

**Attachment 21**

**Wetland delineation by Critical Areas Consulting, 2013**

**Wetland Delineation**

City of Long Beach

Tax Lots  
10111634649  
and portions of  
10111631054

Prepared For:

City of Long Beach  
115 Bolstad Avenue West  
PO Box 310  
Long Beach, WA  
98631

Prepared By:

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March 13, 2013

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## 1.0 INTRODUCTION

This report documents a wetland delineation conducted on parcel #10111634649 and portions of 10111631054, Section 16, Township 10N, Range 11W, Willamette Meridian (see Figure 1, Topographic Site Vicinity Map). This investigation was conducted in order to facilitate the planned construction of a tsunami evacuation facility adjacent to Long Beach Elementary School at 400 Washington Avenue South. The wetland delineation was authorized by Gayle Borchard Long Beach Director of Community Development. The Pacific County Assessor's office lists the property ownership for both parcels as School District Number 101. This investigation was conducted by Robert S. Bogar of Critical Areas Consulting with field work aided by Kathleen Sayce in order to define the current wetland and buffer boundaries on the project site (see Figure 2, Plat Map and Aerial Photograph) and define wetland categories utilizing the Wetland Rating Form-Western Washington (version 2 October 2008). Site observations in this report were made in February, 2013. The structure and contents of this report including data sheets were based on the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement Manual for Western Mountains, Valleys, and Coastal Region; (Version 2, May 2010). This report meets reporting stipulations as described in *Washington State Wetland and Delineation Manual* of March 1997 and later revisions for wetland determination and delineation reports.

### 1.1 Investigation Methodology

This investigation utilized methodologies defined in *Corps of Engineers Wetlands Delineation Manual*, January 1987 and in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region*, Version 2, May 2010 (Regional Supplement). The Regional Supplement recognizes that differences in climate, geology, soils, hydrology, and other factors vary regionally and provides wetland indicators, delineation guidance, and other information specific to the western mountains, valleys, and coastal region of the Western United States. The project site lies in USDA Land Resource Region (LRR) A - Northwest Forests and Coast. Some information in the original 1987 Corps manual is superseded by more recent Regional Supplement, however, in general the methodologies specified in the '87 Corps manual (the 50/20 rule described below and others) are largely unchanged. Replaced portions include hydrophytic vegetation indicators, hydric soil indicators, and wetland hydrology indicators. This investigation also utilized the *Washington State Wetlands Identification and Delineation Manual*, (1997) to define and categorize wetlands on the project site and utilizes the *Washington State Wetlands Rating System for Western Washington* revised August 2006, to assign wetland categories noted at the site.

### 1.2 Project Site Area Description

The project site is located in southwest Pacific County in the town of Long Beach, Washington. The City and the surrounding area was built on a 27 mile sand spit that formed north of the resistant headlands of Crescent Formation Tertiary basalt near

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Ilwaco. The sand underlying and making up the peninsula are part of the Columbia River littoral cell which extends 165 km (102 mi) between Tillamook Head, OR and Point Grenville, WA. The project site and peninsula in general is low-lying and characterized by north-south elongate ridges and interdunal swales often occupied by wetlands or lakes. The project site includes all of the southernmost parcel (no. 1011634649), a roughly square shaped parcel measuring approximately 400 ft in north/south and east/west dimensions. The project site extends approximately 100 feet north to include the southern portion of parcel number 10111631054. The southern lot is zoned Public (P) with the lot to the North (partially delineated) zoned Parks and Recreation (PR).

## 2.0 PROJECT SITE DESCRIPTION

The project site (including the southern extent of the northern parcel) is roughly rectangular in shape and is accessed by 4<sup>th</sup> or 5<sup>th</sup> Streets SE which extend east from Washington Avenue S., Oregon Avenue S., and Pacific Avenue (State Hwy 103) to the West. Site topography is relatively flat at an elevation of approximately 16 ft msl (data from USGS LIDAR and Pacific County, see Figure 2) sloping gently upwards from east to west with an abrupt 1 to 2 ft rise where it meets the parking lot and access drive for the elementary school. The majority of the project site has been utilized as a ball field and is regularly mowed with a portion of the inner ball field slightly elevated above the surrounding field. The ballfield occupies the majority of the western half of the project site with scrub-shrub vegetation occupying the majority of the Eastern and Northern project site (see Figure 2).

### 2.1 Records Review

The following records relevant to the project site or project site area were obtained.

#### 2.1.1 Precipitation

The following data were reported by the National Weather Service for Astoria, Oregon, located approximately 15 miles southeast of the project site. The rainfall for the prior year, from January 1 through December 31, 2012 was 91.29 inches, about 24 inches above normal for the calendar year. Rainfall for January and February of 2013 totaled approximately 15.36 inches or about 2 inches below normal for the two month span. No compensation for unusual rainfall or surface water conditions were taken during this investigation.

