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CITY OF MUKILTEO
GEOENGINEERS

1101 South Fawcett Avenue, Suite 200
Tacoma, Washington 98402
253.383.4940

December 19, 2017

City of Mukilteo
11930 Cyrus Way
Mukilteo, Washington 98275

Attention: Challis Stringer

Subject: Revised 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.

Japanese Gulch has been identified by the City of Mukilteo in their Critical Areas Mitigation Program (CAMP) as an area for wetland and buffer mitigation. A community garden is located on the west end of the Mukilteo property (within parcel No. 00628500000001) and public formal and informal hiking trails are located in the east end of the Mukilteo property (within parcel No. 06314000000001). A paved roadway extends east/west across the southern portion of the Mukilteo property and is used by mountain bikers and hikers to access the trails. The proposed mitigation site is located in an approximately 55-acre area consisting of 17 parcels owned by the City of Mukilteo, west of Japanese Gulch Creek (Appendix A – Data Review Maps). The parcels containing the mainstem of Japanese Gulch Creek are owned by the BNSF railway company (Parcel Nos. 28041000200600 and 28040300300300) (Appendix A). A railway line extends along the eastern edge of Japanese Gulch Creek.

The proposed mitigation site is located in the southeast corner of parcel No. 06314000000001. Figure 2 depicts wetlands identified within the proposed Japanese Gulch mitigation area. The vast majority of the Mukilteo-owned parcels in Japanese Gulch are dominated by a mature mixed coniferous and deciduous forest of western red cedar (*Thuja plicata*) and red alder (*Alnus rubra*) with salmonberry (*Rubus spectabilis*) and sword fern (*Polystichum munitum*) in the understory. The parcels adjacent to the 76th Street SW and 44th Avenue West intersection, that have been identified by Mukilteo for mitigation are dominated by weedy species including Himalayan blackberry (*Rubus armeniacus*) and some reed canary grass with few trees.

For the purposes of the project and this report, an approximate 0.5-acre area was investigated for the presence of wetlands and streams. The area is largely dominated by blackberry species (*Rubus species*), fireweed (*Chamaenerion angustifolium*) and grasses; however, there is a small area of young red alder (*Alnus rubra*) forest.

DATA REVIEW

Environmental maps of the project area were collected and reviewed as part of a paper inventory. The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) online mapper (USFWS, 2017) does not map a wetland on the proposed area for wetland mitigation. However, a palustrine aquatic bed permanently flooded wetland that has been diked or impounded (PABHh) is mapped just north of the proposed mitigation site and, a Riverine upper perennial unconsolidated bottom stream that is permanently flooded (R3UBH) is mapped east of the proposed mitigation area (USFWS, 2017). The City of Everett Critical Areas maps identifies two wetlands adjacent to the proposal mitigation site (Everett, 2013). The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey indicates one soil type on the property: Alderwood gravelly sandy loam, 0 to 8 percent slopes (USDA-NRCS, 2016). Alderwood gravelly sandy loam, 0 to 8 percent slope soils are not hydric but do contain hydric inclusions (USDA-NRCS, 2017). The NWI map, Everett Critical Areas Map and soil survey information are included in Appendix A (Data Review Maps).

Additional information was obtained from the Washington State Department of Natural Resources (DNR) Forest Practices Application Review System (FPARS), and Washington State Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) Interactive map viewer (DNR, 2015; WDFW, 2017). FPARS maps a non-fish bearing stream east of the proposed mitigation area; however, PHS data does not map a stream in the vicinity of the project site (DNR, 2015; WDFW, 2017). PHS maps a biodiversity area and corridor in the proposed mitigation vicinity but the proposed mitigation site is not located within the biodiversity area (Appendix A).

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.

Soils

Soil pits were dug at each of the sample plots. The soils were loamy soils with sand and gravels. Soils were dark brown and black with colors that consisted of 7.5YR 3/2 and 7.5YR 2.5/1 (Appendix C) (GretagMacbeth, 2000).


Hydrology

In general, water on the site flows east and north. The paved road contains multiple catch basins and three manholes. Mukilteo has performed dye tests to determine where water flows within the catch basins and manholes. From the catch basin that is farthest east along the access road, water flows east under the paved roadway and then at an unknown point the underground pipe turns to the north and eventually drains into the northern off-site wetland (Wetland 2). Wetland 3 (off-site to the south) floods during the wet season and water seeps from this wetland and flows north towards the proposed mitigation site and then to a swale that flows north. The swale extends along the eastern parcel boundary and forest edge towards the off-site wetland (Wetland 2). Figure 2 depicts the catch basin and water flow through the site.

At the time of the site visit hydrology was not observed within the proposed mitigation area. However, evidence of wetland hydrology was present at Wetland A with ground position and passing the FAC neutral test. In addition, during a site visit in March 2017, a GeoEngineers biologist observed water flowing into the wetland area from road runoff and the seep from Wetland 3.

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 (13 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 - 13 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	5 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.

SUMMARY

GeoEngineers performed wetland delineation services at Japanese Gulch, the site selected to perform wetland mitigation for the Harbour Pointe Boulevard Widening project, to provide baseline information for the proposed mitigation. One Category IV wetland (Wetland A) was identified and delineated in the proposed mitigation area with a 45-foot regulatory buffer. Two off-site wetlands have been identified by others in the Japanese Gulch vicinity; one to the north (Wetland 2) and one to the south (Wetland 3).

LIMITATIONS

GeoEngineers has prepared this letter report in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for wetland and stream delineation in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for the exclusive use of City of Mukilteo, Tuttle Engineering and Management, authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state and federal) prior to design or construction of any development to obtain necessary permits and approvals.

REFERENCES

City of Everett. Everett Municipal Code. Available at: <http://www.codepublishing.com/WA/Everett/>

City of Everett, 2013. Critical Areas Map 1. City of Everett Planning & Community Development Everett, WA 98201. Map last updated November 12, 2013.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe, 1979. "Classification of Wetland and Deep Water Habitats of the United States." Performed for Office of Biological Services, Fish, and Wildlife Service, U.S. Department of the Interior, Washington, D.C.

Department of Natural Resources DNR, 2015. Forest Practices Application Review System (FPARS) Mapping Application. Available at: https://fortress.wa.gov/dnr/protectiongis/fpamt/index.html?maptheme=Water_Type&extent=-14385498.437950825,5552851.051296187,-12532664.872318646,6457865.466192433

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ESA, 2011. "City of Mukilteo Critical Areas Mitigation Program," prepared for City of Mukilteo, November 2011.

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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.

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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>.

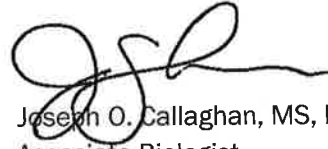
Washington State Department of Fish and Wildlife, 2017. Priority Habitats and Species (PHS) on the Web. Available at: <http://wdfw.wa.gov/mapping/phs/>

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.

Sincerely,
GeoEngineers, Inc.



Jennifer L. Dadisman, PWS
Biologist



Joseph O. Callaghan, MS, PWS
Associate Biologist

JLD:JOC:tlm

List of Figures:

Figure 1. Vicinity Map

Figure 2. Japanese Gulch Wetland Exhibit

List of Appendices:

