: Alaska	Region: Alaska	1	Milepost:			
Latitude: 62° 31′ 58.8	L.J ''	Longitude	: 150' 14	013.85	"	Datum: WGS84
Logbook No.: 003	Logbook Page No.:	040	Picture No.:	P-N,	s, wat	er
SITE PARAMETERS		-			2.2	
Subregion: South central			Landform (hil	lslope, terrac	e, hummock	s, etc.): Denussion
Slope (%): 1 - 3			Local relief (c	oncave, con	vex, none):	Concave
Pre-mapped Alaska LNG/NWI classifica	ation: Vpland		Soil Map Unit	Name:	N/A	
Are climatic/hydrologic conditions on the Yes $\underline{\times}$ No (if no exp		e of year?	Are "No Yes_>		stances" pre (If no, ex	sent: blain in Notes.)
Are Vegetation, Soil, or Hy	drology Significant	tly Disturbed?	No <u>×</u>	_(If yes, exp	lain in Notes)
Are Vegetation, Soil, or Hy	drology Naturally I	Problematic?	No <u>×</u>	_ (If yes, exp	lain in Notes	.)
SUMMARY OF FINDINGS	10- 1	and the				
Hydrophytic Vegetation Present? Yes_	X No	ls	the Sampled A	rea within a	Wetland?	Yes No
Hydric Soil Present? Yes_	X No	w	etland Type:	PEN	11/C	
Wetland Hydrology Present? Yes_	XNo	— Al:	aska Vegetatior	n Classificati	on (Viereck):	Ⅲ A 3
Notes and Site Sketch: Please include I corridor.	Directional & North Arrow	v, Centerline,	Length of featu	re, Distance:	s from Center	line, Photo Locations, and Survey

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VEGETATION (use scientific names of plant	(S)			
Tree Stratum (Plot sizes: <u>26</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 2
1.				Total Number of Dominant Species Across All Strata: (% Dominant Species that are OBL, FACW, or FAC: _/dO(A
2.				W Dominant Species that are OBL, FACW, or FAC: (A
3.				
4.				Prevalence Index worksheet:
Total Cove	r:0	-		Total % Cover of: Multiply by:
50% of total cove	r: <u>0</u> 20	% of total cov	ver:0	OBL species: $75 \times 1 = 75$
<u>Sapling/Shrub Stratum (</u>	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $i \partial$ $X 2 =$ 2∂ FAC species 71 $X 3 =$ $\partial 1 J$ FACU species $X 4 =$ $X =$
1. Salex barclayi	TR	N	FAC	UPL species X 5 =
2.				Column Totals: 15 ((A) 30 9 (B)
3.				PI=B/A= 1,87
4.			_	
5.				
6.				
7.				
8.				
9.				-
	r:			
50% of total cove	r: 20)% of total cov	/er:	*
VEGETATION (use scientific names of plant	s)		-	A STATE AND A STAT
Herb Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators:
1. Comarum palustre	351	1	OBL	Prevalence Index is ≤ 3.0
2. Carex aquatilis	251		OBL	Morphological Adaptations ¹ (Provide supporting data in Notes)
25	1.0		EAC	
s. Equisetum arvense	18 .		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
3. Equisetum arvense 4. Equisetum sylvaticum	-		FAC	Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
4. Equisetum sylvaticum	-		-	
4. Equisetum sylvaticum	31-		FAC	¹ Indicators of hydric soil and wetland hydrology must be present unless
 Equisetum sylvaticum Viola palustris 	1 31.		FAC FACW	¹ Indicators of hydric soil and wetland hydrology must be present unless
 ⁴ Equisetum Sylvaticum ⁵ Viola palustris ⁶ Carex magellanica 	31 101 51 101	A Y	FAC FACW OBL OBL	¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes
4. Equisetum sylvaticum 5. Viola palustris 6. carex magellanica 7. carex limosa	31 101 51 101	æ y	FAC FACW OBL	 Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground % Cover of Wetland Bryophytes % Total Cover of Bryophytes
 ⁴ Equisetum Sylvaticum ⁵ Viola palustris ⁶ Carex magellanica ⁷ Carex limosa ⁸ Calamagrostis Canadensis 	31 101 51 101	Ø Y	FAC FACW OBL OBL	¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
 4. Equisetum Sylvaticum 5. Viola palustris 6. carex magellanica 7. carex limosa 8. Calamagrostis Canadensis 9. 10. 	31 101 51 101 501	Ø Y	FAC FACW OBL OBL	 ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. <u>—</u>% Bare Ground <u>—</u>% Cover of Wetland Bryophytes <u>?</u> <u>?</u>
 4. Equisetum Sylvaticum 5. Viola palustris 6. carex magellanica 7. carex limosa 8. Calamagrostis Canadensis 9. 10. 	31. 101 51 101 501		FAC FACW OBL OBL FAC	¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

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SOIL			Date 7/2/14	Feature ID	NGO	HT051		Soil Pit Requ	Ired (Y/N)
	ILE DESCRIPTION: (onfirm the abser		
Depth	Matrix		Redox Feature						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	×.
-									
	-								
					/				
							•		
		-			_				
*1	oncentration, D=Depl	etion, RM	I=Reduced Matri	ix, CS=Cover	red or Co	oated Sand G	1	n: PL=Pore Lining, M=Ma	
	IL INDICATORS			X				S FOR PROBLEMATIC H	
	listel (A1)			eyed (A13)			-	Change (TA4) ⁴	-
	don (A2)			dox (A14)				e Swales (TA5)	-
Black Histic	(A3)		Alaska Gle	eyed Pores (A	A15)			x with 2.5Y Hue	the set of
Hydrogen Su	ulfide (A4)						Alaska Gleye	d without 5Y Hue or Redd	ier Underlying
Thick Dark S	Surface (A12)							in in Notes) 🔨	
³ One indicat	or of hydrophytic veg	etation, o	ne primary indica	ator of wetlan	d hydro	logy, and an a		cape position must be pre-	sent unless
40 in a dataila	problematic. s of color change in No	otes							
Restrictive L	ayer (if present): Typ	0163.	-	_ Depth (in	ches):	-			
		1							
Hydric Soil	Present (Y/N):	1							
Notes:		1							
Λ	Surea	IN	Tril BA	SIL a	1	Start	4 H.C.	of 5-Singer	
Mr	3500000	1.10					110-	1 - Art	
				· · · · · · · · · · · · · · · · · · ·	1		(1)01047000		CONTRACTOR OF
HYDROLOG	GY PRIMARY INDICA	ATORS (a	iny one indicator	is sufficient)				(2 or more required)	
Surface Wat	ter (A1)X	Su	face Soil Cracks	s (B6)		Water-stained Leaves (B9)		Stunted or Stress Plants (D1)	
		Inu	ndation Visible o	n Aerial Imag		Drainage Patterns (B10)			
High Water	Table (A2) <u>X</u>	- (B7							
Saturation (/	A3) X		arsely Vegetated			Oxidized Rhizospheres along Living Roots (C3) Shallow Ag			I (D3)
			ncave Surface (E		-	Presence of F		Microtopographic	<u>.</u>
Water Marks	s (B1)	Ma	rl Deposits (B15))		Iron (C4)		Relief (D4)	
Sediment D	eposits (B2)		drogen Sulfide			Salt Deposits	(C5)	FAC-Neutral Tes	st (D5) V
			or (C1)			Notes:	(00)		
Drift Deposit	ts (B3)		-Season iter Table (C2) _			Notes.			
Algal Mat or	Crust (B4)	- Otr	ner (Explain in N	otes):					
Iron Deposit	ts (B5)								
		200				2.4			
Surface Wat	ter Present (Y/N):	Y	Depth (in):	- 4 "		<i>i</i>		N	
Mate-T-L-	Dresent (MAI)	J	v		W	etland Hydro	logy Present (Y	/N):/	-
vvater Table	e Present (Y/N):	/	Depth (in):	9					
	Present (Y/N):		Depth (in):	0					
	ipillary fringe) /			0					
Notes:	epussion								•

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Persistent PersistentX Aquatic Bed Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X- <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A >75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species)X High (>25)
Presence of Islands (M): Absent (none)
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous CoverX
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) Moderate (broken irregular rings)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional X Riverine Estaurine Fringe
Soil VARIABLES Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric A Ssumed Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey A Ssumed
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow X Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)X pH Reading 5.2.9
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) X High Gradient (≥2%)
Evidence of Seeps and Springs (P): No Seeps or Springs X Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below 🖄 📈
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) X Medium (10-100 acres) arge (>100 acres)

Crew Chief QA/QC check:

GPS Technician QA/QC check:

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Field Target:_ 2 3 Feature ID: W60H1051

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- Z At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- D Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Z Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Z Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
 Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

7/5/14 X Madel Signature/ Date

Field Crew Chief (print)

Х

Signature / Date

Vegetation Classification Data Form

Site Description		1. A.A.A.	CAR DE			
Date: 7 5 14 Project Name & #: Alaska LNG 26221306				Field Target: CWG0HT052		
Investigators: JC, ZM, AF				Feature ID:		
Latitude: 62°31′58.35	<i>II</i>	Longitude:	.36"	Datum: WGS84		
Logbook #: 00 3		Logbook F		Picture #: P_N, S		
Location Description			2 11			
E of 12	3 - 0n (renter	line			
Common Species O	bserved (Scientific	: Name)		A STATISTICS IN THE REAL		
Betula ne	oalaskana	ι	Veratri	im viride		
Picea g	lauca		Sambucus racemosa			
Vaccinium		υm	Sorbus scopulina			
Viburnum	edule		Almus 55p			
Percent Cover of Dom	ninant Structure Lev	rel: 250	lo pic gla, Bet neo			
Habitat Description:						
Mixed f	orrest			9		
Alaska Vegetation C	lassification: Leve	el I, Level II,	, Level III	a statistical statistics		
IC2	II	B2				
Notes:			1 Sector			
3-7% hill	side slope	, 30' 1	birch			
	1					
Field Crew Chief:	n	F	ield Scientist/	Technician		
/				V		

Vegetation Classification Data Form

Level I	Level II	Level III
I Forest	A. Needleleaf (conifer) forest	(1) Closed needleleaf (conifer) forest (2) Open needleleaf (conifer) forest (3) Needleleaf (conifer) woodland
	B. Broadleaf forest	 Closed broadleaf forest Open broadleaf forest Broadleaf woodland
	C. Mixed forest	(1) Closed mixed forest (2) Open mixed forest (3) Mixed woodland
II. Scrub	A. Dwarf tree scrub	 Closed dwarf tree scrub Open dwarf tree scrub Dwarf tree scrub woodland
	B Tall scrub	(1) Closed tall scrub (2) Open tall scrub
	C. Low scrub	(1) Closed low scrub (2) Open low scrub
	D. Dwarf scrub	 Dryas dwarf scrub Encaceous dwarf scrub Willow dwarf scrub
III Herbaceous	A Graminoid herbaceous	 Dry graminoid herbaceous Mesic graminoid herbaceous Wet graminoid herbaceous (emergent)
	B. Forb herbaceous	 Dry forb herbaceous Mesic forb herbaceous Wet forb herbaceous (emergent)
	C. Bryoid herbaceous	(1) Mosses (2) Lichens
	D. Aquatic (nonemergent) herbaceous	 Freshwater aquatic herbaceous Brackish water aquatic herbaceous Marine aquatic herbaceous

11.50	crub
83	Vegetation with at least 10 percent cover of dwarf trees
8b.	Vegetation with at least 25 percent cover of shrubs and less than 10 percent cover of dwarf trees
9a.	Dwarf tree canopy of 60-100 percent cover
9b.	Dwarf tree canopy of 25-59 percent cover II A.2 Open dwarf tree scrub
9c.	Dwarf tree canopy of 10-24 percent cover
10a	Shrubs more than 1.5 meters (5 ft) tall II B Tall scrub 11
10b	Shrubs less than 1.5 meters (5ft) tall
11 a	Shrub canopy cover greater than 75 percent II & 1 Closed tall scrub
11 b	b. Shrub canopy cover of 25-74 percent II B 2 Open tall scrub
12a	Shrubs 20 centimeters to 1.5 meters tall
12b	Shrubs under 20 centimeters in height
13a	Shrub canopy cover greater than 75 percent II C.I Closed low scrub
13b	Shrub canopy cover of 25-74 percent, or as low as 2 percent if little or no other vegetation cover present
14a	Dryas species dominant in the dwarf shrub layer
14b	Ericaceous species dominant in the dwarf shrub layer
14c.	Willow species dominant in the dwarf scrub layer II D 2 Willow dwarf scrub
III F	Herbaceous
	Terrestrial vegetation, or if growing in the water, dominated by emergent vegetation
15b	Dominant vegetation growing submerged in water or floating on the water surface. but not emerging above the water

Des	criptions of levels I, II, III, and IV follow the class	ification table
la.	Trees over 3 meters (10 ft) tall are present and have a canopy cover of 10 percent or more	. I Forest 2
1 b	Trees over 3 meters (10 ft) tail are absent or neerly so, Less then 10 percent cover (Dwaft trees, less then 3 meters [10 ft] tail may be present and abundant	
I Fo	west	
28	Over 75 percent of tree cover contributed by needleleaf (conifer) species	
26	Less than 75 percent of tree cover contributed by needleleaf (conifer) species	
3e	Tree canopy of 60-100 percent cover	I.A.1 Closed needleleaf forest
3b.	Tree canopy of 25-59 percent cover	I.A.2 Open needleleaf forest
3c	Tree canopy of 10-24 percent cover	I.A.3 Needleleaf woodland
4a	Over 75 percent of tree cover contributed by broadleaf species	i B Broadlesf forest 5
4b,	Broadleef or needleleaf species contribute 25 to 75 percent of the tree cover	
5a	Tree canopy of 60-100 percent cover	I.B.1 Closed broadleaf forest
5b.	Tree canopy of 25-59 percent cover	LB 2 Open broadleaf forest
5c	Tree canopy of 10-24 percent cover	I.B.3 Broadleaf woodland
6a	Tree canopy of 60-100 percent cover	I.C.1 Closed mixed forest
6b.	Tree canopy of 25-59 percent cover.	I.C.2 Open mixed forest
6c	Tree canopy of 10-24 percent cover	I.C.3 Mixed woodland
7a	Vegetation with at least 25 percent cover of erect to decumbent shrubs or with at least 10 percent cover of dwarf trees (less than 3 meters [10 t]tail]	
7b	Vegetation herbaceous (may have up to 25 percent shrub cover)	
16a	Grasses, sedges, or rushes (graminoid) plants dominant	III A Graminoid herbaceous 17
16b	Forbs or bryophytes dominant	
17a	Grasslands of well-drained, dry	

17a	Grasslands of well-drained, dry sites, such as south-facing bluffs, old beaches, and sand dunes. Typically (but not always) dominated by <i>Elymus</i> spp, <i>Festuce</i> spp, and <i>Deschampsie</i> spp	
17Ь	On moist sites, but usually not with standing water. Usually dominated by Calamagrosi/s spp., Carex spp. or Eriophorum spp.; tussocks often present	
17c	On wet sites, standing water present for part of the year; dominated by either sedges or grasses; includes wet tundra, bogs, marshes, and fens	
18a	Vegetation dominated by forbs (broadleaf herbs, ferns, or horsetails)	
1 8 6	Vegetation dominated by mosses or lichens	
19a	On dry sites, usually rocky and well drained: mostly tundra sites III B 1 Dry forb herbaceous	l
19b	On moist sites but without standing water, mostly within forested areas	
19c	On wet sites, usually with standing water for part of the year for an and the standard lile B 3 Wet forb herbaceous	
20a	Vegetation cover dominated by mosses	
206	Vegetation cover dominated by lichens	
21a	Vegetation submerged or floating in fresh water	l
21 b	Vegetation submerged or floating in brackish water	
21c	Vegetation submerged or floating in salt water	

Vegetation Classification Data Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: W60HT052 Field Target: 124 Date: 7/5/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. General Information

- Location data recorded?
- Delta Photo taken and photo number recorded?

2. Location Description

Location of site recorded with enough detail to help relocate?

3. Common Species

- Scientific name of common species recorded?
- Percent cover of dominant structure level noted?

4. Habitat Description

∠ Habitat described?

5. Classification

All three levels of classification recorded?

6. Field Log Book

- Field form entries consistent with log book?
- Logbook clearly identifies the Field Target ID and Feature ID?

Zoe Meadl

Field Technician (print)

AMed 5/14 Signature

Field Crew Chief (print)

Signatu

SITE DESCRIPTION							
Survey Type: Centerline Acce	ss Road (explain)	Other (expl	ain)	n) X Field Target: 138 Map #:			
Date: 7/8/14	Project Name & No.:	Alaska LNG	G 26221306 Feature Id:			WGOHTOGO 053 -	
Investigators: Joe Christoph	er, Zoe Meade	, Abiga	ayle Fisher Team No.: W6			Team No.: W60	
State: Alaska	Region: Alaska		Milepost:	23 (PH)		
Latitude: 62° 25' 50 Logbook No.: 003	1.5911	Longitude	150 16	07.58"	1	Datum: WGS84	
Logbook No.: 003	Logbook Page No.:	47	Picture No.:	P- N. 5	s, pit, p	oluq	
						J	
SITE PARAMETERS			1				
subregion: South Centra			Landform (hillslope, terrace, hummocks, etc.): de pression				
Slope (%): 0 - 2_			Local relief (concave, convex, none): Con cave				
Pre-mapped Alaska LNG/NWI classifica	tion: PEM1B		Soil Map Unit Name: NA				
Are climatic/hydrologic conditions on the Yes_ χ _ No (if no expl		of year?	Are "Normal Circumstances" present: Yes_XNo (If no, explain in Notes.)				
Are Vegetation, Soil, or Hyd	Irology Significant	ly Disturbed?	No <u>X</u>	_(If yes, expl	lain in Notes)	
Are Vegetation, Soil, or Hyd	Irology Naturally P	Problematic?	NoX	_ (If yes, exp	lain in Notes	i.)	
SUMMARY OF FINDINGS							
Hydrophytic Vegetation Present? Yes X No No			Is the Sampled Area within a Wetland? Yes χ No				
Hydric Soil Present? Yes X No No			Wetland Type: PSS1/EM1B				
Wetland Hydrology Present? Yes_	— Ala	Alaska Vegetation Classification (Viereck):					
Notes and Site Sketch: Please include D	irectional & North Arrow						

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

PS.47 De gow' Fust Corridor

.

