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CITY OF MUKILTEO



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Tacoma, Washington 98402
253.383.4940

November 14, 2017

City of Mukilteo
11930 Cyrus Way
Mukilteo, Washington 98275

Attention: Challis Stringer

Subject: Japanese Gulch Wetland Delineation
Harbour Pointe Boulevard Widening Project
Mukilteo, Washington
File No. 5790-004-00

INTRODUCTION AND PROJECT UNDERSTANDING

The City of Mukilteo (City) is proposing to widen Harbour Pointe Boulevard and install new sidewalks for a project within Mukilteo jurisdiction. A total of three wetlands were identified within the roadwork project vicinity (two by GeoEngineers and one by others) and based on current designs one wetland will need to be partially filled as part of this project. For more information on the wetlands identified at the road widening project site, see the wetland delineation reports for the Harbour Pointe Boulevard Widening Project site (GeoEngineers, 2017a, Wetland Resources, 2016).

The City owns property, known as Japanese Gulch, that it has identified for wetland and buffer mitigation. GeoEngineers, Inc. (GeoEngineers) was contracted by Tuttle Engineering and Management (TEAM) on behalf of the City to perform wetland delineation services at the proposed Japanese Gulch Mitigation site located in Everett, Washington (Figure 1 – Vicinity Map). This report has been prepared to provide baseline information on wetlands and streams within the proposed mitigation site in accordance with Everett Municipal Code (EMC), Chapter 1937 Critical Areas. Compensation for impacts to wetlands at the project site is described in the Mitigation Plan (GeoEngineers, 2017b).

Mitigation Site Location and Description

The proposed Japanese Gulch mitigation site, is located northeast of the 76th Street SW and 44th Avenue West intersection situated in Section 10 of Township 28 North and Range 4 East of the WM and WRIA 7 (Snohomish) within the City of Everett. The Japanese Gulch property consists of several parcels owned by the City of Mukilteo that total approximately 7.45 acres (Parcel Nos. 00628500000001, 00631400000001, 00491200000101, 28041000201400). The property is in the southwest portion of the City of Everett, adjacent to the Mukilteo city limits.

The City of Mukilteo identifies two wetlands adjacent to the proposed mitigation site, previously identified by others (delineation occurred in 2007) (City of Mukilteo, 2016; ESA, 2011). The wetlands are identified as Wetlands 2 and 3 (ESA, 2011). Wetland 2 is to the north of the mitigation site and is identified as a palustrine open water/forested wetland less than 0.5 acre in size (ESA, 2011). Wetland 3 is to the south of the mitigation site and is identified as a palustrine forested wetland approximately 0.14 acre in size (ESA, 2011). No wetlands have been identified within the proposed mitigation site (City of Mukilteo, 2016; ESA, 2011).

FIELD INVESTIGATION

GeoEngineers biologists conducted a field assessment on August 2, 2017 to document habitat and delineate potential wetlands within the proposed mitigation site footprint. GeoEngineers biologists identified and delineated one wetland (Wetland A) during the 2017 field investigation. In addition, the previously delineated wetlands were observed north (Wetland 2) and south (Wetland 3) of the mitigation site. No streams were identified within or immediately adjacent to the mitigation site. Representative photographs of the site have been included in Appendix B. Figure 2 depicts the wetlands and the proposed mitigation site.

Wetland and Stream Assessment Methods

The identification of wetlands was conducted in accordance with guidelines presented in EMC Chapter 19.37.090 (Wetland designation, delineation, mapping and rating). The U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE, 2010) were used to identify potential wetland habitat. Wetland buffer widths are identified according to wetland category and habitat functions points according to EMC 19.37.110 (standard wetland buffer width requirements). A total of four sample plots were completed at the project site to document site conditions and habitat. Appendix C includes the sample plot wetland determination data forms. The wetland rating form is included in Appendix D.

Below is a description of habitat within the project site and Table 1, on the following page, summarizes information regarding Wetland A (the delineated wetland within the proposed mitigation site within the area of investigation).

Site Conditions


The information below was gathered during the field investigation. See wetland determination data forms in Appendix C for more information on the habitat conditions.

Vegetation

Vegetated portions of the proposed mitigation site are slightly weedy. Dominant vegetation includes Himalayan blackberry (*Rubus armeniacus*) and reed canarygrass (*Phalaris arundinacea*), which are non-native invasive weeds, and trailing blackberry (*Rubus ursinus*) a native groundcover. In addition, there is a small amount of young red alder (*Alnus rubra*), with lesser amounts of western red cedar (*Thuja plicata*), scouler's willow (*Salix scouleriana*), Indian plum (*Oemleria cerasiformis*), field horsetail (*Equisetum arvense*) and Canada thistle (*Cirsium arvense*). Appendix B contains site photographs.

TABLE 1. WETLAND A

Wetland A - Information	
Location	~700 feet northeast of the 76 th St SW and 44 th Ave W intersection
WRIA	7 – Snohomish
Local Jurisdiction	City of Everett
Rating ¹	IV (14 points)
Buffer Width ²	45 feet
Size	832 square feet
Cowardin Class	Palustrine Shrub and Emergent
HGM Class	Slope
Data Forms	Appendix C: SP-4



Description Summary	
Vegetation	Herbaceous: Reed canarygrass (<i>Phalaris arundinacea</i>) Shrub: Hardhack (<i>Spiraea douglasii</i>), Himalayan blackberry (<i>Rubus armeniacus</i>) Tree: Although overhung by young red alder trees, no trees were within the wetland.
Soils	Soils meet the criteria for hydric soil indicator Redox Dark Surface (F6)
Hydrology	Indicators: FAC neutral test, geomorphic position, observed saturation during two spring site visits. Source: Direct precipitation, stormwater runoff and seep from wetland to the south and high-water table in the wet season.
Notes	Water appears to discharge to the ground and potentially the swale to the east.

Western Washington Wetland Rating Functions Summary (Appendix D - 12 points total)	
Water Quality	4 points: due to having a gradual slope and greater than 50 percent dense and uncut herbaceous vegetation coverage.
Hydrologic	4 points: due to having greater than 90 percent dense and uncut herbaceous and shrub vegetation coverage, receiving stormwater runoff and there not being downstream flooding issues.
Habitat	4 points: due to having two vegetation communities, having connections to other upland and wetland areas but also having impacted buffers from historical residential and agricultural use and use of the buffer areas by hikers, dogs and mountain bikers.
Buffer Condition	The wetland buffer consists of a mix of disturbed areas including the paved road and turn around area (used by people and pets), an informal trail to the south and east and areas of young vegetation to the north and west including blackberry species, young red alder, young western red cedar and grasses. There are also two second growth mature cottonwood in the buffer to the north and east.