Appendix A. Data Review Maps

Appendix B. Site Photographs

Appendix C. Data Sheets

Appendix D. Wetland Rating Form

One electronic copy submitted

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

APPENDIX A

Data Review Maps



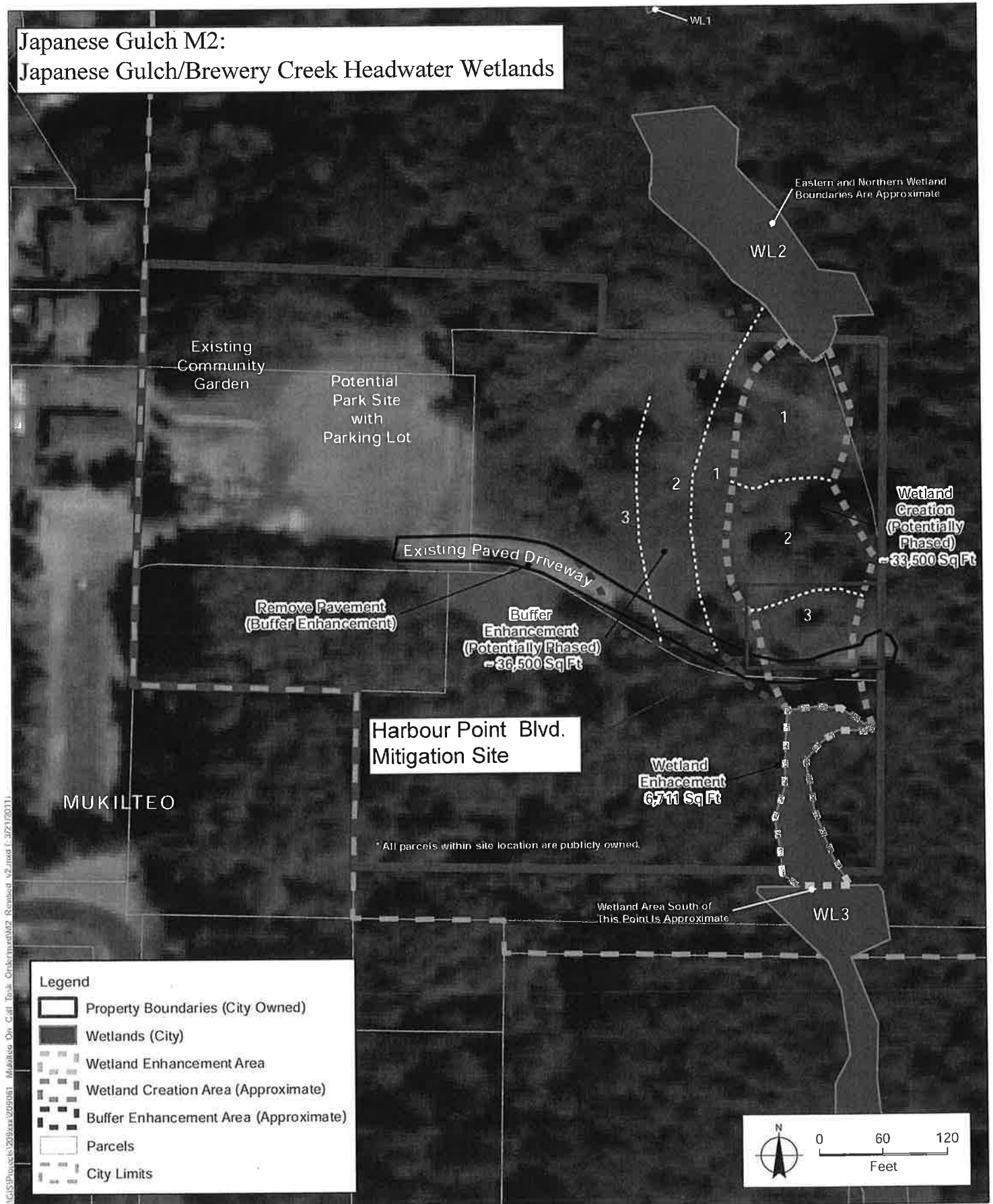
CITY OF
MUKILTEO
Public Works Department

CAMP Mitigation Property Ownership

The City of Mukilteo disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either expressed or implied. No representation or warranty is made concerning the accuracy, completeness, or quality of data depicted on this map. Any user of this map assumes all responsibility for the use thereof, and further agrees to hold the City of Mukilteo harmless from and against any damages, loss or liability arising from any use of this map.



Japanese Gulch M2: Japanese Gulch/Brewery Creek Headwater Wetlands



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



Notes:

- The locations of all features shown are approximate.
- This drawing is for information purposes. It is intended to provide a visual representation of the wetland areas and features. 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

- Catch Basin
- Sample Point
- Seep
- Storm Drain Manhole
- Stormwater Outfall
- Curb
- Subsurface Flow Direction
- Swale
- Existing Informal Trail
- Wetland (Identified by GeoEngineers)
- Wetland (Identified by others)
- Wetland Buffer

Japanese Gulch Wetland Exhibit

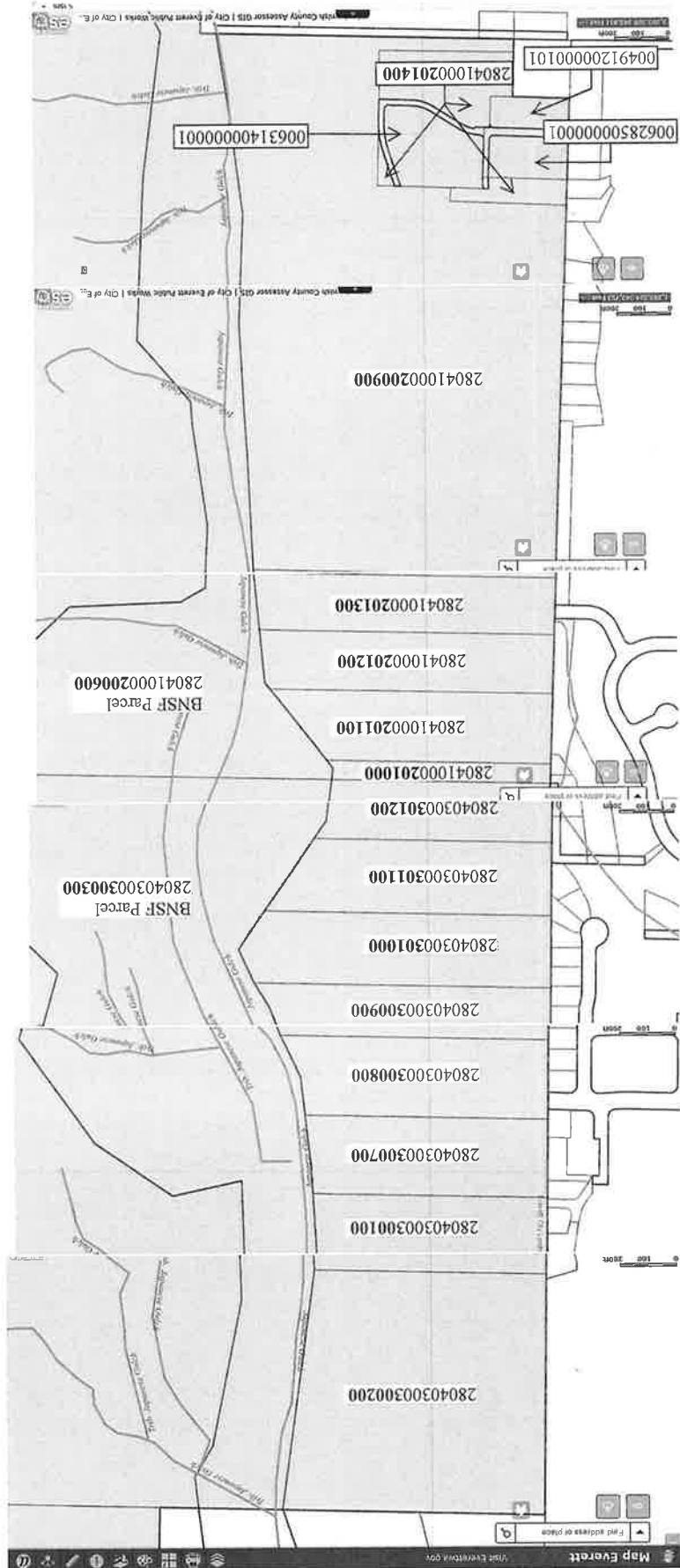
Harbour Pointe Boulevard Widening Project
 Mukilteo, Washington