VEGETATION (use scientific names of plants						
Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 2 Total Number of Dominant Species Across All Strata:		
1.				% Dominant Species that are OBL, FACW, or FAC: 100		
2.				bominant Species that are OBL, FACW, of FAC(F		
3.		-				
4.				Prevalence Index worksheet:		
Total Cover:	0			Total % Cover of:Multiply by:		
50% of total cover:		% of total cov	er: O	OBL species:X 1 =/		
Sapling/Shrub Stratum (<u>26'</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 65 $X 2 =$ 130 FAC species: 7 $X 3 =$ 21 FACU species: 0 $X 4 =$ 0		
1. Chamaedaphne calyculata	65	У	FACW	UPL species		
2. Betula nana	5		FAC	Column Totals: 113 (A) 192 (B)		
3. Vaccinium oxycoccus	1		OBL	PI = B/A = 1,67		
4. Vaccinium uliginosum	2		FAC			
5.						
6.						
7,	1					
8.	_					
9.						
Total Cover:			. 3			
50% of total cover:	36.5 20	% of total cov	er: 14, %C			
VEGETATION (use scientific names of plants)					
Herb Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50% X Prevalence Index is ≤ 3.0		
1. Carex microglochin	40	Y	OBL	Morphological Adaptations ¹ (Provide supporting data in		
2. Menyanthes trifoliata	TR		OBL	Notes)		
3. Pedicularis labradorica	TR			Problematic Hydrophytic Vegetation ¹ (Explain)		
4.		i		¹ Indicators of hydric soil and wetland hydrology must be present unless		
5.				disturbed or problematic.		
6.						
7_				0 % Bare Ground		
8.				% Cover of Wetland Bryophytes		
9.				Total Cover of Bryophytes		
				% Cover of Water		
10				Hydrophytic Vegetation Present (Y/N):		
10.	1					
10. Total Cover 50% of total cover		0% of total cov	ĸ	Notes: (If observed, list morphological adaptations below):		

SOIL			Date 7/8/14 F	eature I	DWGOF	53 (T060		Soil Pit Required (Y/N)		
SOIL PROFI	LE DESCRIPTION: (Describe	to the depth neede	d to doc	ument the	indicator or c	onfirm the abser	ice of indicators.)		
Depth	Matrix		Redox Features							
(inches)	Color (moist)	%	Color (moist)	r (moist) %		Loc ²	Texture	Notes		
0-20							Fibric	organics		
-			1							
						-				
	oncentration, D=Depl	etion, RM	/I=Reduced Matrix, (CS=Cov	ered or Coa	ated Sand G		n: PL=Pore Lining, M=Matrix.		
	L INDICATORS							5 FOR PROBLEMATIC HYDRIC SOILS ³		
listosol or Hi	istel (A1) <u>X</u>	_	Alaska Gleye	Alaska Gleyed (A13)			Alaska Color Change (TA4) ⁴			
listic Epiped	on (A2)		Alaska Redox	Alaska Redox (A14)				Alaska Alpine Swales (TA5)		
lack Histic (A3)		Alaska Gleye	Alaska Gleyed Pores (A15)			Alaska Redox with 2.5Y Hue			
lydrogen Su	lfide (A4)	-					Alaska Gleye Layer	d without 5Y Hue or Redder Underlying		
hick Dark S	urface (A12)						Other (Explain in Notes)			
isturbed or p Give details	or of hydrophytic vege problematic. of color change in Ne ayer (if present): Typ	otes.				gy, and an a		cape position must be present unless		
lydric Soil F	Present (Y/N):	У								
Notes:										

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2) X	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3)X	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	ediment Deposits (B2) Hydrogen Sulfide Odor (C1)		FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:			
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N): N	Depth (in):		N		
Water Table Present (Y/N):	Depth (in): 3	Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N):	Depth (in):	1	1		
Notes	1				

Page 3 of 4

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall) O Tall shrub (2-6m) O Short shrub (0.5-2m) 7 2- Dwarf shrub (<0.5m)
Number of Wetland Types (M): 3 Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even X
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) Very High Density (80-100%) Low Density (20-40%) Medium Density (40-60%) High Density (60-
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a>25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover <a>N/A <a>25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover <a>N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none)
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
Mineral: Gravelly Mineral: Silty Mineral: Clayey HYDROLOGIC VARIABLES HYDROLOGIC VARIABLES
Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
Mineral: Gravelly Mineral: Sandy Mineral: Clayey HYDROLOGIC VARIABLES Inter/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial
Mineral: GravellyMineral: SandyMineral: SiltyMineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Mineral: GravellyMineral: SandyMineral: SiltyMineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Mineral: GravellyMineral: SandyMineral: SiltyMineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/No OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Mineral: Gravelly
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Mineral: GravellyMineral: SandyMineral: SiltyMineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletNo Inlet/Intermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Netremittent Inlet/Perennial OutletPerennial Inlet/No Outlet
Mineral: Gravelly
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Mineral: GravellyMineral: SandyMineral: SiltyMineral: Clayey HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletNo Inlet/Intermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Netrmittent Inlet/Perennial OutletPerennial Inlet/No Outlet

Low Intensity (i.e. open space)

>50% Urbanized

Crew Chief QA/QC check

Small (<10 acres)

Wetland Land Use:

Size:

Watershed Land Use:

High Intensity (i.e., ag.)_

0-5% Rural

GPS Technician QA/QC check:

25-50% Urbanized

1/h

Large (>100 acres)

Moderate Intensity (i.e., forestry)_

5-25% Urbanized

Medium (10-100 acres)

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

53 A Feature ID: WGOHT 0'60

Field Target: 138 Date: 7/8/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- ☑ Site description, site parameters and summary of findings are complete?
- \square A detailed site sketch is included in logbook?

2. Vegetation

- \square At least 80% of onsite vegetation has been keyed to species, or collected for later , identification?
- 应, Vegetation names are entered legibly for all strata present?
- ☑ Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Z Each logbook page is initialed and dated?

7. Maps

- 应, Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

- Z Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Z Two photos were taken for each Observation Point (vegetation/site overview)?

Х X Zoe Meade 4 logle Wetland Scientist (print) Signature //Date 100 141 Signature / Date

Field Crew Chief (print)

SITE DESCRIPTION	1.1		2000'study				
Survey Type: Centerline Acces	ss Road (explain)	Other (expl	ain)X	in)X Field Target: 130		Map #: <u>90</u> Map Date: <u>5/27/</u> 14	
Date: 7/6/14	Project Name & No.:	Alaska LNG	G 26221306 Feature Id			: W60HT054	
Investigators: Joe Christop	bigayle Fisher Team No .: W60						
State: Alaska Region: Alaska			Milepost: 651.5				
Latitude: 62°29'18.85" Longitude			:150°16'	21.58	I	Datum: WGS84	
Logbook No.: 003				P_ N, S	, pit,	pluq	
	and the second second				~		
SITE PARAMETERS							
Subregion: South Centr	al		Landform (hi	llslope, terrace	e, hummock	s, etc.): depression	
Slope (%): 0 - 2			Local relief (concave, convex, none): Cancave				
Pre-mapped Alaska LNG/NWI classifica	tion: PSSI/EMI	В	Soil Map Unit Name: N/A				
Are climatic/hydrologic conditions on the Yes_X No (if no expl		of year?	Are "Normal Circumstances" present: Yes X No (If no, explain in Notes.)				
Are Vegetation, Soil, or Hyd	drology Significant	ly Disturbed?	ed? No_X (If yes, explain in Notes)				
Are Vegetation, Soil, or Hyd	drology Naturally F	Problematic?	No_X	(If yes, exp	lain in Notes	s.)	
SUMMARY OF FINDINGS			der-			and the second sec	
Hydrophytic Vegetation Present? Yes_	Is	Is the Sampled Area within a Wetland? Yes X No					
Hydric Soil Present? Yes_	X No	w	Wetland Type: PEM/SSZF				
Wetland Hydrology Present? Yes_	X No	— AI	Alaska Vegetation Classification (Viereck): TTA 3, IT C 2				

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

Site Sketch and notes on page 042 of Logbook 003 Distursed powercine R.O.W to west.

VEGETATION (use scientific names of plants	5)			
Tree Stratum (Plot sizes: 26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 니
1.				Total Number of Dominant Species Across All Strata:
2.				% Dominant Species that are OBL, FACW, or FAC: <u>100</u>
3.	Non by the second second			
4				Prevalence Index worksheet:
Total Cover:	0			Total % Cover of: Multiply by:
50% of total cover:	0_ 20	% of total cov	ver:O	OBL species: 80 x 1 = 80
Sapling/Shrub Stratum (26')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species:10 $X_2 = 2.0$ FAC species110 $X_3 = 330$ FACU species3 $X_4 = 12$
1. Betula nana	25	У	FAC	UPL species \bigcirc X 5 = \bigcirc
2. Salex pulchra	10	У	FACW	Column Totals: 203 (A) 442 (B)
3. Spiraea stevenii	3		FACU	PI = B/A =
4.				
5.	1			
6,				
7.				
8. 9.				
8. 9. Total Cover:				
8. 9.		1% of total cov	er: <u>7.6</u>	
8. 9. Total Cover: 50% of total cover:	19 20	1% of total cov	er: <u>7.6</u>	
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants	19 20	0% of total cov Dominant Species? (Y/N)	Per: 7.6 Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50%
3. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>)) Absolute	Dominant Species?	Indicator	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Comarvm palvstre) Absolute % Cover	Dominant Species?	Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants <u>Herb Stratum</u> (<u>26'</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (19 20) Absolute % Cover 30 40	Dominant Species? (Y/N)	Indicator Status 08 L FA C	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum () 1. Comarvm palvstre 2. Equisetvm arvense 3. Carex aquatilis 4. Carex canescens	19 20) Absolute % Cover 30 40 30	Dominant Species? (Y/N)	Indicator Status 0BL FAC 0BL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
 8. 9. Total Cover: 50% of total cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (26') 1. Comarvm palvstre 2. Equisetvm arvense 3. Carex aquatilis 4. Carex canescens 5. Carex magellanica 	19 20 Absolute % Cover 30 40 30 10 10 10	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL OBL OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (19 20 Absolute % Cover 30 40 30 10	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
 8. 9. Total Cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (26') 1. Comarvm palvstrc 2. Equisetvm arvense 3. Carex aquatilis 4. Carex canescens 5. Carex magellanica 6. Calamagrostic canadensis 7. 	19 20 Absolute % Cover 30 40 30 10 10 10	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL OBL OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic.
 8. 9. Total Cover: 50% of total cover: 50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (26') 1. Comarvm palvstre 2. Equisetvm arvense 3. Carex aquatilis 4. Carex canescens 5. Carex magellanica 	19 20 Absolute % Cover 30 40 30 10 10 10	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL OBL OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unlest disturbed or problematic. O% Bare Ground O% Cover of Wetland Bryophytes OTotal Cover of Bryophytes
50% of total cover: VEGETATION (use scientific names of plants Herb Stratum (2G') 1. Comarvm palvstre 2. Equisetvm arvense 3. Carex aquatilis 4. Carex cane Scens 5. Carex magellanica 6. Calamagrostis canadensis 7. 8.	19 20 Absolute % Cover 30 40 30 10 10 10	Dominant Species? (Y/N)	Indicator Status OBL FAC OBL OBL OBL	X Dominance Test is > 50% X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic. O% Bare Ground 0% Cover of Wetland Bryophytes

SOIL		1000	Date 1/6/14	Feature I	D W60	<u>HT054</u>		Soil Pit Required (Y/N)		
SOIL PROF	LE DESCRIPTION: (Describe	to the depth need	ed to doo	ument the	indicator or	confirm the absen			
Depth	Matrix		Redox Features							
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes		
0-20							Fibric	saturated organics		
						_				
	-	-		-		-				
		-				-	-			
¹ Type: C=Ce	oncentration, D=Deple	etion, RM	/ /=Reduced Matrix,	CS=Cov	ered or Co	pated Sand (Grains. ² Locatio	n: PL=Pore Lining, M=Matrix.		
-	IL INDICATORS					14	INDICATORS	FOR PROBLEMATIC HYDRIC SOILS ³		
			Alaska Gleye	Gleyed (A13)			Alaska Color	Alaska Color Change (TA4) ⁴		
			Alaska Redo	Alaska Redox (A14)				Swales (TA5)		
Black Histic ((A3)		Alaska Gleye	d Pores	(A15)		Alaska Redox	with 2.5Y Hue		
	Ilfide (A4)						Alaska Gleye Layer	d without 5Y Hue or Redder Underlying		
	urface (A12)				_		Other (Explain	n in Notes) ape position must be present unless		
Notes:	Present (Y/N):	y no y								
HYDROLOG	Y PRIMARY INDICA	TORS (a	iny one indicator is	sufficient	t)	SECONDAR	Y INDICATORS (2 or more required)		
Surface Wate	er (A1) <u>X</u>	Sur	face Soil Cracks (E	36)		Water-staine Leaves (B9)	d	Stunted or Stressed Plants (D1)		
High Water T	able (A2) X	· Inu · (B7	ndation Visible on <i>i</i>	Aerial Ima	agery	Drainage Patterns (B10)		Geomorphic Position (D2)		
Saturation (A	3) <u>X</u>		arsely Vegetated ncave Surface (B8)			Oxidized Rhizospheres along Living Roots (C3)		Shallow Aquitard (D3)		
Water Marks	(B1)	Ma	rl Deposits (B15) _			Presence of Reduced Iron (C4)		Microtopographic Relief (D4)		
Sediment De	posits (B2)		drogen Sulfide or (C1)	ogen Sulfide			Salt Deposits (C5) FAC-Neutral Test (D			
Drift Deposits	s (B3)		-Season ter Table (C2)			Notes:				
Algal Mat or (Crust (B4)	_ Oth	er (Explain in Note	s):						
Iron Deposits	(B5)									
Surface Wate	er Present (Y/N):	Y	Depth (in):		- 1	-		V		
Water Table	Present (Y/N):		Depth (in):		We	etland Hydro	ology Present (Y/	N):/		

Saturation Present (Y/N): (includes capillary fringe) Daprassim

Y

Depth (in):

& Drainage Through Depression.

Notes:

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent PersistentX Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall) O Tall shrub (2-6m) O Short shrub (0.5-2m) 3€ Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) Y One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Y Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional 📈 Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Per
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) X Alkaline (>7.4) Acid (<5.5) pH Reading 5.79
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%)
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m. Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized

Medium (10-100 acres)_

Size:

Small (<10 acres)

Crew Chief QA/QC check

GPS Technician QA/QC check:

Large (>100 acres)

Δ

nor

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT054 Field Target: 130 Date: 7/6/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

☑ Site description, site parameters and summary of findings are complete?
 ☑ A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Ø Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Ø Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked? Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- D Each logbook page is initialed and dated?

7. Maps

- Ø Wetland boundaries have been corrected if necessary?
- ✓ Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- D Two photos were taken for each Observation Point (vegetation/site overview)?

6/14 ead Wetland Scientist (print) Signature / Date

X

stoph

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION			00	tside :	2000' (corridor
Survey Type: Centerline Acces	ss Road (explain)	Other (expla	ain) <u>X</u>	Field Targ	jet: <u>132</u>	Map #: 92_Map Date: 5/21/14
Date: 7/6/14	Project Name & No.:	Alaska LNG	Feature Id:	W60 HT 0 57 055		
Investigators: JC, ZM, A	F					Team No.: W60
State: Alaska	Region: Alaska		(45)			
Latitude: 62° 28' 38.43"		Longitude	150° 16'	18-12"		Datum: WGS84
Logbook No.: 003	Logbook Page No.:	044	Picture No.:	P_ N,	s. pit,	plug

SITE PARAMETERS				
Subregion: South Central	Landform (hillslope, terrace, hummocks, etc.): depression			
Slope (%): () - ()	Local relief (concave, convex, none): CONCAVE			
Pre-mapped Alaska LNG/NWI classification: PSS J &	Soil Map Unit Name: N/A			
Are climatic/hydrologic conditions on the site typical for this time of year? Yes χ No (if no explain in Notes)	Are "Normal Circumstances" present: Yes X No (If no, explain in Notes.)			
Are Vegetation, Soil, or Hydrology Significantly Disturbed	d? No_X(If yes, explain in Notes)			
Are Vegetation, Soil, or Hydrology Naturally Problematic	? No_X (If yes, explain in Notes.)			
SUMMARY OF FINDINGS				
Hydrophytic Vegetation Present? Yes No I	s the Sampled Area within a Wetland? Yes No			
Hydric Soil Present? Yes X No	Wetland Type: PEM1F			
Wetland Hydrology Present? Yes X No No	Alaska Vegetation Classification (Viereck): III_A 3			

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

POINT LOOSLES OUTSIDE 2000 Corridor

16'	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes: 26')	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata:3
1. Betula neoalaskana	2		FACU	% Dominant Species that are OBL, FACW, or FAC:(4)
2. Picea alavca	1		FACU	
3.				
4.				Prevalence Index worksheet:
Total Cover:		de la Terra da	"Tr	Total % Cover of: Multiply by:
50% of total cover	20	% of total cov	er:	OBL species: 40 $x = 40$ FACW species: 15 $x = 30$
<u>Sapling/Shrub Stratum(2-6))</u>	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 10X 2 =
1. Alnus SSP	3	У	FAC	UPL speciesX 5 =
2.				Column Totals:(A)(2) (B)
3.				PI = B/A =/6
4.				
5.		T		
6.				
7.				Tree shatum added to shrub shatum
8.				since There was 25% cover
9.			1	
Total Cover				-
)% of total cov	ver: 1 - 2	-
Total Cover 50% of total cover	3 20	0% of total cov	ver: <u>1 - 2</u>	-
Total Cover 50% of total cover VEGETATION (use scientific names of plants	3 20)% of total cov	ver: <u>1.2</u> Indicator	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cover VEGETATION (use scientific names of plants	; <u> </u>	Dominant Species?	1	Hydrophytic Vegetation Indicators:
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (2. 6 ')	: <u>3</u> 20 ;) Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>26'</u>) 1. Comarum palustre	: <u>3</u> 20 ⇒) Absolute % Cover └4 ()	Dominant Species?	Indicator Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (<u>2.6')</u> 1. Comarum palustre 2. Equisetum arvense	3 20 Absolute % Cover 4 () 2 ()	Dominant Species? (Y/N)	Indicator Status OBL FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes)
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (2.6') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis canadensi	3 20 Absolute % Cover 4 () 2 0 9 0	Dominant Species? (Y/N)	Indicator Status O B L FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (2.6') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis canadonsi ^{4.} víola palustre Palustres	3 20 Absolute % Cover 4 () 2 ()	Dominant Species? (Y/N)	Indicator Status OBL FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (2.6') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis canadensi	3 20 Absolute % Cover 4 () 2 0 9 0	Dominant Species? (Y/N)	Indicator Status O B L FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (2.6') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis canadonsi ^{4.} viola palustre Palustre	3 20 Absolute % Cover 4 () 2 0 9 0	Dominant Species? (Y/N)	Indicator Status O B L FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
Total Cover. 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (2.6') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis canadonsi 4. viola palustre Palustos 5.	3 20 Absolute % Cover 4 () 2 0 9 0	Dominant Species? (Y/N)	Indicator Status O B L FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. % Bare Ground
Total Cover 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (2.6') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis canadensi 4. viola palustre Palustres 5. 6.	3 20 Absolute % Cover 4 () 2 0 9 0	Dominant Species? (Y/N)	Indicator Status O B L FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
Total Cover. 50% of total cover VEGETATION (use scientific names of plants Herb Stratum (2.6') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis canadonsi 4. viola palustre Palustos 5. 6. 7.	3 20 Absolute % Cover 4 () 2 0 9 0	Dominant Species? (Y/N)	Indicator Status O B L FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
Total Cover 50% of total cover VEGETATION (use scientific names of plants <u>Herb Stratum (2.6')</u> 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis canadensi 4. viola palustre palustres 5. 6. 7. 8.	3 20 Absolute % Cover 4 () 2 0 9 0	Dominant Species? (Y/N)	Indicator Status O B L FAC FAC	$ \underbrace{\times}_{X} \text{ Dominance Test is } 50\% \\ \underbrace{\times}_{X} \text{ Prevalence Index is } 3.0 \\ \underline{}_{Morphological Adaptations^{1}} (\text{Provide supporting data in Notes}) \\ \underline{}_{Problematic Hydrophytic Vegetation^{1}} (\text{Explain}) \\ \overset{1}{\text{ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.} \\ \underbrace{}_{0} & \% \text{ Bare Ground} \\ \underline{}_{10} & \% \text{ Cover of Wetland Bryophytes} \\ \underline{}_{30} & \% \text{ Cover of Bryophytes} \\ \underline{}_{30} & \% \text{ Cover of Water} \\ \underbrace{}_{0} & & & & & & & & & & & & & & & & & & &$
50% of total cover VEGETATION (use scientific names of plants Herb Stratum (2.6') 1. Comarum palustre 2. Equisetum arvense 3. Calamagrostis canadensi 4. viola palustre Palustos 5. 6. 7. 8. 9.	3 20 Absolute % Cover 40 20 90 15	Dominant Species? (Y/N)	Indicator Status O B L FAC FAC	Dominance Test is > 50% Prevalence Index is ≤ 3.0 Morphological Adaptations¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

