
WETLAND IDENTIFICATION AND DELINEATION

Parcel 14 at Pacific International Terminals, Inc. Property

Whatcom County, Washington

Prepared for:

Pacific International Terminals

1131 SW Klickitat Way

Seattle, Washington 98134

Prepared by:

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11810 North Creek Parkway North

Bothell, Washington 98011

September 26, 2011

Project No. 0-915-15338-C



EXECUTIVE SUMMARY

AMEC Earth & Environmental, Inc. (AMEC) conducted a wetland determination and delineation at the request of Pacific International Terminals, Inc. on 29.66 acres of heavy-impact industrial zoned land in the vicinity of Cherry Point in Whatcom County, Washington. The study area is identified as Parcel 14 in previously published reports regarding the proposed Gateway Pacific Terminal project; such as, *Wetland Delineation and Determination, Gateway Pacific Terminal* (AMEC, 2008) and *Project Information Document, Gateway Pacific Terminal* (Pacific International Terminals, Inc, 2011). This comprehensive evaluation of wetland vegetation, hydrologic conditions, and soils was conducted from July 27 through 29, 2011.

This report summarizes the findings of the field effort; provides field data to support the delineated wetland boundaries; characterizes wetland areas and waters of the U.S.; and assesses the functions of the delineated wetlands. An 11 by 17 inch map of the Parcel 14 study area showing wetland boundaries and other study area details is included as Appendix A. The information in this report is provided to support jurisdictional determination under the Clean Water Act and boundary concurrence from the U.S. Army Corps of Engineers (USACE).

No new wetlands were identified on Parcel 14; however, the boundaries of two previously delineated wetlands (Wetlands 5A and 5C) on adjacent parcels were determined to continue onto Parcel 14. Wetland 5C connects to 5A, and is no longer described as a separate wetland because it has been incorporated into Wetland 5A. Total wetland area on Parcel 14 is 13.8 acres. All delineated wetland areas on Parcel 14 are classified as palustrine forested (PFO) according to the Cowardin classification system.

Wetlands 5A and 5C are already under the jurisdiction of the USACE in accordance with the 2009 Jurisdictional Determination issued for those properties that confirmed those wetlands' boundaries. Wetland 5A on Parcel 14 is therefore considered to be jurisdictional.

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1.0 INTRODUCTION

Pacific International Terminals, Inc. (Pacific International Terminals) owns approximately 1,200 acres at Cherry Point in Whatcom County, Washington. Wetland boundaries on the property were delineated in 2008, and confirmed under a Jurisdictional Determination issued by the US Army Corps of Engineers (USACE) in 2009 (Appendix B). The 2008 wetland delineation efforts excluded a 29.66-acre parcel located adjacent to the Pacific International Terminals, Inc. property and owned by others, identified as Parcel 14. Wetlands on Parcel 14 were not delineated previously because site access was not granted at that time. This wetland delineation report documents the wetland boundaries on Parcel 14.

1.1 SETTING

The Parcel 14 study area is located 18 miles northwest of Bellingham and 10 miles west of Ferndale (Figure 1). Parcel 14 is approximately 29.66 acres in size, and is located in Section 17 of Township 39 North, Range 1 East, all in unincorporated Whatcom County (Figure 2). Parcel 14 is accessible from I-5 via Highway 548 (Grandview Road) west, and south on Kickerville Road. Rectangular in shape, the study area is bounded by Henry Road to the south, and forested uplands and wetlands to the west, north, and south. A wet meadow abuts the southeast corner of the study area (Figure 3). Parcel 14 slopes gently from east to west (Figure 4). A linear access path from east to west was cleared for geotechnical investigation activities onsite, and currently bisects the study area.

1.2 SOILS

The Natural Resource Conservation Service (NRCS) mapped two unique soil series in the study area, including Birchbay silt loam (0 to 3 percent slopes) and Whitehorn silt loam (0 to 2 percent slopes). Almost all of the study area is mapped as Whitehorn silt loam except for the southeast corner, which is mapped as Birchbay silt loam (Figure 5). Descriptions of these two soil series are described below.

Birchbay silt loam (0 to 3 percent slopes and 3 to 8 percent slopes) – This soil generally has moderate to very rapid permeability in the sandy surface layer, and slow in the loamy lower part. In general, the soil is moderately well drained. The native vegetation consists primarily of conifers and shrubs. The surface layers are dark brown silt loam to a depth of 12 inches, increasing in yellow and becoming more gravelly to 24 inches. Below 24 inches, soil is dark yellowish brown, and becomes increasingly rocky.

Whitehorn silt loam (0 to 2 percent slopes) – Whitehorn silt loam is listed as hydric and is mapped over 95 percent of the study area. The permeability of the soil is low. Due to the high water table generally associated with the soil, rooting depth is limited. Native vegetation includes trees and shrubs, with red alder the dominant woodland species. The surface layer is typically very dark brown



loam to a depth of 10 inches. Below 10 inches, the subsoil is generally a slightly lighter brown/grayish brown, mottled loam and very fine sandy loam.

1.3 GROWING SEASON

The growing season is defined as the portion of the year when soil temperatures at 19.7 inches below the soil surface are higher than biological zero (41 °F) (Corps, 1987). The growing season can be approximated as the number of frost-free days from the last date in spring when air temperature drops to 28°F, to the first date in fall when it drops to 28°F. The beginning and ending dates for growing season in the study area were estimated based on the median dates (50 percent probability) for the first and last 28°F days, based on long-term temperature data (NRCS 2006d).

The start and end dates for the growing season in the study area are March 24 to November 5, in any year, for a total of 227 days. Areas with wetland hydrologic conditions present for 28 consecutive days during the growing season are considered wetlands, and areas with 11 consecutive days of wetland hydrologic conditions can be characterized as wetlands, depending on soil and plant community conditions. While the duration of wetland hydrologic conditions was not measured in the field, the range of duration was noted and visually interpreted in field efforts.