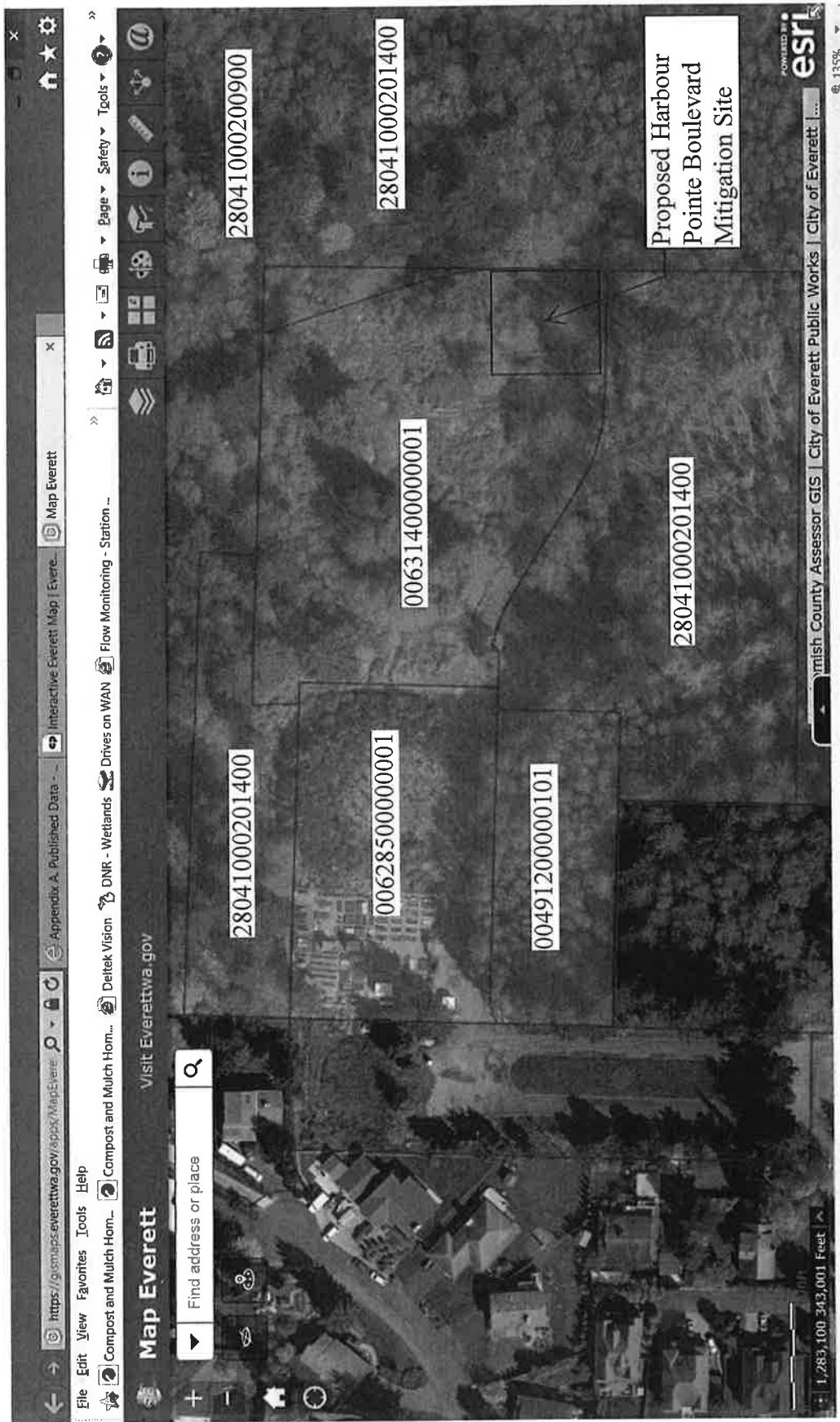
GEOENGINEERS

Figure 2

North Arrow

Scale: 0 50 100 Feet







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

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
 Piped


Outside Everett UGA

 Drainage Basin Boundaries

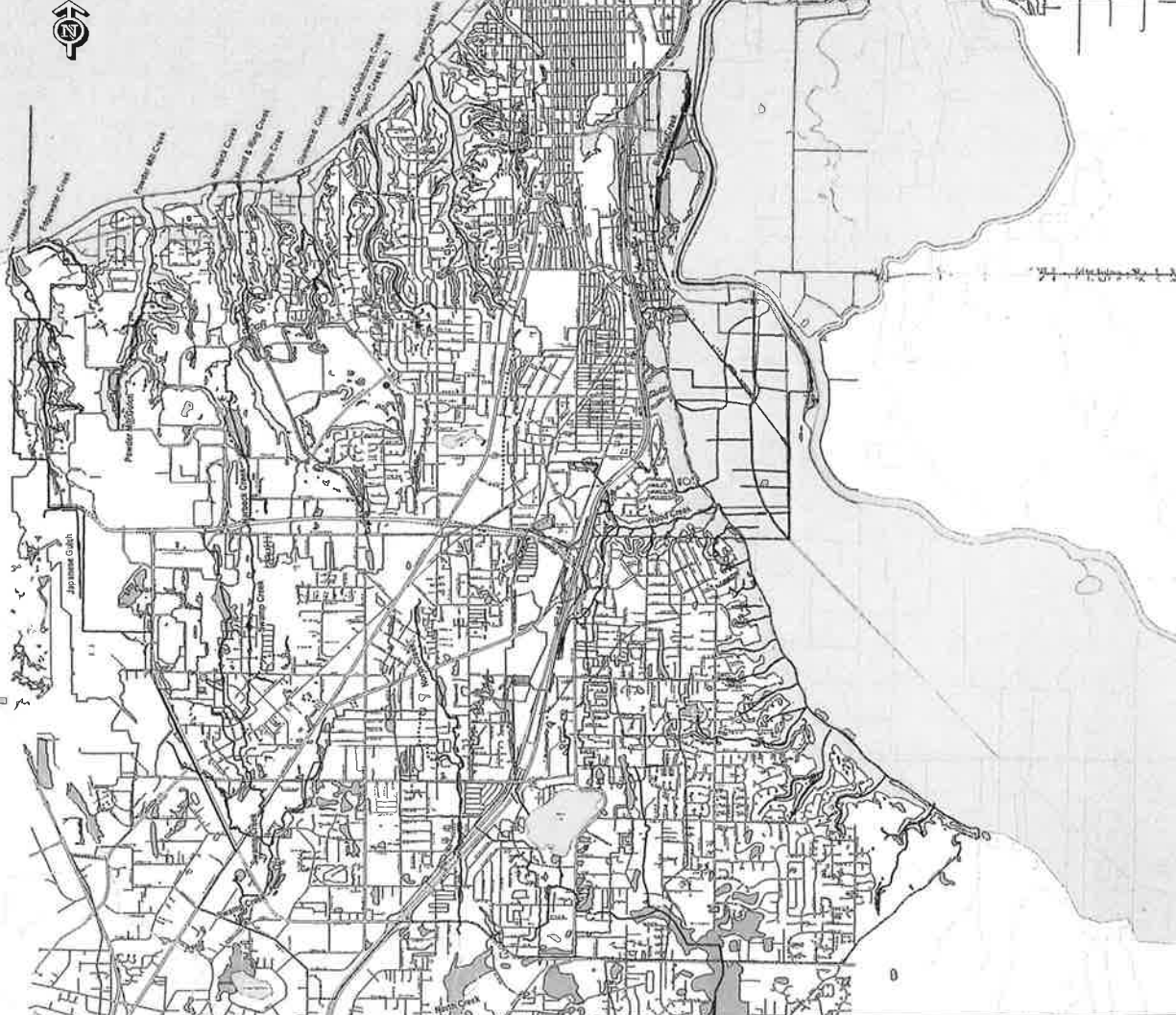
 Wetlands

 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
Phone: (425) 257-8731

1:250,000 1:50,000 1:25,000
Scale: 1 inch = 1,000 feet
Roberta Goodall
GIS Analyst / Programmer
Planning Dept.
11/17/2013

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.