WETLAND	DETERMINATION	DATA FORM
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Depth nches)	DESCRIPTION: (E Matrix Color (moist)	-	to the depth needed Redox Features	d to doc	ument the	indicator or	confirm the absence	of indicators)		
nches)) - 1-0		-	Redox Features					of indicators.)		
0-1-0	Color (moist)				lui-					
		%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes		
10 - 2.0							Fibric			
	10YR 2/1	100		1	1		Silt loam			
		-			-	-				
		-		-		-				
		-		-		-				
Type: C=Conc	centration, D=Deple	tion RM	=Reduced Matrix	S=Cov	ered or Co	ated Sand G	rains ² ocation:	PL=Pore Lining, M=Matrix.		
YDRIC SOIL I	· · ·		nouvou mann, e				1	OR PROBLEMATIC HYDRIC SOILS		
listosol or Histe	el (A1)		Alaska Gleyed	Alaska Gleyed (A13)				Alaska Color Change (TA4) ⁴		
	n (A2) X			Alaska Redox (A14)				Alaska Alpine Swales (TA5)		
lack Histic (A3	3)		Alaska Gleyed	Alaska Gleyed Pores (A15)			Alaska Redox with 2.5Y Hue			
lydrogen Sulfid	de (A4)						Alaska Gleyed without 5Y Hue or Redder Underlying Layer			
hick Dark Surf	face (A12)						Other (Explain in Notes)			
isturbed or pro Give details of	blematic. color change in No	tes.						pe position must be present unless		
Restrictive Laye	er (if present): Type			Depth (i	nches):					
lydric Soil Pre	esent (Y/N):	1								
lotes:										

stained s (B9) ge Patterns (B10) ed Rhizospheres along Roots (C3) nce of Reduced 24) eposits (C5)				
ed Rhizospheres along Roots (C3) nce of Reduced 24) eposits (C5)	Shallow Aquitard (D3) Microtopographic Relief (D4)			
Roots (C3) nce of Reduced (4) eposits (C5)	Microtopographic Relief (D4)			
24) eposits (C5)	Relief (D4)			
eposits (C5)	FAC-Neutral Test (D5)			
Notes:				
Wetland Hydrology Present (Y/N):			Depth (in):	
	Hydrology Present (Y			

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) Very High Density (80-100%) Low Density (20-40%) Medium Density (40-60%) High Density (60-
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none)
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe DepressionalX Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol: Fibric Histosol: Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inter/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perenninlet/Perennial Inlet/Perennial Inlet/Perennial
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. FloodedX
Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) X Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding_∑ Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Degree of Outlet Restriction (P): No Outflow X Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) X pH Reading 4.83
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits X
Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) ×
Basin Topographic Gradient (M): Low Gradient (<2%) X High Gradient (≥2%)

Wetland Juxtaposition: Only Connected Above_		X Wetlands within stream & Downstream	1 400m, Not Connected Unknown	Only Connected Below	
Wetland Land Use:	High Intensity (i.e., ag.)	Moderate Int	ensity (i.e., forestry)	_ Low Intensity (i.e. open space)X	
Watershed Land Use:	0-5% Rural	5-25% Urbanized	25-50% Urbanized	>50% Urbanized	
Size: Small (<10 ac	res) Medium (1	0-100 acres)	Large (>100 acres)		

Size:

Crew Chief QA/QC check:

WW

GPS Technician QA/QC check:

DAN

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60 HT05 75 74 Field Target: 13 Z ____ Date: 7/6/14___

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- \square A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Divide the second secon
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- \square Soil profile is complete?
- D Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- \square Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- ☑ Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- D Each logbook page is initialed and dated?

7. Maps

- Ø Wetland boundaries have been corrected if necessary?
- D Maps are initialed and dated?

8. Photos

- ∠ Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- ☑ Two photos were taken for each Observation Point (vegetation/site overview)?

X Zoe Meade

Wetland Scientist (print)

all

Signature / Date

Х Х 141Staph 4

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION 2000' COrvidor							
Survey Type: Centerline Access Road (explain) Other (explain)X Field Target:					Map #: <u>11</u> Map Date: <u>5/21/</u> /9		
Date: 71614	Project Name & No.: Alaska LN	Project Name & No.: Alaska LNG 26221306 Feature Id:					
Investigators: JC, ZM, AI	Team No.: W 60						
State: Alaska	Region: Alaska	Region: Alaska Milepost: 656					
Latitude: 6 2 4 2 5 / 3 5 8 2 "	Longitud	Datum: WGS84					
Logbook No.: 003	Logbook Page No.: 045 Picture No.: P. N.S. PiE.			pluq			

SITE PARAMETERS					
Subregion: South central	Landform (hillslope, terrace, hummocks, etc.): $\pm 1a$ \pm				
Slope (%): 🖒 \	Local relief (concave, convex, none):				
Pre-mapped Alaska LNG/NWI classification:	Soil Map Unit Name: n / a				
Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (if no explain in Notes)	Are "Normal Circumstances" present: Yes No (If no, explain in Notes.)				
Are Vegetation, Soil, or Hydrology Significantly Disturbe	ed? No(If yes, explain in Notes)				
Are Vegetation, Soil, or Hydrology Naturally Problemation	ic? No (If yes, explain in Notes.)				
SUMMARY OF FINDINGS					
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area within a Wetland? Yes No				
Hydric Soil Present? Yes No	Wetland Type: PSSIEMILB				
Wetland Hydrology Present? Yes No	Alaska Vegetation Classification (Viereck):				

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

P45 Ser Skitch

VEGETATION (use scientific names of plants				T
Tree Stratum (Plot sizes: <u>26</u>)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 3 Total Number of Dominant Species Across All Strata:
1.				% Dominant Species that are OBL, FACW, or FAC: 100 (
2.				
3.	1			
4.				Prevalence Index worksheet:
Total Cover:	G			Total % Cover of: Multiply by:
50% of total cover:	0 20	% of total cov	er:0	OBL species: <u>52</u> X 1 = <u>52</u>
Sapling/Shrub Stratum(G')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $6 1$ X 2 = 12 FAC speciesX 3 = 2 FAC speciesX 3 = 2 FACU speciesY 4 = 2
. Chamaedaphne calyculata	20	Y	FACW	UPL speciesX 5 =
2. Rhododendron tomentosum	20	У	FACW	Column Totals: 121 (A) 198 (B)
3. Empetrum nigrum	5		FAC	PI = B/A = <u>}</u> , (c) - }
1. Betula nana	3		FAC	
5. Picea mariana	5		FACW	
3. Vaccinium occycoccus	2		OBL	
· vaccinium vitis-idaea	TR		FAC	
3.		1		
9.				
Total Cover:				
50% of total cover:	27.5 20	% of total cov	ver:	
VEGETATION (use scientific names of plants)			
Herb Stratum(G()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: X Dominance Test is > 50%
			P	
1. Carex micro chaeta	10		FACW	X Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
	50	У	OBL	
2. Cavex microviochim		У		Morphological Adaptations ¹ (Provide supporting data in
2. Cavex microglochin 3. Rubus Chamaemorous	50	Y	OBL	Morphological Adaptations ¹ (Provide supporting data in Notes)
2. Cavex microglochin 3. Rubus Chamdemorous 4.	50	/	OBL	Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
2. Cavex microglochin 3. Rubus Chamaemorous 4. 5.	50	/	OBL	Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles
2. Cavex microglochin 3. Rubus Chamaemorous 4. 5.	50	/	OBL	Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles
2. Cavex microglochin 3. pubus Chamaemorous 4. 5. 6. 7.	50	/	OBL	Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic.
2. Carex microglochim 3. pubus Chamaemorous 4. 5. 6. 7. 8.	50	/	OBL	Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic.
2. Carex microglochin 3. Robus Chamdemorous 4. 5. 6. 7. 8. 9.	50	/	OBL	Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic.
2. <u>Carex microglochim</u> 3. <u>Rubus Chamdemorous</u> 4. 5. 6. 7. 8. 9. 10.	50	/	OBL	Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic.
2. Cavex microglochin 3. Rubus Chamdemorous 4. 5. 6. 7. 8. 9.	50 (n	/	OBL FACW	Morphological Adaptations ¹ (Provide supporting data in Notes) Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic.

SOIL			Date 716 14 Fe	eature I	DWGOH	LOSE	242	Soil Pit Required (Y/N)
SOIL PROFIL	E DESCRIPTION: (Describ	e to the depth needed				onfirm the absen	
Depth	Matrix	Matrix Redox Features						
(inches)	Color (moist)	%	Color (moist)	Color (moist) % Type ¹ Loc ²		Texture	Notes	
0-20							FIDRIC	Graanies, saturaled
								0
		-		1	[
		-		1			-	
		-				-		
		-		-		-		
	acontration D-Denk	ation Pl	 M=Reduced Matrix, C	S=Cov	ered or Cos	ted Sand G	raine ² l ocation	I n: PL=Pore Lining, M=Matrix.
				0-000				FOR PROBLEMATIC HYDRIC SOILS ³
Histosol or Hi	stel (A1)	-	Alaska Gleyed	(A13)				Change (TA4) ⁴
	on (A2)		Alaska Redox					Swales (TA5)
	43)		Alaska Gleyed	Pores	(A15)		Alaska Redox	with 2.5Y Hue
Hydrogen Sul	lfide (A4)						Alaska Gleyed Layer	d without 5Y Hue or Redder Underlying
Thick Dark Su	urface (A12)	_					Other (Explain	n in Notes)
disturbed or p								ape position must be present unless
Restrictive La	yer (if present): Typ	e:		Jepth (i	ncnes):			
Hydric Soil P	Present (Y/N):	Y						
Notes:								

RS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)				
Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1) _X			
Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)			
Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4) X			
Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)			
Dry-Season Water Table (C2)	Notes:				
Other (Explain in Notes):					
Depth (in):					
Depth (in): ()	Wetland Hydrology Present (Y/N):				
Depth (in):					
	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 Notes):	Surface Soil Cracks (B6) Water-stained Leaves (B9) Inundation Visible on Aerial Imagery (B7) Drainage Patterns (B10) Sparsely Vegetated Concave Surface (B8) Oxidized Rhizospheres along Living Roots (C3) Marl Deposits (B15) Presence of Reduced Iron (C4) Hydrogen Sulfide Odor (C1) Salt Deposits (C5) Dry-Season Water Table (C2) Notes: Other (Explain in Notes): Wetland Hydrology Present (Y/N):			

VEGETATION VARIABLES P= Plot, M= Matrix							
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Persistent Persistent Aquatic Bed Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent							
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall)							
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Moderately even X							
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) X Very High Density (80-100%)							
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A <25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A							
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)							
Presence of Islands (M): Absent (none) One or Few Several to Many N/A X							
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous CoverX							
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)							
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)							
HGM Class (P): Slope Flat Lacustrine Fringe Depressional _ X Riverine Estaurine Fringe							
SOIL VARIABLES							
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey							
HYDROLOGIC VARIABLES							
Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Outlet Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial							
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated X Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded							
Evidence of Sedimentation (P): No Evidence Observed X Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created							
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)							
Frequency of Overbank Flooding (P): No Overbank Flooding X Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs Return Interval >5 yrs Return Interval 2-5 yrs							
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow							
Water pH (P): No surface water X Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading							
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable							
Basin Topographic Gradient (M): Low Gradient (<2%)							
LANDSCAPE VARIABLES (M)							

Moderate Intensity (i.e., forestry)_

M

Low Intensity (i.e. open space)

X

Page 4 of 4

Crew Chief QA/QC check:

Small (<10 acres)

High Intensity (i.e., ag.)_

Wetland Land Use:

Size:

Watershed Land Use:

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W60HT3

Field Target: 139 Date: 7/6/14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

匕, Site description, site parameters and summary of findings are complete? A detailed site sketch is included in logbook?

2. Vegetation

- Z At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Ø Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- E Each logbook page is initialed and dated?

7. Maps

- (Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

Mb X Zoe Meade 6/14 Wetland Scientist (print) Signature / Date Х Anichophy Signature / Date Field Crew Chief (print)

SITE DESCRIPTION							
Survey Type: Centerline Acc	ess Road (explain)	Other (expl	plain) X Field Target: 202		t: 202	Map #:Map Date: <u>8/a.9/</u> 14	
Date: 9/3/2014	Project Name & No.:	Alaska LNG	6 26221306		Feature Id:	W60 HT 057 57 (2)	
Investigators: JC, JA						Team No.: ₩(₀0	
State: Alaska	Region: Alaska		Milepost: (ç	64.6			
Latitude: 62° 21' 14.69		Longitude	: 150° 16'	28.25		Datum: WGS84	
Logbook No.: WWO - B	Logbook Page No.:	а.	Picture No.:	W60			
SITE PARAMETERS	1						
Subregion: South central			Landform (hillslope, terrace, hummocks, etc.):				
Slope (%): 0			Local relief (concave, convex, none): Scheave				
Pre-mapped Alaska LNG/NWI classific	cation: N/A		Soil Map Unit Name: N/A				
Are climatic/hydrologic conditions on the Yes_XNo(if no ex	he site typical for this time plain in Notes)	of year?	Are "No Yes_>	ormal Circums	tances" pre _ (If no, exp	sent: blain in Notes.)	
Are Vegetation, Soil, or H	ydrology Significantl	ly Disturbed?	No <u>×</u>	_(If yes, expla	in in Notes))	
Are Vegetation, Soil, or Hy	ydrology Naturally P	roblematic?	No_X	_ (If yes, expla	ain in Notes	.)	
SUMMARY OF FINDINGS	MA TO A					The second second second	
Hydrophytic Vegetation Present? Yes	Is	Is the Sampled Area within a Wetland? Yes X No No					
Hydric Soil Present? Yes_	X No	w	Wetland Type: PEMI (SSIB				
Wetland Hydrology Present? Yes_	X No		Alaska Vegetation Classification (Viereck): III A 3/II C 2				

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

Gel W40-3 PJ LogBrok

VEGETATION (use scientific names of plants)	_		a state of the sta
Tree Stratum (Plot sizes:)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Stàtus	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: <u>7</u> (A
1. n. (.).	/		tout	Total Number of Dominant Species Across All Strata: <u>2</u> (% Dominant Species that are OBL, FACW, or FAC: <u>1001</u> , (A
2.				A Dominant Species that are OBL, FACW, of FAC. <u>1001</u> , (A
3.				
4.		1		Prevalence Index worksheet:
Total Cover:				Total % Cover of:Multiply by:
50% of total cover:	20	% of total cov	er:	OBL species: <u>63</u> X1 = <u>63</u>
Sapling/Shrub Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 3.5 $X_2 = 70$ FAC species 16 $X_3 = 48$ FACU species 5 $X_4 = 20$
1. Picea mariana	5%		Farw	UPL speciesX 5 =
2. Rhododendrum grænlandicum	5%		Fac	Column Totals: 119 (A) 201 (B)
3. Betula nana	71.		Fac.	PI = B/A = <u>I.6%</u>
4. chamae daphné calyculata	301.	Y	Far W	
5. Empetrum nigrum	3%		Fac	
6. Picea glauca	5%	(Facu	
7.				
8.				
9.		· · · · · · ·		-
Total Cover:				
50% of total cover:		% of total cov	er: tt.t	
VEGETATION (use scientific names of plants	27.5		11	
Herb Stratum ()	Absolute	Dominant	Indicator	Hydrophytic Vegetation Indicators:
	% Cover	Species? (Y/N)	Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0
1. carex limosa	60	Y	061	Morphological Adaptations ¹ (Provide supporting data in
2. carex microglochih	31.		obl	Notes)
³ calamagrostis condensis	17/		Fac	Problematic Hydrophytic Vegetation ¹ (Explain)
4. 0				¹ Indicators of hydric soil and wetland hydrology must be present unless
5.	7			disturbed or problematic.
6.	/			
7.	/		-	% Bare Ground
8.				<u>NA</u> % Cover of Wetland Bryophytes
9.				<u>100</u> Total Cover of Bryophytes
10.				Cover of Water
Total Cover:	6.41.			Hydrophytic Vegetation Present (Y/N):
50% of total cover:)% of total cov	ver: 12.8	Notes: (If observed, list morphological adaptations below):