Notes:

¹ Wetland rating in accordance with Washington State Wetlands Rating System for Western Washington, (Hruby, revised 2014).

² EMC 19.37.110 based on a rating score of points for habitat and wetland category. The final buffer width is subject to approval by the jurisdictional authority. Buffer width also assumes minimization measures will be applied.

GeoEngineers, Inc. 2017a. "Draft Wetland and Stream Delineation Report, Harbour Pointe Boulevard Widening Project. Mukilteo, Washington." GEI File No. 5790-004-00, September 20, 2016.

GeoEngineers, Inc. 2017b. "Mitigation Plan for the Harbour Pointe Boulevard Widening Project. Mukilteo, Washington." GEI File No. 5790-004-00, in preparation.

GretagMacbeth. 2000. Munsell® Soil Color Charts. New Windsor, New York.

Hruby, T. 2014. "Washington State Wetland Rating System for Western Washington: 2014 Update. (Publication #14-06-029)." Department of Ecology, Olympia, Washington.

United States Army Corps of Engineers, 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, ed. J.S. Wakeley, R. W. Lichvar, and C.V. Noble. ERDC/EL TR-10-3. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

United States Army Corp of Engineers (USACE). 2016. Western Mountains, Valleys, and Coast 2016 Regional Wetland Plant List, US Army Corp of Engineers, Cold Regions Research and Engineering Laboratory.

United States Department of Agriculture – National Resource Conservation Service, 2016. Web Soil Survey. Available at: <http://websoilsurvey.nrcs.usda.gov/app/>.

United States Department of Agriculture – National Resource Conservation Service, 2017. National Hydric Soils List by State.

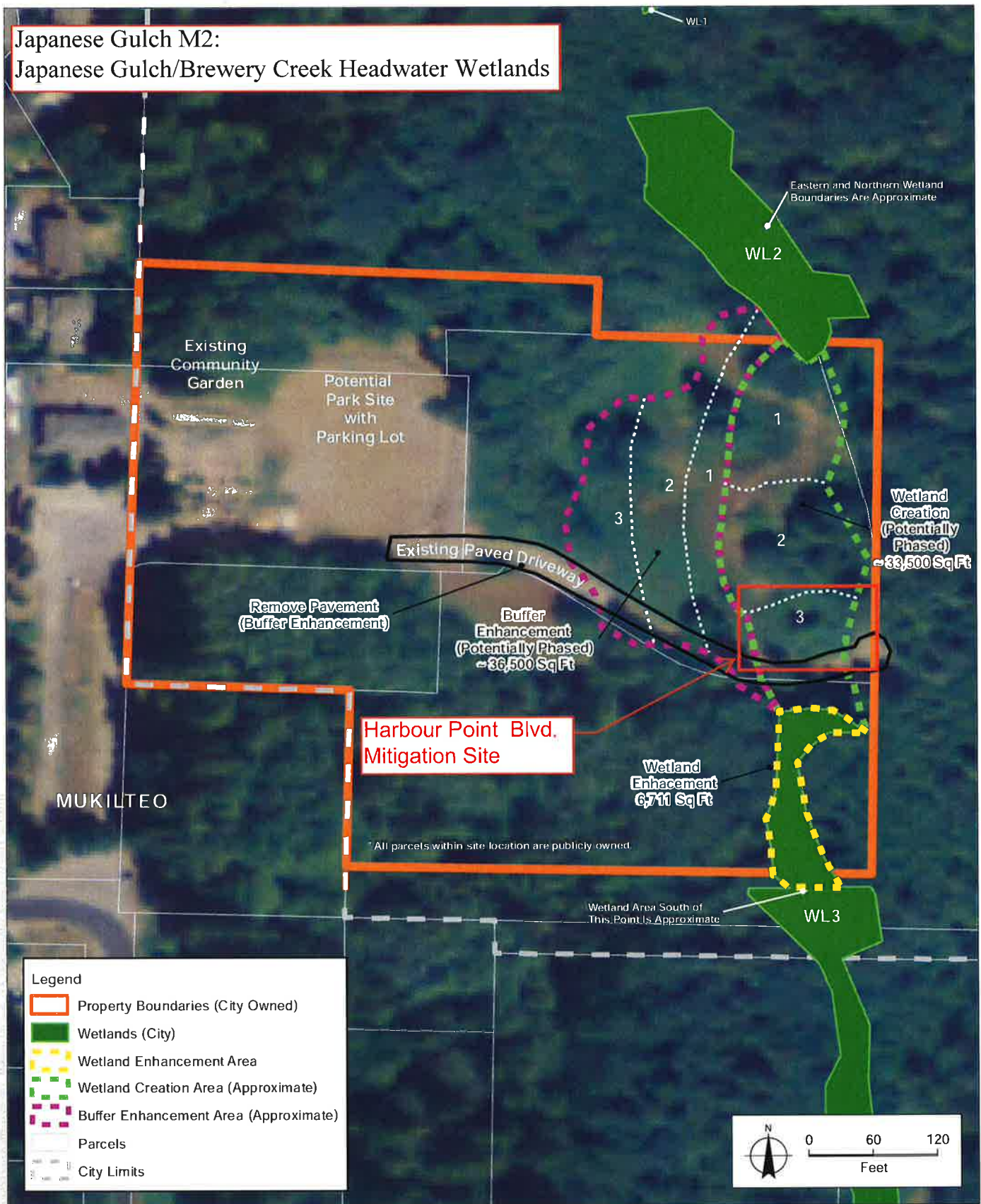
United States Fish and Wildlife Service, 2017. Wetlands Mapper. Available at: <http://www.fws.gov/wetlands/Data/mapper.html>.

Washington State Department of Fish and Wildlife, 2017. Priority Habitats and Species (PHS) on the Web. Available at: <http://wdfw.wa.gov/mapping/phs/>

Wetland Resources, Inc., 2016. "Critical Area Study and Buffer Averaging Plan for ICOM – Harbour Pointe Blvd, Mukilteo, WA." Wetland Resources, Inc. Project # 14060, prepared for Mohammed Khan.