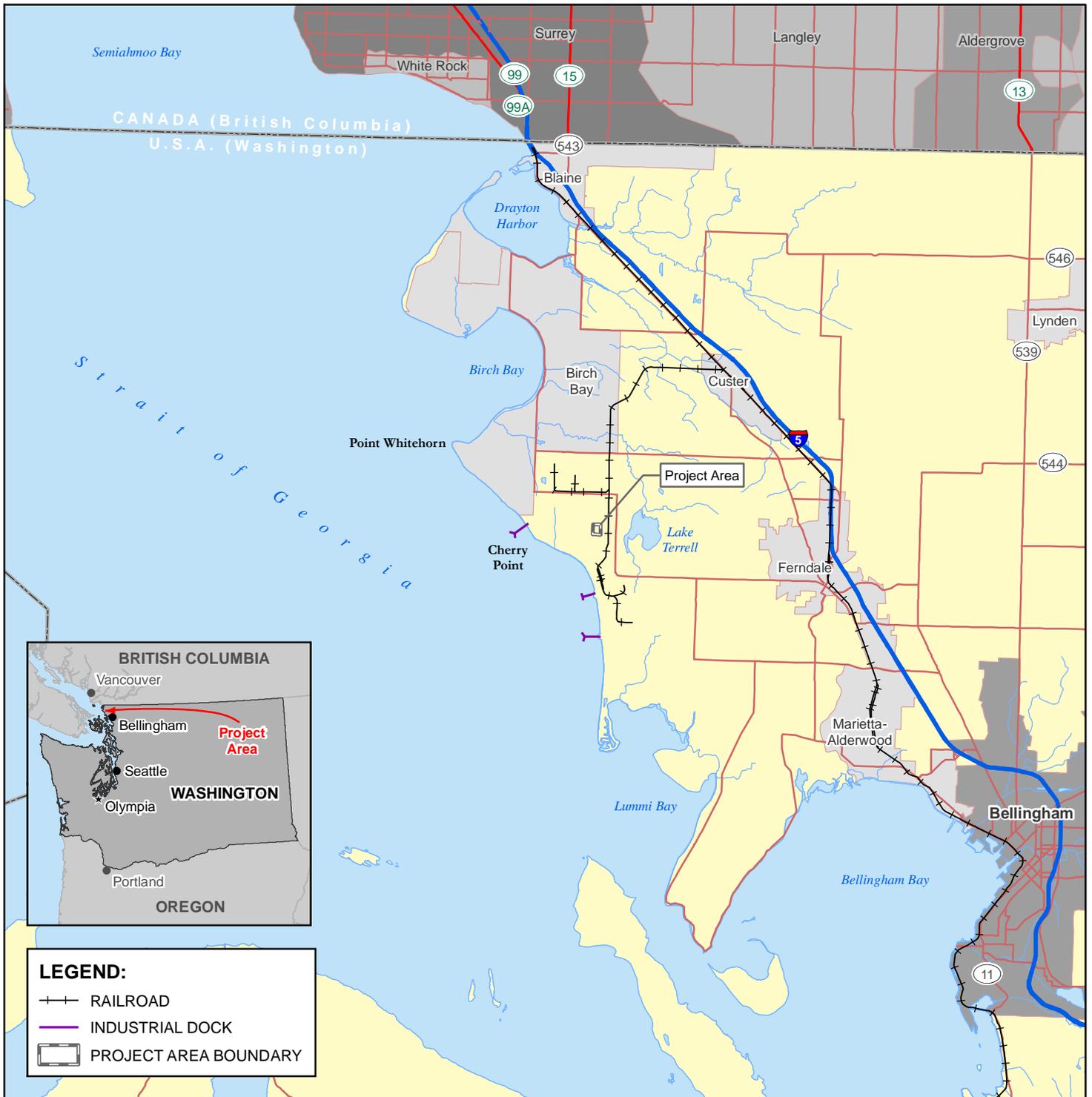
2.0 METHODS

A field investigation was performed by AMEC staff from July 27 through 29, 2011 to delineate wetland boundaries in the study area. Existing published information and the 2009 Jurisdictional Determination was reviewed prior to the field investigation.

2.1 REVIEW OF AVAILABLE PUBLISHED INFORMATION

Available site information was reviewed to identify any documented wetlands, streams, or other site characteristics (e.g., vegetation patterns, topography, soils, or water courses) that would indicate the presence of wetlands within the study area. Documents reviewed include the following:

- National Wetlands Inventory (USFWS 2007);
- Aerial photo of the vicinity (Google 2010); and,
- Federal Emergency Management Agency National Flood Insurance Program Flood Insurance Rate Map (FEMA 2005).



LEGEND:

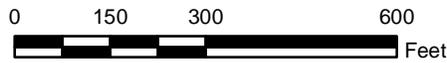
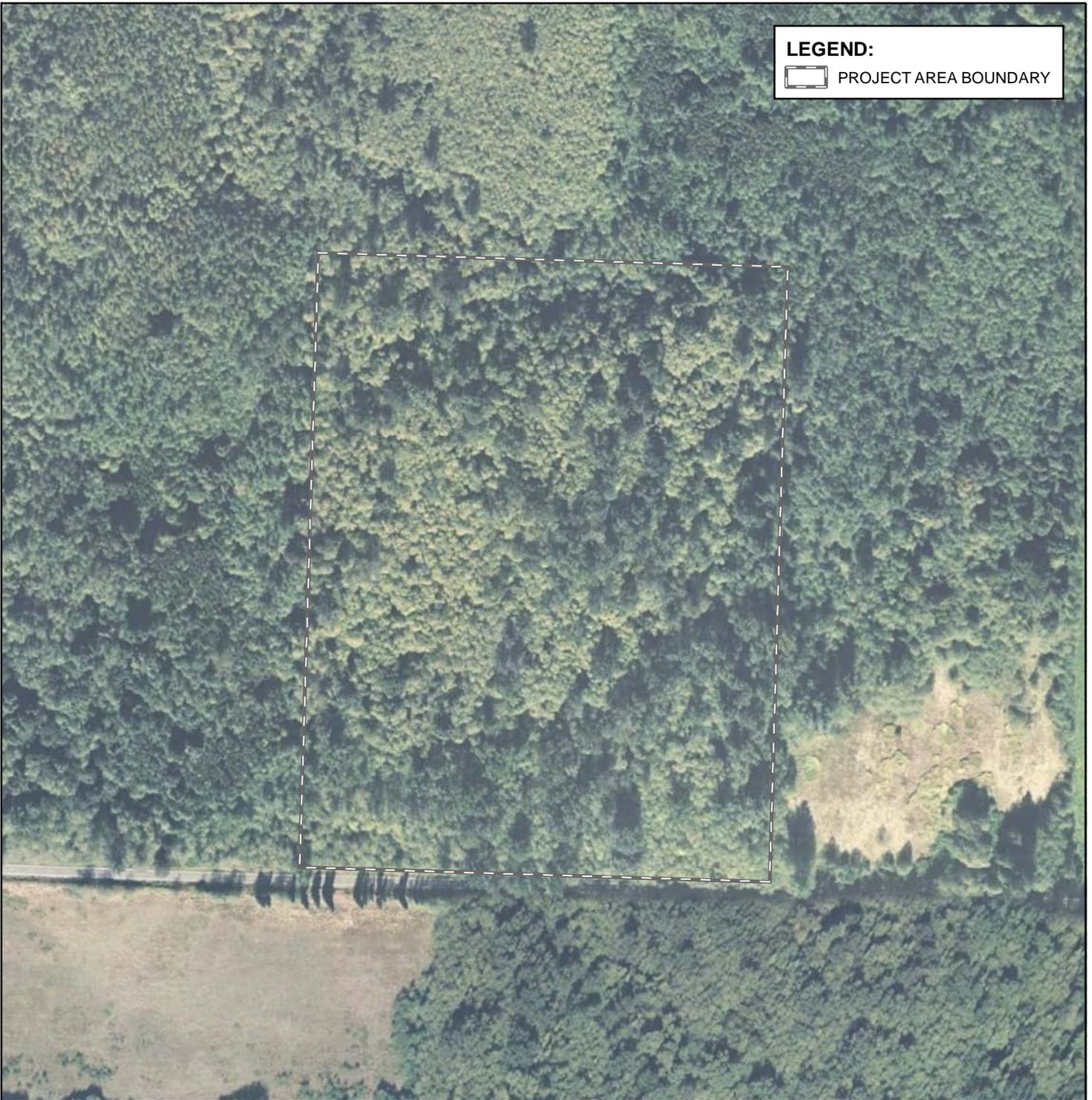
- ++ RAILROAD
- INDUSTRIAL DOCK
- ▭ PROJECT AREA BOUNDARY



AMEC Earth & Environmental 11810 North Creek Parkway N Bothell, WA 98011						CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	
PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL				DWN BY: SD	DATUM: NAD83	DATE: SEPTEMBER 2011	
TITLE: VICINITY MAP PARCEL 14 WETLAND DELINEATION, JULY 2011				CHK'D BY: JG	REV. NO.: 1	PROJECT NO.: 091515338C-01-06	
				PROJECTION: WA SP North, Ft.	SCALE: 1 inch=3 miles	FIGURE No.: FIGURE 1	

LEGEND:

 PROJECT AREA BOUNDARY



AMEC Earth & Environmental
11810 North Creek Parkway N
Bothell, WA 98011

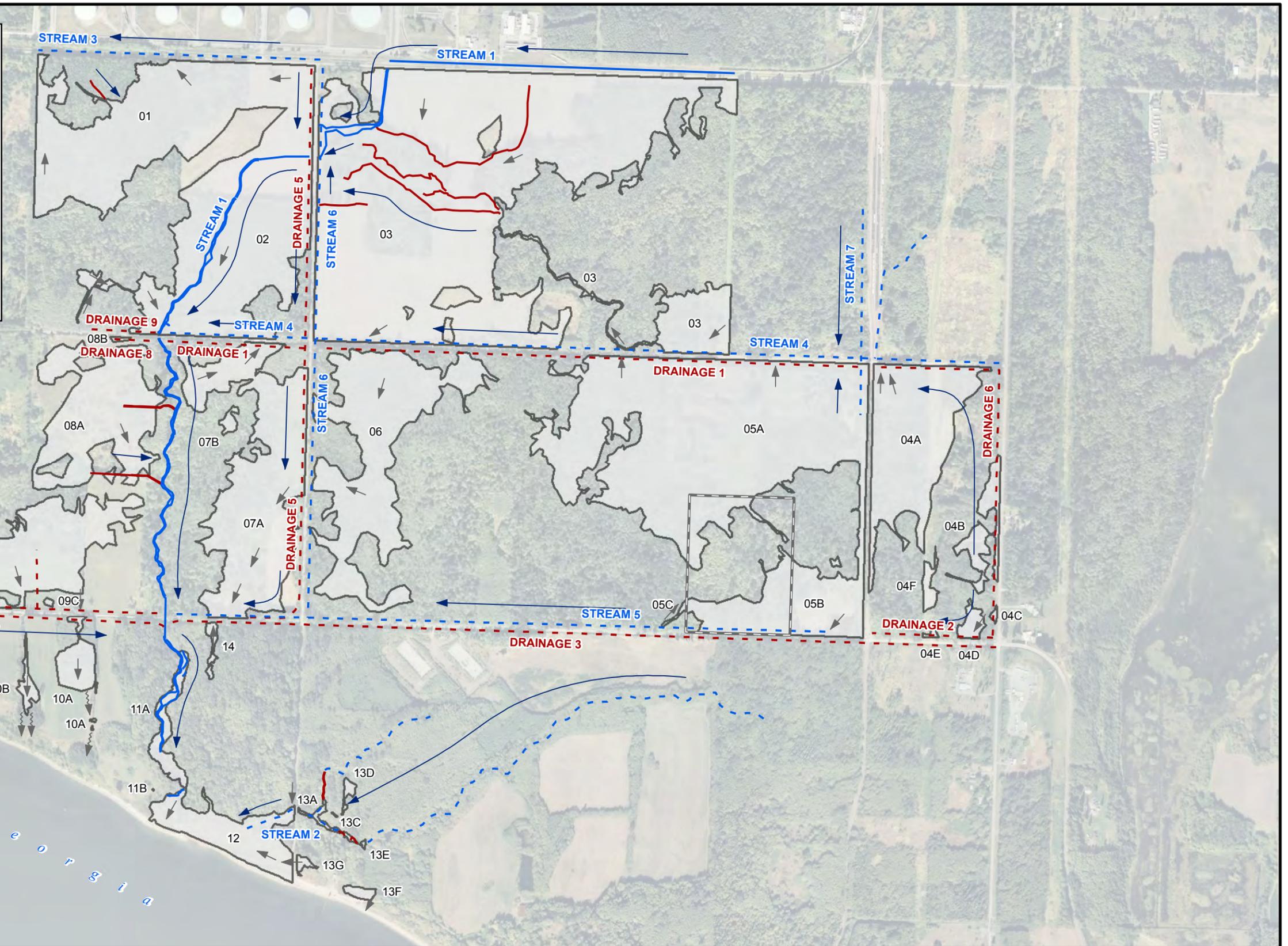


CLIENT:
**PACIFIC INTERNATIONAL
TERMINALS, INC.**

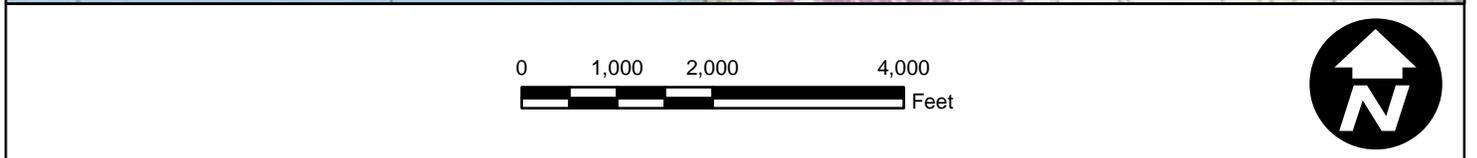
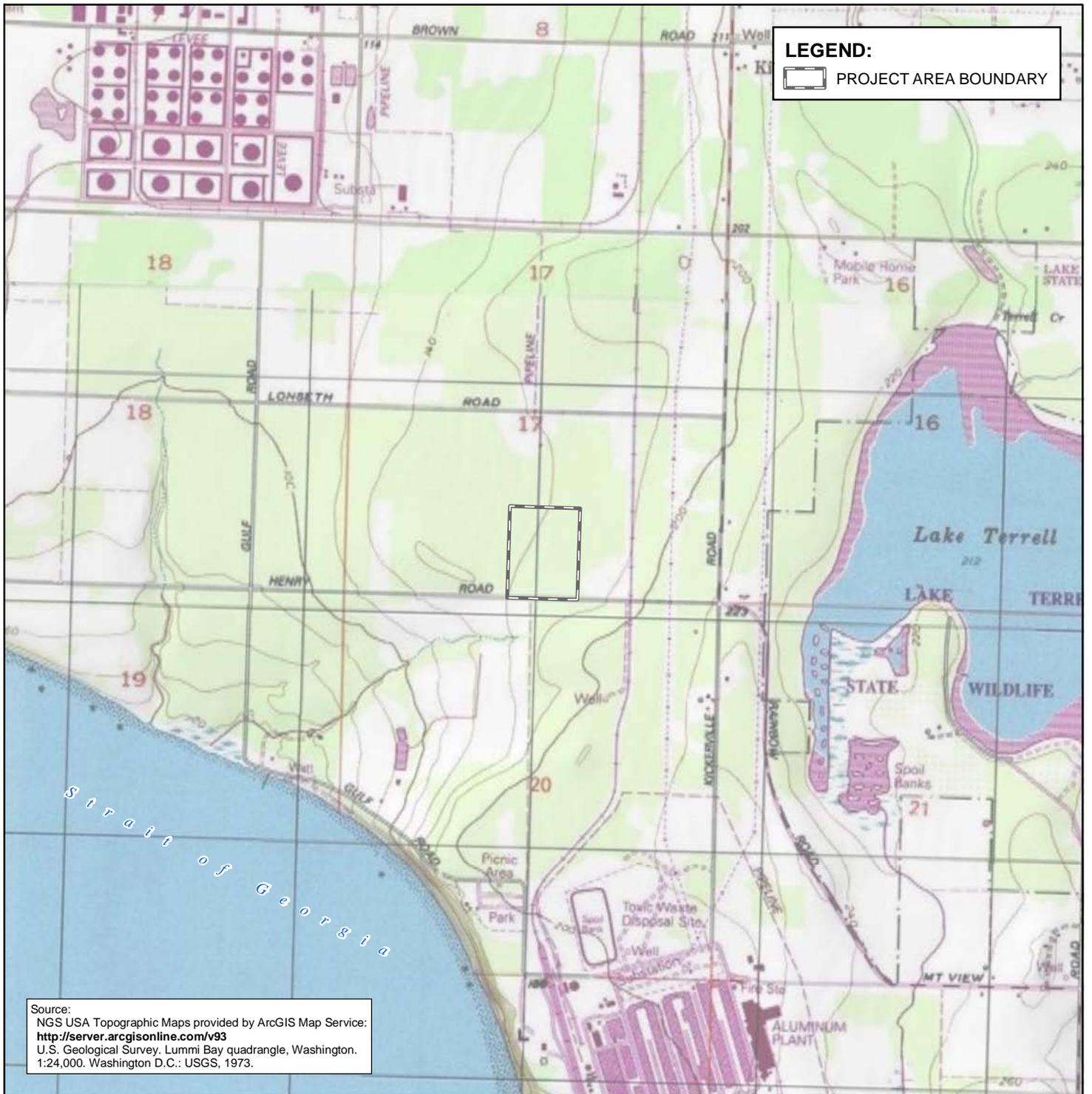
PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DWN BY: SD	DATUM: NAD83	DATE: SEPTEMBER 2011
	CHK'D BY: JG	REV. NO.: 1	PROJECT NO.: 091515338C-01-06
TITLE: PARCEL 14 STUDY AREA PARCEL 14 WETLAND DELINEATION, JULY 2011	PROJECTION: WA SP North, Ft.	SCALE: 1 inch=300 feet	FIGURE No.: FIGURE 2

LEGEND:

- - - APPROXIMATE DRAINAGE
- SURVEYED DRAINAGE
- - - APPROXIMATE STREAM COURSE
- SURVEYED STREAM COURSE
- ➔ STREAM AND DRAINAGE FLOW DIRECTION
- ➔ WETLAND FLOW DIRECTION
- 05A EXISTING WETLAND AREA
(Wetland boundaries on Parcel 14 to be verified)
- PROJECT AREA BOUNDARY



 <p>Pacific International Terminals A Carrix Enterprise</p>	CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: SD CHK'D BY: JG DATUM: NAD83 PROJECTION: WA SP North, Ft. SCALE: 1 inch = 1,000 feet	PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DATE: SEPTEMBER 2011 PROJECT NO.: 091515338C-01-06 REV. NO.: 1 FIGURE NO.: FIGURE 3
	AMEC Earth & Environmental 11810 North Creek Parkway N Bothell, WA 98011 	TITLE: EXISTING WETLANDS AND DRAINAGES PARCEL 14 WETLAND DELINEATION, JULY 2011		