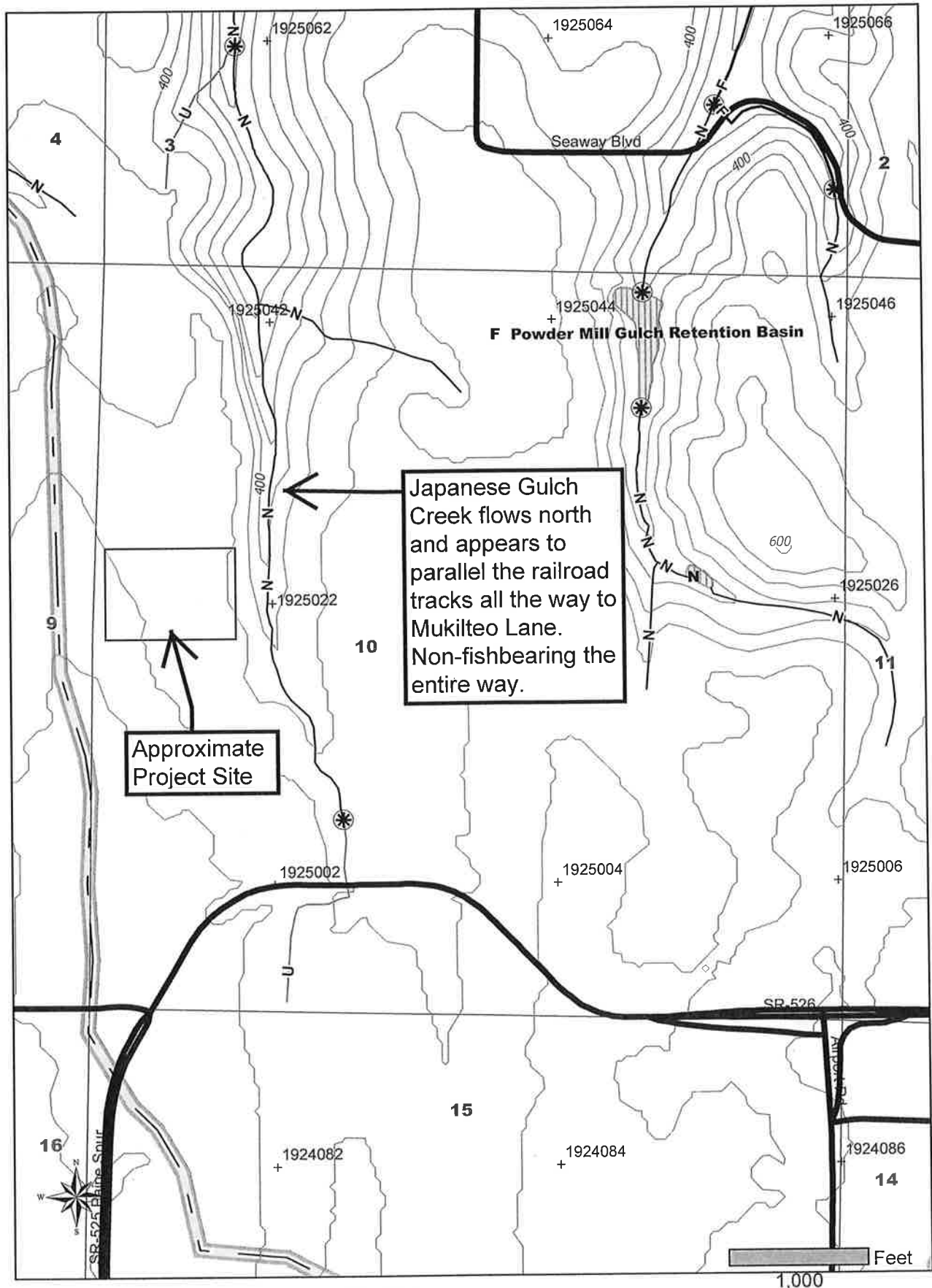
Vicinity Map



FOREST PRACTICE ACTIVITY MAP

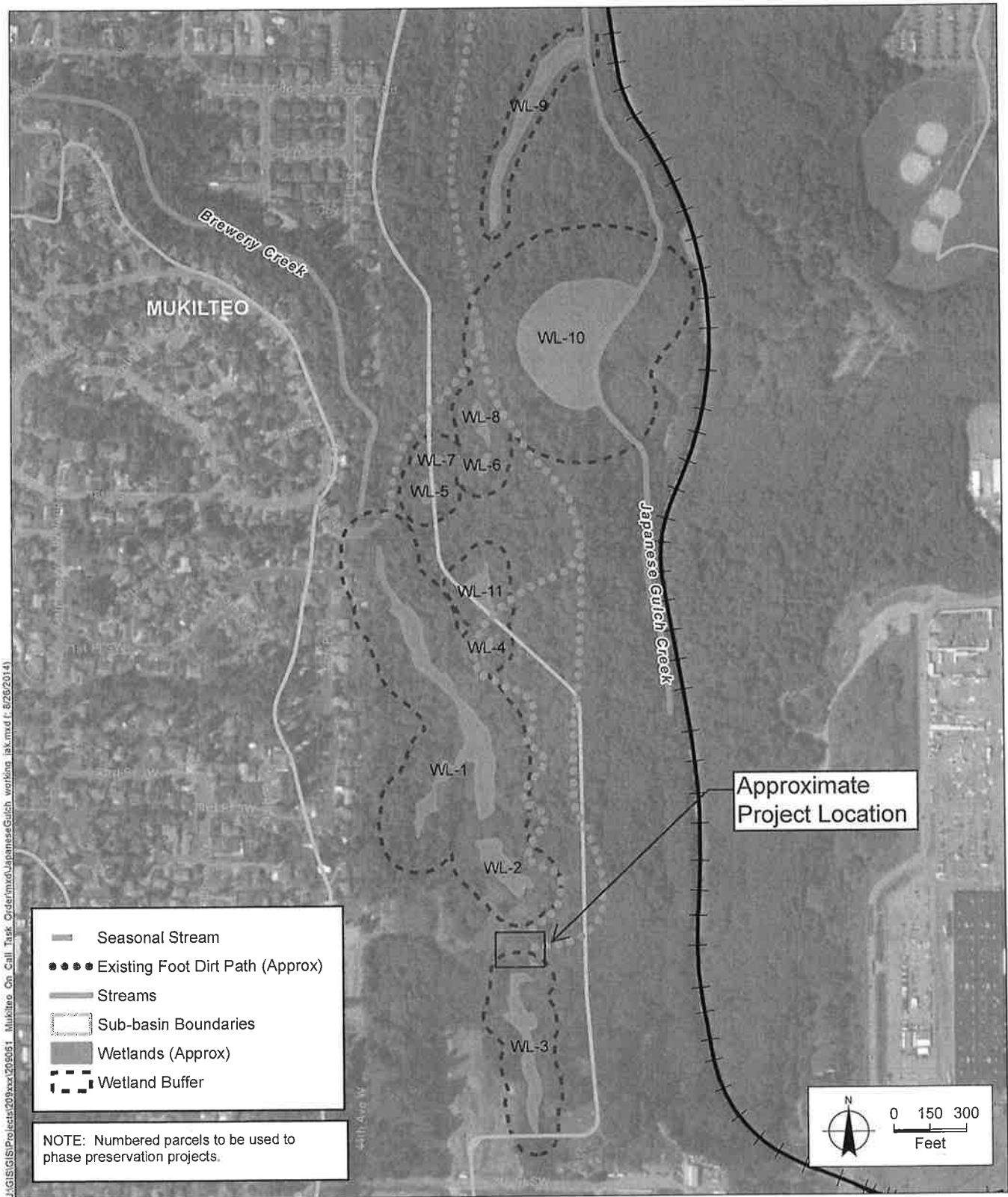
TOWNSHIP 28 NORTH HALF 0, RANGE 04 EAST (W.M.) HALF 0, SECTION 10

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



SOURCE: City of Mukilteo, 2009; Snohomish County, 2008; ESRI, 2014 (Aerial)

Mukilteo Critical Areas Mitigation Program. 209061.10

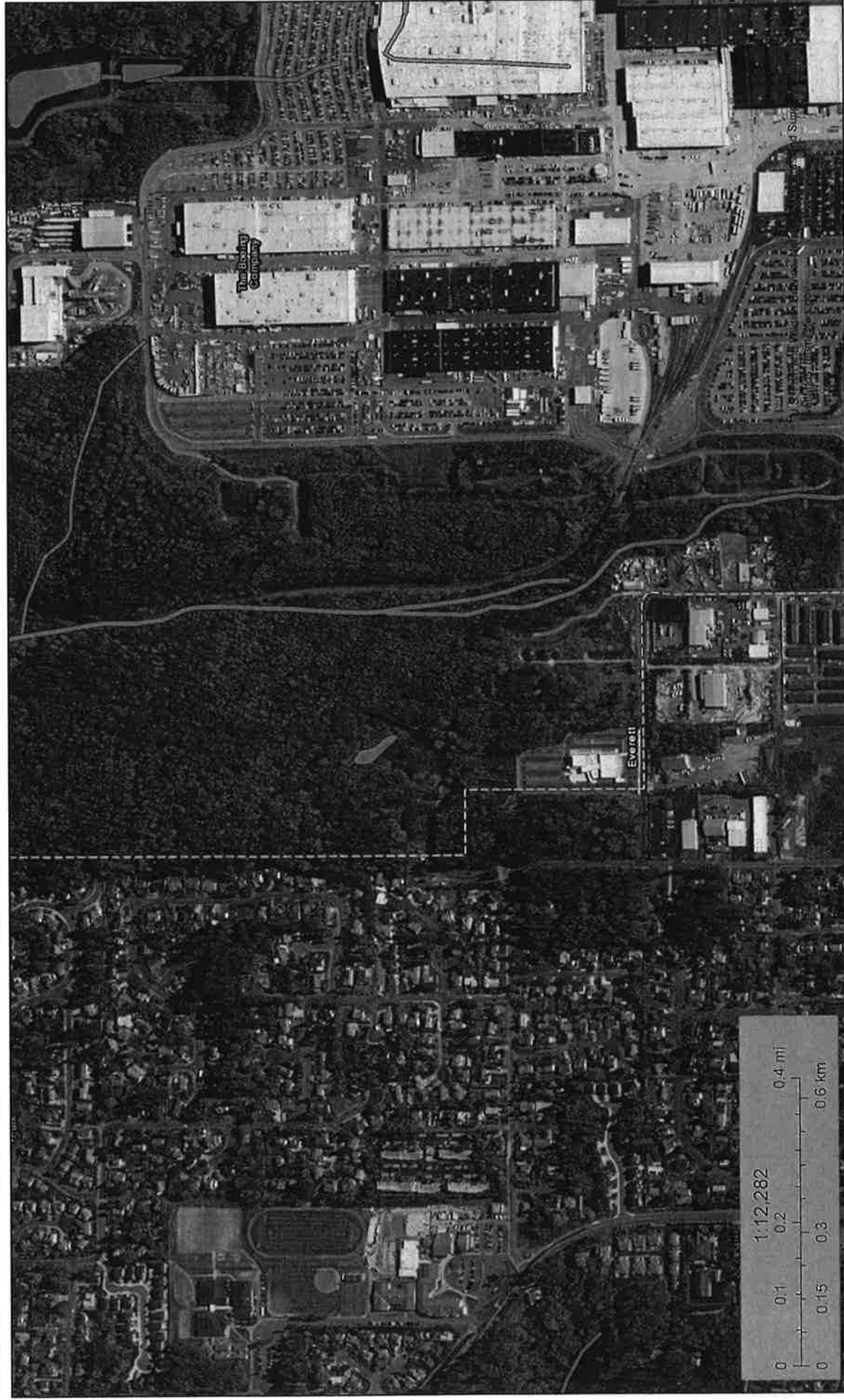
Figure 1
Japanese Gulch Wetland Buffers
Mukilteo, Washington