APPENDIX A

Data Review Maps



SOURCE: City of Mukilteo, 2009; Snohomish County, 2008; NAIP (USDA), 2009 (Aerial)

Mukilteo Critical Areas Mitigation Program, 209061.03

Figure 8
Off-Site Mitigation: Conceptual Mitigation Opportunities (M2)
Mukilteo, Washington



Japanese Gulch Mitigation Site Parcels

CRITICAL AREAS MAP 1

Legend:

- Erosion / Landslide Hazard
(See Maps 2 - 3)
- Liquefaction Hazard
(See Maps 4 - 5)

Streams Revised

- S
- F
- NP
- NS
- Unknown
- Piped

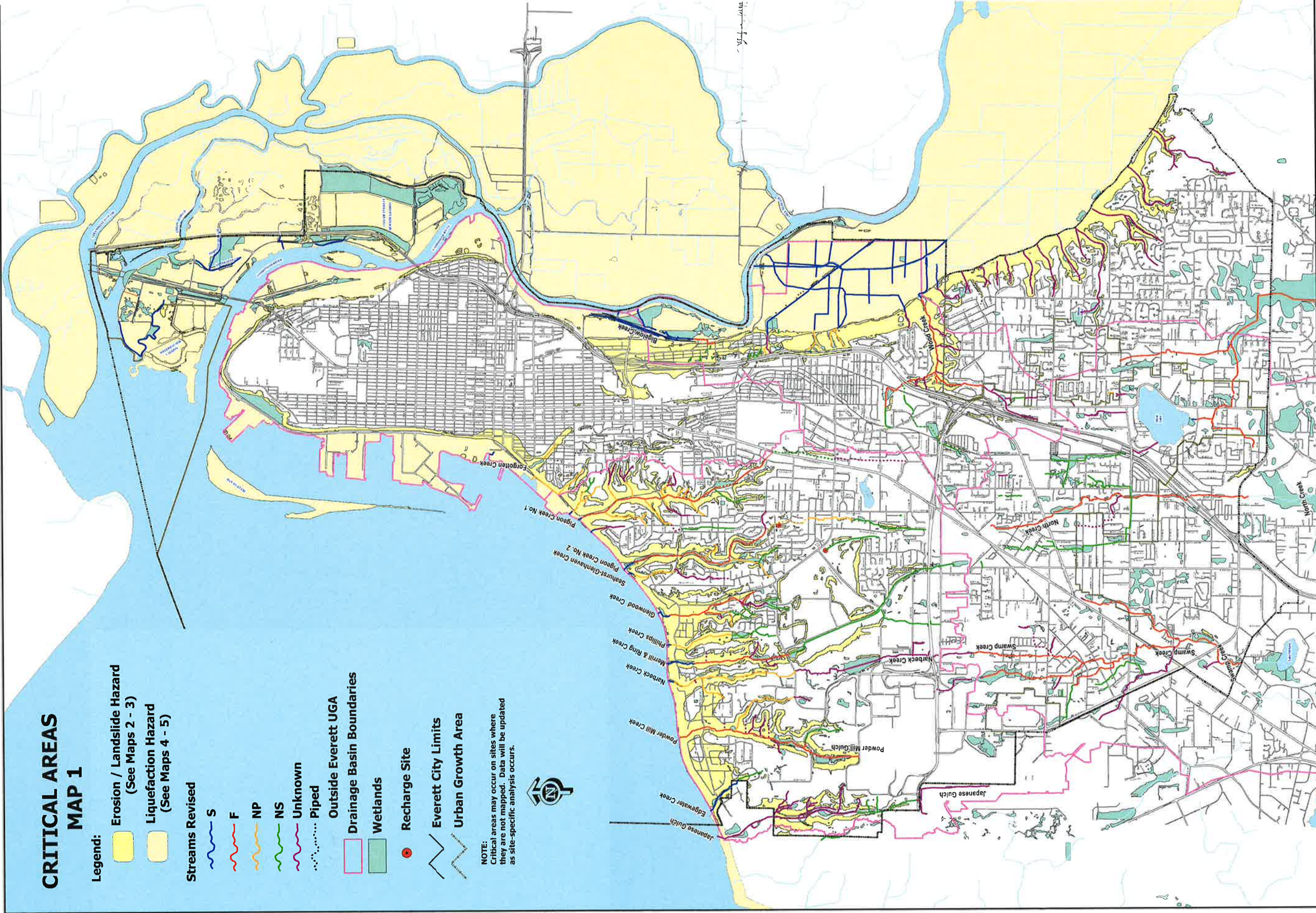
Outside Everett UGA

- Drainage Basin Boundaries
- Wetlands

- Recharge Site

- Everett City Limits
- Urban Growth Area

NOTE:
Critical areas may occur on sites where they are not mapped. Data will be updated as site-specific analysis occurs.



For more information contact:
City of Everett
Planning & Community Development
2930 Wetmore Avenue, 8th Floor
Everett, WA 98201-4044
Dennis 425.731.7572, 8731