#### 2.1.2 Soil Survey

The Soil Survey of the Grays Harbor County Area, and Pacific and Wahkiakum Counties, Washington (Soil Survey) indicates that the project site area supports Netarts Fine Sand (series no. 92), Seastrand Mucky Peat (series no. 132) and Yaquina Loamy Fine Sand (no. 162) (see Figure 3, Pacific County NRCS Soils Map) In the project site area the soil map shows a narrow finger of Yaquina loamy fine Sand separating Netarts fine Sand to the west and Seastrand mucky peat to the east. According to the Soil Survey, these soil series are very deep soils classified as well-drained with moderately

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rapid permeability (Netarts), very poorly drained soil with moderate permeability (Seastrand), and poorly drained soils with moderately rapid permeability (Yaquina). Both the Seastrand and Yaquina soils form in depressional areas between sand dunes. According to the survey shallow Netarts fine sand is typically dark brown and dark grayish brown fine sand about 3 inches thick overlain by a surface covering of bark and needles about 3 inches thick. The subsoil is dark brown and grayish brown fine sand about 22 inches thick. The Seastrand mucky peat exhibits shallow soils of black, very dark brown, and dark reddish brown mucky peat to about 30 inches in depth. Yaquina soils are typically composed of a thin surface layer of needles and twigs with a very dark grayish brown and dark reddish gray loamy fine sand about 9 inches thick. The subsoil is dark reddish gray and dark brown fine sand about 15 inches thick.

According to the Field Guide for Wetland Delineation, 1987 Corps of Engineers Manual (Wetland Training Institute), a hydric soil is "a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA-NRCS 1995)". All three soils are listed as hydric by the Oregon Natural Resource Conservation Service (NRCS), due to either a shallow groundwater table or saturation by ponding in the growing season.

## 2.2 Field Observations

### 2.2.1 Methodology

This investigation utilized routine determination field methods to define wetland boundaries as defined in *Corps of Engineers Wetlands Delineation Manual*, 1987 and by the *Washington State Wetlands Identification and Delineation Manual*, March 1997. These methods typically include demarcation of the wetland boundary in the field by using labeled wetland delineation flagging or pin flags and recording these boundaries on a wetland map. The wetland delineation site plan (Figure 5) was drawn based on site features such as asphalt driveway or parking area and vegetation breaks between scrub-shrub and the mowed ballfield or presumed parcel boundaries such as a chain-link fence located near the north end of the south parcel boundary. Field measurements utilized a 300 ft measuring tape, Brunton compass and Bushnell GPS device.

In general, topographic changes at the site are subtle with the exception of significant fill areas associated with the asphalt parking lot and driveway. When wetland/upland boundaries are identified, survey areas are paired with selected locations on either side of the identified boundary. Difficult situations or problem areas were not identified during this investigation. Wetland Determination Data Forms - Western Mountains, Valleys, and Coast Region are included in Appendix A.

### 2.2.2 Vegetation

This investigation utilized "absolute percent cover" to define each plants abundance for trees, scrub-shrub, and herbal vegetation. Several surveys of vegetation were conducted to determine dominant vegetation in a 30 ft radius for treed areas and 5 ft radius for herbal areas. Dominant species of vegetation were those that made up more than 50%

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aerial cover of a surveyed area or whose aerial cover was at least 20 percent for the radius' described above. Vegetation in a surveyed location or site was considered hydrophytic (adapted to saturated soil conditions) if more than 50% of the dominant vegetation (regardless of strata) was facultative or wetter using Fish and Wildlife Service plant listings (Reed 1988, revised 1993). The dominance test, Indicator 1 (see Wetland Determination Data Forms), was utilized as the basic hydrophytic vegetation indicator for the project site.

### 2.2.3 Soil

According to the Regional Supplement, 2010, the National Technical Committee for Hydric Soils defines a hydric soil as a soil that formed under conditions of saturation, flooding, or ponding long enough during the grows it growing season to develop anaerobic conditions in the upper part (USDA Soil Conservation Service 1994). The goal of soil observations was to identify hydric soil characteristics associated with repeated periods of saturation and/or inundation for extended periods. Soil profiles were investigated using test pits excavated by hand shovel to at least 20 inches below the surface. Test pit locations were measured with respect to assumed property boundaries described above using a 300 ft. tape and GPS device. Measurements are accurate to within approximately four feet.

### 2.2.4 Hydrology

Groundwater in the project site area has been characterized by a US Geological Survey water resources investigations report entitled *Groundwater Flow and Water Quality in the Sand Aquifer of Long Beach Peninsula, Washington*, by Blakemore E Thomas, 1995.

Both the report cited above and observations of multiple areas on the Long Beach Peninsula suggest that some areas of the Long Beach Peninsula only support ponded water during brief periods of high precipitation. Seasonal ponding supporting wetlands, ponds, or lakes, tends to occur where the groundwater table intersects with topographically low elevations between dunal ridges. Observations at the project site suggest that groundwater is very shallow with some areas saturated very near or to the surface. Drainage in the site area has been impacted by a man-made ditch (the south main drainage) that runs from Tinker Lake about ½ mile to the north, south to near the eastern project site boundary (Figures 1 and 2).

## 2.3 Natural Heritage Program Considerations

The Township, Range and Section are used to define whether wetlands in a specific location have Natural Heritage Features identified by the Natural Heritage Program (NHP). Sections that contain natural heritage features associated with wetlands are listed, by section, by the Washington Natural Heritage Program. Data current as of August 24, 2012 suggests that the project site location (Section 16 of Township 10W, Range 11N) does not support threatened or endangered species.