AMEC Earth & Environmental 11810 North Creek Parkway N Bothell, WA 98011						CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	
PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL				DWN BY: SD		DATUM: NAD83	
TITLE: USGS TOPOGRAPHIC MAP PARCEL 14 WETLAND DELINEATION, JULY 2011				CHK'D BY: JG		DATE: SEPTEMBER 2011	
				PROJECTION: WA SP North, Ft.		SCALE: 1 inch=2,000 feet	
						PROJECT NO.: 091515338C-01-06 FIGURE No.: FIGURE 4	

LEGEND:

 PROJECT AREA BOUNDARY

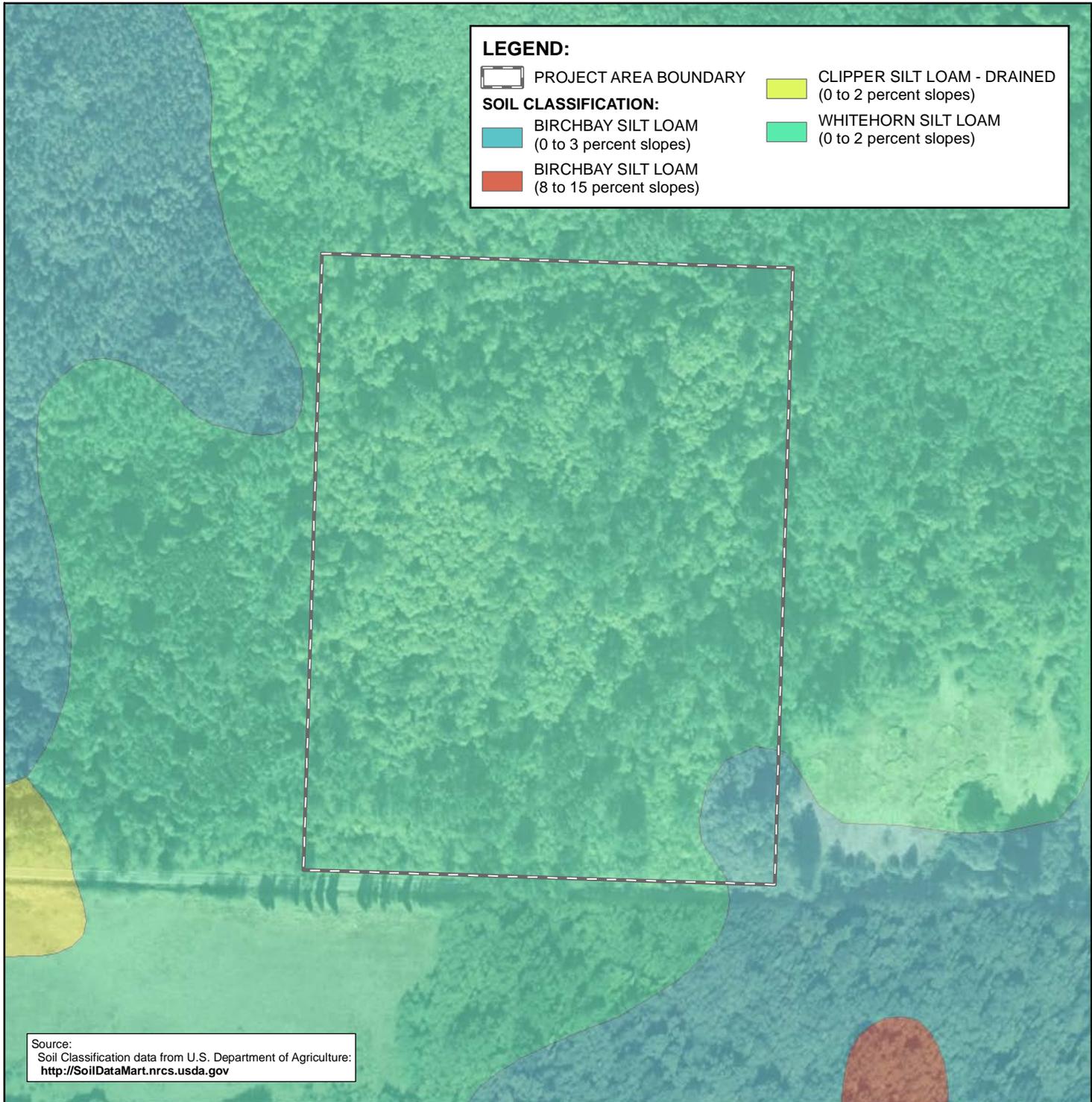
SOIL CLASSIFICATION:

 BIRCHBAY SILT LOAM (0 to 3 percent slopes)

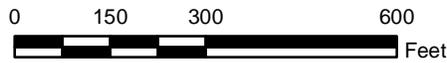
 BIRCHBAY SILT LOAM (8 to 15 percent slopes)

 CLIPPER SILT LOAM - DRAINED (0 to 2 percent slopes)

 WHITEHORN SILT LOAM (0 to 2 percent slopes)



Source:
Soil Classification data from U.S. Department of Agriculture:
<http://SoilDataMart.nrcs.usda.gov>



AMEC Earth & Environmental 11810 North Creek Parkway N Bothell, WA 98011						CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	
PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL				DWN BY: SD	DATUM: NAD83	DATE: SEPTEMBER 2011	
TITLE: NRCS SOIL MAP PARCEL 14 WETLAND DELINEATION, JULY 2011				CHK'D BY: JG	REV. NO.: 1	PROJECT NO.: 091515338C-01-06	
				PROJECTION: WA SP North, Ft.	SCALE: 1 inch=300 feet	FIGURE No.: FIGURE 5	

2.2 FIELD INVESTIGATION

AMEC staff conducted a wetland delineation at the study area using the three-parameter approach detailed in the *Corps of Engineers Wetlands Delineation Manual* (1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (2008). The Regional Supplement provides detailed regional guidance on how to identify and interpret field indicators for wetland hydrology, soils, and vegetation.

Wetland Data Sheets documenting the field investigation on Parcel 14 are presented in Appendix C.

In general, to qualify as a wetland, specific vegetation, soil features, and hydrologic characteristics must be present. If an area exhibits characteristics for all three wetland parameters, or normally would exhibit those characteristics, a positive wetland determination can be made for the area. Definitions for each of these three parameters are provided in Table 1. Wetland boundaries were flagged in the field with sequentially numbered, pink flagging marked "WETLAND BOUNDARY."

Table 1 Definitions and Indicators of the Three Wetland Parameters

Parameter	Definition and Indicators
Wetland Vegetation	<p>Dominant vegetation consists of wetland-adapted plant species, based on one or more of the following indicators:</p> <ul style="list-style-type: none"> • Dominance Test: more than 50 percent of dominant vegetation is of facultative, facultative wetland, or obligate status as determined from the National List of Plant Species Occurring in Wetlands (Reed, Jr. 1988; Reed, Jr., et al. 1993). • Prevalence Index: Prevalence index is 3.0 or less. The prevalence index is a weighted average that takes into account plant abundance and indicator status. • Plant morphological conditions are evident. • More than 50 percent of the total coverage of bryophytes consists of wetland-associated species.
Hydric Soils	<p>A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding that persist long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils generally exhibit one or more of the following characteristics:</p> <ul style="list-style-type: none"> • Histosol (highly organic soil); • Histic epipedon (organic soil surface layer); • Sulfidic material (rotten-egg odor); • Aquic or peraquic moisture regime (saturation during the growing season); • Soil matrix colors that indicate a loss or movement of organic matter, iron, or manganese; • The presence of redoxymorphic features, which are locations within the soil structure of iron and manganese depositions and depletions; and • The presence of oxidized iron and manganese in specific abundance and distribution.
Wetland Hydrologic	<p>Wetland hydrologic conditions, indicated by one or more of the following:</p> <ul style="list-style-type: none"> • Surface inundation visible on ground or aerial imagery;

Parameter	Definition and Indicators
Conditions	<ul style="list-style-type: none"> • Standing water or saturated soils in a soil pit at or above a depth of 12 inches for fine textured soil; • Oxidized rhizospheres along living roots; • Presence of reduced iron; • Dry season water table between 12 and 24 inches, or shallow aquitard; • Iron deposits; • Surface soil cracks; • Water marks on vegetation; • Drift lines; • Waterborne sediment deposits; • Water-stained or surface scoured leaves; • Algal mats; • Sparsely vegetated concave surface; • Geomorphic position; • FAC-neutral test; • Salt crust; • Hydrogen sulfide odor; • Aquatic invertebrates; • Raised ant mounds; • Wetland drainage patterns; and • Stunted or stressed plants.