Roberta Goodwill
CITE Analyst / Environmental

Vicinity Map

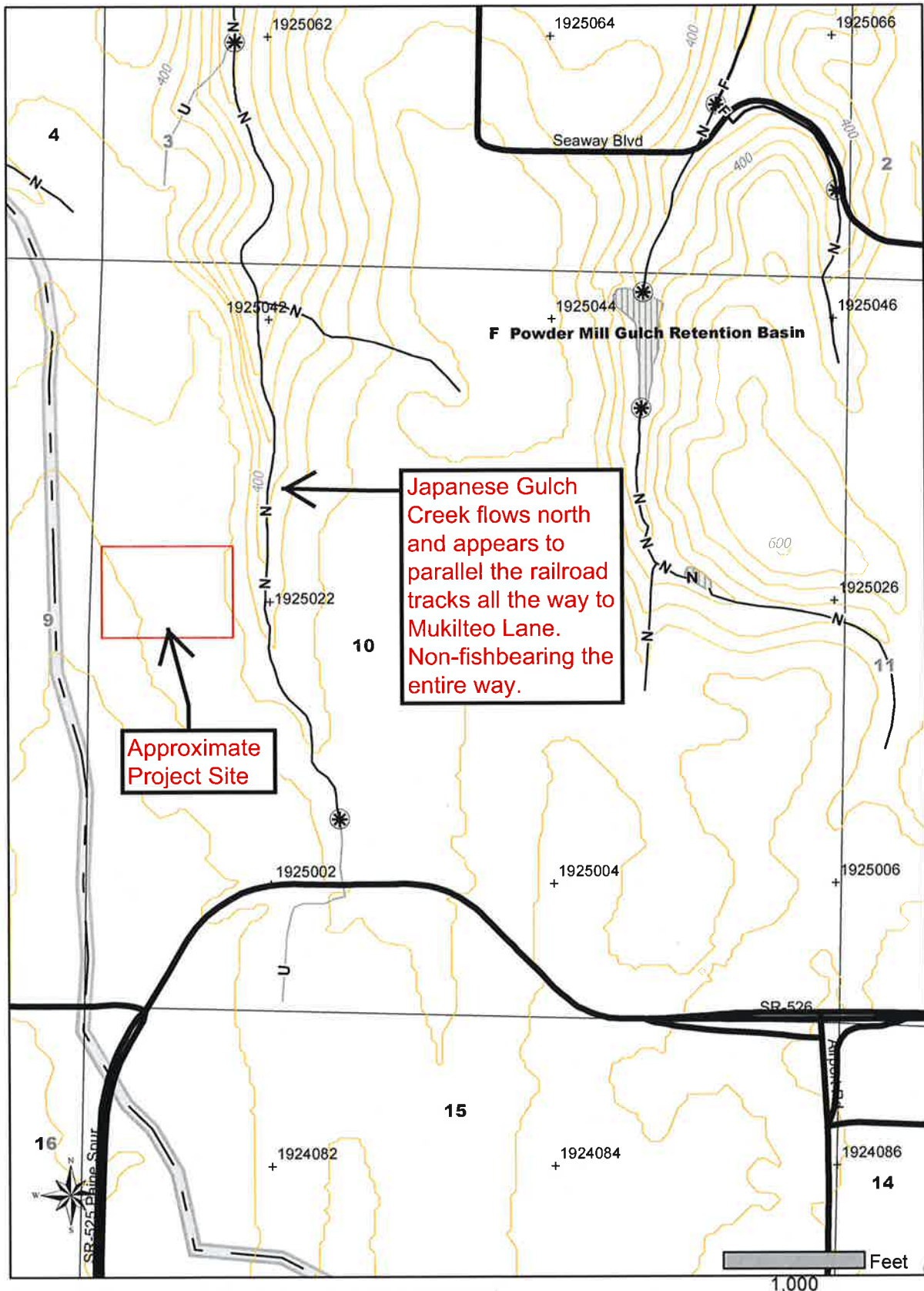
A full colored map may be purchased from the Dept. of Planning & Community Development for \$13.00.

This map has been produced using the best information available. However, the City of Everett in no way guarantees its accuracy.

FOREST PRACTICE ACTIVITY MAP

TOWNSHIP 28 NORTH HALF 0, RANGE 04 EAST (W.M.) HALF 0, SECTION 10

Application #: _____



Please use the legend from the FPA Instruction or provide a list of symbols used.

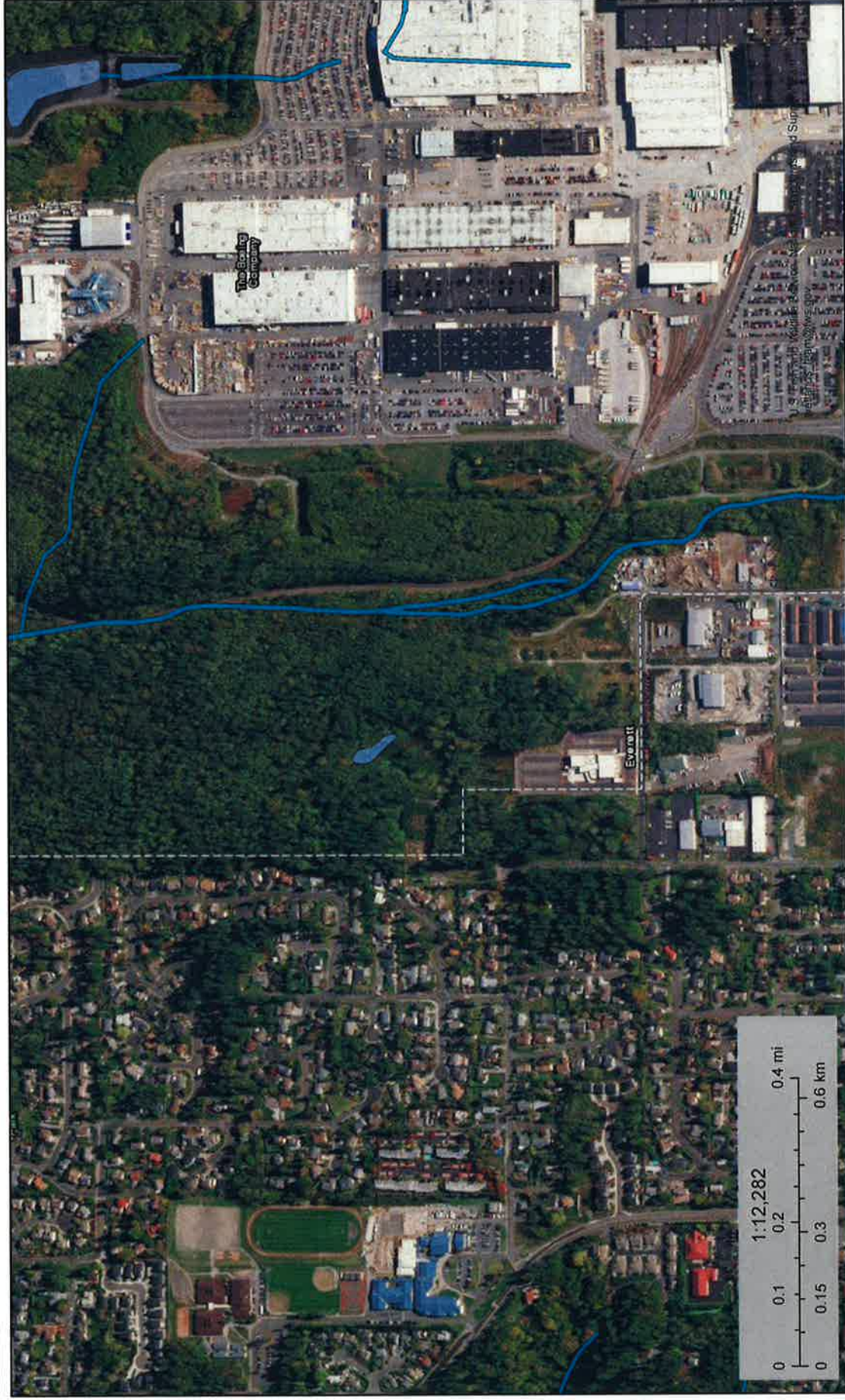
Date: 7/18/2017 Time: 10:42:44 AM
NAD 83
Contour Interval: 40 Feet



U.S. Fish and Wildlife Service

National Wetlands Inventory

Japanese Gulch



July 21, 2017

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

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.



WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

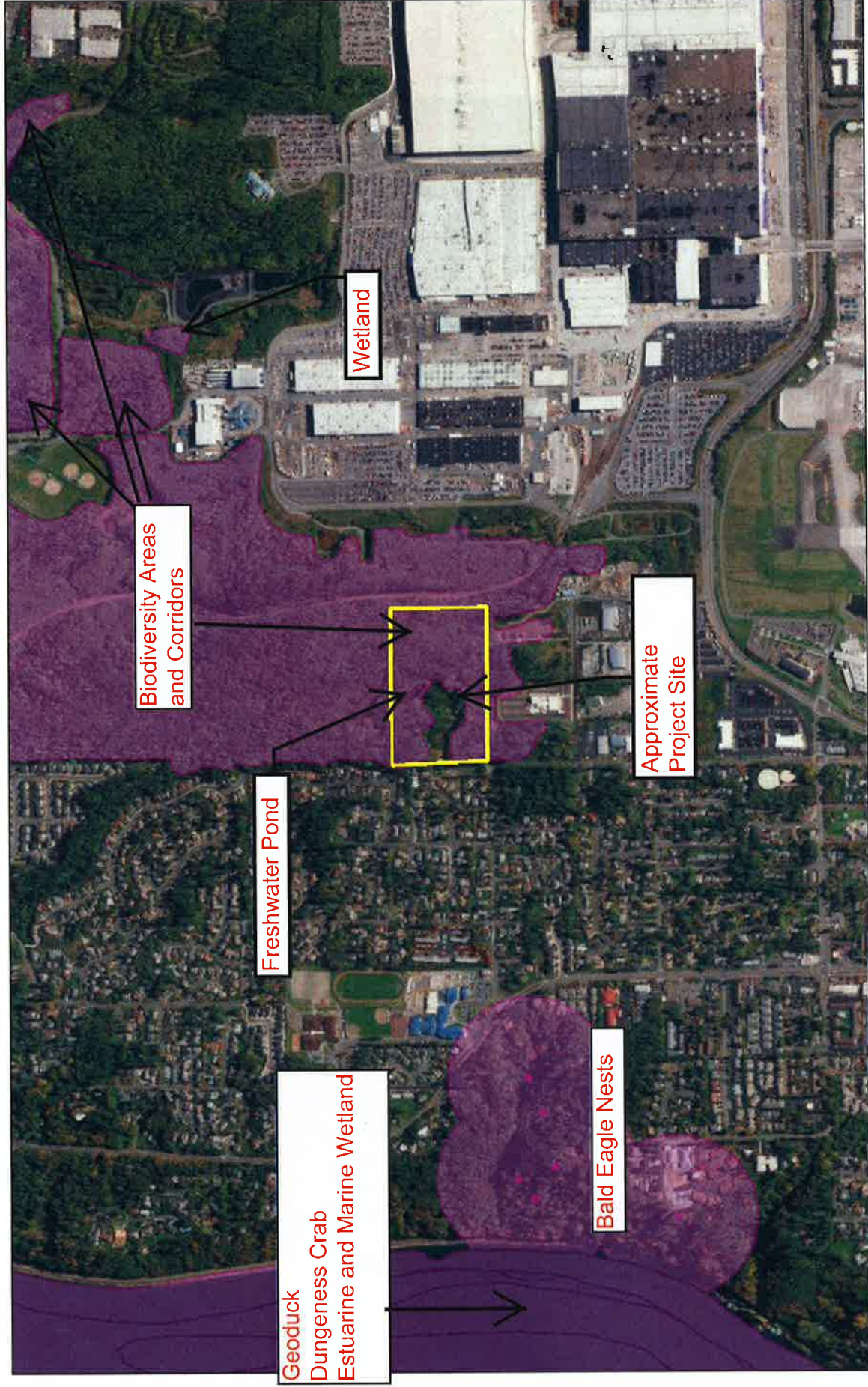
SOURCE DATASET: PHSPlusPublic
REPORT DATE: 07/18/2017 10.26

Query ID: P170718102604

Common Name	Site Name	Priority Area	Accuracy	Federal Status	Sensitive Data	Source Entity
Scientific Name	Source Dataset	Occurrence Type		State Status	Resolution	Geometry Type
Notes	Source Record	More Information (URL)		PHS Listing Status		
	Source Date	Mgmt Recommendations				
Biodiversity Areas And	JAPANESE GULCH RAVINE	Terrestrial Habitat	1/4 mile (Quarter	N/A	N	WA Dept. of Fish and Wildlife
	PHSREGION	N/A		N/A	AS MAPPED	Polygons
	902714	http://wdfw.wa.gov/publications/pub.php?		PHS LISTED		
Freshwater Pond	N/A	Aquatic Habitat	NA	N/A	N	US Fish and Wildlife Service
	NWIWetlands	Aquatic habitat		N/A	AS MAPPED	Polygons
		http://www.ecy.wa.		PHS Listed		

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

WDFW Test Map



July 18, 2017

- ☒ PHS Report Clip Area **POLY**
- ☐ AS MAPPED
- ☐ SECTION
- ☐ QTR-TWP
- ☐ TOWNSHIP
- ☐ PT
- ☐ LN







































