## 2.4 Wetland HydroGeoMorphic (HGM) Modeling

Hydrogeomorphic classification, groups wetlands into categories based on the geomorphic and hydrologic characteristics that control functions. Classes of wetlands include riverine, slope, lake-fringe, tidal fringe, and depressional. As part of this investigation the Wetland Rating Form – Western Washington, revised October 2008, was utilized in order to categorize wetlands at the project site. Classification of a wetland in Washington State utilizes this rating form that ties site observations and nearby natural habitat features to categorize the wetland based on functions and values.

Utilizing the Wetland Rating Form, the mowed wetland making up the ballfield in the southwest portion of the project site received a score of 19 points placing the wetland in a Category of IV requiring a 25 ft buffer. Again, utilizing the Wetland Rating Form, the scrub-shrub portion of the wetland received a score of 39 points, approximately mid range in a Category III wetland, requiring a 50 foot buffer. The completed Wetland Rating Forms – Western Washington has been included in Appendix B of this report.

### 3.0 RESULTS AND DISCUSSION

#### 3.1 Project Site Description

The project site topography, as mentioned above, is characterized by low-lying elevations dropping gradually to the east toward the south main drainage system. The following paragraphs describe plant communities, soils and hydrology noted at the project site.

##### 3.1.1 Plant Communities

At the time of the site visit, the southwestern portion of the project site was a grass covered ballfield immediately surrounded by scrub-shrub vegetation. The mown ballfield was dominated by *Holcus lanatus* (common velvetgrass), *Agrostis sp.* (bent grass), *Ranunculus repens* (creeping buttercup), and *Carex obnupta* (slough sedge). The scrub-shrub community was dominated by *Salix hookeriana* (Hooker willow), *Carex obnupta*, *Spiraea douglasii* (Douglas spirea), and *Juncus effuses*. *Alnus rubra* (red alder) and invasive *Phallus arundinacea* (reed canary grass) were also dominant near the north portion of the scrub-shrub plant community.



Site Photograph 1 (left): View to the southeast showing the ballfield, Note standing water in the foreground. The baseball diamond is located in the far south corner of the field, seen on the right-hand side in the photograph.

Site Photograph No. 2 (right): View to the south of the northern scrub-shrub portion of the wetland. The driveway and parking area for the elementary school is not seen but is located immediately right of the image.



For this investigation, a total of three surveys were conducted on the subject parcel including one survey near the west edge of the mowed field, one survey near first base of the baseball diamond and one survey in the scrub-shrub wetland near the baseball diamond. The identified wetlands at the site are limited on the west by the playground and driveway. On the north the scrub-shrub wetlands (see Photograph 2) transition abruptly to an area dominated by invasive grasses (*P. arundinacea*) and further north and offsite to another mown baseball field (see Figure 4). Vegetation surveys were labeled TP-1 (Test Pit number 1) through TP-3. (See Figure 5 for test pit locations.)

### 3.1.2 Soils

In general observed soils included dark silty sand and sandy silt with depleted matrix as the common hydric soil indicator. Hydrogen sulphide odors were noted in two of the borings with shallow groundwater noted in all three test pits.

Photograph No. 3: Photograph taken from above of TP-1 located in the Category IV wetland identified in this report. Soil texture is about 5 inches of silty sand overlying gray sand. Note ground water in test pit at about 3 inches below surface grade.



Photograph No. 4a (right) and 4b (below): Views from above of TP-2 soil and test pit located in the Category IV wetland near the baseball diamond identified in this report. Soil texture is about 5 inches of sandy silt overlying gray sand. Note ground water in test pit at about 12 inches below surface grade.



Photograph No. 5: Photograph taken from above of TP-3 soil located in the Category III scrub-shrub wetland identified in this report. Soil texture is about 7 inches of sandy silt overlying silty sand. Groundwater (not shown) stabilized at about 8 inches below grade.



All three soils were consistent with Yaquina fine sand characterized in the soil survey of Pacific County and consisted of a darker typically more silty layer near the surface with a sandy (less silty) layer below. No upland soils were noted on the project site.

### *3.1.3 Hydrologic Information*

The US geological survey study mentioned above shows a hydrologic divide oriented north-south and typically positioned near the center of the peninsula. Groundwater flow west of the divide typically flows to the Pacific Ocean and east of the divide flows to Willapa Bay. The project site and Long Beach Elementary is located near the southern boundary of the study area. The project site appears to be close to the hydrologic divide flowing either east and north to the Tarlet Slough and Willapa Bay or west to the Pacific. Shallow groundwater flowing from the project site is most likely flowing east to the south main drainage which directs runoff south and then west to the Pacific Ocean.

Primary hydrologic indicators noted during field reconnaissance of this wetland investigation (behind Long Beach Elementary) included shallow groundwater noted from 3 inches to 12 inches in depth below surface grade.

### *3.1.4 Existing Wetland Mapping*

The National Wetlands Inventory (NWI) map did not show wetlands on the baseball field portion of the project site. The wetlands inventory map shows wetlands associated with the natural scrub-shrub vegetation, labeled as PSS1C or Palustrine Scrub-shrub, with vegetation including broad leaved deciduous (1), and seasonally flooded (C). Local wetlands maps were not available for this investigation.

## 3.2 Findings

The following paragraphs summarize findings of this investigation and provide additional description of the wetlands observed at that the site.