U.S. Fish and Wildlife Service

National Wetlands Inventory

Japanese Gulch



July 21, 2017

Wetlands

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

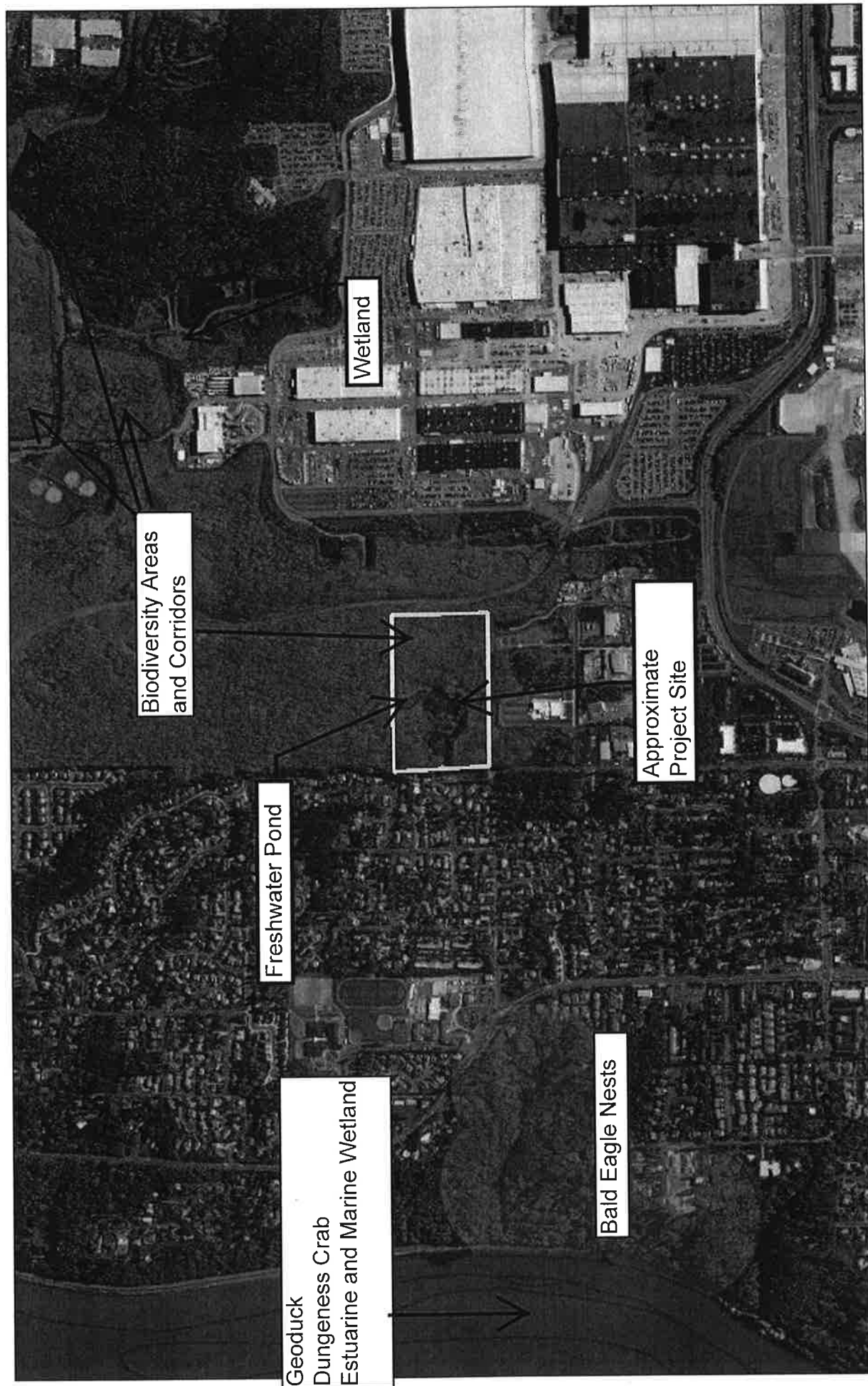
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REPORT DATE: 07/18/2017 10.26

Query ID: P170718102604

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

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
- ☐ QTR-TWP
- ☐ AS MAPPED
- ☐ TOWNSHIP
- ☐ PT
- ☐ SECTION
- ☐ LN

POLY

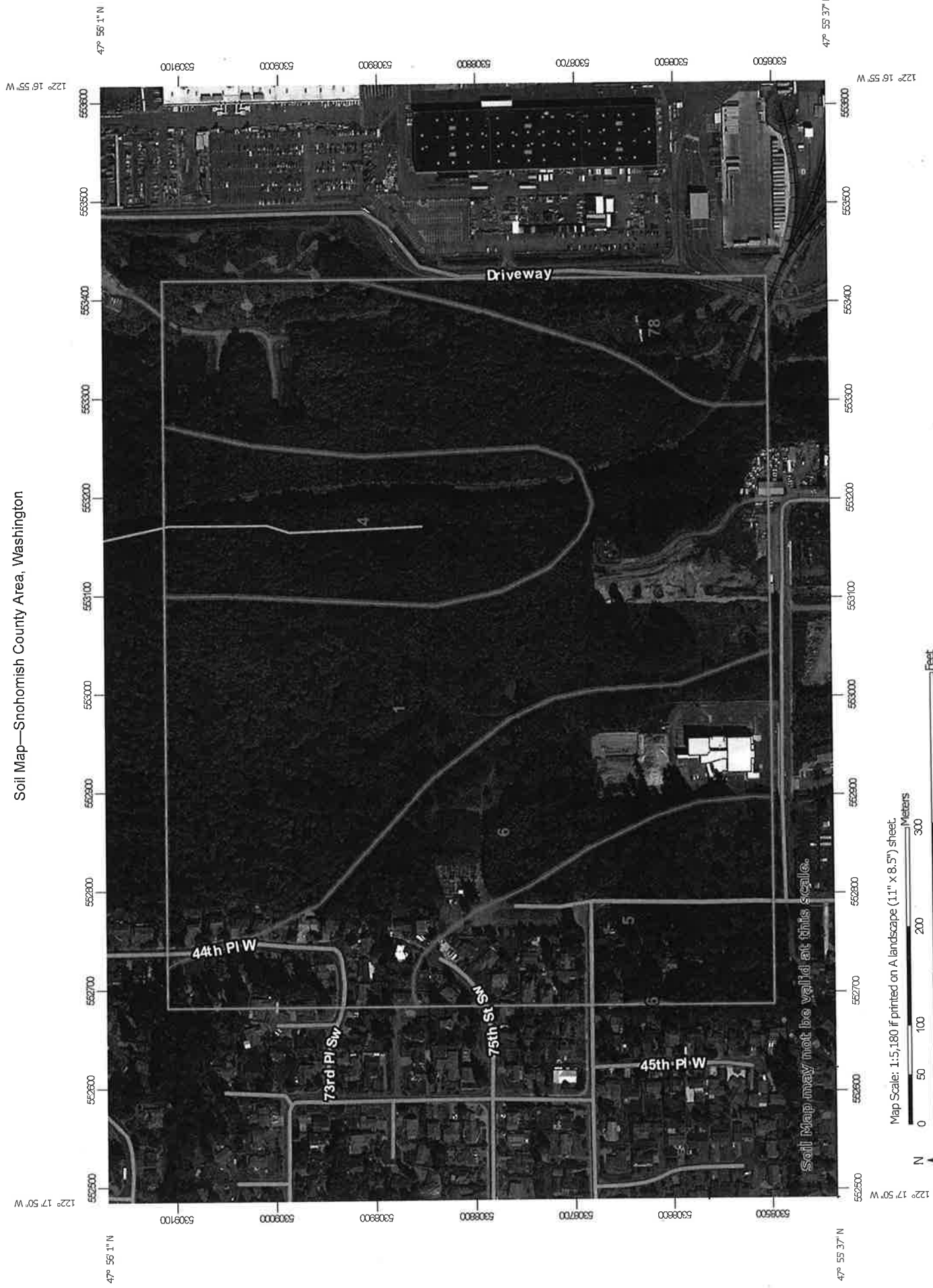
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





































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

Soil Map—Snohomish County Area, Washington



MAP LEGEND

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

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

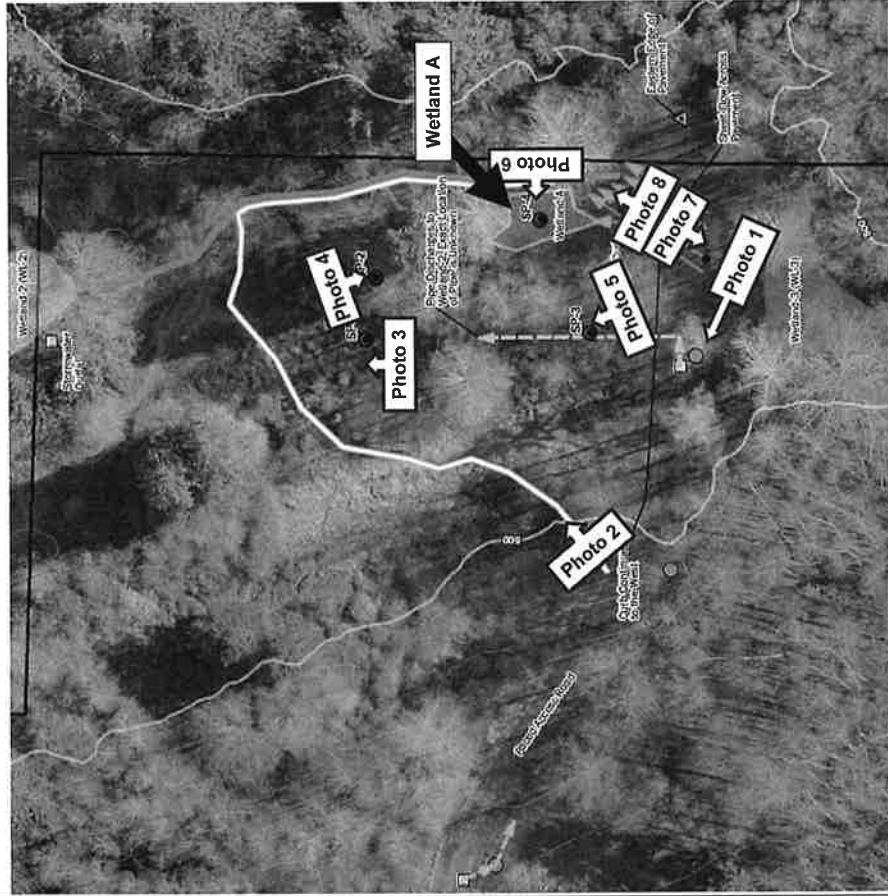
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Snohomish County Area, Washington (WA661)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Alderwood gravelly sandy loam, 0 to 8 percent slopes	55.9	49.9%
4	Alderwood-Everett gravelly sandy loams, 25 to 70 percent slopes	15.4	13.8%
5	Alderwood-Urban land complex, 2 to 8 percent slopes	13.6	12.1%
6	Alderwood-Urban land complex, 8 to 15 percent slopes	20.3	18.1%
78	Urban land	6.7	6.0%
Totals for Area of Interest		111.9	100.0%