1:19,842

0 0.15 0.3 0.55 0.6 mi

0 0.275 0.55 1.1 km

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

MAP LEGEND

 Area of Interest (AOI)	 Area of Interest (AOI)
 Soils	 Area of Interest (AOI)
 Soil Map Unit Polygons	 Area of Interest (AOI)
 Soil Map Unit Lines	 Area of Interest (AOI)
 Soil Map Unit Points	 Area of Interest (AOI)
 Special Point Features	 Area of Interest (AOI)
 Blowout	 Area of Interest (AOI)
 Borrow Pit	 Area of Interest (AOI)
 Clay Spot	 Area of Interest (AOI)
 Closed Depression	 Area of Interest (AOI)
 Gravel Pit	 Area of Interest (AOI)
 Gravelly Spot	 Area of Interest (AOI)
 Landfill	 Area of Interest (AOI)
 Lava Flow	 Area of Interest (AOI)
 Marsh or swamp	 Area of Interest (AOI)
 Mine or Quarry	 Area of Interest (AOI)
 Miscellaneous Water	 Area of Interest (AOI)
 Perennial Water	 Area of Interest (AOI)
 Rock Outcrop	 Area of Interest (AOI)
 Saline Spot	 Area of Interest (AOI)
 Sandy Spot	 Area of Interest (AOI)
 Severely Eroded Spot	 Area of Interest (AOI)
 Sinkhole	 Area of Interest (AOI)
 Slide or Slip	 Area of Interest (AOI)
 Sodic Spot	 Area of Interest (AOI)
 Water Features	 Area of Interest (AOI)
 Streams and Canals	 Area of Interest (AOI)
 Transportation	 Area of Interest (AOI)
 Rails	 Area of Interest (AOI)
 Interstate Highways	 Area of Interest (AOI)
 US Routes	 Area of Interest (AOI)
 Major Roads	 Area of Interest (AOI)
 Local Roads	 Area of Interest (AOI)
 Background	 Area of Interest (AOI)
 Aerial Photography	 Area of Interest (AOI)

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

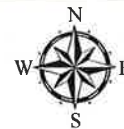
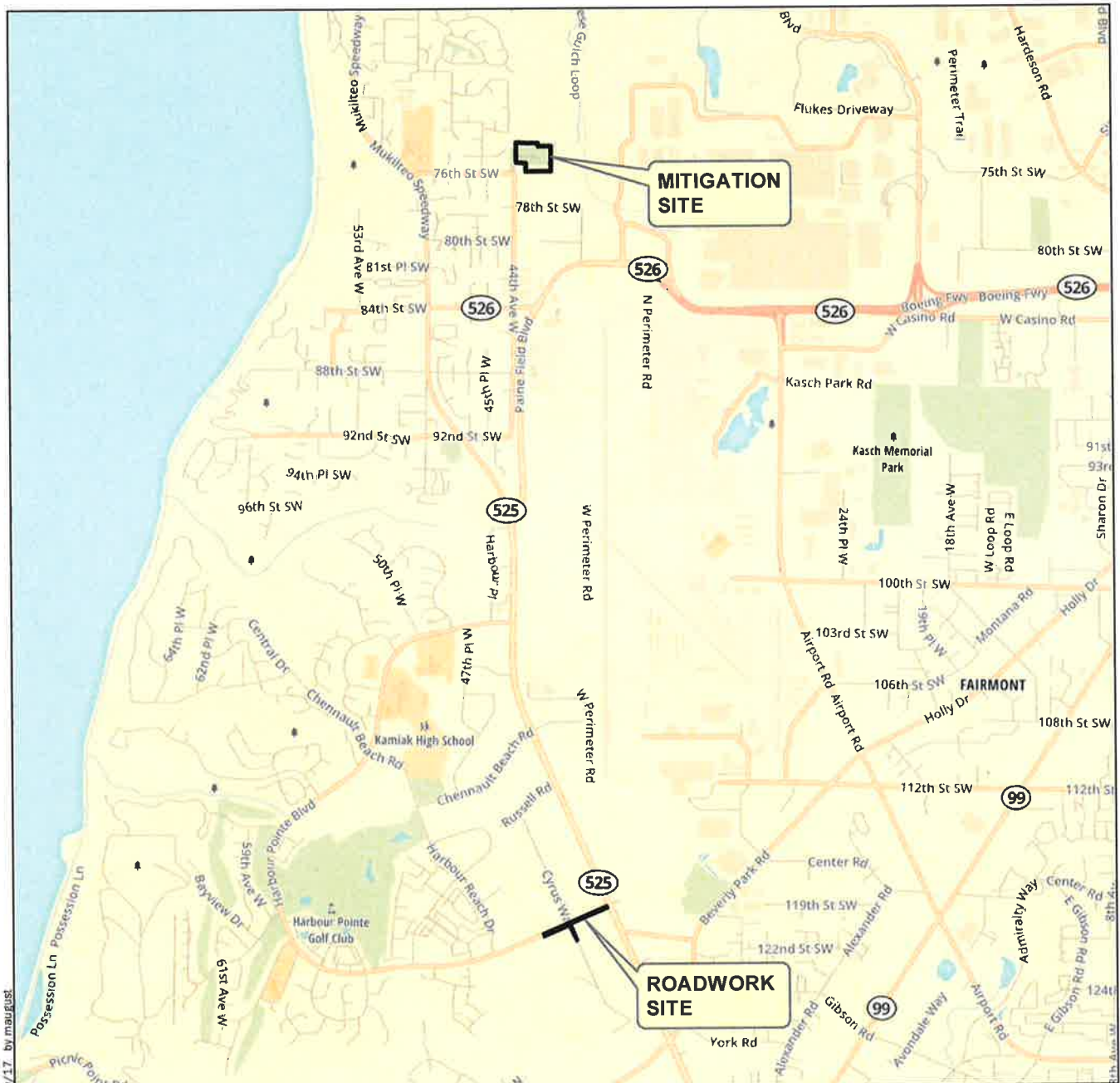
This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Snohomish County Area, Washington
Survey Area Data: Version 14, Sep 8, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 7, 2014—Jul 8, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



