DEVELOPMENT SERVICES DEPARTMENT
ENVIRONMENTAL COORDINATOR
450 110th Ave NE., P.O. BOX 90012
BELLEVUE, WA 98009-9012

OPTIONAL DETERMINATION OF NON-SIGNIFICANCE (DNS) NOTICE MATERIALS

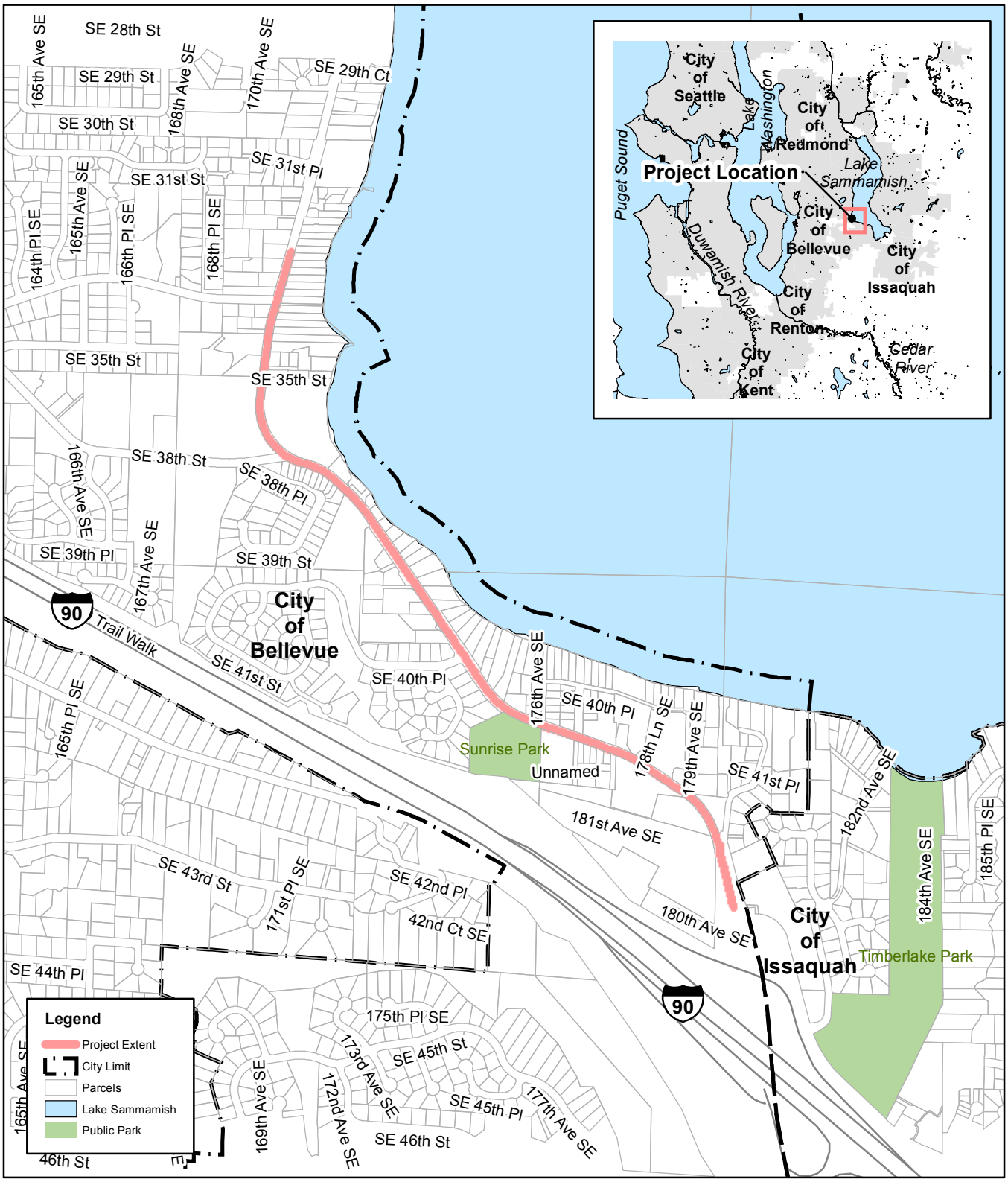
The attached materials are being sent to you pursuant to the requirements for the Optional DNS Process (WAC 197-11-355). A DNS on the attached proposal is likely. This may be the only opportunity to comment on environmental impacts of the proposal. Mitigation measures from standard codes will apply. Project review may require mitigation regardless of whether an EIS is prepared. A copy of the subsequent threshold determination for this proposal may be obtained upon request.