2.2.1 Vegetation

Vegetation was evaluated at sample point locations that were representative of the vegetated community. At each sample plot, trees within a 30-foot radius, shrubs within a 15-foot radius, and non-woody herbaceous plants—including forbs, grasses, sedges and rushes within a 5-foot radius of plot center—were identified and the percent cover for each species was recorded on a wetland field data form. The indicator status and 50/20 rule was used to determine the presence of wetland vegetation, and the dominant species for each stratum. A sampling point is considered to have wetland vegetation if more than 50 percent of the dominant species have an indicator status of FAC, FACW, or OBL. Definitions of indicator status is presented in Table 2. To determine dominant species, the 50/20 rule states that dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total (USACE, 2008).

Scientific nomenclature of all plant species follows that of the PLANTS database (NRCS 2007b) and Hitchcock and Cronquist (1976).

Table 2 Definitions of Indicator Status

Indicator Symbol	Definition
OBL	<i>Obligate</i> . Species that almost always occur in wetlands (estimated probability >99%) under natural conditions.
FACW	<i>Facultative wetland</i> . Species that usually occur in wetlands (estimated probability 67 to 99%), but occasionally are found in uplands.
FAC	<i>Facultative</i> . Species that are equally likely to occur in wetlands or uplands (estimated probability 34 to 66%).
FACU	<i>Facultative upland</i> . Species that usually occur in uplands (estimated probability 67 to 99%), but occasionally are found in wetlands.
UPL	<i>Upland</i> . Species that almost always occur in uplands under normal conditions (estimated probability >99%).
NL	<i>Not Listed</i> . Species was not included in evaluation and does not have an indicator status. More often occurs with plant species that would be categorized as UPL if they had been included in the evaluation.
NI	<i>No indicator</i> . Species for which insufficient information was available to determine an indicator status.

Source: Reed, Jr. 1988; Reed, Jr., et al. 1993.

2.2.2 Hydric Soil

Hydric soils are defined as being saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (Corps 2008). Hydric soils exhibit certain characteristics that can be observed in the field. Such characteristics or indicators include high organic content, accumulation of sulfidic material, greenish or bluish-gray color (gley formation), and development of redoxymorphic features. Hydric soil indicators as discussed in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (Corps 2008) were evaluated in the field.

Soil samples were obtained at representative sampling points by digging a pit to a depth of at least 18 inches. Soil samples were then examined for hydric indicators. Soil colors were evaluated against a Munsell® soil color chart (Gretag Macbeth LLC 2000).

2.2.3 Wetland Hydrologic Conditions

While wetlands are defined in part by the presence of water, water does not need to be present throughout the entire year for an area to be considered a wetland. Wetland hydrologic conditions are present when an area is either permanently or temporarily inundated, or when the soil is saturated for a significant period (usually a week or more) during the growing season under normal conditions (Corps 1987 and 2008).



The presence of wetland hydrologic indicators was determined at each sampling point. Primary indicators of wetland hydrology generally include areas of ponding or soil saturation, and evidence of previous water inundation or saturation (i.e., watermarks drift lines, sediment deposits, and oxidized root channels). Secondary indicators include, but are not limited to, wetland drainage patterns geomorphic position, and raised ant mounds. Where positive indicators were observed, wetland hydrology was assumed to occur during the growing season long enough to result in wetland conditions.

2.3 WETLAND CLASSIFICATION AND RATINGS

Wetland vegetation community classification follows that developed by Cowardin, et al. (1979), and hydrogeomorphic classification follows Brinson (1993). *The Washington State Wetlands Rating System for Western Washington* (Hruby 2004) was used to rate wetlands.

3.0 RESULTS

Boundaries of existing Wetlands 5A and 5C were determined to extend onto Parcel 14. Extending the wetland boundary of Wetland 5A to Wetland 5C through Parcel 14 resulted in a single connected wetland. As such, Wetland 5C is now incorporated Wetland 5A. A total of 13.8 acres of PFO wetlands were delineated in the study area. Revisions to Wetland 5A and the total amount of wetlands on the Pacific International Terminals property are highlighted in Table 3.

No wetlands on Parcel 14 are located within a FEMA 100-year floodplain (Figure 6). No wetlands were identified on the property by the NWI maps (see Figure 7).

3.1 WETLANDS AND DRAINAGES

A total of 530.6 acres have been delineated on the Pacific International Terminals, property, including seven streams and 9 drainages (Figure 3). Most of the streams and drainages occur in roadside ditches. Stream 5 abuts the southern edge of Parcel 14, and flows along the northern side of Henry Road. Stream 5 is a relatively permanent waterway (RPW) with seasonal flows, and drains to Stream 1 and eventually to the Strait of Georgia.

Wetland 5 was partially delineated in 2008 with the portion on Parcel 14 not delineated. As a result Wetland 5 was identified in three distinct sections: 5A, 5B and 5C. Wetland 5A and 5C are now continuous and will be called Wetland 5A (See Appendix A for boundary locations). Wetland 5B is located in an isolated depression, and is only connected to Wetland 5A by sheet flow during storm events.

Table 3 Revised Characteristics and Ratings of Wetlands on the Pacific International Terminals Property

Wetland Name	Hydrogeomorphic Class	Area by Cowardin ¹ Classification			Rating ²	Total Area (acres)
		Palustrine Scrub-Shrub (acres)	Palustrine Emergent (acres)	Palustrine Forested (acres)		
1	Flats/Depressional	1.3	5.1	37.8	III	44.2
2	Slope	5.0	11.3	37.0	III	53.2
3	Slope	15.1	72.3	63.2	III	150.7
4A	Slope	2.2	5.0	19.5	III	26.6
4B	Depressional	0.7	0	3.7	III	4.4
4C	Depressional	0.1	0	0.1	III	0.2
4D	Slope	0	0	1.3	III	1.3
4E	Slope	0	0.2	0	III	0.2
4F	Slope	0.3	0.8	0	IV	1.1
5A	Slope	8.6	3.2	97.4	III	109.2
5B	Depressional	0	0	0.1	III	0.1
6	Slope	0	0	36.9	III	36.9
7A	Slope	2.1	3.5	34.5	III	40.1
7B	Depressional	0	0	0.6	III	0.6
8A	Slope	9.8	5.9	9.1	III	24.8
8B	Depressional	0.1	0	0	III	0.1
9A	Slope	6.9	8.6	12.7	III	28.2
10A	Slope	0.5	0.2	3.1	III	3.7
10B	Depressional	0.6	0.3	0.3	III	1.1
11A	Riverine	0	0	3.5	I	3.5
11B	Depressional	<0.1	0	0	III	<0.1
12	Depressional ³	4.7	0.7	5.8	I	11.2
13A	Riverine	0	0	0.6	I	0.6
13C	Depressional	0	0	<0.1	III	<0.1
13D	Slope	0	0	0.4	III	0.4
13E	Riverine	0	0	0.1	I	0.1
13F	Depressional	0	0	0.6	III	0.6
13G	Depressional	0	0	0.4	III	0.4
14	Depressional	0	0	0.7	III	0.7
Total Wetland		57.9	117.1	369.4		544.4

1 Cowardin et al. (1979)

2 Hruby (2004)

3 Estuarine, not palustrine wetland

The wetlands on Parcel 14 were determined to be continuous with previously delineated Wetland 5A and 5C. These existing wetland boundaries were confirmed in the 2009 Jurisdictional Determination from the USACE. Wetlands 5A and 5C are now incorporated into a single wetland, identified as Wetland 5A. With the addition of the area contained on Parcel 14, this Wetland 5A now covers 109.2 acres.



3.1.1 Wetland 5A

As documented in the previously submitted *Wetland Delineation and Determination, Gateway Pacific Terminal*, AMEC, 2008, Wetland 5A is primarily a forested slope wetland that abuts the roadside ditch on the south side of Lonseth Road to the north and lies adjacent to Stream 5 to the south at Henry Road. The wetland is bounded on the north by Lonseth Road, on the south and west by forested uplands on slopes, and on the east by a BNSF Railway embankment. Old logging roads and skid trails are common, and result in linear areas of ponding throughout the area. Wetland 5A receives small amounts of surface flow from the roadside ditch on the north side of Henry Road, which empties into the wetland via a culvert under the railroad tracks. Much of the central portion of Wetland 5A has very low gradient topography with slightly steeper slopes on the south (north aspects) and east (west aspects) perimeters.