					100 m 100	051		
SOIL			Date 9 3 114		-		A 41 1	Soil Pit Required (Y/N)
SOIL PROFIL	LE DESCRIPTION: (I	Describe			ent the i	ndicator or co	onfirm the absend	ce of indicators.)
Depth (inches)	Matrix	1.04	Redox Feature	- F	1	1 . 2		
(inches)	Color (moist)	%	Color (moist)	% T	/pe ¹	Loc ²	Texture	Notes
0-20		-			_	-	Fibric	Saturated
	-	-			_			
	-	-				-		
		-						
		-						
	-				_	-		
Type: C=Co	ncentration, D=Deple	tion RM	I=Reduced Matri	ix CS=Covered	or Coa	ated Sand Gr	ains ² location	E PL=Pore Lining, M=Matrix.
	L INDICATORS				01 000		1	FOR PROBLEMATIC HYDRIC SOILS ³
Histosol or Histel (A1) X			Alaska Gle	yed (A13)			A second second second second	Change (TA4) ⁴
Histic Epipedon (A2)				dox (A14)			-	Swales (TA5)
	A3)			eyed Pores (A1				with 2.5Y Hue
								without 5Y Hue or Redder Underlying
	fide (A4)		1.4				Laver	
Thick Dark Su							Other (Explain	
disturbed or p		tation, oi	ne primary indica	ator of wetland r	nyarolo	gy, and an ap	propriate landsc	ape position must be present unless
⁴ Give details	of color change in No		-					
Restrictive La	yer (if present): Type	e: Non	e	_ Depth (inche	es):t	10		
Hydric Soil P	Present (Y/N):							
Notes:								
	HARS)	1 (1	-10	~ /	1	l	
	De l	14	Jun S.	VIS (95	Svu	12	
	~ (,	and the second second			1.02			
HYDROLOGY	Y PRIMARY INDICA	TORS (a	ny one indicator	is sufficient)	-	ECONDARY		2 or more required)
Surface Wate	r (A1)	_		ce Soil Cracks (B6)				Stunted or Stressed Plants (D1) <u>X</u>
High Water Ta	able (A2) 🗡	Inui (B7	ndation Visible o	n Aerial Imager	y D	rainage Patte	erns (B10)	Geomorphic Position (D2)
Saturation (A	3) _ 🗙		arsely Vegetated acave Surface (E			Oxidized Rhizospheres along Living Roots (C3)		Shallow Aquitard (D3)
Water Marks	(B1)	Mai	l Deposits (B15)			resence of R on (C4)	educed	Microtopographic Relief (D4) _X
Sediment Dep	oosits (B2)		lrogen Sulfide or (C1)	_	S	Salt Deposits (C5) FAC-Neutral Test (D5)		
Drift Deposits	(B3)	Dry Wa	-Season ter Table (C2)		N	otes:		
Algal Mat or C	Crust (B4)	Oth	er (Explain in No	otes):				
Iron Deposits	(B5)							
Oude a Mitt	Descent (MAD)	- 1		4	Y			
Surrace Wate	r Present (Y/N): N		Depth (in): H o		- Mich	land Hudrol	ogy Present (Y/N	
	Present (Y/N): Y		Depth (in): 〇 ^I	N	wet		Jgy Fresent (17/	N):
(included cupi	esent (Y/N): Ilary fringe)		Depth (in): O	11				
Notes:			0					
	LI.	121	1-200	04<	01	reb		
		1	. 0 1		N	VIC		

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Emergent-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) O Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water X <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover_X 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) X Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet X No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/Perennial In
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Degree of Outlet Restriction (P): No Outflow 1/2 Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water V Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) ✓ High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs ✓ Seeps Observed Intermittent Spring Perennial Spring
Tridence of beeps and oprings (F). No beeps of oprings beeps observed intermittent opring Perennial opring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres)
Crew Chief QA/QC check:
Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W6011

Field Target: 202

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?

□ A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- □ Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

☑ Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
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8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

□ Two photos were taken for each Observation Point (vegetation/site overview)?

Х 4540 Wetland Scientist (print)

Signature / Date

Field Crew Chief (print)

enviter Anderson 9/3/14 Signature / Date

Vegetation Classification Data Form

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for Ar

Vegetation Classification Data Form

Level I	Level II	Level III
I Forest	A Needleleaf (conifer) forest	 Closed needleteaf (conifer) forest Open needleteaf (conifer) forest Needleteaf (conifer) woodland
	B. Broadleaf forest	 Closed broadleaf forest Open broadleaf forest Broadleaf woodland
	C. Mixed forest	 Closed mixed forest Open mixed forest Mixed woodland
li Scrub	A Dwarf tree scrub	 Closed dwarf tree scrub Open dwarf tree scrub Dwarf tree scrub woodland
	B Tall scrub	(1) Closed tall scrub (2) Open tall scrub
	C Low scrub	(1) Closed low scrub (2) Open low scrub
	D Dwarf scrub	 Dryas dwarf scrub Ericaceous dwarf scrub Willow dwarf scrub
III Herbaceous	A Graminoid herbaceous	 Dry graminoid herbaceous Mesic graminoid herbaceous Wet graminoid herbaceous (emergent)
	B Forb herbaceous	 Dry forb herbaceous Mesic forb herbaceous Wet forb herbaceous (emergent)
	C Bryoid herbaceous	(1) Mosses (2) Lichens
	D. Aquatic (nonemergent) herbaceous	 Freshwater aquatic herbaceous Brackish water aquatic herbaceous Marine aquatic herbaceous

 Sc	er de
 ~	

11. 44	100
8a	Vegetation with at least 10 percent cover of dwarf trees
8b	Vegetation with at least 25 percent cover of shrubs and less than 10 percent cover of dwarf trees
9a.	Dwarf tree canopy of 60-100 percent cover
9b	Dwarf tree canopy of 25-59 percent cover
9c	Dwarf tree canopy of 10-24 percent cover
10a	Shrubs more than 1.5 meters (5 ft) tall
10b	Shrubs less than 1.5 meters (5ft) tali
11 a	Shrub canopy cover greater than 75 percent
11 ь	Shrub canopy cover of 25-74 percent II.B 2 Open tall scrut
12a	Shrubs 20 centimeters to 1 5 meters tall II.C Low scrub 13
12b	Shrubs under 20 centimeters in height . II.D Dwarf scrub 1
	Shrub canopy cover greater than II C.I Closed low scrul
13b	Shrub canopy cover of 25-74 percent, or as low as 2 percent if little or no other vegetation cover present
14a	Dryas species dominant in the dwarf shrub layer
14b	Ericaceous species dominant in the dwarf shrub layer II D.2 Ericaceous dwarf scrub
14c	Willow species dominant in the dwarf scrub layer II D.2 Willow dwarf scrub
III H	erbaceous
15a	Terrestrial vegetation, or if growing in the water, dominated by emergent vegetation
15b	Dominant vegetation growing submerged in water or floating on the water surface, but not emerging above the water III D Aquatic herbaceous 2'

Des	criptions of levels I, II, III, and IV follow the c	lassification table.
la.	Trees over 3 meters (10 ft) tall are present and have a canopy cover of 10 percent or more	I Forest 2
16	Trees over 3 meters (10 ft) tail are absent or nearly so, Less than 10 percent cover, (Dwaff trees, less than 3 meters [10 ft] tail may be present and abundant	
I F	prest	
2a.	Over 75 percent of tree cover contributed by needleleaf (conifer) species	I A Needleleaf forest 3
2b.	Less than 75 percent of tree cover contributed by needleleaf (conifer) species	
3a	Tree canopy of 60-100 percent cover	I.A.1 Closed needleleaf forest
3Ь	Tree canopy of 25-59 percent cover	I A 2 Open needleleaf forest
3c	Tree canopy of 10-24 percent cover	I A 3 Needleleaf woodland
4a	Over 75 percent of tree cover contributed by broadleaf species	. I B Broadleaf forest 5
4b	Broadleaf or needleleaf species contribute 25 to 75 percent of the tree cover	
5a	Tree canopy of 60-100 percent cover	I.B.1 Closed broadleaf forest
5b	Tree canopy of 25-59 percent cover	
5c	Tree canopy of 10-24 percent cover	I B 3 Broadleaf woodland
6a	Tree canopy of 60-100 percent cover	
6b.	Tree canopy of 25-59 percent cover	I.C.2 Open mixed forest
6c.	Tree canopy of 10-24 percent cover	LC 3 Mixed woodland
7a	Vegetation with at least 25 percent cover of erect to decumbent shrubs or with at least 10 percent cover of dwarf trees (less than 3 meters [10 t] tail)	8
7b	Vegetation herbaceous (may have up to 25 percent shrub cover)	
16a.	Grasses, sedges, or rushes (graminoid) plants dominant	
16b	Forbs or bryophytes dominant	
17a	Grasslands of well-drained, dry sites, such as south-facing bluffs, old beaches, and sand dunes Typically (but not always) dominated by <i>Elymus</i> spp., <i>Fesfuca</i> spp., and <i>Deschampsia</i> spp.	III A I Dry graminoid herbaceous
17b	On moist sites, but usually not with standing water. Usually dominated by <i>Calamacrustis</i> son	

	and Deschampsia spp. III AT Dry graminoid nerbaceous	L
17b	On moist sites, but usually not with standing water. Usually dominated by Calamagrostis spp. Carex spp. or Eriophorum spp.: tussocks often present	
17c	On wet sites, standing water present for part of the year; dominated by either sedges or grasses; includes wet tundra, bogs, marshes, and fens	
18a	Vegetation dominated by forbs (broadleaf herbs, ferns, or horsetails)	
18b	Vegetation dominated by mosses or lichens	
19a	On dry sites, usually rocky and well drained; mostly tundra sites	
19b.	On moist sites but without standing water, mostly within forested areas	
19c.	On wet sites, usually with standing water for part of the year and a standing lill.B.3 Wet forb herbaceous	
20a	Vegetation cover dominated by mosses III.C.1 Bryoid moss	
20b.	Vegetation cover dominated by tichens	
21a.	Vegetation submerged or floating in fresh water	
21 b	Vegetation submerged or floating in brackish water auatic herbaceous III.D.2 Brackish water aquatic herbaceous	

21c Vegetation submarged or floating in salt water III D 3 Marine aquatic herbaceous

Vegetation Classification Data Form QA/QC Checklist

This form is to be completed before leaving the field site.

WEOHTOS 09 Field Target: 200 Feature ID:

For all items not checked, please provide detailed explanation in the notes section of data form.

1. General Information

- Location data recorded?
- Photo taken and photo number recorded?

2. Location Description

☑ Location of site recorded with enough detail to help relocate?

3. Common Species

- Scientific name of common species recorded?
- Percent cover of dominant structure level noted?

4. Habitat Description

Habitat described?

5. Classification

All three levels of classification recorded?

6. Field Log Book

- E Field form entries consistent with log book?
- Logbook clearly identifies the Field Target ID and Feature ID?

Field Technician (print)

1520pm

Field Crew Chief (print)

Signature

SITE DESCRIPTION						
Survey Type: Centerline 🗶 Acce	ess Road (explain) Other (explain)	Field Target:	203	Map #: <u>2</u> Map Date: <u>8/29//</u> 4	
Date: 9/3/14	Project Name & No.: Alaska	LNG 26221306	F	eature Id:	WHO HTOS9	
Investigators: JC , JA					Team No.: W 60	
State: Alaska	Region: Alaska Milepost: 666.43					
Latitude: 62° 19' 47-61 "	Latitude: 62° 19' U7.61" Longitude				Datum: WGS84	
Logbook No.: WGO - B	Logbook Page No.: 3	the second se	WEONTOS			
6						
SITE PARAMETERS			1			
Subregion: South CAN	that	Landform (hil	llslope, terrace, h	hummocks	s, etc.): TEWACK	
Slope (%): 3 - 5 40		Local relief (d	concave, convex	k, none): /	ONVEN	
Pre-mapped Alaska LNG/NWI classifica	ation: NA	Soil Map Uni	Soil Map Unit Name: MA			
Are climatic/hydrologic conditions on th Yes_XNo(if no exp	Are "Normal Circumstances" present: Yes_X No (If no, explain in Notes.)					
Are Vegetation, Soil, or Hydrology Significantly Disturbed? No_X_(If yes, explain in Notes)						
Are Vegetation, Soil, or HydrologyNaturally Problematic? No (If yes, explain in Notes.)						
SUMMARY OF FINDINGS	and the second s					
Hydrophytic Vegetation Present? Yes_	Is the Sampled	Area within a W	/etland?	Yes NoX		
Hydric Soil Present? Yes_	× No	Wetland Type:	UPL			
Wetland Hydrology Present? Yes_	× No	Alaska Vegetatio	n Classification ((Viereck):	IC2, IIC2	
Notos and Site Skotobi Blogga include	Directional & North Arrow Center	dine. Length of feat	ire Distances fro	om Center	dine Photo Locations, and Survey	

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Surve corridor.

Recent heavy rainfall

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot sizes:)	% Cover	Species? (Y/N)	Status	No. of Dominant Species that are OBL, FACW, or FAC:
1. Piceo glauca	10%		Fac.U	Total Number of Dominant Species Across All Strata: 5
2. Betula nepalaskana	25%	V	Facu	% Dominant Species that are OBL, FACW, or FAC: <u>407</u> .
3.	L.) 4'		raca	
4.			-	Prevalence Index worksheet:
Total Cove				Total % Cover of: Multiply by:
50% of total cove	er: <u>17.5</u> 20	0% of total cov	ver: <u>77.</u>	OBL species:X 1 =
Sapling/Shrub Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: 15 $X_2 = 30$ FAC species 95 $X_3 = 285$ FACU species 80 $X_4 = 310$
1. Sheperdia conadensis	257	Y	Forcil	UPL speciesX 5 =
2. Spiraca Steveni	51-	1	Facu	Column Totals: 190 (A) 635 (B)
3.				PI = B/A =
4.				
5.				
6.	A			
7.				
^				-
				-
9.	2/54			
9. Total Cove	r: <u>307.</u>			
9.		% of total cov	er: <u>(¢]/</u>	
9. Total Cove 50% of total cove	r: <u>157.</u> 20	% of total cov	er: <u>(¢]/</u>	
). Total Cove 50% of total cove /EGETATION (use scientific names of plant	r: <u>157.</u> 20	0% of total cov Dominant Species? (Y/N)	er: <u>(¢`/ .</u> Indicator Status	Hydrophytic Vegetation Indicators:
Total Cove 50% of total cove /EGETATION (use scientific names of plant Herb Stratum () 1. A thurcium, cuclosorum	r: <u>157.</u> 20 s) Absolute % Cover 357.	Dominant Species?	Indicator	$\underbrace{\mathcal{N}}_{\mathcal{N}}$ Dominance Test is > 50% $\underbrace{\mathcal{N}}_{\mathcal{N}}$ Prevalence Index is ≤ 3.0
7. Total Cove 50% of total cove VEGETATION (use scientific names of plant Herb Stratum () 1. A thyrium cyclosorum 2. calomograstic can deosic	r: <u>157.</u> 20 s) Absolute % Cover 357.	Dominant Species? (Y/N)	Indicator Status	Dominance Test is > 50%
9. Total Cove 50% of total cove 50% of total cove VEGETATION (use scientific names of plant Herb Stratum () 1. A thyrium cyclasarum 2. Calamagrastis canadeosis 3. Rubus Chamaemarus	r: <u>157.</u> 20 s) Absolute % Cover 357.	Dominant Species? (Y/N)	Indicator Status	Dominance Test is > 50% $\cancel{\nu}$ Prevalence Index is ≤ 3.0 $\cancel{\nu}$ Morphological Adaptations ¹ (Provide supporting data in
Total Cove 50% of total cove 50% of total cove VEGETATION (use scientific names of plant Herb Stratum () 1. A thyrium cyclosorum 2. calamograstis can deosis 3. Rubus Chomaemarus 4. cornsus can densis	r: <u>157.</u> 20 s) Absolute % Cover 357. 507.	Dominant Species? (Y/N)	Indicator Status Far Far	↓ ↓ Dominance Test is > 50% ↓ Prevalence Index is ≤ 3.0 ↓ ↓ Morphological Adaptations ¹ (Provide supporting data in Notes) ↓ ↓ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles
9. Total Cove 50% of total cove VEGETATION (use scientific names of plant Herb Stratum () 1. A thyrium cyclasarum 2. calamagrasts can deosis 3. Rubus Chamaemarus 4. corn 505 can densis 5. Equise fum Sy Ivahcum	r: <u>157.</u> 20 s) Absolute % Cover 357. 507. 157.	Dominant Species? (Y/N)	Indicator Status Far Far FacW	$ \underbrace{\bigvee}_{\text{Dominance Test is > 50\%}} \text{Prevalence Index is $ $ 3.0} \\ \underbrace{\bigvee}_{\text{Norphological Adaptations}^{1}} (\text{Provide supporting data in Notes}) \\ \underbrace{\bigvee}_{\text{Notes}} \text{Problematic Hydrophytic Vegetation}^{1} (\text{Explain}) $
9. Total Cove 50% of total cove 50% of total cove VEGETATION (use scientific names of plant Herb Stratum () 1. A thyrium cyclasarum 2. Calamagrastis canadeosis 3. Rubus Chamaemarus 4. carnesus canadeosis 5. Equise hum Sy Ivahcum 6.	r: <u>157.</u> 20 s) Absolute % Cover 357. <u>507.</u> 157. 157.	Dominant Species? (Y/N)	Indicator Status Fac Fac Fac Fac Fac V Fac U	✓ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 ✓ Morphological Adaptations ¹ (Provide supporting data in Notes) ✓ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic.
7. Total Cove 50% of total cove 50% of total cove VEGETATION (use scientific names of plant Herb Stratum () 1. A thyrium cyclosarum 1. A thyrium cyclosarum 2. calamagrastis canadensis 3. Rubus Chomaemarus 4. cornsus canadensis 5. Equise tum Sy Ivahcum 6.	r: <u>157.</u> 20 s) Absolute % Cover 357. <u>507.</u> 157. 157.	Dominant Species? (Y/N)	Indicator Status Fac Fac Fac Fac Fac V Fac U	↓ ↓ Dominance Test is > 50% ↓ Prevalence Index is ≤ 3.0 ↓ ↓ Morphological Adaptations ¹ (Provide supporting data in Notes) ↓ ↓ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles
7. Total Cove 50% of total cove 50% of total cove VEGETATION (use scientific names of plant Herb Stratum () 1. A thyrium cyclosorum 2. Colomograstic canadensis 3. Rubus Chomaemorus 4. cornesus canadensis 5. Equise hum Sy Ivaticum 6. 7. 8.	r: <u>157.</u> 20 s) Absolute % Cover 357. <u>507.</u> 157. 157.	Dominant Species? (Y/N)	Indicator Status Fac Fac Fac Fac Fac V Fac U	✓ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 ✓ Morphological Adaptations ¹ (Provide supporting data in Notes) ✓ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic.
9. Total Cove 50% of total cove VEGETATION (use scientific names of plant Herb Stratum () 1. A thyrium cyclasarum 2. Calamagrastis canadensis 3. Rubus Chamaemarus 4. corness canadensis 5. Equise hum Sy Ivahcum 6. 7. 8. 9.	r: <u>157.</u> 20 s) Absolute % Cover 357. <u>507.</u> 157. 157.	Dominant Species? (Y/N)	Indicator Status Fac Fac Fac Fac Fac V Fac U	✓ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 ✓ Morphological Adaptations ¹ (Provide supporting data in Notes) ✓ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic. ✓ % Bare Ground ✓ % Cover of Wetland Bryophytes ✓ Total Cover of Bryophytes ✓ % Cover of Water
50% of total cove VEGETATION (use scientific names of plant Herb Stratum () 1. A thyrium cyclosorum 2. colomograstis canadensis 3. Rubus Chomaemorus 4. corn 505 canadensis	r: <u>157.</u> 20 s) Absolute % Cover 357. 507. 157. 157. 157.	Dominant Species? (Y/N)	Indicator Status Fac Fac Fac Fac Fac V Fac U	✓ Dominance Test is > 50% ✓ Prevalence Index is ≤ 3.0 ✓ Morphological Adaptations ¹ (Provide supporting data in Notes) ✓ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present unles disturbed or problematic. ✓ ✓ ✓ ✓ ✓ % Bare Ground ✓ % Cover of Wetland Bryophytes ✓ Total Cover of Bryophytes