File No.	11-115204-LO/11-115202-WG
Project Name/Address:	City of Bellevue Transportation Department West Lake Sammamish Parkway Phase 1 Improvements Interstate 90 to SE 34th Street
Planner:	David Pyle / dpyle@bellevuewa.gov
Phone Number:	425-452-2973
Minimum Comment Period:	**Monday, January 2, 2012, 5 PM**

Materials included in this Notice:

- ☒ Blue Bulletin
- ☒ Checklist
- ☒ Vicinity Map
- ☒ Plans
- ☐ Other:

Vicinity Map



\\Sfo-gists01\gis\GIS\Projects\209xxx\209364_West_LK_Sammamish_Pkwy\Projects\SEPA Fig 01.mxd (DLP; 10/27/2011)

SOURCE: King County, 2007, 2010 (2002 Aerial Imagery); Reid Middelton, 2008

N

0 250 500 1,000
Feet

West Lake Sammamish Parkway Improvements. 209364

Figure 1
Vicinity Mapl
Bellevue, WA

City of Bellevue File Number 11-115204-LO/11-115202-WG
12/01/2011
City of Bellevue Transportation Department
West Lake Sammamish Parkway Phase 1 Improvements
Project SEPA Checklist
Interstate 90 to SE 34th Street

SEPA Checklist Reviewed By:
David Pyle, Land Use Planner
425-452-2973 - dpyle@bellevuewa.gov

City of Bellevue Submittal Requirements

ENVIRONMENTA

If you need assistance in completing the checklist or have an
please visit or call the Permit Center (425-452-6864) betwee
10 to 4). Our TTY number is 425-452-4636.:

BACKGROUND INFORMATION

Property Owner:
City of Bellevue

Proponent:
City of Bellevue

Contact Person:
(If different from the owner. All questions and correspondence will be directed to the individual listed.)
Paul Krawczyk, Project Manager

Address:
Bellevue Transportation Department
301-116 Ave. SE Suite 200
P.O. Box 90012
Bellevue, WA 98009-9012

Phone:
425-452-7905

Proposal Title:
West Lake Sammamish Parkway Improvements – Phase 1

Proposal Location:
(Street address and nearest cross street or intersection) Provide a legal description if available.
West Lake Sammamish Parkway from north of Interstate 90 to approximately SE 34th Street within Sections 12 and 13 of Township 24 North, Range 4 East, and within Section 18 of Township 24 North, Range 5 East, Willamette Meridian.

Please attach an 8 ½" x 11" vicinity map that accurately locates the proposal site. (see Figure 1)

Give an accurate, brief description of the proposal's scope and nature:

1. General description:

The City of Bellevue is proposing to enhance safety for pedestrians and bicyclists by providing a multi-use trail, landscaped buffer, and shoulder improvements along 1.2 miles of West Lake Sammamish Parkway (Parkway). The project extends along the Parkway from north of Interstate-90 to approximately SE 34th Street (see Figures 2a, 2b, and 2c).

The project will include minor widening of the existing paved shoulder to accommodate the new multi-use trail and buffer on the west side, and a new 4-foot paved shoulder on the east side of the road. The multi-use trail will vary in width between 8 and 10 feet separated from the roadway along most of the project length by a landscaped buffer varying in width between 2 and 5 feet. Where site constraints dictate, portions of the project will have no buffer. The southbound lane will be reduced from its current width of 10.5 feet to 10 feet in order to accommodate the trail and buffer improvements. The width of the northbound lane will

remain 10.5 feet. A separate left-turn lane will be constructed at the SE 34th Street intersection for the northbound direction and a new traffic signal will be installed. The project will also include pavement restoration, stormwater treatment, retaining walls, and utility improvements and relocations.