3,000 0 3,000

Feet

Vicinity Map

Harbour Pointe Boulevard Widening Project
Mukilteo, Washington

GEOENGINEERS 

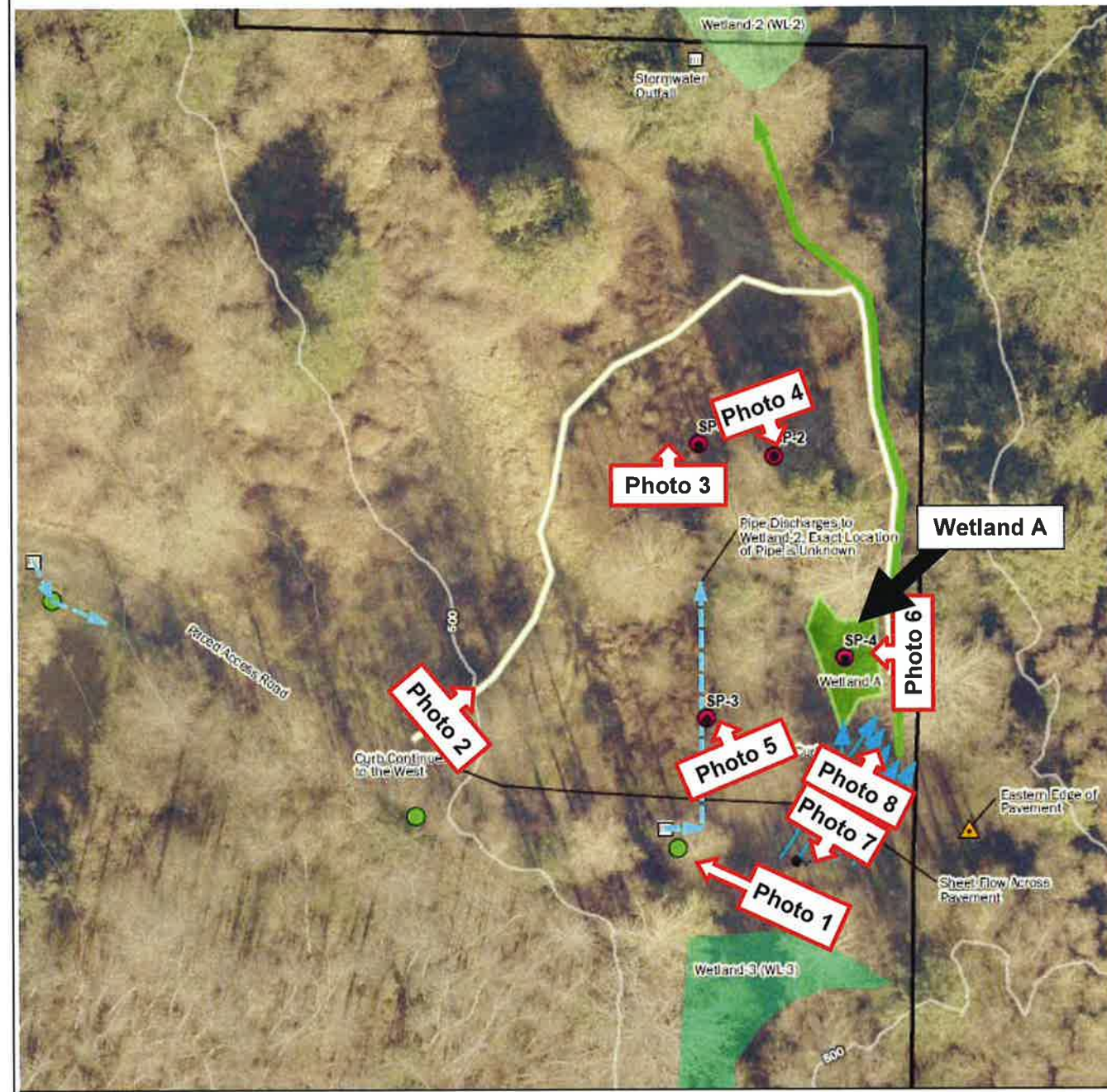
Figure 1

Notes:

- NOTES:
1. The locations of all features shown are approximate.
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet



Legend

- | | |
|---------------------|---------------------------|
| Catch Basin | Curb |
| Sample Point | Subsurface Flow Direction |
| Seep | Swale |
| Storm Drain Manhole | Existing Informal Trail |
| | Wetland |

Not to Scale



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:



Photo 1. Looking northwest at the paved road



Photo 2. Looking northeast at the informal trail



Photo 3. Looking north near SP-1



Photo 4. Looking southeast at SP-2



Photo 5. Looking northwest near SP-3



Photo 6. Looking west across Wetland A, near SP-4



Photo 7. Looking southwest towards the seep and Wetland 3



Photo 8. Looking northeast towards the proposed mitigation site

Site Photographs

Harbour Pointe Boulevard Widening Project
Everett, Washington



Figure B-1

APPENDIX C

Data Sheets

Sampling Point: 1

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"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <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 Reduction Iron (C4) <input type="checkbox"/> Recent Iron Reduction Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturated Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)	
Field Observations: Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (includes capillary fringe)		Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

SOIL

Sampling Point: 2

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-11	7.5YR 3/2	100					loamy sand	with gravel

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

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

<input type="checkbox"/> Histisol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<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: _____ Hydric Soil Present? ☐ Yes ☒ No
 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"/> Saturated 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 Reduction Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth (inches): _____	Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Table Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth (inches): _____	
Saturation Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth (inches): _____	

(includes capillary fringe)

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

Remarks:

SOIL

Sampling Point: 3

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-16	7.5YR 2.5/1	100					loam	with some organics and gravels

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

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

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Depleted Dark Surface (F7)	
	<input type="checkbox"/> Redox Depressions (F8)	

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? ☐ Yes ☒ No

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"/> Saturated 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 Reduction Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth (inches): _____	Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Table Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth (inches): _____	
Saturation Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth (inches): _____	

(includes capillary fringe)

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

Remarks:

Sampling Point: 4

[illegible]

Wetland Hydrology Indicators:

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

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A (Japanese Gulch Wetland # 1) Date of site visit: 7/28/2017

Rated by J. Dadisman Trained by Ecology? ☒ Yes ☐ No Date of training 6/3/2014

HGM Class used for rating Slope Wetland has multiple HGM classes? ☐ Yes ☒ No

NOTE: Form is not complete with out the figures requested (figures can be combined).

Source of base aerial photo/map _____

OVERALL WETLAND CATEGORY IV (based on functions ☒ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

_____ Category I - Total score = 23 - 27
_____ Category II - Total score = 20 - 22
_____ Category III - Total score = 16 - 19
 X Category IV - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	L	M	L	
Landscape Potential	M	L	L	
Value	L	L	M	Total
Score Based on Ratings	4	4	4	12

Score for each function based on three ratings

(order of ratings
is not
important)

9 = H, H, H

8 = H, H, M

7 = H, H, L

7 = H, M, M

6 = H, M, L

6 = M, M, M

5 = H, L, L

5 = M, M, L

4 = M, L, L

3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.
If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☒ **NO** - go to 2

☐ **YES** - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☐ **NO - Saltwater Tidal Fringe (Estuarine)**

☐ **YES - Freshwater Tidal Fringe**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is Saltwater Tidal Fringe it is an Estuarine wetland and is not scored. This method cannot be used to score functions for estuarine wetlands.

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.

Groundwater and surface water runoff are NOT sources of water to the unit.

☒ **NO** - go to 3

☐ **YES** - The wetland class is Flats

If your wetland can be classified as a Flats wetland, use the form for Depressional wetlands.

3. Does the entire wetland unit meet all of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;

☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ **NO** - go to 4

☐ **YES** - The wetland class is Lake Fringe (Lacustrine Fringe)

4. Does the entire wetland unit meet all of the following criteria?

☒ The wetland is on a slope (*slope can be very gradual*),

☒ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

☒ The water leaves the wetland without being impounded.