SOIL		-	Date 15/19 F	eature I	DALLOUH	199	-	Soil Pit Required (Y/N)
SOIL PROF	LE DESCRIPTION: (Describe	to the depth neede	d to doc	ument the	indicator or	confirm the abser	nce of indicators.)
Depth	Matrix		Redox Features	Redox Features				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes
0-9"							FILOVIC	Saturated
7-20"	10 YR 2/2	100		-	-	-	SL	
				-				
						1		
		_						
							21	
	oncentration, D=Deple	etion, Riv	I=Reduced Matrix, 0	JS=Cov	ered or Co	ated Sand G		on: PL=Pore Lining, M=Matrix. S FOR PROBLEMATIC HYDRIC SOIL:
	listel (A1)		Alaska Gleye	H (A13)			No. of Concession, Name	Change (TA4) ⁴
	lon (A2)		Alaska Redox					e Swales (TA5)
	(A3)		Alaska Gleye				in the second se	x with 2.5Y Hue
	Ilfide (A4)				· · /			ed without 5Y Hue or Redder Underlying
Thick Dark S	urface (A12)						Other (Expla	in in Notes)
disturbed or			ne primary indicator	of wetla	and hydrolo	gy, and an a	appropriate lands	cape position must be present unless
	ayer (if present): Typ			Depth (i	nches):	1/A		
Hydric Soil	Present (Y/N):							

HIDROLOGI PRIMART INDIGATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10) Geomorphic Position			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:	R		
Algal Mat or Crust (B4)	Other (Explain in Notes):	1 RECEVEN PRACTO	1. Field Indiantors		
Iron Deposits (B5)		CIKHA JARI. E	reld Indicators		
Surface Water Present (Y/N): H	Depth (in): O				
Water Table Present (Y/N): V Depth (in): 4		Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N):	Depth (in): 0 ¹¹				

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Emergent-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M); Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%) Figh Density (20-40%) <
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) Moderate (broken irregular rings)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
Soil Variables Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Sifty Mineral: Clayey
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval >5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres)
Crew Chief QA/QC check: GPS Technician QA/QC check WMM Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Field Target: 903 Feature ID: U/O Date

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

Soil profile is complete?
 Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values ()

□ Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

Each logbook page is initialed and dated?

7. Maps

Wetland boundaries have been corrected if necessary?
 Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

Two photos were taken for each Observation Point (vegetation/site overview)?

Anderson lenniter Wetland Scientist (print)

X 3/14 Signature / Date

9/21

HStophy

Field Crew Chief (print)

Signature / Date

bgbook No.: WGI-A Logbook Page No.: TE PARAMETERS ubregion: ubregion: ope (%): e-mapped Alaska LNG/NWI classification: PS: HB e climatic/hydrologic conditions on the site typical for this time of year es No	a LNG 26221306 Feature Id: (JG1 HT 00) A Fishen Team No.: (JG1 Milepost: S22,9 gitude: [49] OH 30.719 Datum: WGS84 Picture No.: PUG1 H001 Pit; Play, SwiNF Landform (hillslope, terrace, hummocks, etc.): F1A.f Local relief (concave, convex, none): NOMF Soil Map Unit Name: No(If no, explain in Notes.) rbed? No(If yes, explain in Notes)
ate: 6 3 111 Project Name & No.: Alaska vestigators: Fearry Margin vate: Alaska Region: Alaska atitude: 63 53 08.043 Long ogbook No.: W61-2 Logbook Page No.: Long ogbook No.: W61-2 Logbook Page No.: Fearry TE PARAMETERS Logbook Page No.: Fearry ubregion: Margin HB e-mapped Alaska LNG/NWI classification: PS : HB e climatic/hydrologic conditions on the site typical for this time of year No	a LNG 26221306 Feature Id: WG1 HT 00 A Fishen Team No.: WG1 Milepost: Saray gitude: 149° 04' 30.719" Datum: WG584 Picture No.: PWG1 H001 PI, Play, Sw; NF Landform (hillslope, terrace, hummocks, etc.): F1A f Local relief (concave, convex, none): MOWF Soil Map Unit Name: ? ? Are "Normal Circumstances" present: Yes No (If yes, explain in Notes.) matic? No (If yes, explain in Notes.)
tate: Alaska Region: Alaska atitude: $(23^\circ < 33^\circ < 08 .0.43^\circ)$ Long ogbook No.: $(61 - 2)$ Logbook Page No.: TE PARAMETERS Logbook Page No.: Image: Comparison of the second s	A Fishen Team No.: WG (Milepost: \$2,2,9 Datum: WGS84 pitude: [49] 04'30.719'' Datum: WGS84 Picture No.: p.WG1 H001 _pi, Play, SwiNF Landform (hillslope, terrace, hummocks, etc.): F1A.f Local relief (concave, convex, none): MOME Soil Map Unit Name: ? ? Are "Normal Circumstances" present: Yes No (If no, explain in Notes.) rrbed? No (If yes, explain in Notes.)
Region: Alaska atitude: 63° 53° 68.043" Logbook No.: 66-2 Logbook Page No.: TE PARAMETERS ubregion: ubregion: ope (%): e-mapped Alaska LNG/NWI classification: P\$: HB e climatic/hydrologic conditions on the site typical for this time of year No (if no explain in Notes) e Vegetation, Soil, or Hydrology Significantly Disture e Vegetation, Soil, or Hydrology Naturally Problemation: JMMARY OF FINDINGS	Milepost: Sarah gitude: 149° 04' 30.719" Datum: WGS84 Picture No.: PUGI HOO1 PAR Play, SwiNF Landform (hillslope, terrace, hummocks, etc.): F1A f Local relief (concave, convex, none): NOMF Soil Map Unit Name: ? ? Are "Normal Circumstances" present: No (If no, explain in Notes.) rrbed? No (If yes, explain in Notes.)
Degbook No.: WGI-A Logbook Page No.: TE PARAMETERS ubregion: ope (%): e-mapped Alaska LNG/NWI classification: P 55 ! e climatic/hydrologic conditions on the site typical for this time of year as No (if no explain in Notes) e Vegetation, Soil, or Hydrology Significantly Disturbe e Vegetation, Soil, or Hydrology Naturally Problema JMMARY OF FINDINGS	gitude: 149° 04' 30.719" Datum: WGS84 Picture No.: PWG1 H001 PI; Plug, Sw; NF Landform (hillslope, terrace, hummocks, etc.): F1A f Local relief (concave, convex, none): MowF Soil Map Unit Name: Soil Map Unit Name: ?? Are "Normal Circumstances" present: Yes_No (If no, explain in Notes.) rrbed? No (If yes, explain in Notes.)
Degbook No.: WGI-A Logbook Page No.: TE PARAMETERS ubregion: ope (%): e-mapped Alaska LNG/NWI classification: P 55 ! e climatic/hydrologic conditions on the site typical for this time of year as No (if no explain in Notes) e Vegetation, Soil, or Hydrology Significantly Disturbe e Vegetation, Soil, or Hydrology Naturally Problema JMMARY OF FINDINGS	Picture No.: P.W.Gi HoolRi; Plug, SwiNF Landform (hillslope, terrace, hummocks, etc.): FIA f Local relief (concave, convex, none): NowF Soil Map Unit Name: Soil Map Unit Name: ? Are "Normal Circumstances" present: YesNo (If no, explain in Notes.) nrbed? No (If yes, explain in Notes) natic? No (If yes, explain in Notes.)
TE PARAMETERS ubregion: ope (%): e-mapped Alaska LNG/NWI classification: P 5 e climatic/hydrologic conditions on the site typical for this time of year escience No	Landform (hillslope, terrace, hummocks, etc.): FIA f Local relief (concave, convex, none): Nourf Soil Map Unit Name: Soil Map Unit Name: ? Are "Normal Circumstances" present: Yes (If no, explain in Notes.) rrbed? No (If yes, explain in Notes) natic? No (If yes, explain in Notes.)
ubregion:	Local relief (concave, convex, none): None Soil Map Unit Name: Soil Map Unit Name: ? Are "Normal Circumstances" present: YesNo (If no, explain in Notes.) nrbed? No (If yes, explain in Notes) natic? No (If yes, explain in Notes.)
ope (%): e-mapped Alaska LNG/NWI classification: PS : HB e climatic/hydrologic conditions on the site typical for this time of year so (if no explain in Notes) e Vegetation, Soil, or Hydrology Significantly Disture e Vegetation, Soil, or Hydrology Naturally Problem: JMMARY OF FINDINGS rdrophytic Vegetation Present? Yes No	Local relief (concave, convex, none): None Soil Map Unit Name: Soil Map Unit Name: ? Are "Normal Circumstances" present: YesNo (If no, explain in Notes.) nrbed? No (If yes, explain in Notes) natic? No (If yes, explain in Notes.)
e-mapped Alaska LNG/NWI classification: PS + HB e climatic/hydrologic conditions on the site typical for this time of year No (if no explain in Notes) e Vegetation, Soil, or Hydrology Significantly Distur e Vegetation, Soil, or Hydrology Naturally Problema JMMARY OF FINDINGS	Soil Map Unit Name: ? Are "Normal Circumstances" present: YesNo (If no, explain in Notes.) urbed? No (If yes, explain in Notes) natic? No (If yes, explain in Notes.)
e climatic/hydrologic conditions on the site typical for this time of year No (if no explain in Notes) e Vegetation, Soil, or Hydrology Significantly Distur e Vegetation, Soil, or Hydrology Naturally Problema JMMARY OF FINDINGS rdrophytic Vegetation Present? Yes No	? Are "Normal Circumstances" present: YesNo(If no, explain in Notes.) urbed? No(If yes, explain in Notes) natic? No(If yes, explain in Notes.)
No (if no explain in Notes) Vegetation, Soil, or Hydrology Significantly Distur e Vegetation, Soil, or Hydrology Naturally Problem: JMMARY OF FINDINGS rdrophytic Vegetation Present? Yes No	Yes No (If no, explain in Notes.) urbed? No (If yes, explain in Notes) uatic? No (If yes, explain in Notes.)
e Vegetation, Soil, or Hydrology Naturally Problems JMMARY OF FINDINGS rdrophytic Vegetation Present? Yes No	natic? No (If yes, explain in Notes.)
VMMARY OF FINDINGS	T
rdrophytic Vegetation Present? Yes No	Is the Sampled Area within a Wetland? Yes No
1.0	Is the Sampled Area within a Wetland? Yes No
rdric Soil Present? Yes No No	Wetland Type: PSSI/4B
etland Hydrology Present? Yes No	Alaska Vegetation Classification (Viereck):
ndor.	rline, Length of feature, Distances from Centerline, Photo Locations, and Survey
See locbou	ok Wol-Z, page I for sketch
1	1
4	a wates

VEGETATION (use scientific names of plants	s)			
Tree Stratum (Plot sizes: 26)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata:
1. Picea glenca	15	Y	FACU	% Dominant Species that are OBL, FACW, or FAC: 67 (A/
2. 0				
3.				
4				Prevalence Index worksheet:
Total Cove	15		1	Total % Cover of: Multiply by:
50% of total cove	<u>7.5</u> 20	% of total cov	ver:3	OBL species:X 1 =
Sapling/Shrub Stratum(26))	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $2 - x^2 = -4$ FAC species $39 - x^3 = -409$ FACU species $39 - x^4 = -100$
1. Betula alment osa	80	Y	FAC	UPL speciesX 5 =
2. Vaccinium vitis-iducey	10		FAC	Column Totals: 102 (A) 509 (B)
3. VAccinium Vighosum	30		FAC	PI = B/A =
4. Picea dana	10		FACU	
5. Salir Barlen	15		FAC	
6.				
7.				
8.				
9.				
Total Cove 50% of total cove)% of total cov	ver: <u>27</u>	
VEGETATION (use scientific names of plant	s)	-	-	the state of the state of the state of the
Herb Stratum (20)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3.0
1 Petasites frigidus	2		FREW	Morphological Adaptations ¹ (Provide supporting data in
2. Calamagnostis CANERENSIS	10	Y	FAC	Notes)
3.				Problematic Hydrophytic Vegetation ¹ (Explain)
4.				¹ Indicators of hydric soil and wetland hydrology must be present unless
5.				disturbed or problematic.
6.				NA ANA ANA ANA ANA ANA ANA ANA ANA ANA
7.				% Bare Ground
8.				% Cover of Wetland Bryophytes
9.				<u><u><u>u</u></u> Total Cover of Bryophytes</u>
	-			- % Cover of Water
10.				Lindesphysic Veretation Drocant (V/N):
10. Total Cove	12			Hydrophytic Vegetation Present (Y/N): Notes: (If observed, list morphological adaptations below):

SOIL	Here and the second		Date 62714 Fea	ature II	DWOIH	TOOL		Soil Pit Required (Y/N)	
SOIL PROF	LE DESCRIPTION: (D						confirm the absence	e of indicators.)	
Depth	Matrix		Redox Features				3 m - + -		
(inches)	Color (moist)	%	Color (moist) % Type ¹ Loc ²				Texture	Notes	
0-4							Fibric	Saturated	
4-5	tothe station	\$ 3 9	> 7.54R 5 8	10	C	in	SANLEY LOAN		
5-6	104251	(00)	7.542 5B	40	C	M	5.14 1	Satureited .	
6"	FROzen							1 W	
	pncentration, D=Deplet	ion, RM	=Reduced Matrix, CS	i=Cove	ered or Co	ated Sand G		PL=Pore Lining, M=Matrix.	
	LINDICATORS		1		No.		INDICATORS FOR PROBLEMATIC HYDRIC SOILS ³		
Histosol or H	istel (A1)		Alaska Gleyed (Alaska Color Change (TA4) ⁴		
	on (A2)		Alaska Redox (A	A14)			Alaska Alpine Swales (TA5)		
Black Histic (A3)		Alaska Gleyed F	Pores (A15)		Alaska Redox with 2.5Y Hue		
	lfide (A4)						Alaska Gleyed without 5Y Hue or Redder Underlying Layer		
	urface (A12)	_					Other (Explain in Notes)		
⁴ Give details	r of hydrophytic vegeta problematic. of color change in Note yer (if present): Type:	- 24			nd hydrolo ches):	gy, and an a	ppropriate landscap	be position must be present unless	
Hydric Soil F	Present (Y/N):	1							

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:	ц.		
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N):	Depth (in):		14		
Vater Table Present (Y/N): Y Depth (in): O		Wetland Hydrology Present (Y/N):			
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):				
Notes:					

Page 3 of 4

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Needle-leaved Persistent Aquatic Bed Image: Scrub Shrub-Evergreen-Needle-leaved Image: Scrub Shrub-Evergreen-Needle-leaved
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) O Short shrub (0.5-2m) Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a>25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover <a>N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) Image: Concentric rings) Moderate (broken irregular rings)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Wet: Perm, Flooded, Intermittently Exposed, Semiperm, Flooded
Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding P Return Interval 1-2 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5)
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%)
Evidence of Seeps and Springs (P): No Seeps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below Only Connected Above Connected Upstream & Downstream Unknown Only Connected Below Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: WOI HOO! _____ Field Target: 053 ____ Date: 6 27 14

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- K Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?³
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?
- 3. Soil
 - Soil profile is complete?

K Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked?
 Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate? Each logbook page is initialed and dated?

7. Maps

Wetland boundaries have been corrected if necessary? Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

□ Two photos were taken for each Observation Point (vegetation/site overview)?