The project will be constructed within the existing City of Bellevue street right of way (ROW) except on the west side of Parkway north of SE 38th Street, where strip acquisition is needed to accommodate the widened shoulder. Also, some ROW acquisition will be needed at the SE 34th intersection to accommodate the intersection improvements and new traffic signal.

2. Acreage of site:

Approximately 5 Acres.

3. Number of dwelling units/buildings to be demolished:

None

4. Number of dwelling units/buildings to be constructed:

None

5. Square footage of buildings to be demolished:

N/A

6. Square footage of buildings to be constructed:

N/A

7. Quantity of earth movement (in cubic yards):

1,900 CY of fill (imported) / 11,100 CY of roadway excavation (haul)

8. Proposed land use:

Public Roadway / Multi-use Trail

The proposed project passes through residential land use districts.

9. Design features, including building height, number of stories and proposed exterior materials:

Roadway, road shoulder, and multi-use trail will be constructed with asphalt paving. Structural components include: roadway/trail embankment fill; retaining wall construction; and concrete curb.

10. Other

Estimated date of completion of the proposal or timing of phasing:

Construction may begin as early as spring of 2012 and may be completed by winter 2013.

Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Yes. This project is the first phase of a broader plan to complete improvements along a total of 4.98 miles of West Lake Sammamish Parkway, beginning just north of the roundabout at I-90 and continuing north to the city limits near NE 24th Street. The only phase that is funded is the south segment (Phase 1).

The overall plan has a total of five independent phases, each constructing approximately one mile of multi-use trail and other improvements per segment. There will be no increase in roadway capacity. Each phase is independent; the trail will connect into existing paved shoulders where each phase terminates. These future phases will be subject to additional environmental review.

List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Environmental studies have been prepared, or will be prepared, as follows:

- Water Quality Summary Memorandum (Tetra Tech, 2011)
- Biological Evaluation Letter of No Effect (ESA, 2011a)
- Critical Areas Report (ESA, 2011b)
- Geologic Hazard Areas Evaluation (GeoEngineers, 2011)

Completed environmental studies have been attached to this application.

- Critical Areas Report (ESA, 2011b)
- Geologic Hazard Areas Evaluation (GeoEngineers, 2011)

Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. List dates applied for and file numbers, if known.

There are no other applications for governmental approvals of other proposals that would directly affect the property covered by this proposal. This SEPA analysis is associated with a Critical Areas Land Use Permit and a Shoreline Substantial Development Permit.

List any government approvals or permits that will be needed for your proposal, if known. If permits have been applied for, list application date and file numbers, if known.

- Section 404 Nationwide Permit – U.S. Army Corps of Engineers
- Section 7 Endangered Species Act Review ('No Effect') – U.S. Army Corps of Engineers
- Construction Stormwater General Permit - Washington Department of Ecology
- State Environmental Policy Act (SEPA) – City of Bellevue
- Shoreline Substantial Development Permit – City of Bellevue
- Clearing and Grading Permit (with SEPA) – City of Bellevue
- Development Review – City of Bellevue
- Right of Way Use Permit – City of Bellevue

Please provide one or more of the following exhibits, if applicable to your proposal.
(Please check appropriate box(es) for exhibits submitted with your proposal):

☐ Land Use Reclassification (rezone) Map of existing and proposed zoning

☐ Preliminary Plat or Planned Unit Development
Preliminary plat map

☐ Clearing & Grading Permit
Plan of existing and proposed grading

Development plans

☐ Building Permit (or Design Review)
Site plan
Clearing & grading plan

☒ Shoreline Management Permit
Site plan

A. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site: ☐ Flat ☒ Rolling ☐ Hilly ☐ Steep slopes ☐ Mountains ☐ Other

The project site is generally rolling. The south portion of the project site has a gradual downslope and flattens out just north of Sunrise Park. The roadway then slopes downward nearing Vasa Park and then gradually upward towards SE 34th.

b. What is the steepest slope on the site (approximate percent slope)? The project area includes slopes in excess of 40%.