Vegetation is the typical forest community for almost all of the area, and is dominated by red alder (*Alnus rubra*, FAC). A 100-foot-wide easement for a pipeline lies adjacent to the rail embankment, and is vegetated mainly with reed canarygrass that is mowed annually. A wet meadow is located in the southeast corner of Wetland 5A, and is dominated by reed canary grass (*Phalaris arundinacea*, FACW), meadow foxtail (*Alopecurus pratensis*, FACW), and bentgrass (*Agrostis spp.*).

Soils are mapped as Whitehorn silt loam. Soils were very dark brown (10 Y/R 2/2) or black (10 YR 2/1) in the upper 5 to 6 inches. In some areas, depth below 6 inches had a depleted matrix (10 YR 4/1) with distinct redoximorphic (redox) features. Most areas had redox features within 6 inches of the surface, and some small depressional features showed increased organic matter at the surface.

A total of 13.8 acres of wetlands were delineated in the Parcel 14 study area. Clearing for access for the ongoing geotechnical investigation occurred within wetland areas on Parcel 14. As described in the *Critical Areas Study and Mitigation Plan*, AMEC, 2011, these impacted wetland areas will be restored to pre-existing conditions by re-planting native forest vegetation, re-grading displaced soil mounds, and replacing divots caused by pushing over mature trees.

Wetland 5A was rated as a Category III wetland according to the Washington State Wetland Rating System for Washington State (Hruby, 2004). Wetland 5A, located on a shallow slope, has dense, rigid vegetation throughout most of its area, and many small surface depressions that can trap water. Wetland 5A may function to improve downstream water quality by trapping nutrients and sediments, and to decrease downstream erosion by attenuating overland flow velocity. Multiple Cowardin classes and hydroperiods, plant diversity, and habitat interspersions and features contribute to the habitat value of Wetland 5A.

Source:
Soil Classification data from U.S. Department of Agriculture:
<http://SoilDataMart.nrcs.usda.gov>



LEGEND:

 PROJECT AREA BOUNDARY

WETLAND TYPE:

 FRESHWATER EMERGENT WETLAND

 FRESHWATER FORESTED/SHRUB WETLAND



AMEC Earth & Environmental 11810 North Creek Parkway N Bothell, WA 98011						CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	
PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL				DWN BY: SD	DATUM: NAD83	DATE: SEPTEMBER 2011	
TITLE: NWI MAP PARCEL 14 WETLAND DELINEATION, JULY 2011				CHKD BY: JG	REV. NO.: 1	PROJECT NO.: 091515338C-01-06	
				PROJECTION: WA SP North, Ft.	SCALE: 1 inch=300 feet	FIGURE No.: FIGURE 7	

3.1.2 Vegetation on Parcel 14

Delineated wetland areas on Parcel 14 are mainly forested. The dominant wetland vegetation included red alder and cottonwood (*Populus balsamifera*, FAC) in the canopy, salmonberry (*Rubus spectabilis*, FAC) and twinberry (*Lonicera involucrata*, FAC+) in the shrub understory, and mannagrass (*Glyceria grandis*, OBL) and slough sedge (*Carex obnupta*, OBL) in the herbaceous understory.

Dominant vegetation in the upland areas included red alder and big leaf maple (*Acer macrophyllum*, FACU) in the canopy, vine maple (*Acer circanatum*, FAC-), red elderberry (*Sambucus racemosa*, FACU), and Indian plum (*Oemleria cerasiformis*, FACU) in the shrub understory, and false lily-of-the-valley (*Maianthemum dilatatum*, FAC), lady fern (*Athyrium filix-femina*, FAC), and sword fern (*Polystichum munitum*, FACU) in the herbaceous understory.

3.1.3 Hydrology on Parcel 14

Hydrology in the forested wetland areas in the study area is influenced by shallow groundwater, ponding during precipitation events, and shallow rivulets that direct surface flow.

Primary wetland hydrologic indicators observed include algal mat or crust (B4). Secondary wetland hydrologic indicators observed include water-stained leaves (B9), drainage patterns (B10), and geomorphic position (D2).

3.1.4 Soils on Parcel 14

Soils within the study area generally consisted of a low chroma matrix with common, faint to prominent redox features. Matrix colors documented within the study area included dark gray (10YR 2/1) and very dark grayish brown (10YR 3/2, 2.5Y 3/2). Redox features consisted of faint, common, dark yellowish brown (10YR 4/6) concentrations in pore linings. Soil textures consisted of loam, silt loam, sandy loam, and clay loam. Mixed matrixes were also observed.

Soils meet the criteria for Depleted Matrix (F3), which is defined as a layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, and a minimum thickness of 2 inches if it is entirely within the upper 6 inches of the soil, or 6 inches and starts within 10 inches of the soil surface.

Some soils in the study area also meet hydric soil indicator F6 (Redox Dark Surface), which is defined as a layer occurring entirely within the upper 12", is at least 4" thick, has a matrix value of 3 and a chroma of 2, and has greater than 5 percent prominent redoximorphic features.



4.0 CONCLUSIONS

In the Parcel 14 study area, 13.8 acres of PFO wetlands were delineated. Wetlands on Parcel 14 connect the previously delineated Wetlands 5A and 5C, and have thus become a single wetland area identified as Wetland 5A. Wetland 5A totals 109.2 acres in size including the Pacific International Terminals property and Parcel 14.

5.0 STATEMENT OF LIMITATION

The wetland boundaries, classification, ratings, and jurisdictional assessments described herein are the professional opinion of AMEC staff based on the circumstances and site conditions at the time of this study. These professional opinions have been developed in a manner consistent with the level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our signed proposal. These findings are considered preliminary until local, state, or federal jurisdictions make verification of jurisdiction and confirm the wetland determination, boundary locations, and classifications.

6.0 REFERENCES

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APPENDIX A

Parcel 14 Wetland Delineation Map

APPENDIX B

Correspondence



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

Regulatory Branch

MAR 5 2009

Pacific International Terminals
Mr. Skip Sahlin
1131 Southwest Klickitat Way
Seattle, Washington 98134

Reference: NWS-2008-260-NO
Pacific International
Terminals

Dear Mr. Sahlin:

On March 23 and 24, 2008 and November 6, 2008, Mr. Randel Perry and I conducted a site visit in response to your request for a jurisdictional determination for wetlands and streams on property located near Ferndale, Whatcom County, Washington. The information provided by your agent, AMEC Earth and Environmental, Inc., indicated that some of the wetlands may be "isolated" and outside the U.S. Army Corps of Engineers (Corps) jurisdiction.

We have confirmed that wetlands and jurisdictional streams exist on your property. After reviewing the submitted information and our office resources and after visiting the site, we have determined the all delineated on-site wetlands shown on the enclosed drawing dated April 2008 abut or are adjacent to unnamed tributaries of the Strait of Georgia, a navigable waterway used for interstate and foreign commerce. These wetlands have a significant nexus to down stream traditional navigable waters (the Strait of Georgia) and, as such, are regulated by the Corps under Section 404 of the Clean Water Act.

We have also confirmed that all waterbodies identified as "Streams" and "Drainages" on the enclosed drawing dated April 2008 are tributaries to down stream navigable waters (the Strait of Georgia) and/or have a significant nexus to down stream traditional navigable waters. These tributaries are jurisdictional waters of the U. S. and are regulated by the Corps under Section 404 of the Clean Water Act.

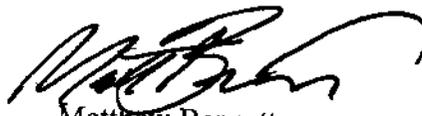
This approved jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revisions of the determination. A copy of this jurisdictional determination can be found on our website at <http://www.nws.usace.army.mil/> click on Regulatory, Regulatory/Permits, Recent Jurisdictional Determinations. If you object to this determination, you may request an administrative appeal under our regulations 33 CFR 331

as described in the enclosed *Appeal Process Fact Sheet* and the *Notification of Administrative Appeal Options and Process and Request for Appeal* form.

A copy of this correspondence with enclosure will be furnished to Ms. Kristie Dunkin of AMEC Earth and Environmental, Inc. at 11810 North Creek Parkway North, Bothell, Washington 98011. Because Department of the Army authorization may be necessary for work in jurisdictional wetlands and drainages, do not commence construction before written authorization is received.

If you have any questions, please contact Mr. Randel Perry at (206) 764-6985 or by email at randel.j.perry@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read 'Matthew Bennett', with a large, sweeping flourish extending to the right.