Wetland Scientist (print)

Signature

6/27/14

Field Crew Chief (print)

Signature / Date

y		1130				
Survey Type: Centerline A	Access Road (explain) Other (explain)	explain) Field Target: 060 Map #: 31 Map Date: 5 211				
Date: 0 28 14	Project Name & No.: Alaska I	LNG 26221306 Feature Id: 6/6/ 14100 2				
Investigators: 12 DEGUTI	5 5 Anderson	A Fisher Team No.: W6				
State: Alaska	Region: Alaska	Milepost: 547, 5				
Latitude: 63° 36' 26	.76 ¹¹ Longit	tude: 148° 46 21.20" Datum: WGS84				
Logbook No.: WG - Z	Logbook Page No.: 4	Picture No .: P. WGIHTOOD _P.F. Plux, SW'SE				
SITE PARAMETERS		· 0/ /-				
Subregion: Interior		Landform (hillslope, terrace, hummocks, etc.):				
Slope (%): Z		Local relief (concave, convex, none): NONE				
Pre-mapped Alaska LNG/NWI class	ification: UDIAND	Soil Map Unit Name:				
Are climatic/hydrologic conditions or Yes No (if no	n the site typical for this time of year? explain in Notes)	Are "Normal Circumstances" present: YesNo (If no, explain in Notes.)				
Are Vegetation, Soil, or						
Are Vegetation, Soil, or	Hydrology Naturally Problemati					
SUMMARY OF FINDINGS						
lydrophytic Vegetation Present? Y	es No	Is the Sampled Area within a Wetland? Yes No				
lydric Soil Present? Ye	No	Wetland Type: \$64 5513 PSS + 143 PSS +				
Netland Hydrology Present? Ye	PS No	Alaska Vegetation Classification (Viereck): TA2, TC				
Notes and Site Sketch: Please incluc	le Directional & North Arrow, Centerlir	ne, Length of feature, Distances from Centerline, Photo Locations, and Survey				
See ladou	ok Wel-Z, page 4					
See loopon	ok Wel-Z, page 4 on site steetch & notis					
AHA	AAA AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	Powerline				
AHA	AAA AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	X				

VEGETATION (use scientific names of plants)				
Tree Stratum (Plot sizes: 26)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet : No. of Dominant Species that are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B)
1. Picen moniapa	20	Y	Forme	% Dominant Species that are OBL, FACW, or FAC: (A/B)
2.				
3.	1			No.
4.	1.1.2.1.1			Prevalence Index worksheet:
Total Cover: 50% of total cover:	10	% of total cov	er:_4	Total % Cover of: Multiply by: OBL species:
Sapling/Shrub Stratum (200)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $80 \times 2 = 160$ FAC species $125 \times 3 = 375$ FACU species $x = x = x = 100$
1. Betula nana	35	X	FAC	UPL speciesX 5 =
2. Abodedenction openlandicum		Y	FAC	Column Totals: 105 (A) 535 (B)
3. VACINIUM Ulizinesum	30	Y	FAC	PI = B/A = 2.6
4. VAccinium U.P.S-idaecy	20		FAC	
5. Empetrum nisnum	8		Fac	
6. Sallix Pulchice	5		Facil	
7. Picea Manana	25		FORW	
8. 5				
9.				
Total Cover. 50% of total cover	76.5 20	0% of total cov	ver: <u>30,6</u>	
VEGETATION (use scientific names of plants	T	Deminant	Indicator	Hydrophytic Vegetation Indicators:
Herb Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Status	Dominance Test is > 50% Prevalence Index is ≤ 3.0
1. Rubus champemorous	25	Y	FACW	Morphological Adaptations ¹ (Provide supporting data in
2 Geocaulos lividium	T		Facu	Notes)
3. Retasites figidis	5		FORN	Problematic Hydrophytic Vegetation ¹ (Explain)
4 Carex SPP	T		For	¹ Indicators of hydric soil and wetland hydrology must be present unless
5 RUDUS Chamarmocus	·		Eseth	disturbed or problematic.
6. Calamagosts canadensis	2		For	
7.				3 % Bare Ground
8.				% Cover of Wetland Bryophytes
9.	1	-		Total Cover of Bryophytes
10				Cover of Water
Total Cove	32			Hydrophytic Vegetation Present (Y/N):
50% of total cover		- 0% of total co	ver: 6.4	Notes: (If observed, list morphological adaptations below):

SOIL PROFILE Depth (inches) 0 - 7 1 1	DESCRIPTION: (Matrix Color (moist)	Describe	to the depth neede Redox Features	d to doc	ument the	indicator or	confirm the absend	Soil Pit Required (Y/N)		
Depth (inches)	Matrix									
	Color (moist)	%	Redox Features							
0-7" 1"		10	Color (moist)	Color (moist) % Type ¹ Loc ²		Texture	Notes			
7"					1		Fibric	Saturated		
	Frozen									
		-		-		-				
Type: C=Cond	entration, D=Deple	etion, RM	l=Reduced Matrix, C	CS=Cove	ered or Coa	ated Sand G	arains. ² Location	PL=Pore Lining, M=Matrix		
YDRIC SOIL I			100 million (100 m	200	-	and the second		FOR PROBLEMATIC HYDRIC SOILS ³		
listosol or Histe	el (A1)		Alaska Gleyed	Alaska Gleyed (A13)				Alaska Color Change (TA4) ⁴		
listic Epipedon	(A2)		Alaska Redox				Alaska Alpine Swales (TA5)			
lack Histic (A3)		Alaska Gleyed	Pores ((A15)		Alaska Redox with 2.5Y Hue			
	le (A4)							without 5Y Hue or Redder Underlying		
	ace (A12)	_					Other (Explain in Notes)			
			0200 E				appropriate landsca	pe position must be present unless		
Conclive Laye	i (ii present): Type			Jepth (in	icnes):	1				
lydric Soil Pre	sent (Y/N):	Y								
lotes:		1								

Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained	
		Leaves (B9)	Stunted or Stressed Plants (D1)
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)
Drift Deposite (P2)	Dry-Season Water Table (C2)	Notes:	
	Other (Explain in Notes):	-	
Iron Deposits (B5)			
Surface Water Present (Y/N):	Depth (in):		1.4
Water Table Present (Y/N):		Wetland Hydrology Present (Y/N):	<u> </u>
Saturation Present (Y/N):	Depth (in):		
Notes:	1		

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Image: Advantage in the second secon
Percent Cover (P): Tree (>5 dbh, >6m tall) Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): 2 Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water 25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches_ O Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) V
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Estaurine Fringe Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Perennial
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perenninlet/No Outlet
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OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/No Outlet
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OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial
OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/No Outlet
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OutletIntermittent Inter/Intermittent OutletIntermittent Inter/Perennial OutletPerennial Inter/No OutletPerennial InterNo OutPerennial Perennial Perenn
OutletIntermittent Inlet/Intermittent OutletPerennial OutletPerennial Inlet/Intermittent OutletPerennial Inlet/Intermittent Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Intermittent OutletPerennial Inlet/Perennial OutletPerennial Inlet/No Outlet
Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/NotOutlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/NotOutlet Perennial Inlet/NotOutlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perennial Inlet/Netronal Inlet/Perennial Outlet Wet: Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/NotOutlet Wet: Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/NotOutlet Wet: Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/NotOutlet Wet: Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Wet: Perennial Inlet/Perennial Outlet Exidence of Seeps and Spring Perennial Inlet/Perennial Outlet Wet: Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Evidence of Seeps and Springs (P): No Evidence Observed Sediment Observed on Wetland Substrate Flovaguent Soils Sediment Degree of Outlet Restriction (P): No Outflow Restricted Outflow
Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/Intermittent Outlet Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Intermittent Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
OutletIntermittent Inlet/Intermittent Inlet/Intermittent Inlet/Perennial OutletPerennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial OutletPerennial Perennial Perennial Observed on Wetland SubstratePronounced (>18in.)Perennial Perennial Peren
OutletIntermittent Inlet/Intermittent OutletPerennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial OutletPerennial OutletPerennial Inlet/No OutletPerennial Section Perennial Section Perennial Section Perennial Section Perennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/No OutletPerennial Inlet/Perennial Observed on Wetland SubstratePronounced (>18in.)Perennial Section Perennial Inlet/No OutletPerennial Section Perennial Inlet/No Perennial Perennial Inlet/No Perennial Inlet/Not Permeability Stratified Deposits
OutletIntermittent Intel/Intermittent Intel/Perennial OutletPerennial Intel/No OutletPerennial Intel/No OutletPerennial Intel/Intermittent Verennial OutletPerennial Intel/No OutletPerennial Intel/No OutletPerennial Intel/Intermittent Verennial OutletPerennial Intel/No OutletPerennial Intel/No OutletPerennial Intel/Intermittent Verennial OutletPerennial Intel/No OutletPerennial Outlet
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Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W61HT002 Field Target:__060

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

2. Vegetation

- 🐹 At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- S Dominance Test and Prevalence Index have been completed?

3. Soil

- ☑ Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked? Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

A Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Motes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- □ Two photos were taken for each Observation Point (vegetation/site overview)?

Andler ON 6/28/14 Anderson nature / Date Wetland Scientist (print)

6/28/14 Elouns

(print) Field Crew

Signature / Date

SITE DESCRIPTION						1130
Survey Type: Centerline 📉 Acce	ss Road (explain)	Other (expla	ain)	Field Tar	jet: <u>057</u>	Map #: 31 Map Date: 5 27
Date: 6 28 14	Project Name & No.:	Alaska LNG	26221306		Feature Id	W61 HT003
nvestigators: 16 DEGUTIS	J Anderson	Ang	MA.			Team No.: WGI
State: Alaska	Region: Alaska			542.5	5	Wei
atitude: 63° 40' 19.2	7"	Longitude			92"	Datum: WGS84
ogbook No .: Wel-2	Logbook Page No.:	5	M	P. Wal	LITON	At. Plus : SE; NW
		0			HICODO	-MIL NULSE, NW
Subregion: /pt/co.						
Tricilai			Landform (hil			s, etc.): FIAF
Nope (%): 2			Local relief (c		vex, none):	Convex
re-mapped Alaska LNG/NWI classifica re climatic/hydrologic conditions on the	UDIAND	of year?	Soil Map Unit			
	ain in Notes)	or year?	Yes_	No	stances" pre (If no, exp	sent: plain in Notes.)
re Vegetation, Soil, or Hyd	rology Significantly	y Disturbed?	No_p	_(If yes, exp	lain in Notes)	
re Vegetation, Soil, or Hyd	Irology Naturally Pi	roblematic?	No_p	_ (If yes, exp	lain in Notes)
UMMARY OF FINDINGS		-				
ydrophytic Vegetation Present? Yes	0_ No	ls t	he Sampled A	rea within a	Wetland?	Yes No
ydric Soil Present? Yes	<u>р</u> No	_ We	tland Type:	PSSI	4B	
/etland Hydrology Present? Yes	<u>р</u> No	- Ala	ska Vegetation	Classificatio	n (Viereck):	ICI, IA
otes and Site Sketch: Please include D	irectional & North Arrow,	Centerline, L	ength of featur	e, Distances	from Center	
		1 1	1.1/1.	-2 0	5	-
	Dee	aboat	cuer	-11	J -	
		6	w61. site sla	10	1 ade	N
		401	SHE SHE	cian	5 100	,
						0

VEGETATION (use scientific names of plants))			
Tree Stratum (Plot sizes:)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC (A) Total Number of Dominant Species Across All Strata:
1. Picen glassa	12	Y	FACU	% Dominant Species that are OBL, FACW, or FAC: 75% (A/B)
2.		/		
3,				
4.				Prevalence Index worksheet:
Total Cover:			0.1	Total % Cover of: Multiply by:
50% of total cover:	20	% of total cov	er: <u>2.9</u>	OBL species: 30 $x_2 = 4(1)$
Sapling/Shrub Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $30 \times 2 = 9(1)$ FAC species $126 \times 3 = 384$ FACU species $34 \times 4 = 136$
1. Picca glanca	20	У	FACU	UPL speciesX 5 =
2. Betala aladulosa	35	γ	FAC	Column Totals: 182 (A) 560 (B)
3. Rhododendron govenlendicum		Y,	FAC	PI=B/A=8
4. VACCINIUM Ulicinosum	20	Y	FAC	Citiz T FAC
5. VAccinium vills-idaea	10		FAC	Dasiphora Fruiticosa T FAC Dalia Glauca S FAC
6. Salix myrtillifolia	12		Fach	Dasiphera Fruiticosa T FAC Dalix glauca 5 FAC
7. Empeterum Alegum	20	Y	FAC	U
8. Arctuous rubra	10		FAC	
9. Salix outchra	5		FACW	
Total Cover 50% of total cover	78.5 20	0% of total cov	ver: 31.4	
VEGETATION (use scientific names of plants	s)			
Herb Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3_0
1. Petasites frigiduo	3	Y	FACW	Morphological Adaptations ¹ (Provide supporting data in
2 Equisetum scirpoides	T		FACU	Notes)
3. Calamacnostis cavadansis	8	Y	FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Unknown herb	T		ASSORATE	¹ Indicators of hydric soil and wetland hydrology must be present unless
5. Mertensia paniculata	2		FACU	disturbed or problematic.
6.			1.1.00	
7.				% Bare Ground
8.				% Cover of Wetland Bryophytes
9.				35% Total Cover of Bryophytes
10.	-			Hydrophytic Vegetation Present (Y/N):
Total Cove	13	1		Notes: (If observed, list morphological adaptations below):
50% of total cove		0% of total co	over:_2,6	Notes: (If observed, list morphological adaptations below).

SOIL		1	Date 6 28 14 F	eature	D/W61	1003		Soil Pit Required (Y/N)	
SOIL PROFI	LE DESCRIPTION: (D	escribe					confirm the absend	ce of indicators.)	
Depth (inches)	Matrix		Redox Features						
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes	
0-7"							Fibric	Saturated	
7-8"	2.54 4/2						Silt		
8"	FROZEN								
						1			
Type: C=Cc	ncentration, D=Deplet	ion RM	1=Reduced Matrix (CS=Cove	ared or Cor	ated Sand G		PL=Pore Lining, M=Matrix.	
	LINDICATORS					aled Gallu G		FOR PROBLEMATIC HYDRIC SOILS ³	
Histosol or Hi	stel (A1)		Alaska Gleyed	I (A13)			Alaska Color Change (TA4) ⁴		
Histic Epipedon (A2)			Alaska Redox (A14)					Swales (TA5)	
Black Histic (A3)		Alaska Gleyed Pores (A15)					Alaska Redox with 2.5Y Hue	
Hydrogen Sulfide (A4)							Alaska Gleyed without 5Y Hue or Redder Underlyir Layer		
	urface (A12)	_					Other (Explain		
Give details	r of hydrophytic vegeta problematic. of color change in Note yer (if present): Type:	ac ac				gy, and an a		ape position must be present unless	
Hydric Soil P	resent (Y/N):	Y							
Notes:									

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)		
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:	1		
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N): N	Depth (in):				
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N):	_Y		
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):				
Notes:					

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) 1 Sapling (<5 dbh, <6m tall)
Number of Wetland Types (M): 2 Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water 25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) Description Description
HGM Class (P): Slope Flat 2 Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Volume Volume Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Vet: Perennial Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Volume Volume Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Vet: Perenniation (P): Wetlance of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Intermittent Inlet/No Outlet
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/No OutletIntermittent Inlet/Intermittent OutletIntermittent Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Inlet/Perennial OutletPerennial Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Perennial Inlet/No Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Inlet/Outlet Class (P): No Inlet/Utet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/No Outlet Intermittent Inlet/No Outlet Perennial Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/Perennial Outlet Intermittent Inlet/Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated
Inlet/Outlet Class (P): No Inlet/Intermittent Outlet
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Perennial Perennial Wettand Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Perennial Perennial Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Perennial Inlet/No Wet: Perm. Flooded, Intermittently Exposed, Semipern. Flooded Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created File No Inter/Newsed, Semipern. Flooded Poorty Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Poorty Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Begree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow Porty Developed (5:5.7) pH Reading Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Seeps or Spring Seeps Observed Intermittent Spring Perennial Spring Basin Topographic Gradient (M): Low Gr

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

DO3 Feature ID: Field Target:

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

安 Site description, site parameters and summary of findings are complete? 赵 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- S Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- ☑ Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

Wetland Scientist (print)

Signature / Date

lEans

X / hlly bilt 6/28/14

14

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION	The state		200			1130	
Survey Type: Centerline Ac	Other (exp	olain)_X	Field Tar	get: 08	Map #: 31 Map Date: 5/2-1		
Date: 6 28 14	ate: 6 28 14 Project Name & No.: Alaska						
Investigators: K DEGUTI	S JAN	derson	AFIS	her	-	Team No.: W61	
State: Alaska	Region: Alaska		Milepost:		5	- Churt	
Latitude: 63° 40'20.59		Longitud	e:148° 45			Datum: WGS84	
Logbook No.: W61-2	Logbook Page No.:	6	Picture No.:	P-WG11	HT 004-	PH; Plug; NE; S	
SITE PARAMETERS		-		-		, 0, ,	
Subregion: Inditerion			Landform (hillslope, terrace, hummocks, etc.): FIAT				
Slope (%): 2			Local relief (concave, convex, none): CONVEX				
Pre-mapped Alaska LNG/NWI classif		Soil Map Unit Name:					
Are climatic/hydrologic conditions on Yes No (if no ex	the site typical for this time splain in Notes)	of year?			nstances" pre (If no, exp	sent: blain in Notes.)	
Are Vegetation, Soil, or H	lydrology Significant	ly Disturbed			lain in Notes)		
Are Vegetation, Soil, or H	lydrology Naturally P	Problematic?	No D	(If yes, exp	plain in Notes	.)	
SUMMARY OF FINDINGS				1.			
Hydrophytic Vegetation Present? Yes	Is the Sampled Area within a Wetland? Yes No						
Hydric Soil Present? Yes No V			Wetland Type: UPIAND				
Wetland Hydrology Present? Yes No Vo			Alaska Vegetation Classification (Viereck): IICI, IA2				
Notes and Site Sketch: Please include corridor.	Directional & North Arrow	, Centerline,	Length of featur	e, Distances	s from Center		
	\leq 11	1 11	(1)		(
	See lozboo	r w	n - 2	page	6		

for site slatch & notes

VEGETATION (use scientific names of plants)					
Tree Stratum (Plot sizes:)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: 61 Total Number of Dominant Species Across All Strata: 6	
1. Picen glanca 2.	15	Y	FACU	% Dominant Species that are OBL, FACW, or FAC:	
3.					
4				Prevalence Index worksheet:	
Total Cover:	15			Total % Cover of: Multiply by:	
50% of total cover:	7.5 20	% of total cov	er: <u>3</u>	OBL species:X 1 =	
Sapling/Shrub Stratum (26)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $0 \times 2 = 40$ FAC species: $157 \times 3 = 471 + 102$ FACU species: $157 \times 4 = 48 + 102$	
1. Salix myrtillifolia	10		FACW	UPL speciesX 5 =	
2. VACCINIUM Ulisinosum	20	Y	FAC	Column Totals: 179 (A) 539 (B) 530	
3. Arctuous rubra	5		FAC	PI=B/A= 3.10	
4 VAccinium vitis-idaea	10		FAC	Salin Oscudo moticala E FAR	
5. Rhododendron greenlandicum	30	1	FAC	Salix pseudomonticola 5 FAC Empetrum nigrum 3 FAC Rosa aciaularis 2 FACU Sulix arbusculoides T PACU	
6. Salix glanca	10		FAC	Rosa acialaris 2 FACU	
7. Betula hana	40	Y	FAC	Sulix arbusculaides T PARW	
8. Alnus tenuifolia	8		FAC		
9. Picen clause	10		FACU		
U Total Cover:	153		2 ~ (
50% of total cover	76.5 20	0% of total cov	ver: 20.6		
VEGETATION (use scientific names of plants	.)				
Herb Stratum ()	Absolute	Dominant	Indicator	Hydrophytic Vegetation Indicators:	
<u></u>	% Cover Species? Status Dominance Test is > 50%		Dominance Test is > 50% Prevalence Index is ≤ 3.0		
1. Calamanastis canadensis	3	Y Y	FAC	Morphological Adaptations ¹ (Provide supporting data in	
2. Mertensia DANiculata	T	1	FACU	Notes)	
3. Petas, les frigidus	T		FACW	Problematic Hydrophytic Vegetation ¹ (Explain)	
4. Par 69	8	Y	Assume	¹ Indicators of hydric soil and wetland hydrology must be present unless	
5. Unknown herb	T		Accume	disturbed or problematic.	
6.			Linc		
7.				% Bare Ground	
8		1		% Cover of Wetland Bryophytes	
9.				Total Cover of Bryophytes	
		1	-	- % Cover of Water	
10.	1			Hydrophytic Vegetation Present (Y/N):	
Total Cover 50% of total cover		- 0% of total co	over: 0.2	Notes: (If observed, list morphological adaptations below):	