### *3.2.1 Description and Extent*

The Cowardin system classifies wetlands based on water flow, substrate types, vegetation types, and dominant plant species. The grassy baseball field is not in a natural state and therefore does not have a relevant Cowardin classification. However, if left in a natural state this area would most likely regenerate to a scrub-shrub wetland system. For the purposes of the hydrogeomorphic model the Category IV wetland associated with the ballfield was considered a depressional wetland.

Designation of the natural wetland at the project site using the Cowardin classification system results in this wetland being categorized as a palustrine scrub-shrub, intermittently flooded wetland.

### *3.2.2 Locations*

As mentioned above natural wetlands of the Peninsula are typically found in low lying areas between dune ridges. The project site wetland appears to drain to the east to the south main drainage which outlets south and west of the project site at the Pacific Ocean.

### *3.2.3 Upland Areas*

No uplands were identified at the project site. Areas immediately west of the baseball field, currently where the driveway, parking lot and elementary school buildings are located, likely supported upland plant communities prior to development. Scrub-shrub wetlands surround the baseball field described in this report to the north, east and south.

### *3.2.4 Wetland Boundaries*

As mentioned above wetland/upland boundaries were not identified in this investigation.

### 3.3 Other Waters Identified

A small pond is located immediately northeast of the project site. This apparently man-made pond does not directly intersect the south main channel and appears to act as a reservoir accepting shallow groundwater during winter months. Tinker Lake is located less than 1 mile north of the project site with the south main drainage beginning at the south end of the lake. From the perspective of Tinker Lake, the south main drainage ditch runs to the south (past the project site) about two miles to 30<sup>th</sup> Street in Seaview, and then west to the Pacific Ocean. There is no obvious connectivity between the project site and Tinker Lake as the south main directs runoff during high flow periods south and then west. (Note that although the USGS map shown in Figure 1 shows a direct connection between the pond north of the project site and Tinker Lake, this is no longer the case.)

### 4.0 CONCLUSIONS

Classification using the Washington State Wetland Rating System utilized separate categorizations for the baseball field vegetated with mown grasses and the natural wetland system occupying eastern and northern portions of the project site. Results of this investigation suggest that the wetlands associated with the baseball field are Category IV depressional wetlands with the natural, fresh-water, scrub-shrub wetlands as Category III wetlands.

Any future impacts to these wetlands will require mitigation which should reflect these relative ratings based on wetland functions and values.

### 5.0 LIMITATIONS

This report documents the investigation, best professional judgment and conclusions of the investigator(s). It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Washington State Department of Ecology or Army Corps of Engineers if required. In addition, estimates of property line locations (septic systems, domestic water wells, etc.) are often made using visual or verbal data. These estimates should be verified by the site owner, surveyor, and/or private contractor independently prior to initiating any construction activity.

Thank you for allowing me to conduct your wetland survey. Please contact me at the below phone number or email address if you have questions or require additional information.

Sincerely,

A handwritten signature in blue ink that reads "Robert S. Bogar". The signature is written in a cursive style with a long horizontal line extending to the right.

Robert S. Bogar  
WA Licensed Hydrogeologist  
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Email: [rbogar@gmail.com](mailto:rbogar@gmail.com)

## Bibliography

Blakemore E. Thomas, 1995. *US Geological Survey Water Resources Investigations Report (95-4026) entitled Groundwater Flow and Water Quality in The Sand Aquifer of Long Beach Peninsula, Washington*, by Blakemore E Thomas, 1995.

*Corps of Engineers Wetlands Delineation Manual, January 1987 and in the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, Version 2, May 2010 (Regional Supplement).*

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*Soil Survey of Grays Harbor County Area, Pacific County, and Wahkiakum County, Washington, US Department of Agriculture, Soil Conservation Service, 1979.*

US Fish and Wildlife Service *National Wetlands Inventory (NWI) Map.*

<http://wetlandsfws.er.usgs.gov/NWI/index.html>

US Fish and Wildlife Service *List of Plants that Occur in Wetlands, 1988 and 1993 Supplement.*

Washington State Department of Ecology, *Washington State Wetlands Identification Manual*, Ecology Publication #96-94, March 1997 (updated August 2006).