APPENDIX B

Site Photographs



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

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

Project/Site: Japanese Gulch City/County: Everett Sampling Date: 7/28/2017

Applicant/Owner: City of Mukilteo State: WA Sampling Point: 1

Investigator(s): J. Dadisman, F. McNair Section/Township/Range: S10/T28N/R04E

Landform (hillslope, terrace, etc.): hillslope Local Relief (concave, convex, none): none Slope (%): 1-3

Subregion (LLR): A Lat: 47.930431 Long: -122.290794 Datum: WGS 84

Soil Map Unit Name: Alderwood gravelly sandy loam, 0 to 8 percent slopes 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 ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☒ Yes ☐ No

Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

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

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of dominant Species That are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of dominant Species That are OBL, FACW, or FAC: <u>0</u> (A/B)
1.				
2.				
3.				
4.	0	= Total Cover		Prevalence Index Worksheet: Total % Cover of: <u>0</u> Multiply by: OBL Species <u>0</u> x 1 = <u>0</u> FACW Species <u>0</u> x 2 = <u>0</u> FAC Species <u>10</u> x 3 = <u>30</u> FACU Species <u>95</u> x 4 = <u>380</u> UPL Species <u>0</u> x 5 = <u>0</u> Column Totals: <u>105</u> (A) <u>410</u> (B) Prevalence Index = B/A = <u>3.90</u>
Sapling/Shrub Stratum 1. 2. 3. 4. 5.				
Herb Stratum 1. <i>Trailing blackberry (Rubus ursinus)</i> 95 Y FACU 2. <i>Field horsetail (Equisetum arvense)</i> 5 N FAC 3. <i>Canadian thistle (Cirsium arvense)</i> 5 N FAC 4. 5. 6. 7. 8. 9. 10. 11.				
105 = Total Cover				
Woody Vine Stratum 1. 2.				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (provide supporting data in Remarks or on a separate sheet. <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problem Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
0 = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				
Remarks:				

Sampling Point: 1

HYDROLOGY

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 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"/> <u>Sparsely Vegetated</u> 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)
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Field Observations: <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> 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) </div> <div style="width: 45%;"> Depth (inches): _____ Depth (inches): _____ Depth (inches): _____ </div> </div> </div> <div style="width: 50%; text-align: right;"> Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No </div> </div>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

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

Project/Site: Japanese Gulch City/County: Everett Sampling Date: 7/28/2017

Applicant/Owner: City of Mukilteo State: WA Sampling Point: 2

Investigator(s): J. Dadisman, F. McNair Section/Township/Range: S10/T28N/R04E

Landform (hillslope, terrace, etc.): hillslope Local Relief (concave, convex, none): none Slope (%): 2-4

Subregion (LLR): A Lat: 47.930419 Long: -122.290643 Datum: WGS 84

Soil Map Unit Name: Alderwood gravelly sandy loam, 0 to 8 percent slopes 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 ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☒ Yes ☐ No

Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

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

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <i>Red alder (Alnus rubra)</i>	80	Y	FAC	Number of dominant Species That are OBL, FACW, or FAC:	<u>2</u> (A)
2. <i>Western red cedar (Thuja plicata)</i>	10	N	FAC		
3.					
4.					
	90	= Total Cover		Total Number of Dominant Species Across All Strata:	<u>4</u> (B)
Sapling/Shrub Stratum				Percent of dominant Species That are OBL, FACW, or FAC:	<u>50</u> (A/B)
1. <i>Scouler's willow (Salix scouleriana)</i>	15	Y	FAC		
2. <i>Indian plum (Oemleria cerasiformis)</i>	30	Y	FACU		
3.					
4.					
5.					
	45	= Total Cover		Prevalence Index Worksheet:	
				Total % Cover of:	Multiply by:
Herb Stratum				OBL Species	<u>5</u> x 1 = <u>5</u>
1. <i>Trailing blackberry (Rubus ursinus)</i>	70	Y	FACU	FACW Species	<u>0</u> x 2 = <u>0</u>
2. <i>Field horsetail (Equisetum arvense)</i>	5	N	FAC	FAC Species	<u>110</u> x 3 = <u>330</u>
3. <i>Slough sedge (Carex obnupta)</i>	5	N	OBL	FACU Species	<u>100</u> x 4 = <u>400</u>
4.				UPL Species	<u>0</u> x 5 = <u>0</u>
5.				Column Totals:	<u>215</u> (A) <u>735</u> (B)
6.				Prevalence Index = B/A = <u>3.42</u>	
7.				Hydrophytic Vegetation Indicators:	
8.				<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation	
9.				<input type="checkbox"/> 2 - Dominance Test is >50%	
10.				<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
11.				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (provide supporting data in Remarks or on a separate sheet.)	
	80	= Total Cover		<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹	
Woody Vine Stratum				<input type="checkbox"/> Problem Hydrophytic Vegetation (Explain)	
1.				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2.					
	0	= Total Cover			
% Bare Ground in Herb Stratum <u>0</u>					
Remarks:				Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

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"/> 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? ☐ Yes ☒ No Depth (inches): _____

Water Table Present? ☐ Yes ☒ No Depth (inches): _____

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: _____

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

Project/Site: Japanese Gulch City/County: Everett Sampling Date: 7/28/2017
 Applicant/Owner: City of Mukilteo State: WA Sampling Point: 3
 Investigator(s): J. Dadisman, F. McNair Section/Township/Range: S10/T28N/R04E
 Landform (hillslope, terrace, etc.): hillslope Local Relief (concave, convex, none): none Slope (%): 2-4
 Subregion (LLR): A Lat: 47.930104 Long: -122.290783 Datum: WGS 84
 Soil Map Unit Name: Alderwood gravelly sandy loam, 0 to 8 percent slopes 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 ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☒ Yes ☐ No
 Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

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

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <i>Red alder (Alnus rubra)</i>	60	Y	FAC	Number of dominant Species That are OBL, FACW, or FAC:	3 (A)
2.					
3.					
4.				Total Number of Dominant Species Across All Strata:	4 (B)
	60	= Total Cover		Percent of dominant Species That are OBL, FACW, or FAC:	75 (A/B)
Sapling/Shrub Stratum				Prevalence Index Worksheet:	
1. <i>Hardhack (Spiraea douglasii)</i>	15	Y	FACW	Total % Cover of:	Multiply by:
2. <i>Himalayan blackberry (Rubus armeniacus)</i>	10	Y	FAC	OBL Species	x 1 = 0
3. <i>Black hawthorn (Crataegus douglasii)</i>	5	N	FAC	FACW Species	x 2 = 0
4.				FAC Species	x 3 = 0
5.				FACU Species	x 4 = 0
	30	= Total Cover		UPL Species	x 5 = 0
Herb Stratum				Column Totals:	0 (A) 0 (B)
1. <i>Trailing blackberry (Rubus ursinus)</i>	60	Y	FACU	Prevalence Index = B/A = #DIV/0!	
2. <i>Canadian thistle (Cirsium arvense)</i>	5	N	FAC	Hydrophytic Vegetation Indicators:	
3. <i>Stinging nettle (Urtica dioica)</i>	10	N	FAC	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation	
4.				<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
5.				<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
6.				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (provide supporting data in Remarks or on a separate sheet.)	
7.				<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹	
8.				<input type="checkbox"/> Problem Hydrophytic Vegetation (Explain)	
9.				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
10.					
11.					
	75	= Total Cover		Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Woody Vine Stratum					
1.					
2.					
	0	= Total Cover			
% Bare Ground in Herb Stratum 0					
Remarks:					

SOIL

Sampling Point: 3

[illegible]

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:		Wetland Hydrology Present?	
Surface Water Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<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): _____	

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

Remarks:

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

Project/Site: Japanese Gulch City/County: Everett Sampling Date: 7/28/2017
 Applicant/Owner: City of Mukilteo State: WA Sampling Point: 4
 Investigator(s): J. Dadisman, F. McNair Section/Township/Range: S10/T28N/R04E
 Landform (hillslope, terrace, etc.): hillslope Local Relief (concave, convex, none): none Slope (%): 1-3
 Subregion (LLR): A Lat: 47.930096 Long: -122.29037 Datum: WGS 84
 Soil Map Unit Name: Alderwood gravelly sandy loam, 0 to 8 percent slopes 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 ☐ Hydrology significantly disturbed? Are "normal circumstances" present? ☒ Yes ☐ No
 Are ☐ Vegetation ☐ Soil ☐ Hydrology naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS

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

VEGETATION - Use scientific names of plants.