SOIL	The section of the	1	Date 6 28 14	Feature I	D WEIF	17004	and the second	Soil Pit Required (Y/N)		
SOIL PROFIL	E DESCRIPTION:	(Describe	to the depth nee	ded to doc	ument the	indicator or o	confirm the absence	of indicators.)		
Depth	Matrix	27.2	Redox Features	6						
inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes		
0-7.5"	1. <u></u>						Fibric	Dry		
2.5-5"					1.		Moist Fibric	Moit		
5" + 16"	2.57 41	70	104R 5/6	30	C	M	S.It	Not distinct on prominent		
16"	Cobbles					-				
	icentration, D=Dep	letion, RM	Reduced Matri	, CS=Cove	ered or Co	ated Sand G		PL=Pore Lining, M=Matrix		
Histosol or Histel (A1) Alaska Gleyed (A13)						Alaska Color Change (TA4) ⁴				
Histic Epipedon (A2)			Alaska Redox (A14)					wales (TA5)		
Black Histic (A3)			Alaska Gleyed Pores (A15)					Alaska Redox with 2.5Y Hue		
Hydrogen Sulfide (A4)							Alaska Gleyed without 5Y Hue or Redder Underly Layer			
	face (A12)						Other (Explain in			
Sive details of	of hydrophytic veg oblematic. <u>f color change in N</u> er (if present): Typ	otes.	te primary indicat			egy, and an a		e position must be present unless		
lydric Soil Pr	esent (Y/N):	N								
lotes:	oes not s	satisfi	(A11) 0	r Ak	Redox	w/2.51	Hues			

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)		
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)		
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3) Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)		
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)		
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:	/		
Algal Mat or Crust (B4)	Other (Explain in Notes):				
Iron Deposits (B5)					
Surface Water Present (Y/N): N	Depth (in):				
Water Table Present (Y/N): N	Depth (in):	Wetland Hydrology Present (Y/N):	N		
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):				
Notes:					

VEGETATION VARIABLES P= Plot, M=	Matrix
Forested Evergreen-Needle-leaved Scrub Shrut Evergreen-Broad-leaved Persistent Aquatic Bed	kingForested-Deciduous-Needle-leavedForested-Deciduous-Broad-leaved Scrub Shrub-Deciduous-Needle-leavedScrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Needle-leavedEmergent-Non-persistentEmergent-
Percent Cover (P): Tree (>5 dbh, >6m tall) Dwarf shrub (<0.5m) Tall herb (≥1m	Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m)) Short herb (<1m) Moss-Lichen Floating Submerged
Number of Wetland Types (M):	Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
80%) Very High Density (80-100%)_	
Interspersion of Cover & Open Water (P): Peripheral Cover >75% Stattered	100% Cover or Open Water <25% Scattered/Peripheral Cover 26-75% Scattered or or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant sp	becies) Medium (5-25 species) High (25)
Presence of Islands (M): Absent (none)	One or Few Several to Many N/A
	No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site
Dead Woody Material (P): Low Abundance (C Abundant (>50% of surface)	-25% of surface) Moderately Aprindant (25-50% of surface)
Vegetative Interspersion (P): Low (large p High (small groupings, diverse and intersperse	atches, concentric rings) Moderate (broken irregular rings) d)
HGM Class (P): Slope Flat	Lacustrine Fringe Estaurine Fringe
	X
Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Sandy	Histosol:FibricHistosol:HemicHistosol: Sapric Mineral: SiltyMineral: Clayey
HYDROLOGIC VARIABLES	
Inlet/Outlet Class (P): No Inlet/Outlet	No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial et/Perennial Outlet
Wet: Perm. Flooded, Intermittently Exposed, S	nally Flooded, Temporarily Flooded, Saturated
Created	Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Microrelief of Wetland Surface (P): Abjent_	Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (B). No Ov Return Interval >5 yrs	erbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (B. No Outflow	
	cumneutral (5.5-7.4) Alkaline (>7.4) Acid (\\$5.5) pH Reading
Surficial Glacial Depositunder Wetland (P): Glacial Till/Not Permeable	High Permeability Stratified Deposits Low Permeability Stratified Deposits
Basin Topographic Gradient (M): Low C Evidence of Seeps and Springs (P): No See	Bradient (<2%) High Gradient (≥2%) ps or Springs Seeps Observed Intermittent Spring Perennial Spring
LANDSCALE VARIABLES (M)	
	Upstream & Downstream Unknown Only Connected Below
Westand Land Use: High Intensity (i.e., a	g.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Vatershed Land Use: 0-5% Rural	5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres)	m (10-100 acres) Large (>100 acres)
Crew Chief QA/QC check:	GPS Technician QA/QC check: Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

 Feature ID:
 WeiHTrocy
 Field Target:
 050
 Date:
 62014

 For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later , identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

Z Each logbook page is initialed and dated?

7. Maps

- Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

Χ. Proderson

Wetland Scientist (print)

1. Conderson 6/28/14

EGAD

Field Crew Chief (print

Signature / Date

6/28/14

SITE DESCRIPTION					1130
Survey Type: Centerline 🖄 Acce	ss Road (explain)	Other (expl	ain)	Field Target: 059	Map #: 39 Map Date: 5 27 1
Date: 6 29 14	Project Name & No.:	Alaska LNG	26221306	Feature Id	
Investigators: K VEGOTIS	J ANDUSON)	A Fisher		Team No.: WG
State: Alaska	Region: Alaska		1	544.85	
Latitude: 63° 38' 29.10'	•	Longitude		44' 20.12"	Datum: WGS84
Logbook No.: WG(-7	Logbook Page No.:	BA 9	Picture No.:	P. WGIHTOOS_S	RI; Plus; SE; NE
SITE PARAMETERS	ALL	1 1		1000 miles	2
Subregion: (ntuim			Landform (hi	llslope, terrace, hummock	s, etc.): FlAts
Slope (%): 2			Local relief (d	concave, convex, none):	Convex
Pre-mapped Alaska LNG/NWI classifica	ition: UDIAMO		Soil Map Uni		only cr
Are climatic/hydrologic conditions on the Yes No (if no expl		of year?		ormal Circumstances" pre	
Are Vegetation, Soil, or Hyd		v Disturbed?	Yes K	No (If no, exp (If yes, explain in Notes	plain in Notes.)
Are Vegetation, Soil, or Hyd			No V	(If yes, explain in Notes	
SUMMARY OF FINDINGS	<u> </u>				.,
Hydrophytic Vegetation Present? Yes_	× No	ls	the Sampled A	rea within a Wetland?	Yes NoX
Hydric Soil Present? Yes_	X No X	We	etland Type:	UPLAND	PEATE PSS4/13
Wetland Hydrology Present? Yes	X No	— Ala	iska Vegetation	Classification (Viereck):	TAZI CIABO
Notes and Site Sketch: Please include D corridor.				re, Distances from Center - 2, Page skatch 5' Note	
		ſ	0 · -i·t		Thomas by

VEGETATION (use scientific names of plants	;)	1		
Tree Stratum (Plot sizes: 26)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B)
1. Picen danca	25	Y	FACU	% Dominant Species that are OBL, FACW, or FAC: <u>75</u> (A/B)
2. 0				
3.		1		Alter and the state of the stat
4.		1		Prevalence Index worksheet:
Total Cover	25	1	1	Total % Cover of: Multiply by:
50% of total cover	: 20	% of total cov	/er:	OBL species:X 1 =
Sapling/Shrub Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $x = 2$ FAC species $y = 354$ FAC species $y = 40$ $x = 160$
1. Pices Janea	15		FACU	UPL speciesX 5 =
2. Botila SendulosA	10		FAC	Column Totals: 159 (A) 516 (B)
3. Arctous rubra	25	Y	FAC	PI = B/A = 3.25
4. VAccinium uliginosum	40	Y.	FAC	
5. Rhobodendaon amentandicum	20	Y	FAC	
6. Vaccinium vitis- dava	5	,	FAC	
7. Empetrum nigeum	8		FAC	
8. Salix pseudomyrsinites	2		HERE AN	
9. Saline glaucia	10.		FAC	
Total Cover 50% of total cover)% of total cov	ver: 27.4	
VEGETATION (use scientific names of plants	s)			
Herb Stratum (_ 2(a))	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators: Dominance Test is > 50% Prevalence Index is ≤ 3.0
1. Petosites Frisidus	1		FACW	
2. PoA 50.	1		Assume FAC	Morphological Adaptations ¹ (Provide supporting data in Notes)
3. Mertensia pavioulata	T		FAC	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Unknown herb	T		FAC	¹ Indicators of hydric soil and wetland hydrology must be present unless
5.			1.10	disturbed or problematic.
6.			1	
7.				% Bare Ground
8.				% Cover of Wetland Bryophytes
9.			1	Total Cover of Bryophytes
10,	1			% Cover of Water
Total Cove	r VA			_ Hydrophytic Vegetation Present (Y/N):
50% of total cove		0% of total co	ver:	Notes: (If observed, list morphological adaptations below):
Herb stratum added to s				
			COUCY	

NN

N-			Inalici					V		
SOIL					DW616		-	Soil Pit Required (Y/N)		
SOIL PROFIL	E DESCRIPTION:	(Describe	to the depth neede	ed to doc	ument the	indicator or	confirm the absen	ce of indicators.)		
Depth	Matrix		Redox Features			_				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes		
0-3				310			Fronc	Saturated		
3-7							Hemic	Saturated		
7-13"	1042312	90	IOYA 516	10	C	M	Smally Silt			
13"	Petusal - 17A	AD PAN								
				-						
¹ Type: C=Co	icentration, D=Dep	letion, RM	=Reduced Matrix,	CS=Cov	ered or Co	ated Sand G	Frains. ² Location	n: PL=Pore Lining, M=Matrix.		
HYDRIC SOIL	INDICATORS						INDICATORS	FOR PROBLEMATIC HYDRIC SOILS ³		
Histosol or His	stel (A1)	-	Alaska Gleyed (A13)				Alaska Color	Change (TA4) ⁴		
Histic Epipedo	on (A2)		Alaska Redo	Alaska Redox (A14)				Swales (TA5)		
Black Histic (A	(3)		Alaska Gleye	d Pores	(A15)		Alaska Redox with 2.5Y Hue			
Hydrogen Sulf	ïde (A4)	-						Alaska Gleyed without 5Y Hue or Redder Underlying Layer		
Thick Dark Su							Other (Explain in Notes)			
⁴ Give details of	of hydrophytic veg roblematic. <u>f color change in N</u> /er (if present): Typ	otes.	0.1	r of wetla Depth (ii		igy, and an a	appropriate landso	cape position must be present unless		
Hydric Soil P	resent (Y/N):	H	Y							
Notes:		7"25	aturbed az	pener j				1		

Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)	
Inundation Visible on Aerial Imagery			
(B7)	Drainage Patterns (B10)	Geomorphic Position (D2)	
Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)	
Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)	
Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)	
Dry-Season		<i></i>	
Other (Explain in Notes):]		
Depth (in):		V	
Depth (in); /3"	Wetland Hydrology Present (Y/N):		
Depth (in): 3 "			
	Concave Surface (B8) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Other (Explain in Notes): Depth (in): Depth (in):	Concave Surface (B8) Living Roots (C3) Marl Deposits (B15) Presence of Reduced Iron (C4) Hydrogen Sulfide Odor (C1) Salt Deposits (C5) Dry-Season Water Table (C2) Notes: Other (Explain in Notes): Depth (in): / 3 // Wetland Hydrology Present (Y/N):	

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Forested-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent- Forested-Deciduous-Broad-leaved Persistent Aquatic Bed Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall)
Number of Watland Types (M): Evenness of Wetland Type Distribution (M): Even Highly Uneven Moderately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) 80%) Very Nigh Density (80-100%)
Interspersion of Cover & Den Water (P): 100% Cover or Open Water <25% Scattered/Perpheral Cover 26-75% Scattered or Peripheral Cover Peripheral Cover >75% Scattered or Peripheral Cover N/A 26-75% Scattered or Peripheral Cover 26-75% Scattered or Peripheral Cover
Plant Species Diversity (P): Low < 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P: No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rinos) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Funge Depressional Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
HYDROLOGIC VARIABLES
Intermittent (Intermittent Intermittent Outlet No. Intermittent Interm
Inlet/Outlet Class (P): No Inlet/OutletNo Inlet/Intermittent OutletNo Inlet/Perennial OutletIntermittent Inlet/Intermittent OutletPerennial Inlet/Perennial Inl
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Orier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittenity Exposed, Semiperm. Flooded
Inlet/Intermittent Outlet Perannial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittentry Exposed, Semiperm. Flooded Sediment Observed on Wetland Substrate Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Orier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittenity Exposed, Semiperm. Flooded
Inlet/Intermittent Outlet Perannial Inlet/Perennial Outlet Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittentry Exposed, Semiperm. Flooded Sediment Observed on Wetland Substrate Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Orier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittenny Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Inlet/Intermittent Outlet Perannial Inlet/Perennial Outlet Wetland Water Regime (P): Orier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded Evidence of Sedimentation (P): No Evidence Observed Evidence of Sedimentation (P): No Evidence Observed Sediment Observed on Wetland Substrate Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.) Frequency of Overback Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Degree of Outlet kestriction (P): No Outflow Restricted Outflow Unrestricted Outflow Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Arid (<5.5)
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Orier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittenny Exposed, Semiperm. Flooded
Inlet/Intermittent OutletPerannial Inlet/Perennial Outlet
Inlet/Intermittent Outlet Perennial Inlet/Perennial Outlet Wetland Water Regime (P): Orier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittenny Exposed, Semiperm. Flooded
Inlet/Intermittent Outlet Performial Inlet/Perennial Outlet Wetland Water Regime (P): Orier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittenny Exposed, Semiperm. Flooded
Inlet/Intermittent Outlet
Inlet/Intermittent OutletPerannial Inlet/Perennial Outlet
Inter/Intermittent Outlet
Inlet/Intermittent Outlet
Inter/Intermittent Outlet

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

Feature ID: W61 HT005 Field Target: 059

(K.

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
 Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Ø Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- Each logbook page is initialed and dated? 1

7. Maps

- Wetland boundaries have been corrected if necessary?
- Maps are initialed and dated?

8. Photos

- Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- □ Two photos were taken for each Observation Point (vegetation/site overview)?

ndersm Wetland Scientist (print)

1 1a/29/14 rolean

ms

Field Crew Chief (print)

Signature /-Date

6/29/14 Х

Signature / Date

k-					Ð			
SITE DESCRIPTION		- 15-			130 ·			
Survey Type: Centerline_X Acces	ss Road (explain)	Other (expl	ain)	Field Target: 072	Map #: W Map Date: 5 01 14			
Date: 6 29 14	Project Name & No.:	Alaska LNG	-NG 26221306 Feature Id: W61 HTOO 6					
Investigators: K DECUTIS	JANderson	N A	Fisher		Team No.: WG (
State: Alaska	Region: Alaska		Milepost:	572				
Latitude: 43° 20' 57	.98"	Longitude	: 149° 0	4 30.38"	Datum: WGS84			
Logbook No .: WG1-2	Logbook Page No.:	10	Picture No.:	P- W61 HT006 -	-Pit: Plus : WTE]			
SITE PARAMETERS		-	200-0		, 9,			
Subregion: Intaion			Landform (hill	lslope, terrace, hummock	s, etc.): torrage			
Slope (%):				concave, convex, none):				
Pre-mapped Alaska LNG/NWI classifica	tion: PENIE		Soil Map Unit	Name:				
Are climatic/hydrologic conditions on the Yes No (if no expl	site typical for this time of	of year?	Are "No Yes	ormal Circumstances" pre	esent: plain in Notes.)			
Are Vegetation, Soil, or Hyd	Irology Significantly	y Disturbed?	No p	_(If yes, explain in Notes)			
Are Vegetation, Soil, or Hyd	Irology Naturally P	roblematic?	No p	_ (If yes, explain in Notes	5.)			
SUMMARY OF FINDINGS		-						
Hydrophytic Vegetation Present? Yes_	10 No	_ Is	Is the Sampled Area within a Wetland? Yes No					
Hydric Soil Present? Yes	ЮNo	_ wa	Wetland Type: PSSIC					
Wetland Hydrology Present? Yes	10 No	— Ala	Alaska Vegetation Classification (Viereck): 11-13 IL-BI					
Notes and Site Sketch: Please include D	irectional & North Arrow,	Centerline,	Length of featur	re, Distances from Center	rline, Photo Locations, and Survey			
corridor_	Cree la	zbook	W61-2 es é site	page				
1		0						
	(to not	es à site	e sketch				

VEGETATION (use scientific names of plant	s)			
Tree Stratum (Plot sizes: 2.0')	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: (A) Total Number of Dominant Species Across All Strata: (B)
1. N/A	-		-	% Dominant Species that are OBL, FACW, or FAC:
2.				
3.				
4.				Prevalence Index worksheet:
Total Cove 50% of total cove	('	% of total cov	ler:	$\begin{array}{ccc} \underline{\text{Total \% Cover of:}} & \underline{\text{Multiply by:}} \\ \text{OBL species:} & \underline{5} & \underline{5} \\ \end{array}$
Sapling/Shrub Stratum ()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $67 \times 2 = 114$ FAC species $63 \times 3 = 189$ FACU species $x = x = 189$
1. Dasiphora fruiticosA	40	Y	FAC	UPL species X 5 =
2. Salix plehra	50	Ý	FACU	Column Totals: 105 (A) 308 (B)
3. VAccinium ulisinosum	5	1	FAC	PI = B/A = 2.46
4. Andromeda polifolia	2		FACW	
5. Betula Jondulosa	2		FAC	-
6. Salic arbus cubides	5		FACW	
7. Salix pseudomonticola	5		FAC	
9.			-	-
Total Cove 50% of total cove	r: <u>54.5</u> 20)% of total cov	ver: <u>A.K</u>	
VEGETATION (use scientific names of plant	ts)		1	1
Herb Stratum()	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Hydrophytic Vegetation Indicators:
1. Comarum palustre	3		OBL	Prevalence Index is ≤ 3.0 Morphological Adaptations ¹ (Provide supporting data in
2. Rubus arcticus	1		FAC	Notes)
3. CAPER 50 (NOINFLORES.)	10	У	AGOUNE	Problematic Hydrophytic Vegetation ¹ (Explain)
4. Equisation fluvientile	1		OBL	¹ Indicators of hydric soil and wetland hydrology must be present unless
5. Catha palustris	i		OBL	disturbed or problematic
6.				
7,	-			% Bare Ground
8.				% Cover of Wetland Bryophytes
9.				<u>45%</u> Total Cover of Bryophytes <u>45</u> % Cover of Water
10.				Hydrophytic Vegetation Present (Y/N):
Total Cove 50% of total cove	- 6	0% of total cov	ver: 3.2	Notes: (If observed, list morphological adaptations below):