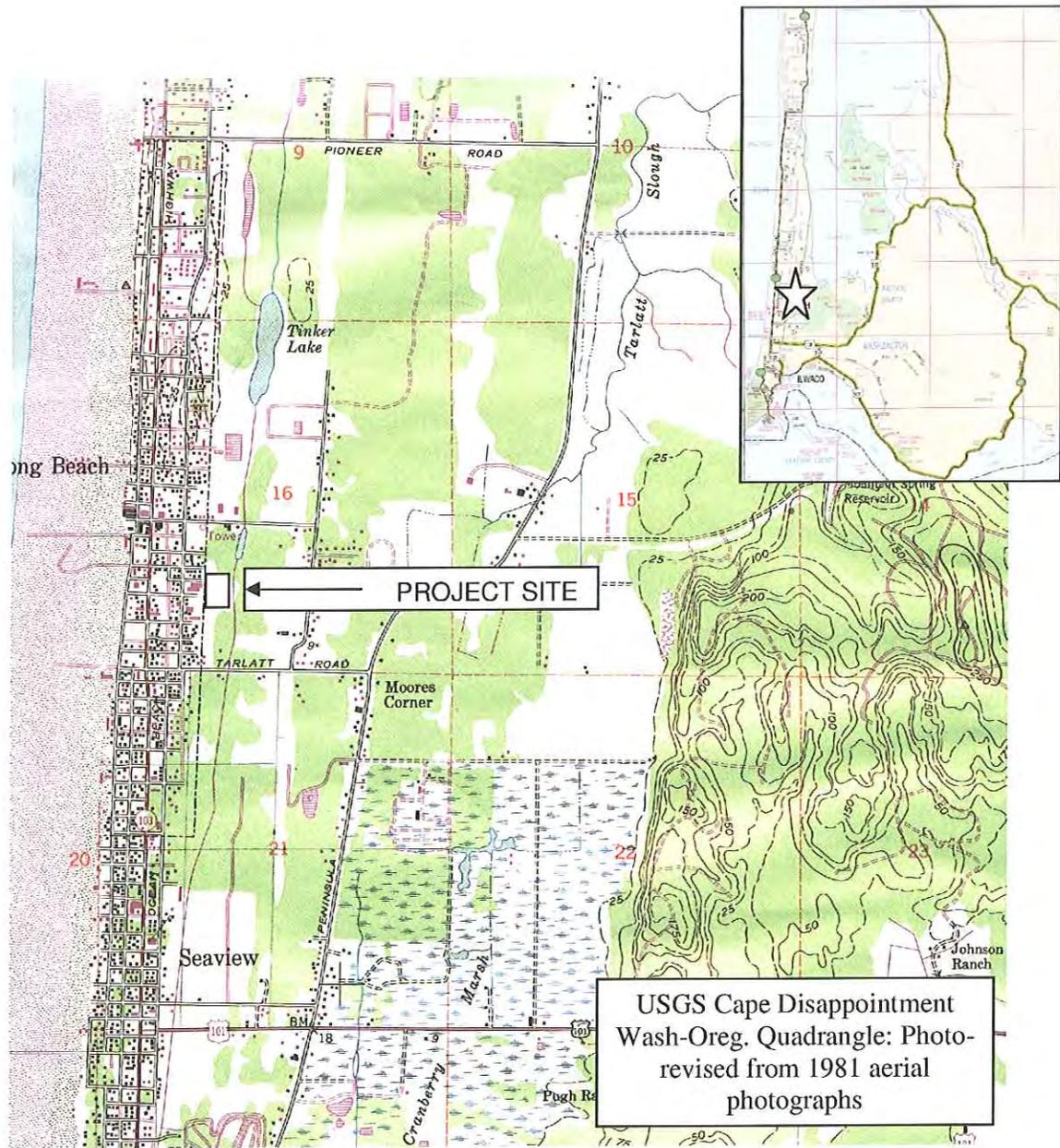
Washington State Department of Ecology, *Washington State Wetland Rating System for Western Washington, Updated 2006 and 2008.*

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Wells, Ray E., 1989. *Geologic Map of the Cape Disappointment-Naselle River Area, Pacific and Wahkiakum Counties, Washington.* Miscellaneous Investigations Series MAP I-1832