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of dominant Species That are OBL, FACW, or FAC: <u>100</u> (A/B)
1.				
2.				
3.				
4.				
		0 = Total Cover		
Sapling/Shrub Stratum				
1. <i>Himalayan blackberry (Rubus armeniacus)</i>	5	Y	FAC	Prevalence Index Worksheet: Total % Cover of: <u>5</u> Multiply by: OBL Species <u>0</u> x 1 = <u>0</u> FACW Species <u>0</u> x 2 = <u>0</u> FAC Species <u>0</u> x 3 = <u>0</u> FACU Species <u>0</u> x 4 = <u>0</u> UPL Species <u>0</u> x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = <u>#DIV/0!</u>
2.				
3.				
4.				
5.				
		5 = Total Cover		
Herb Stratum				
1. <i>Reed canarygrass (Phalaris arundinacea)</i>	100	Y	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (provide supporting data in Remarks or on a separate sheet. <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problem Hydrophytic Vegetation (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
		100 = Total Cover		
Woody Vine Stratum				
1.				
2.				
		0 = Total Cover		
% Bare Ground in Herb Stratum <u>0</u>				
Remarks:				Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

[illegible]

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: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <div style="display: flex; justify-content: space-between;"> <div>Surface Water Present?</div> <div> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No </div> </div> <div style="display: flex; justify-content: space-between;"> <div>Water Table Present?</div> <div> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No </div> </div> <div style="display: flex; justify-content: space-between;"> <div>Saturation Present?</div> <div> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No </div> </div> </div> <div style="width: 45%; border-left: 1px solid black; padding-left: 10px;"> Wetland Hydrology Present? </div> </div> <div style="margin-top: 10px;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Depth (inches): _____ Depth (inches): _____ Depth (inches): _____ </div> <div style="width: 45%; border-left: 1px solid black; padding-left: 10px;"> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No </div> </div> </div>				
(includes capillary fringe)				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

APPENDIX D
Wetland Rating Form

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	H	Total
Score Based on Ratings	4	4	5	13

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

Maps and Figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	1
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	1
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to another figure</i>)	S 4.1	1
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	S 2.1, S 5.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	4

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.

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☒ **NO** - go to 7

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

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☒ **NO** - go to 8

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

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT** (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as Depressional for the rating.

<h2 style="text-align: center;">SLOPE WETLANDS</h2> <p style="text-align: center;">Water Quality Functions - Indicators that the site functions to improve water quality</p>		
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. <u>The soil 2 in below the surface (or duff layer)</u> is true clay or true organic (<i>use NRCS definitions</i>):	Yes = 3 No = 0	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	Add the points in the boxes above	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?	Yes = 1 No = 0	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	Yes = 1 No = 0	1
Total for S 2	Add the points in the boxes above	1
Rating of Landscape Potential If score is: 1 - <input checked="" type="checkbox"/> M 0 = L <input type="checkbox"/> <i>Record the rating on the first page</i>		

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?	Yes = 1 No = 0		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>	Yes = 1 No = 0		0
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? <i>Answer YES if there is a TMDL for the basin in which the unit is found ?</i>	Yes = 2 No = 0		0
Total for S 3		Add the points in the boxes above	0
Rating of Value If score is: 2 = 4 = H 1 = 1 0 = L <input checked="" type="checkbox"/>			Record the rating on the first page

SLOPE WETLANDS**Hydrologic Functions** - Indicators that the site functions to reduce flooding and stream erosion**S 4.0. Does the site have the potential to reduce flooding and stream erosion?**

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.

Dense, uncut, rigid plants cover > 90% of the area of the wetland

points = 1

All other conditions

points = 0

1

Rating of Site Potential If score is: 1 = ☒ 0 = ☐

Record the rating on the first page

S 5.0. Does the landscape have the potential to support hydrologic functions of the site?

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?

Yes = 1 No = 0

0

Rating of Landscape Potential If score is: 1 = ☐ 0 = ☒

Record the rating on the first page

S 6.0. Are the hydrologic functions provided by the site valuable to society?

S 6.1. Distance to the nearest areas downstream that have flooding problems:

The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)

points = 2

Surface flooding problems are in a sub-basin farther down-gradient

points = 1

No flooding problems anywhere downstream

points = 0

0

S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?

Yes = 2 No = 0

0

Total for S 6

Add the points in the boxes above

0

Rating of Value If score is: 2 = ☐ = H 1 = ☐ 0 = ☒

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat**H 1.0. Does the site have the potential to provide habitat?**

H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of $\frac{1}{4}$ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.

- | | | |
|---|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed | 4 structures or more: points = 4 | 1 |
| <input checked="" type="checkbox"/> Emergent | 3 structures: points = 2 | |
| <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 | |
| <input type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0 | |
- If the unit has a Forested class, check if:
- ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or $\frac{1}{4}$ ac to count (see text for descriptions of hydroperiods).

- | | | |
|--|-------------------------------------|---|
| <input type="checkbox"/> Permanently flooded or inundated | 4 or more types present: points = 3 | 0 |
| <input type="checkbox"/> Seasonally flooded or inundated | 3 types present: points = 2 | |
| <input type="checkbox"/> Occasionally flooded or inundated | 2 types present: points = 1 | |
| <input checked="" type="checkbox"/> Saturated only | 1 types present: points = 0 | |
| <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Lake Fringe wetland | 2 points | |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points | |

H 1.3. Richness of plant species

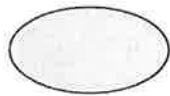
Count the number of plant species in the wetland that cover at least 10 ft².

Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle

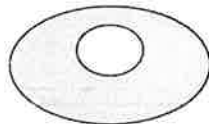
- | | | | |
|-----------------|----------------|------------|---|
| If you counted: | > 19 species | points = 2 | 0 |
| | 5 - 19 species | points = 1 | |
| | < 5 species | points = 0 | |

H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you have four or more plant classes or three classes and open water, the rating is always high.



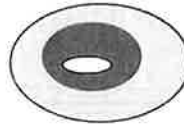
None = 0 points



Low = 1 point

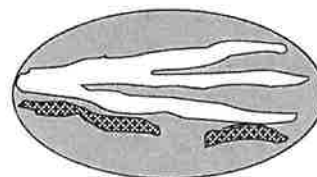
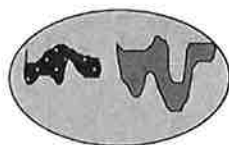


Moderate = 2 points



1

All three diagrams
in this row are
HIGH = 3 points



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.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to SC 1.1 <input checked="" type="checkbox"/> No = Not an estuarine wetland </div>	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <div style="text-align: right;"> <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 1.2 </div>	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> 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. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <div style="text-align: right;"> <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II </div>	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <div style="text-align: right;"> <input checked="" type="checkbox"/> Yes - Go to SC 2.2 <input type="checkbox"/> No - Go to SC 2.3 </div> SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <div style="text-align: right;"> <input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not WHCV </div> SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf <div style="text-align: right;"> <input type="checkbox"/> Yes - Contact WNHP/WDNR and to SC 2.4 <input checked="" type="checkbox"/> No = Not WHCV </div> SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? <div style="text-align: right;"> <input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not WHCV </div>	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> No - Go to SC 3.2 </div> SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> No = Is not a bog </div> SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? <div style="text-align: right;"> <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No - Go to SC 3.4 </div> NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? <div style="text-align: right;"> <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> No = Is not a bog </div>	

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 $\frac{1}{10}$ 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