Matthew Bennett
Senior Scientist
Regulatory Branch

Enclosures

APPENDIX C

Wetland Field Data Sheets

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: GPT - Parcel 14 City/County: near Ferndale, Whatcom County Sampling Date: 9-14-11
 Applicant/Owner: SSA Marine State: WA Sampling Point: 2
 Investigator(s): Jeff Gray, Danah Palik Section, Township, Range: near flag P14-3
 Landform (hillslope, terrace, etc.): bottomland forest Local relief (concave, convex, none): convex Slope (%): 0
 Subregion (LRR): A Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Whitehorn silt oam, Birch Bay silt loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
1. <u>Alnus rubra</u>	<u>40</u>	Yes	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B)
2. <u>Acer macrophyllum</u>	<u>50</u>	Yes	<u>FACU</u>	
3. <u>Thuja plicata</u>	<u>10</u>		<u>FAC</u>	
4. _____				
	<u>100</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Acer circinatum</u>	<u>40</u>	Yes	<u>FAC-</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u>Rubus spectabilis</u>	<u>5</u>		<u>FAC+</u>	
3. <u>Oemleria cerasiformis</u>	<u>30</u>	Yes	<u>FACU</u>	
4. _____				
5. _____				
	<u>75</u>	= Total Cover		
Herb Stratum (Plot size: _____)				
1. <u>Maianthemum dilatatum</u>	<u>45</u>	Yes	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Pteridium aquilinum</u>	<u>15</u>		<u>FACU</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
	<u>60</u>	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>40</u>				
Remarks: _____				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
4-0							organic	duff layer
0-4	10YR 3/4						silt loam	
4-16	10YR 3/6						silt loam	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)						Indicators for Problematic Hydric Soils³:		
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> 2 cm Muck (A10)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)			<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Depleted Matrix (F3)					
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Redox Dark Surface (F6)					
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Depleted Dark Surface (F7)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Redox Depressions (F8)					
Restrictive Layer (if present):								
Type: _____								
Depth (inches): _____								
						Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:								

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: GPT - Parcel 14 City/County: near Ferndale, Whatcom County Sampling Date: 7-28-11
 Applicant/Owner: SSA Marine State: WA Sampling Point: 1
 Investigator(s): Jeff Gray, Kristie Dunkin, Brandon Kemperman Section, Township, Range: near flag P14-3
 Landform (hillslope, terrace, etc.): bottomland forest Local relief (concave, convex, none): concave Slope (%): -
 Subregion (LRR): A Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Whitehorn silt oam, Birch Bay silt loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)					
1. <u>Alnus rubra</u>	<u>100</u>	Yes	<u>FAC</u>	Dominance Test worksheet: Number 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) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
	<u>100</u>	= Total Cover			
Sapling/Shrub Stratum (Plot size: _____)					
1. <u>Acer circinatum</u>	<u>50</u>	Yes	<u>FAC-</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
2. <u>Ribes lacustre</u>	<u>15</u>	_____	<u>FAC+</u>		
3. <u>Sambucus racemosa</u>	<u>5</u>	_____	<u>FACU</u>		
4. <u>Rubus spectabilis</u>	<u>20</u>	Yes	<u>FAC+</u>		
5. _____	_____	_____	_____		
	<u>90</u>	= Total Cover			
Herb Stratum (Plot size: _____)					
1. <u>Maianthemum dilatatum</u>	<u>25</u>	Yes	<u>FAC</u>		
2. <u>Glyceria grandis</u>	<u>25</u>	Yes	<u>OBL</u>		
3. <u>Athyrium filix-femina</u>	<u>15</u>	_____	<u>FAC</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
	<u>65</u>	= Total Cover			
Woody Vine Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
	_____	= Total Cover			
% Bare Ground in Herb Stratum <u>35</u>					
Remarks: _____					

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: GPT - Parcel 14 City/County: near Ferndale, Whatcom County Sampling Date: 9-14-11
 Applicant/Owner: SSA Marine State: WA Sampling Point: 4
 Investigator(s): Jeff Gray, Danah Palik Section, Township, Range: near flag P14B-6
 Landform (hillslope, terrace, etc.): terrace in bottomland forest Local relief (concave, convex, none): convex Slope (%): 0
 Subregion (LRR): A Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Whitehorn silt oam, Birch Bay silt loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: _____ _____ _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30</u>)					
1. <u>Alnus rubra</u>	<u>100</u>	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
	<u>100</u>	= Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15</u>)					
1. <u>Acer circinatum</u>	<u>60</u>	Yes	FAC-	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
2. <u>Rubus spectabilis</u>	<u>25</u>	Yes	FAC+		
3. <u>Ribes lacustre</u>	<u>5</u>	_____	FAC+		
4. <u>Sambucus racemosa</u>	<u>5</u>	_____	FACU		
5. _____	_____	_____	_____		
	<u>90</u>	= Total Cover			
Herb Stratum (Plot size: <u>5</u>)					
1. <u>Maianthemum dilatatum</u>	<u>45</u>	Yes	FAC		
2. <u>Pteridium aquilinum</u>	<u>15</u>	Yes	FACU		
3. <u>Acer circinatum</u>	<u>10</u>	_____	FAC-		
4. <u>Rubus spectabilis</u>	<u>5</u>	_____	FAC+		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
	<u>75</u>	= Total Cover			
Woody Vine Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
	_____	= Total Cover			
% Bare Ground in Herb Stratum <u>25</u>					
Remarks: _____ _____ _____					

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
3-0						organic	duff layer
0-16	7.5YR 4/4					loam	

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: GPT - Parcel 14 City/County: near Ferndale, Whatcom County Sampling Date: 9-14-11
 Applicant/Owner: SSA Marine State: WA Sampling Point: 3
 Investigator(s): Jeff Gray, Danah Palik Section, Township, Range: near flag P14B-6
 Landform (hillslope, terrace, etc.): bottomland forest Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): A Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Whitehorn silt oam, Birch Bay silt loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: _____ _____ _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
1. <u>Alnus rubra</u>	<u>100</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>100</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Acer circinatum</u>	<u>10</u>	_____	<u>FAC-</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u>Rubus spectabilis</u>	<u>60</u>	<u>Yes</u>	<u>FAC+</u>	
3. <u>Sambucus racemosa</u>	<u>5</u>	_____	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>75</u>	= Total Cover		
Herb Stratum (Plot size: _____)				
1. <u>Maianthemum dilatatum</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Rubus spectabilis</u>	<u>40</u>	<u>Yes</u>	<u>FAC+</u>	
3. <u>Athyrium filix-femina</u>	<u>5</u>	_____	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>80</u>	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare Ground in Herb Stratum <u>20</u>				
Remarks: _____ _____ _____				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth (inches)	Matrix		Redox Features				Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²			
3-0							organic	duff layer	
0-8	10YR 2/2	95	10YR 4/6	5%	C	PL	clay loam	moist	
8-20	2.5Y 4/3	70	7.5YR 4/6	5	C	PL	sandy loam		
	10YR 2/2	30					clay loam		
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.									
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)						Indicators for Problematic Hydric Soils³:			
<input type="checkbox"/> Histosol (A1)		<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> 2 cm Muck (A10)					
<input type="checkbox"/> Histic Epipedon (A2)		<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Red Parent Material (TF2)					
<input type="checkbox"/> Black Histic (A3)		<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)					
<input type="checkbox"/> Hydrogen Sulfide (A4)		<input type="checkbox"/> Loamy Gleyed Matrix (F2)		<input type="checkbox"/> Other (Explain in Remarks)					
<input type="checkbox"/> Depleted Below Dark Surface (A11)		<input type="checkbox"/> Depleted Matrix (F3)		³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.					
<input type="checkbox"/> Thick Dark Surface (A12)		<input checked="" type="checkbox"/> Redox Dark Surface (F6)							
<input type="checkbox"/> Sandy Mucky Mineral (S1)		<input type="checkbox"/> Depleted Dark Surface (F7)							
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Redox Depressions (F8)							
Restrictive Layer (if present):						Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Type: _____									
Depth (inches): _____									
Remarks:									