## **FIGURES**

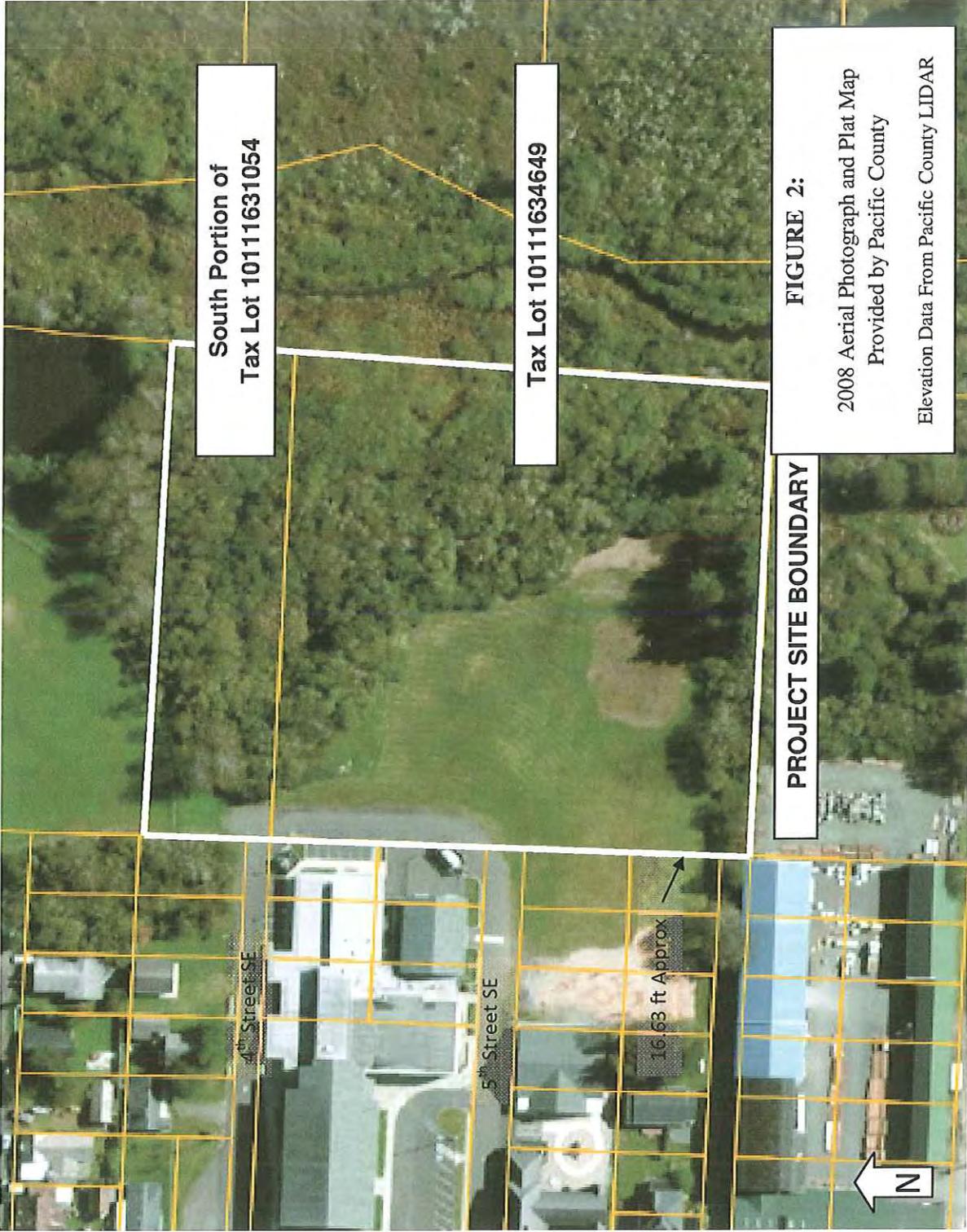
- Figure 1 Topographic Site Vicinity Map
- Figure 2 Plat Map and Aerial Photograph
- Figure 3 Pacific County NRCS Soils Map
- Figure 4 National Wetlands Inventory Map
- Figure 5 Wetland Delineation Site Plan



**FIGURE 1**

Site Vicinity Map  
 City of Long Beach Wetland  
 Delineation

USGS Topographic Map  
 7.5 Minute Series  
 Scale = 1:24,000



South Portion of  
Tax Lot 10111631054

Tax Lot 10111634649

**FIGURE 2:**  
2008 Aerial Photograph and Plat Map  
Provided by Pacific County  
Elevation Data From Pacific County LIDAR