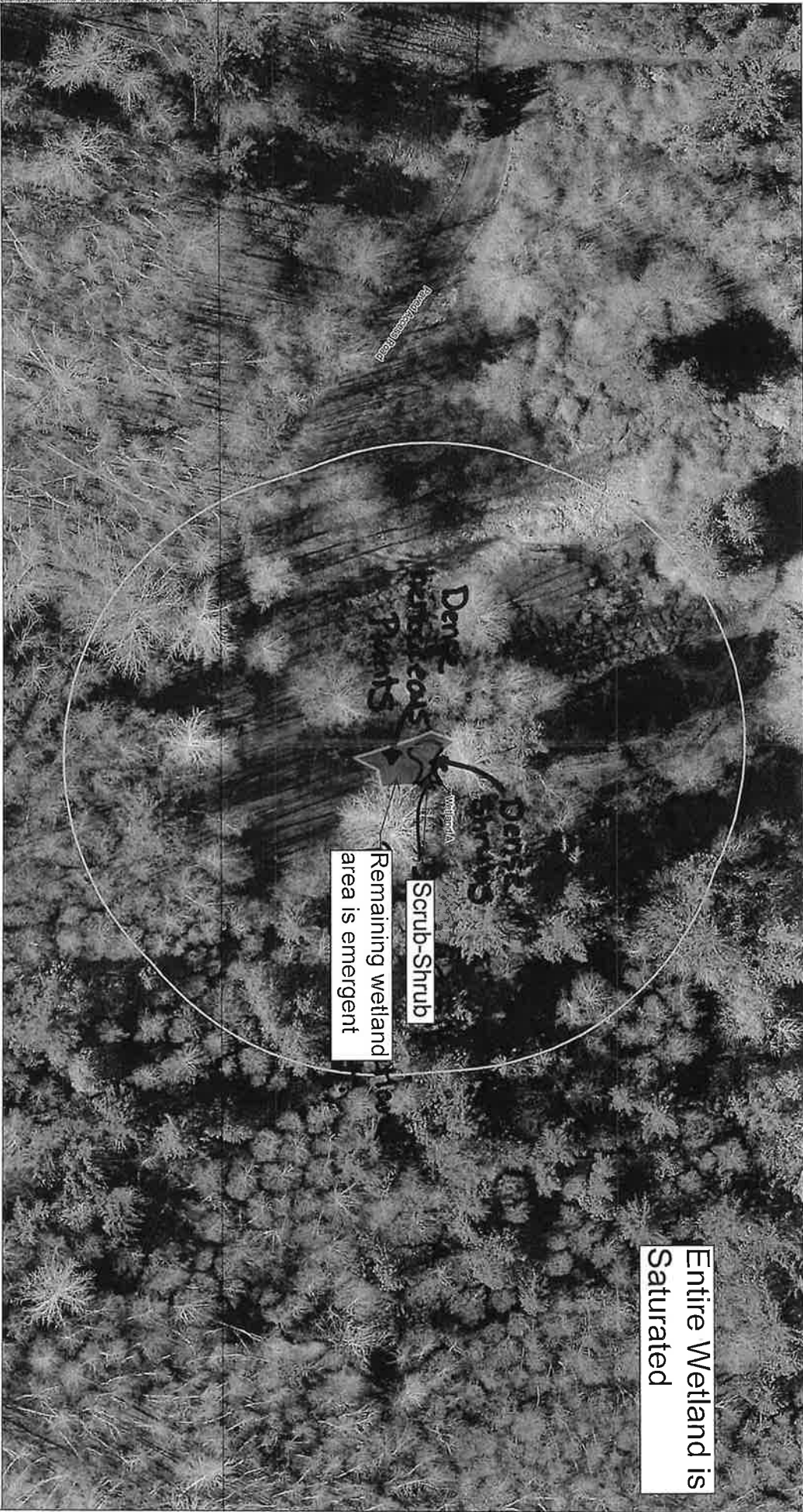
SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐ Yes = Category III ☐ No = Category IV

Category of wetland based on Special Characteristics

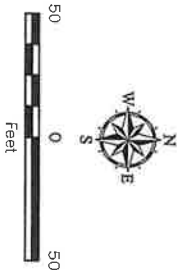
If you answered No for all types, enter "Not Applicable" on Summary Form

Entire Wetland is Saturated



Legend

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



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

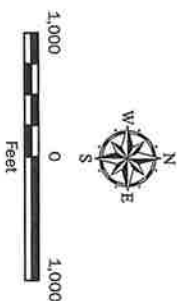
Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers,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

There are actively used trails within the forested area. Human and dogs observed.

- 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. Google/Esri, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by Google/Esri, Inc. and will serve as the official record of this communication.
- Data Source: ESRI Data & Maps, 2015 Aerial Imagery.

Weiland (Identified by GeoEngineers)

- ☐ Wetland Buffer (1 km)



Accessible and Undisturbed Habitat

Wetland A Rating Form
Everett, Washington

GEOENGINEERS

Figure 2



Screen Capture of Ecology 303 (d) Map

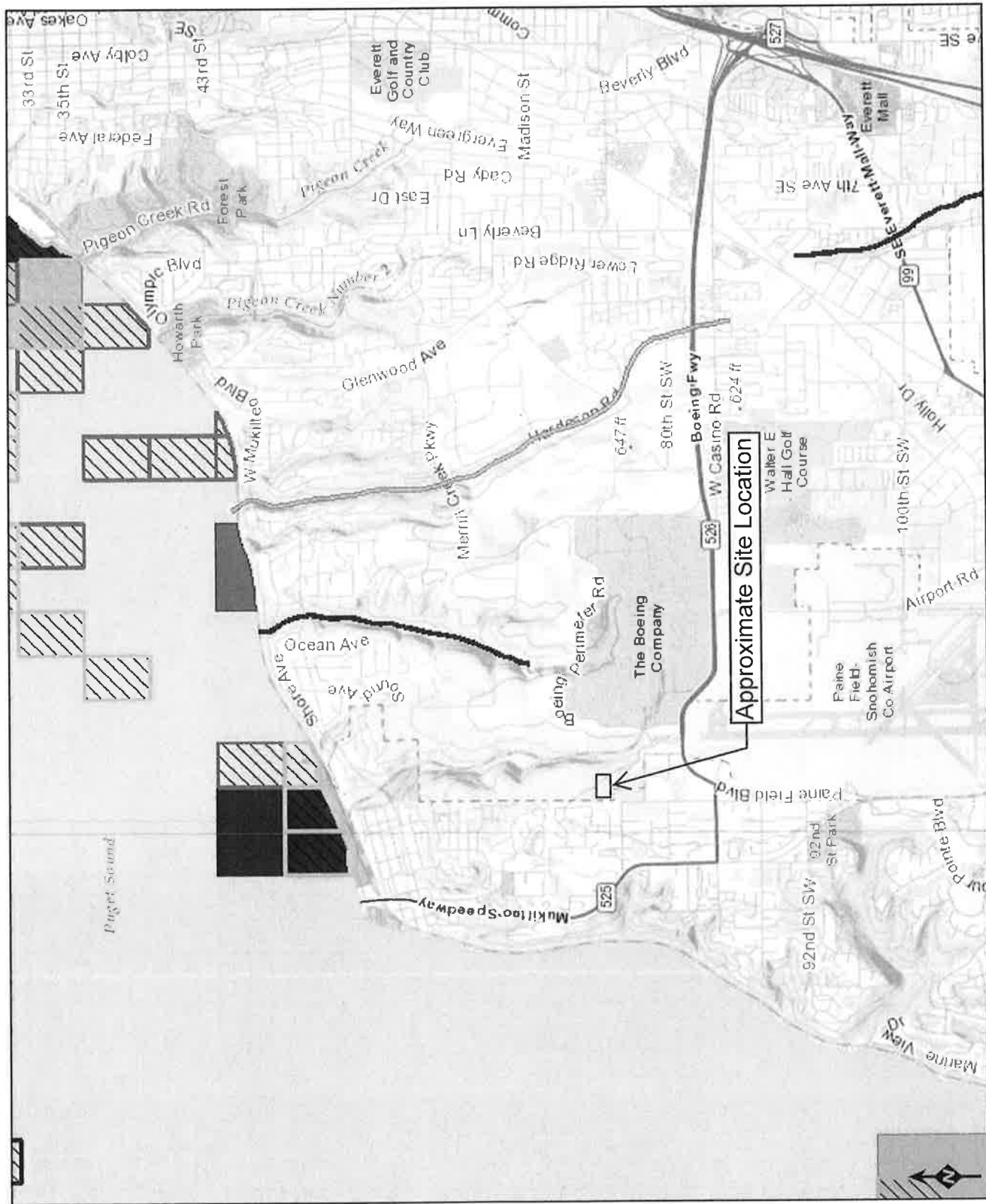
Japanese Gulch Wetland Investigation
Everett, Washington

GEOENGINEERS 

Figure 3

Japanese Gulch - 303(d) Map

- Assessed Waters/Sediment**
- Water
 - Category 5 - 303d
 - Category 4C
 - Category 4B
 - Category 4A
 - Category 2
 - Category 1
 - Sediment
 - Category 5 - 303d
 - Category 4C
 - Category 4B
 - Category 4A
 - Category 2
 - Category 1



Sources: Esri, HERE, DeLorme, Intermap, increment, P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, ©

Water Quality Improvement Projects (TMDLs)

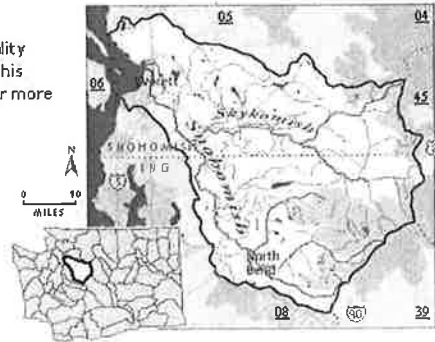
[Water Quality Improvement](#) > [Water Quality Improvement Projects by WRIA](#) > WRIA 7: Snohomish

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	<ul style="list-style-type: none"> • Ammonia-N • BOD (5-day) • Fecal Coliform 	EPA approved	Ralph Svrcek 425-649-7165
	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