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: GPT - Parcel 14 City/County: near Ferndale, Whatcom County Sampling Date: 9-14-11
 Applicant/Owner: SSA Marine State: WA Sampling Point: 6
 Investigator(s): Jeff Gray, Danah Palik Section, Township, Range: near flag P14B-44
 Landform (hillslope, terrace, etc.): bottomland forest Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): A Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Whitehorn silt oam, Birch Bay silt loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30</u>)					
1. <u>Alnus rubra</u>	<u>60</u>	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>86</u> (A/B)	
2. <u>Betula papyrifera</u>	<u>40</u>	Yes	FAC		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
	<u>100</u>	= Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15</u>)					
1. <u>Acer circinatum</u>	<u>30</u>	Yes	FAC-	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
2. <u>Rubus spectabilis</u>	<u>25</u>	Yes	FAC+		
3. <u>Sambucus racemosa</u>	<u>35</u>	Yes	FACU		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
	<u>90</u>	= Total Cover			
Herb Stratum (Plot size: <u>5</u>)					
1. <u>Maianthemum dilatatum</u>	<u>50</u>	Yes	FAC		
2. <u>Athyrium filix-femina</u>	<u>25</u>	Yes	FAC		
3. <u>Acer circinatum</u>	<u>15</u>	_____	FAC-		
4. <u>Polystichum munitum</u>	<u>5</u>	_____	FACU		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
	<u>95</u>	= Total Cover			
Woody Vine Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
	_____	= Total Cover			
% Bare Ground in Herb Stratum <u>5</u>					
Remarks: _____					

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
3-0							organic	duff layer
0-5	10YR 3/2	100					loam	
5-16	10YR 4/4	60	10 YR 4/6	2			loam	
	10YR 3/3	40						
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)						Indicators for Problematic Hydric Soils³:		
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> 2 cm Muck (A10)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)			<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Depleted Matrix (F3)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.		
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Redox Dark Surface (F6)					
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Depleted Dark Surface (F7)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Redox Depressions (F8)					
Restrictive Layer (if present):						Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Type: _____								
Depth (inches): _____								
Remarks:								

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____		
(includes capillary fringe)			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: GPT - Parcel 14 City/County: near Ferndale, Whatcom County Sampling Date: 9-14-11
 Applicant/Owner: SSA Marine State: WA Sampling Point: 5
 Investigator(s): Jeff Gray, Danah Palik Section, Township, Range: near flag P14B-44
 Landform (hillslope, terrace, etc.): bottomland forest Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): A Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Whitehorn silt oam, Birch Bay silt loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
1. <u>Alnus rubra</u>	<u>80</u>	Yes	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. <u>Populus balsamifera</u>	<u>20</u>	Yes	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>100</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Rubus spectabilis</u>	<u>80</u>	Yes	<u>FAC+</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u>Ribes lacustre</u>	<u>5</u>	_____	<u>FAC+</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>85</u>	= Total Cover		
Herb Stratum (Plot size: _____)				
1. <u>Maianthemum dilatatum</u>	<u>20</u>	Yes	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Glyceria grandis</u>	<u>25</u>	Yes	<u>OBL</u>	
3. <u>Athyrium filix-femina</u>	<u>10</u>	_____	<u>FAC</u>	
4. <u>Rubus spectabilis</u>	<u>15</u>	Yes	<u>FAC+</u>	
5. <u>Rubus ursinus</u>	<u>10</u>	_____	<u>FACU</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>90</u>	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare Ground in Herb Stratum <u>10</u>				
Remarks: _____				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth (inches)	Matrix		Redox Features				Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²			
0-5	10YR 2/2	100	10YR 4/6	3	C	PL	silt loam		
5-14	10YR 4/1	70	10YR 4/6	30	C	PL	clay loam	moist	

APPENDIX D

Wetland Rating Forms

Wetland name or number 5A

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 5A Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No Date of training Oct 2006

SEC: 17 TWSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes No X

Map of wetland unit: Figure Estimated size >40 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I II III **X** IV

Category I = Score >=70 Category II = Score 51-69 Category III = Score 30-50 Category IV = Score <30

Score for Water Quality Functions	8
Score for Hydrologic Functions	16
Score for Habitat Functions	21
TOTAL score for Functions	45

Category based on SPECIAL CHARACTERISTICS of Wetland

I II Does not Apply **X**

III

Final Category (choose the “highest” category from above)

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope (depression)	X
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Wetland name or number 5A

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

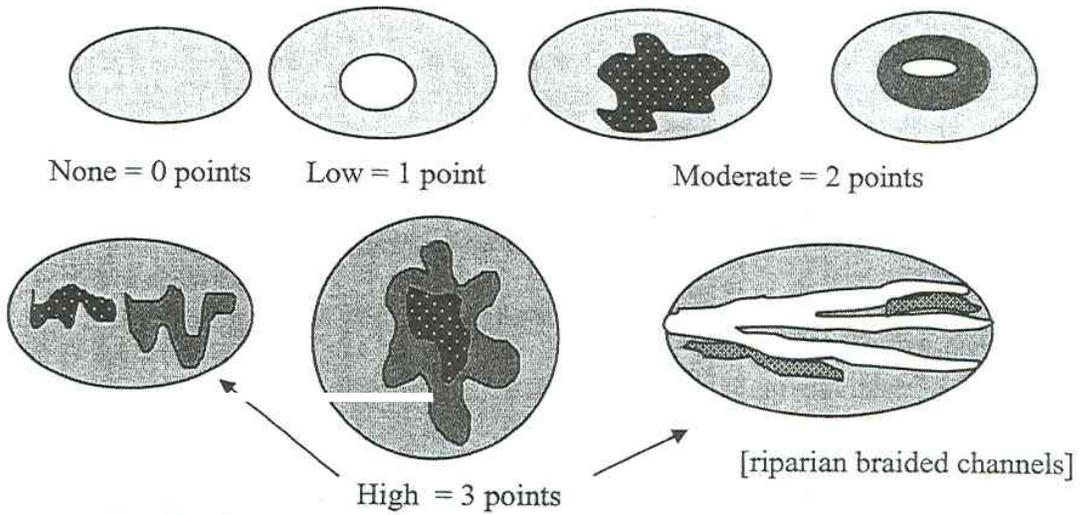
Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, “documented” means the wetland is on the appropriate state or federal database.		X
SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> For the purposes of this rating system, “documented” means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i>		X
SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

S Slope Wetlands		Points
WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality		(only 1 score per box)
S	S 1. Does the wetland unit have the <u>potential</u> to improve water quality?	<i>(see p. 64)</i>
S	<p>S 1.1 Characteristics of average slope of unit: Slope is 1% or less (<i>a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance</i>) points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0</p>	2
S	<p>S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>) YES = 3 points NO = 0 points</p>	0
S	<p>S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: <i>Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.</i> Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons</p>	Figure _____ 2
S	Total for S 1	<i>Add the points in the boxes above</i> 4
S	<p>S 2. Does the wetland have the <u>opportunity</u> to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i></p> <p> <input type="checkbox"/> Grazing in the wetland or within 150 ft <input type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields, logging, or orchards within 150 ft of wetland <input type="checkbox"/> Residential, urban areas, or golf courses are within 150 ft upslope of wetland <input type="checkbox"/> Other _____ YES multiplier is 2 NO multiplier is 1 </p>	<i>(see p. 67)</i> multiplier 2
S	TOTAL – Water Quality Functions	Multiply the score from S1 by S2 <i>Add score to table on p. 1</i> 8

Comments

<p>H 1.4 Interspersion of habitats (<i>see p. 76</i>) Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p>  <p>NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes</p>	<p>Figure _____</p> <p>3</p>
<p>H 1.5 Special Habitat Features (<i>see p. 77</i>) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long).</p> <p><input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland</p> <p><input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)</p> <p><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>)</p> <p><input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</p> <p><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</p> <p>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p>3</p>
<p>H 1. TOTAL Score – potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p>12</p>

Comments

<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW (see p. 82)</u> Which of the following priority habitats are within 330 ft (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.</i></p> <p><input type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres).</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> Old-growth forests: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age.</p> <p><input type="checkbox"/> Mature forests: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest.</p> <p><input type="checkbox"/> Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.</p> <p><input type="checkbox"/> Talus: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0 m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p><input type="checkbox"/> Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p><input type="checkbox"/> Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p><input type="checkbox"/> Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.</p> <p><input type="checkbox"/> Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.</p> <p><input type="checkbox"/> Marine/Estuarine Shorelines: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).</p> <p> If wetland has 3 or more priority habitats = 4 points If wetland has 2 priority habit= 3 points If wetland has 1 priority habitats= 1 point No habitats= 0 points</p> <p><i>Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)</i></p>	<p>0</p>
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<p>H 2.4 <u>Wetland Landscape</u> (choose the one description of the landscape around the wetland that best fits) (see p. 84)</p> <p>There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5</p> <p>The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5</p> <p>There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3</p> <p>The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 3</p> <p>There is at least 1 wetland within ½ mile points = 2</p> <p>There are no wetlands within ½ mile points = 0</p>	3
<p>H 2. TOTAL Score – opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	9
<p>TOTAL for H 1 from page 14</p>	12
<p>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</p>	21