**PROJECT SITE BOUNDARY**

4th Street SE

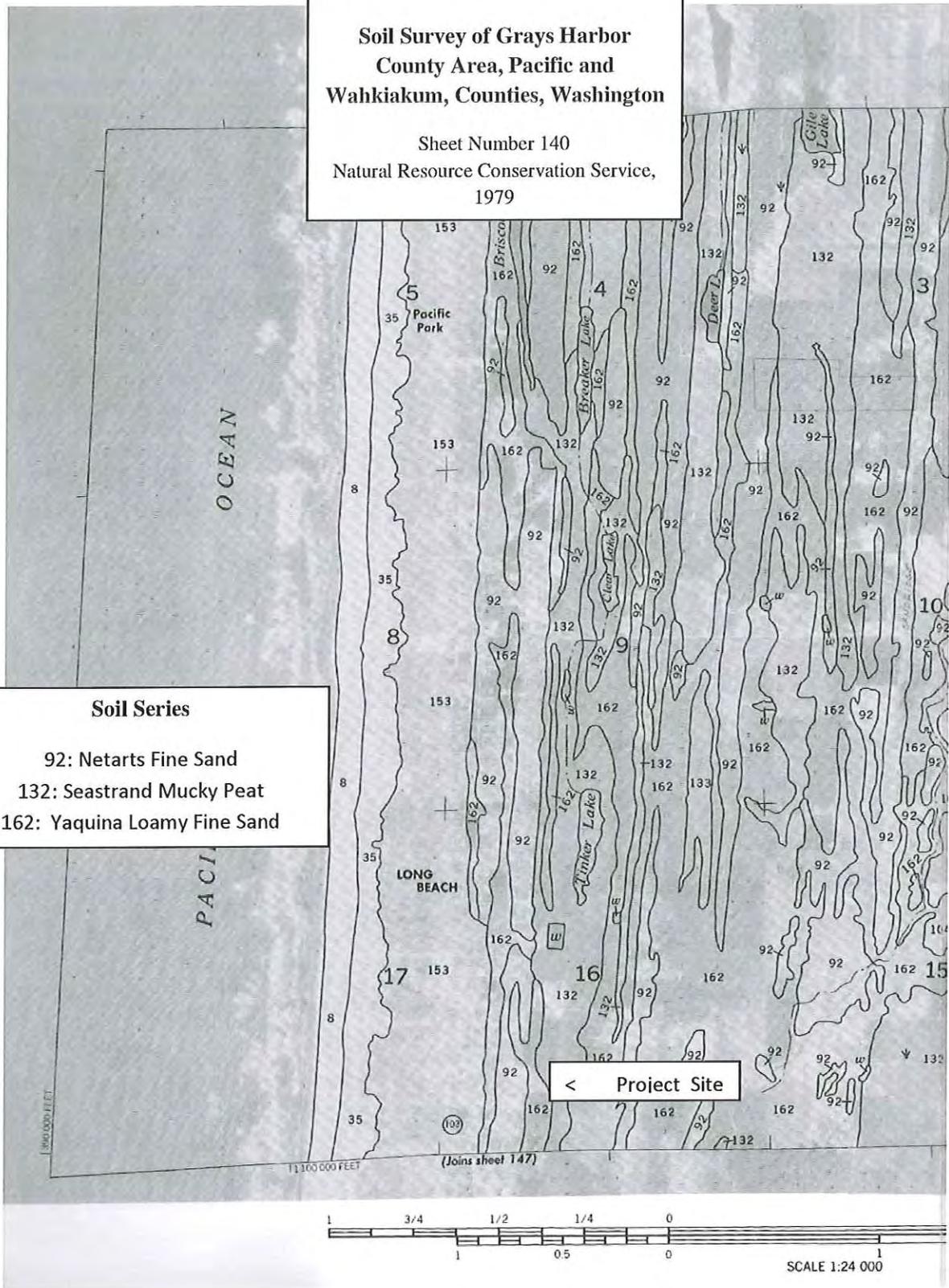
5th Street SE

16.63 ft Approx



**FIGURE 3**  
**Soil Survey of Grays Harbor**  
**County Area, Pacific and**  
**Wahkiakum, Counties, Washington**  
 Sheet Number 140  
 Natural Resource Conservation Service,  
 1979

**Soil Series**  
 92: Netarts Fine Sand  
 132: Seastrand Mucky Peat  
 162: Yaquina Loamy Fine Sand





U.S. Fish and Wildlife Service

# National Wetlands Inventory

Figure 4 NWI Map

Mar 15, 2013



## Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

### User Remarks:

City of Long Beach Wetland Delineation



**FIGURE 5 WETLAND DELINEATION SITE PLAN**

Project: City of Long Beach Wetland Delineation  
 Legal: Tax Lots 10111634649 and 10111631054  
 Address: 400 Washington Avenue South  
 County: Pacific County

Field Date: Feb 13, 2013 Field Crew: RSB / KS  
 Drawing By: RSB (2008 Pacific County Aerial Photograph)  
 Drawing Date: March 27, 2013  
 Report Title: Wetland Delineation/City of Long Beach

  
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## **Appendix A**

Wetland Determination Data Forms

—

Western Mountains, Valleys, and Coast Region

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

Project/Site: LONG BEACH ELEMENTARY City/County: PACIFIC Sampling Date: 2-13-13  
 Applicant/Owner: CITY OF LONG BEACH State: WA Sampling Point: TP-1  
 Investigator(s): RSB/KS. Section, Township, Range: 10/11/16  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): Flat Slope (%): 0  
 Subregion (LRR): MLRA 4A in LRAA Lat: 46.34874 Long: -124.050837 Datum: NAD83  
 Soil Map Unit Name: YAUQUINA LOAMY FINE SAND NWI classification: N/A

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? No Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? No (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 _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks:	

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>N/A</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> 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 = _____
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>N/A</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
Herb Stratum (Plot size: <u>3' RAD</u> )				
1. <u>Halicus lanatus</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Agrostis sp</u>	<u>20</u>	<u>Y</u>	<u>FAC*</u>	
3. <u>Hanunculus repens</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
4. <u>Juncus effusus</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
5. <u>Carex abrupta</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
= Total Cover				
Woody Vine Stratum (Plot size: <u>N/A</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
= Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				

Remarks: Note: Dominant plant cover variable. All FAC or wetter - percentages approx. \*Agrostis species typ. FAC.

**SOIL**

Sampling Point: TP-1

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5"	7.5YR 3-3	100					SM	silty sand, roots
5-16"	7.5YR 3-1	100					SP	sand, v. dk gray.
16-25"								mudstone, hard

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: dense mudstone / f. sandstone

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: Water in test pit @ 3". color of mudstone lt brown. Not typical of iron cementation.

**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) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): 3"

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Ponded in areas.

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

Project/Site: LONG BEACH ELEMENTARY City/County: PACIFIC Sampling Date: 2-13-13  
 Applicant/Owner: CITY OF LONG BEACH State: WA Sampling Point: TP-2  
 Investigator(s): RSB/K.S. Section, Township, Range: 10/11/16  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): (D) Slope (%): 0  
 Subregion (LRR): A - MRLA 4A Lat: 46.343683 Long: -124.050376 Datum: NAD 83  
 Soil Map Unit Name: YAGUINA LOAMY FINE SAND NWI classification: N/A

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? NO Are "Normal Circumstances" present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? NO (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 _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks:	

**VEGETATION – Use scientific names of plants.**

Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
<u>Tree Stratum (Plot size: <u>N/A</u>)</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)
1. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)
2. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
3. _____				<b>Prevalence Index worksheet:</b> 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 = _____
4. _____				
= Total Cover				
<u>Sapling/Shrub Stratum (Plot size: <u>N/A</u>)</u>				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				
<u>Herb Stratum (Plot size: <u>3' RAD</u>)</u>				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants <sup>1</sup> ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Holcus lanatus</u>	<u>25*</u>		<u>FAC</u>	
2. <u>Agrostis sp.</u>	<u>25</u>		<u>FAC*</u>	
3. <u>Ranunculus repens</u>	<u>25</u>		<u>FACW</u>	
4. <u>Juncus eff.</u>	<u>25</u>		<u>FW</u>	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
= Total Cover				
<u>Woody Vine Stratum (Plot size: _____)</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____
1. _____				
2. _____				
= Total Cover				
<u>% Bare Ground in Herb Stratum</u> <u>0</u>				

Remarks: \* Agrostis typically FAC. Percentages approx - all veg FAC or wetter. Mosses also common.