☐ **NO** - go to 5

☒ **YES** - The wetland class is Slope

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit meet all of the following criteria?

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

☐ The overbank flooding occurs at least once every 2 years.

☒ **NO** - go to 6

☐ **YES** - The wetland class is Riverine

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding.

SLOPE WETLANDS		
Water Quality Functions - Indicators that the site functions to improve water quality		
S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of the wetland: <i>(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)</i> <div style="display: flex; justify-content: space-between;"> <div> Slope is 1% or less Slope is > 1% - 2% Slope is > 2% - 5% Slope is greater than 5% </div> <div> points = 3 points = 2 points = 1 points = 0 </div> </div>		2
S 1.2. The soil 2 in below the <u>surface (or duff layer)</u> is true clay or true organic (use NRCS definitions):		0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in. <div style="display: flex; justify-content: space-between;"> <div> Dense, uncut, herbaceous plants > 90% of the wetland area Dense, uncut, herbaceous plants > ½ of area Dense, woody, plants > ½ of area Dense, uncut, herbaceous plants > ¼ of area Does not meet any of the criteria above for plants </div> <div> points = 6 points = 3 points = 2 points = 1 points = 0 </div> </div>		3
Total for S 1		5
Rating of Site Potential If score is: 12 <input type="checkbox"/> H 6 - 11 <input type="checkbox"/> M 0 - 5 = <input checked="" type="checkbox"/> Record the rating on the first page		

S 2.0. Does the landscape have the potential to support the water quality function of the site?		
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?		0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other Sources		1
Total for S 2		1
Rating of Landscape Potential If score is: 1 - 2 <input checked="" type="checkbox"/> M 0 = L <input type="checkbox"/> Record the rating on the first page		

S 3.0. Is the water quality improvement provided by the site valuable to society?		
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?		0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? <i>At least one aquatic resource in the basin is on the 303(d) list.</i>		0
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? Answer YES if there is a TMDL for the basin in which the unit is found?		0
Total for S 3		0
Rating of Value If score is: 2 <input type="checkbox"/> = H 1 = <input type="checkbox"/> 0 = L <input checked="" type="checkbox"/> Record the rating on the first page		

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** *This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☒ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature 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 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) 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.
- ☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☐ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☐ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☒ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? *If you answer YES you will still need to rate the wetland based on its functions.*

- ☐ Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.
- ☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐ Yes = Category I

No = Not a forested wetland for this section

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

- ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks
- ☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)

☐ Yes - Go to SC 5.1

No = Not a wetland in a coastal lagoon

SC 5.1. Does the wetland meet all of the following three conditions?

- ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).
- ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.
- ☐ The wetland is larger than 1/10 ac (4350 ft²)

☐ Yes = Category I

No = Category II

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? *If you answer yes you will still need to rate the wetland based on its habitat functions.*

In practical terms that means the following geographic areas:

- ☐ Long Beach Peninsula: Lands west of SR 103
- ☐ Grayland-Westport: Lands west of SR 105
- ☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐ Yes - Go to SC 6.1

No = Not an interdunal wetland for rating

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?☐ Yes = Category I

No - Go to SC 6.2

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?☐ Yes = Category II

No - Go to SC 6.3

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?☐ Yes = Category III

No = Category IV

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form



P:\5790004\GIS\MXDs\579000400_F01_WetlandA150ftBuffer.mxd Date Exported: 08/29/17 by mau/gust

Notes:

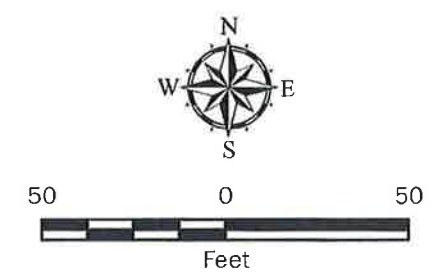
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: 2015 Aerial imagery from King County, Washington GIS.

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Wetland (Identified by GeoEngineers)
- 150-foot Boundary Area



Vegetation, Hydroperiods and 150-foot Boundary Area	
Wetland A Rating Form Everett, Washington	
	Figure 1



Screen Capture of Ecology 303 (d) Map

Japanese Gulch Wetland Investigation
Everett, Washington

GEOENGINEERS 

Figure 3

Water Quality Improvement Projects (TMDLs)

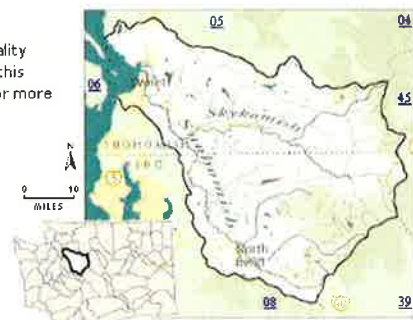
[Water Quality Improvement](#) > [Water Quality Improvement Projects by WRIA](#) > WRIA 7: Snohomish

WRIA 7: Snohomish

The following table lists overview information and links to specific water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- [King](#)
- [Snohomish](#)



Waterbody Name	Pollutant(s)	Status**	TMDL Lead
Lake Loma	Total Phosphorus	Straight to implementation project under development	Tricia Shoblom 425-649-7288
Snohomish River	French Creek / Pilchuck River	Under development	Ralph Svrcek 425-649-7165
	<ul style="list-style-type: none"> Dissolved Oxygen Temperature 		
	Dioxin	EPA approved	Ralph Svrcek 425-649-7165
	Estuary	EPA approved	Ralph Svrcek 425-649-7165
	Tributaries <ul style="list-style-type: none"> Fecal Coliform Tributaries: <ul style="list-style-type: none"> Allen Creek Quilceda Creek French Creek Woods Creek Pilchuck River Marshlands (Wood Creek) {2} 	EPA approved	Ralph Svrcek 425-649-7165
	Snoqualmie River	EPA approved	Ralph Svrcek 425-649-7165
	<ul style="list-style-type: none"> Ammonia-N BOD (5-day) Fecal Coliform Temperature	EPA approved Has an implementation plan	

** Status will be listed as one of the following: Approved by EPA, Under Development or Implementation

For more information about WRIA 7:

- [Waterbodies in WRIA 7](#) - using the Water Quality Assessment Query Tool
- [Watershed Information for WRIA 7](#)

⚠ The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

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Last updated January 2014

Ecology TMDL for WRIA 7

Japanese Gulch Wetland Investigation
Everett, Washington

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Figure 4