SOIL			Date 0 21 Fea	ture l	D Willes +	1006		Soil Pit Required (Y/N)		
SOIL PROFII	LE DESCRIPTION: (Describe	to the depth needed	to doc	ument the	indicator or	confirm the abser	nce of indicators.)		
Depth	Matrix		Redox Features							
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes		
0-14					-		Fibric	Saturated		
							1			
		-								
				1						
	ncentration D=Denl	etion RA	/ /=Reduced Matrix, CS		ered or Cor	ated Sand C		n: PL=Pore Lining, M=Matrix		
	L INDICATORS		-reduced matrix, oc			aleu Sanu e		S FOR PROBLEMATIC HYDRIC SOILS		
Histosol or Hi	stel (A1)		Alaska Gleyed (Alaska Gleyed (A13)				Alaska Color Change (TA4) ⁴		
Histic Epiped	on (A2)		Alaska Redox (/				Alaska Alpine Swales (TA5)			
Black Histic (/	43)		Alaska Gleyed F	ores	(A15)		Alaska Redox with 2.5Y Hue			
	fide (A4)	-						eyed without 5Y Hue or Redder Underlying		
Thick Dark Su	urface (A12)						Other (Explain in Notes)			
disturbed or p ⁴ Give details	r of hydrophytic vege roblematic. of color change in No yer (if present): Typ	otes.	1.			gy, and an a		cape position must be present unless		
	Present (Y/N):	V	3							

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 0	SECONDARY INDICATORS (2 or more required)			
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)			
High Water Table (A2)	Inundation Visible on Aerial Image (B7)	Drainage Patterns (B10)	Geomorphic Position (D2)			
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)			
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)			
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:				
Algal Mat or Crust (B4)	Other (Explain in Notes):					
Iron Deposits (B5)						
Surface Water Present (Y/N): Y	Depth (in): 10 ^{tt}		V			
Water Table Present (Y/N): Y	Table Present (Y/N): Y Depth (in):		<u> </u>			
Saturation Present (Y/N): (includes capillary fringe)	Depth (in):					
Notes						

while

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Persistent Aquatic Bed Forested-Deciduous-Needle-leaved Emergent-Non-persistent
Percent Cover (P): Tree (>5 dbh, >6m tall) Sapling (<5 dbh, <6m tall) Tall shrub (2-6m) Short shrub (0.5-2m) 107 Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60-80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <25% Scattered/Peripheral Cover
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches.
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed) >>>>>>>>>>>>>>>>>>>>>>>>>>>>
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES Soil Factors (P): Soil Lacking Mineral: Gravelly Mineral: Sandy Mineral: Gravelly Mineral: Sandy
HYDROLOGIC VARIABLES
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Intermittent Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/No Outlet Perennial Inlet/No Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perenninlet/Perennial Inlet/Perenninlet/Perennial Inle
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed 20 Sediment Observed on Wetland Substrate Fluvaquent Soils Sediment Created
Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) 🞾 Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2-5 yrs
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading 7.64
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits Low Permeability Stratified Deposits Glacial Till/Not Permeable Unknow N
Basin Topographic Gradient (M): Low Gradient (<2%)
LANDSCAPE VARIABLES (M) Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below
Only Connected Above Connected Upstream & Downstream 20 Unknown
Wetland Land Use: High Intensity (i.e., ag.) Moderate Intensity (i.e., forestry) Low Intensity (i.e. open space)
Watershed Land Use: 0-5% Rural 5-25% Urbanized 25-50% Urbanized >50% Urbanized
Size: Small (<10 acres) Medium (10-100 acres) Large (>100 acres)
Crew Chief QA/QC check: GPS Technician QA/QC check: Jenning A. Derson Page 4 of 4

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Site description, site parameters and summary of findings are complete?
 A detailed site sketch is included in logbook?

2. Vegetation

- At least 80% of onsite vegetation has been keyed to species, or collected for later identification?
- Vegetation names are entered legibly for all strata present?
- Cover calculations are complete and correct?
- All dominant species have been determined and recorded per strata?
- Indicator status is correct for each species?
- Dominance Test and Prevalence Index have been completed?

3. Soil

- Soil profile is complete?
- Appropriate hydric soil indicators are marked?

4. Hydrology

- Appropriate hydrology indicators are marked?
- Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook

- In Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?
- A Each logbook page is initialed and dated?

7. Maps

- ☑ Wetland boundaries have been corrected if necessary?
- ☑ Maps are initialed and dated?

8. Photos

- · Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?
- Two photos were taken for each Observation Point (vegetation/site overview)?

Х mila amleson 6/29/14 Anderson Signature / Date Wetland Scientist (print)

UNTIS

Field Crew Chief (print)

Signature / Date

SITE DESCRIPTION		A	2000			1	180
Survey Type: Centerline Ac	cess Road (explain)	_ Other (expl	ain)	Field Targ	et: 080	Map #: 54	Map Date: 5271
Date: 629/14	Project Name & No.	: Alaska LNC	6 26221306		Feature Id:	WelHT	760
Investigators: 12 DEGUTIS	J Anderson	A Fisher	~		-	Team No.:	WGI
State: Alaska	Region: Alaska		Milepost:	590.1			
Latitude: 63° 09' 27.	33"	Longitude	: 149° 2	4'38.2	7"	Datum: W	GS84
Logbook No.: Wel-2	Logbook Page No.:	12	Picture No.:	P-WGIE	MOOT.	-Pit; Plu	SiW: N
SITE PARAMETERS					1017		0. 7
Subregion Interior	Landform (hillslope, terrace, hummocks, etc.): FIA-t						
Slope (%):			Local relief (concave, convex, none):				
Pre-mapped Alaska LNG/NWI classifi	cation: PEMIF		Soil Map Unit Name:				
Are climatic/hydrologic conditions on Yes No (if no example to the second se	Are "Normal Circumstances" present: Yes No (If no, explain in Notes.)						
Are Vegetation, Soil, or ⊢	lydrology Significan	tly Disturbed?	No p	_(If yes, expl	ain in Notes)		
Are Vegetation, Soil, or H	lydrology Naturally	Problematic?	No yo	_ (If yes, expl	ain in Notes)	
SUMMARY OF FINDINGS							
Hydrophytic Vegetation Present? Yes	. <u> </u>	Is	the Sampled A	rea within a	Wetland?	Yes_	No
Hydric Soil Present? Yes	P No	wa	Vetland Type: PEMIE				
Wetland Hydrology Present? Yes	Alaska Vegetation Classification (Viereck):						

Notes and Site Sketch: Please include Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor.

See logbook W61-2, page 12 For site sketch & notes

NW

VEGETATION (use scientific names of plants)	-		
Tree Stratum (Plot sizes: 26 15)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	Dominance Test worksheet: No. of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B)
1. N A				% Dominant Species that are OBL, FACW, or FAC: 75% (A/B)
2.				% Dominant Species that are OBL, FACW, of FAC(AB)
3.				
4.	0.1			Prevalence Index worksheet:
Total Cover:	NA			Total % Cover of: Multiply by:
50% of total cover:	20	% of total cov	er:	OBL species: 30 x 1 = 30
Sapling/Shrub Stratum (15)	Absolute % Cover	Dominant Species? (Y/N)	Indicator Status	FACW species: $3 \times 2 = 6$ FAC species $75 \times 3 = 700 \times 3 = 40$ FACU species $10 \times 4 = 40$
1. Picen alanca	10	Y	FACU	UPL speciesX 5 =
2. Betula NANA	2		FAC	Column Totals: 18 (A) 301 (B)
3. Dasiphora fruiticosa	8	Y	FAC	PI = B/A = 2.55
4. VACCINIUM DRUCOCOUS	1		OBL	
5. Andromeda policita	1		FACW	
6. Comarum palustre	3		OBL	
7. pecinium Ulizinosum	2		FAC	
8. O				
9.		1		
Total Cover		4	C 11	
50% of total cover	13.6 20	% of total cov	ver: 5.9	
VEGETATION (use scientific names of plants	13		4.8	
Herb Stratum ()	Absolute	Dominant	Indicator	Hydrophytic Vegetation Indicators:
	% Cover	Species? (Y/N)	Status	Dominance Test is > 50%
1. Pedicularis Abriddorica	1	(111)	FACW	Prevalence Index is ≤ 3.0
	1		OBL	Morphological Adaptations ¹ (Provide supporting data in
CONSETUNI TIDVIATILE	1	1	FACW	Notes) Problematic Hydrophytic Vegetation ¹ (Explain)
1 arstanthera aritatates	1		1	
Unosera rotuntitolia	T		OBL	¹ Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.
Viola Innysdatit Palustris	T		FACW	
6. Beckmannia Syzicache	25		OBL	0 % Bare Ground
7. Festuca altaica	60	/	FAC	Cover of Wetland Bryophytes
8. Potentilla 50.	3		FAC	Total Cover of Bryophytes
9 UNKNOWN 50.	T		Assuma	% Cover of Water ✓
10. Comarum pallistre	3		OBL	Hydrophytic Vegetation Present (Y/N):
Total Cover		7	182	Notes: (If observed, list morphological adaptations below):
50% of total cover	20 21 21	D% of total co	18.8	Somple plot shape altered to exclude Adjacant upland
			÷.	401Higs

SOIL			Date 6 24 14 Fe	ature	DWGIH	1007		Soil Pit Required (Y/N)		
SOIL PROFIL	E DESCRIPTION:	(Describe	e to the depth needed	to doc	ument the	indicator or	confirm the abser	nce of indicators.)		
Depth (inches)	Matrix		Redox Features							
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Notes		
0-10							Fibric	Saturated		
10-18"							Hemic	Sciturated		
		_		-		-		-		
		-		-		1				
							-	4		
		-								
¹ Type: C=Cor	centration, D=Depl	etion, RN	/I=Reduced Matrix, C	S=Cov	ered or Co	ated Sand C	Grains. ² Locatio	n: PL=Pore Lining, M=Matrix		
HYDRIC SOIL	INDICATORS			100.00			INDICATOR	S FOR PROBLEMATIC HYDRIC SOILS ³		
Histosol or Histel (A1)			Alaska Gleyed	Alaska Gleyed (A13)				Alaska Color Change (TA4) ⁴		
Histic Epipedon (A2)			Alaska Redox (A14)				Alaska Alpine Swales (TA5)			
Black Histic (A3)			Alaska Gleyed Pores (A15)				Alaska Redox with 2.5Y Hue			
Hydrogen Sulfide (A4)							Alaska Gleyed without 5Y Hue or Redder Underly Layer			
Thick Dark Surface (A12)							Other (Explain in Notes)			
disturbed or pr						ogy, and an		cape position must be present unless		
Hydric Soil P	resent (Y/N):	γ								
Notes:							4.0			

HYDROLOGY PRIMARY INDICATO	ORS (any one indicator is sufficient)	SECONDARY INDICATORS (2 or more required)				
Surface Water (A1)	Surface Soil Cracks (B6)	Water-stained Leaves (B9)	Stunted or Stressed Plants (D1)			
High Water Table (A2)	Inundation Visible on Aerial Imagery (B7)	Drainage Patterns (B10)				
Saturation (A3)	Sparsely Vegetated Concave Surface (B8)	Oxidized Rhizospheres along Living Roots (C3)	Shallow Aquitard (D3)			
Water Marks (B1)	Marl Deposits (B15)	Presence of Reduced Iron (C4)	Microtopographic Relief (D4)			
Sediment Deposits (B2)	Hydrogen Sulfide Odor (C1)	Salt Deposits (C5)	FAC-Neutral Test (D5)			
Drift Deposits (B3)	Dry-Season Water Table (C2)	Notes:				
Algal Mat or Crust (B4)	Other (Explain in Notes):					
Iron Deposits (B5)						
Surface Water Present (Y/N): Y	Depth (in):	No. a contraction	Y			
Water Table Present (Y/N):	Depth (in):	Wetland Hydrology Present (Y/N):				
Saturation Present (Y/N): (includes capillary fringe)	Depth (in): 0					
Notes						

VEGETATION VARIABLES P= Plot, M= Matrix
Primary Vegetation Type (P): Vegetation Lacking Forested-Deciduous-Needle-leaved Forested-Deciduous-Broad-leaved Forested-Evergreen-Needle-leaved Scrub Shrub-Deciduous-Needle-leaved Scrub Shrub-Deciduous-Broad-leaved Forested-Deciduous-Broad-leaved Scrub Shrub-Evergreen-Broad-leaved Scrub Shrub-Evergreen-Needle-leaved Emergent-Non-persistent Emergent-Non-persistent Persistent Aquatic Bed Image: Constant in the second in the
Percent Cover (P): Tree (>5 dbh, >6m tall) Ø Sapling (<5 dbh, <6m tall) IO Tall shrub (2-6m) Ø Short shrub (0.5-2m) Ia Dwarf shrub (<0.5m)
Number of Wetland Types (M): Evenness of Wetland Type Distribution (M): EvenHighly UnevenModerately even
Vegetation Density/Dominance (P): Sparse (0-20%) Low Density (20-40%) Medium Density (40-60%) High Density (60- 80%) 80%) Very High Density (80-100%)
Interspersion of Cover & Open Water (P): 100% Cover or Open Water <a><25% Scattered/Peripheral Cover 26-75% Scattered or Peripheral Cover N/A
Plant Species Diversity (P): Low (< 5 plant species) Medium (5-25 species) High (>25)
Presence of Islands (M): Absent (none) One or Few Several to Many N/A
Cover Distribution of Dominant Layer (P): No Veg Solitary, Scattered Stems 1 or More Large Patches; Parts of Site Open Small Scattered Patches Continuous Cover
Dead Woody Material (P): Low Abundance (0-25% of surface) Moderately Abundant (25-50% of surface) Abundant (>50% of surface)
Vegetative Interspersion (P): Low (large patches, concentric rings) Moderate (broken irregular rings) High (small groupings, diverse and interspersed)
HGM Class (P): Slope Flat Lacustrine Fringe Depressional Riverine Estaurine Fringe
SOIL VARIABLES
Soil Factors (P): Soil Lacking Histosol:Fibric Histosol:Hemic Histosol: Sapric Mineral: Gravelly Mineral: Sandy Mineral: Silty Mineral: Clayey
Inlet/Outlet Class (P): No Inlet/Outlet No Inlet/Intermittent Outlet No Inlet/Perennial Outlet Intermittent Inlet/No Outlet Intermittent Inlet/Intermittent Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Perennial Outlet Perennial Inlet/Perennial Inlet/Pere
Wetland Water Regime (P): Drier: Seasonally Flooded, Temporarily Flooded, Saturated <u>X</u> Wet: Perm. Flooded, Intermittently Exposed, Semiperm. Flooded
Evidence of Sedimentation (P): No Evidence Observed >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Created Microrelief of Wetland Surface (P): Absent Poorly Developed (6in.) Well Developed (6-18in.) Pronounced (>18in.)
Frequency of Overbank Flooding (P): No Overbank Flooding <i>1</i> Return Interval 1-2 yrs Return Interval 2-5 yrs Return Interval 2
Degree of Outlet Restriction (P): No Outflow Restricted Outflow Unrestricted Outflow
Water pH (P): No surface water Circumneutral (5.5-7.4) Alkaline (>7.4) Acid (<5.5) pH Reading 5.86
Surficial Glacial Deposit Under Wetland (P): High Permeability Stratified Deposits <u></u> Low Permeability Stratified Deposits Glacial Till/Not Permeable
Basin Topographic Gradient (M): Low Gradient (<2%) → High Gradient (≥2%) Evidence of Seeps and Springs (P): No Seeps or Springs > Seeps Observed Intermittent Spring Perennial Spring
LANDSCAPE VARIABLES (M)
Wetland Juxtaposition: Wetland Isolated Wetlands within 400m, Not Connected Only Connected Below
Only Connected Above Connected Upstream & Downstream Unknown

Crew Chief QA/QC check:

Size:

>50% Urbanized

for Anders

Wetland Determination Form QA/QC Checklist

This form to be completed before leaving the field site.

6/20 Feature ID: UGI HT007 Field Target:_____660 Date:

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Site description, site parameters and summary of findings are complete?
- A detailed site sketch is included in logbook?

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- Soil profile is complete? Appropriate hydric soil indicators are marked?

4. Hydrology

Appropriate hydrology indicators are marked? Surface water, water table, and saturation depths are recorded if present?

5. Functions and Values

Vegetation, soil, hydrologic variables, and landscape variables complete if site is a wetland?

6. Field Logbook



Notes have been recorded at each site, including general description, sketch, and accuracy of pre-mapped wetland boundary as appropriate?

Each logbook page is initialed and dated? A

7. Maps



Wetland boundaries have been corrected if necessary? Maps are initialed and dated?

8. Photos

Four photos were taken for each Wetland Determination Data Form (2 vegetation, 1 soil pit, 1 soil plug)?

soil pit, 1 soil plug)?

□ Two photos were taken for each Observation Point (vegetation/site overview)?

nderson Wetland Scientist (print)

Х Jenly Anderen 6/29/14 Signature /

6/27/14

Field Crew Chief (print)

Signature / Date



		(Confer						
SITE DESCRIPTION		2000 Conikon						
Survey Type: Centerline Acc	Other (expl	ain)_ 1⁄2		get: <u>0%</u>	Map #: 5 Map Date: 5 h			
Date: (0(29(14	Project Name & No.: A	Alaska LNG 26221306 Feature Id				WGI HTOOB		
Investigators: K Deputis	JAnderson	A	Fisher			Team No.: (JG)		
State: Alaska	Region: Alaska		Milepost:	590.13				
Latitude: 63° 09' 26.6	2"	Longitude	: 149° 2	4' 39.7	LI "	Datum: WGS84		
Logbook No .: WG1-2		12	Picture No.:	P-WEIL	HT008	- Dit; Plug; W; N		
SITE PARAMETERS								
Subregion: Interior			Landform (hill	lslope, terra	ce, hummock	is, etc.): FIAT		
Slope (%): 2			Local relief (concave, convex, none): ConVEY					
Pre-mapped Alaska LNG/NWI classific		Soil Map Unit Name:						
Are climatic/hydrologic conditions on the Yes No (if no exp	ne site typical for this time of plain in Notes)	f year?	Are "No Yes	rmal Circur	nstances" pre (If no, ex	esent: plain in Notes.)		
Are Vegetation, Soil, or Hy	/drology Significantly	Disturbed?	No Y	_(If yes, ex	plain in Notes)		
Are Vegetation, Soil, or Hy	/drology Naturally Pro	oblematic?	No Y	_(If yes, ex	plain in Notes	s.)		
SUMMARY OF FINDINGS								
Hydrophytic Vegetation Present? Yes_	_ ls	Is the Sampled Area within a Wetland? Yes No						
Hydric Soil Present? Yes_	_ w	Wetland Type: PEMIF						
Wetland Hydrology Present? Yes_	- Ala	Alaska Vegetation Classification (Viereck): 10 A 3						
Notes and Site Sketch: Please include corridor.	Directional & North Arrow, (Centerline,	Length of featur	re, Distance	s from Cente	rline, Photo Locations, and Survey		
	Seelog	sook l	NG1-Z	page	212			
		fo	sile	Stetch	ENote	D		