**SOIL**

Sampling Point: 77-2

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 <sup>1</sup>	Loc <sup>2</sup>		
0-4"	7.5 YR 4/3	100					ML/SM	sandy silt
4-5"	7.5 YR 4/6	100					SM	silty sand
5-10"	7.5 YR 4.5/4-6	100					SP	sand, some silt
p-16*	4	80%	7.5 YR 4/6	100%		C	SP	bright mottling (redox)
13-14"	7.5 YR 3/1		V. dk gray					sulphurous odors - sand

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<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)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<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): N/A

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: Sulphurous odor @ 13", surface ponded water nearby. Ground water in test pit @ 10".

**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) (MLRA 1, 2, 4A, and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Ponded nearby (surface).

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

Project/Site: LONG BEACH ELEMENTARY City/County: PACIFIC Sampling Date: 2/13/13  
 Applicant/Owner: CITY OF LONG BEACH State: CA Sampling Point: TP-3  
 Investigator(s): RSB / K.S. Section, Township, Range: 10 / 11 / 16  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): (none) Slope (%): 0-2%  
 Subregion (LRR): A - MIRA YA Lat: 46.348357 Long: -124.050172 Datum: N83/W84  
 Soil Map Unit Name: Seastrand Mucky Peat NWI classification: PSS1C

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? No Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? No (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"/>	Is the Sampled Area within a Wetland? 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"/>	
Remarks:			

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>N/A</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet:
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15' RAD</u> )				OBL species _____ x 1 = _____
1. <u>Salix hookeriana</u>	<u>30*</u>		<u>FACW</u>	FACW species _____ x 2 = _____
2. _____	_____	_____	_____	FAC species _____ x 3 = _____
3. _____	_____	_____	_____	FACU species _____ x 4 = _____
4. _____	_____	_____	_____	UPL species _____ x 5 = _____
5. _____	_____	_____	_____	Column Totals: _____ (A) _____ (B)
= Total Cover <u>30</u>				Prevalence Index = B/A = _____
Herb Stratum (Plot size: _____)				<b>Hydrophytic Vegetation Indicators:</b>
1. <u>Carex obnupta</u>	<u>25D</u>		<u>OBL</u>	<input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Spiraea douglasii</u>	<u>35D</u>		<u>FW</u>	<input type="checkbox"/> 2 - Dominance Test is >50%
3. <u>Juncus effusus</u>	<u>10</u>		<u>FACW</u>	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup>
4. _____	_____	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	<input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup>
6. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
7. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
11. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: <u>N/A</u> )				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
= Total Cover _____				
% Bare Ground in Herb Stratum <u>10%</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: <u>Percentages approx. All dominant are FAC or better.</u>				

**SOIL**

Sampling Point: TP-3

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 <sup>1</sup>	Loc <sup>2</sup>		
0-7"*	5YR 3/1						SM	silty sand*
7-20"	5YR 4/1						SP	less silt
*2" mucky organic silty sand (near surface).								

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils<sup>3</sup>:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4) (14")
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1) (except MLRA 1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: Sulphur smell @ ~14", Groundwater noted @ 8".

**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 checked="" 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  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): 8"  
 Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**Appendix B**

Wetland Rating Form – Western Washington

Wetland name or number \_\_\_\_\_

**WETLAND RATING FORM – WESTERN WASHINGTON**  
 Version 2 - Updated July 2006 to increase accuracy and reproducibility among users  
 Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Mowed Wetland Date of site visit: 2/13/13

Rated by RSB Trained by Ecology? Yes \_\_\_ No X Date of training \_\_\_\_\_

SEC: 16 TOWNSHIP: 10N RANGE: 11W Is S/T/R in Appendix D? Yes \_\_\_ No X

Map of wetland unit: Figure \_\_\_\_\_ Estimated size \_\_\_\_\_

**SUMMARY OF RATING**

Category based on FUNCTIONS provided by wetland

I \_\_\_ II \_\_\_ III \_\_\_ IV X

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

Score for Water Quality Functions	<u>2</u>
Score for Hydrologic Functions	<u>7</u>
Score for Habitat Functions	<u>9</u>
<b>TOTAL score for Functions</b>	<b><u>18</u></b>

Category based on SPECIAL CHARACTERISTICS of wetland

I \_\_\_ II \_\_\_ Does not Apply X

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	<u>X</u>
Natural Heritage Wetland	Riverine	
Bog	Lake-fringe	
Mature Forest	Slope	
Old Growth Forest	Flats	
Coastal Lagoon	Freshwater Tidal	
Interdunal		
None of the above	Check if unit has multiple HGM classes present	<input type="checkbox"/>