The roadway slope is a maximum of 7%. Side slopes adjacent to the roadway can range up to 30%.

c. What general types of soil are found on the site (for example, clay, sand, gravel, peat, and muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

Existing conditions include asphalt pavement, concrete pavement, and compacted gravel. Soils in the project corridor primarily include imported structural fill from previous roadway construction overlying native sandy and silt loam soils (GeoEngineers, 2011).
The project area also includes unmodified native soils, including wetland soils.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

There is no surface indication or history of unstable soils within the immediate vicinity of the road corridor (GeoEngineers, 2011).
The project area does include areas of unstable soils where historic landslides and sluffing have been observed.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

The project will require limited amounts of grading and fill to expand the existing paved shoulder to accommodate a multi-use trail and planted buffer on the west side, and to provide a four-foot shoulder on the east side. Approximately 11,000 cubic yards of non-native roadway material will be removed from the site. Approximately 1,900 cubic yards of imported fill (structural soil) will be required.
Where necessary fill will be retained with structural walls designed to support the roadway/trail expansion.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

The potential for soil erosion is generally low in the project area because of the generally flat conditions of the roadway section and the nature of the construction practices involving compacted stabilized material. However, clearing, grading, excavation and filling on upland soils could result in erosion and subsequent sediment load to adjacent waterbodies. Potential for erosion during construction would be mitigated with implementation of the measures listed below in section A.1.h.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? By contrast the City of Bellevue Land Use Code allows up to 55% impervious surface in areas of adjacent zoning.

Approximately 95 percent of the site will be covered with impervious surfaces. The project will result in a net increase of impervious surface of approximately 3,000 square feet.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Best Management Practices (BMPs) will be implemented during construction in accordance with the City of Bellevue's Transportation Maintenance and Capital Improvements Project Stormwater Management Guidelines (City of Bellevue, 2011); and Washington Department of Ecology NPDES Construction Stormwater General Permit requirements. As part of these requirements, the Contractor will be required to submit and follow a Stormwater Pollution Prevention Plan (SWPPP) and a Temporary Erosion and Sediment Control (TESC) plan. Temporary erosion and sediment control measures and BMPs will at a minimum include: turbidity monitoring; catch basin inserts; covering of utility trenches at the end of each working day; utilization of additional erosion control materials such as plastic sheeting, straw bales, sand bags, pumps, etc.; and avoiding placement of excavated material directly on pavement areas.

A Clearing and Grading Permit is required. Site management practices and erosion control plans are reviewed as part of the Clearing and Grading Permit to ensure project plans comply the the City's Clearing and Grading Code, BCC 23.76.

2. AIR

a. What types of emissions to the air would result from the proposal (i.e. dust, automobile odors, and industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Air impacts will be typical of roadway construction. During project construction, air emissions from soil disturbing activities, operation of heavy-duty equipment, traffic delays, and the laying of asphalt would be temporary and localized. The total emissions and the timing of the emissions from these sources will vary depending on the phasing of construction and construction methods. Typical sources of emissions during construction of transportation projects include: fugitive dust generated during excavation, grading, and other construction activities; engine exhaust emissions from construction vehicles, worker vehicles, and construction equipment; increased motor vehicle emissions associated with increased traffic congestion during construction; and volatile organic and odorous compounds emitted during asphalt paving.

As the project will not increase vehicle capacity or change traffic patterns once completed, the project is not expected to result in an increase or decrease of motor vehicle emissions.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no off-site sources of emissions or odor that may affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to the air, if any:

Emissions during construction would be controlled using BMPs and stationary source emissions controls in compliance with Puget Sound Clean Air Agency (PSCAA) regulations. Street cleaners will periodically operate to keep dust down as well as to provide good site management.

3. WATER

a. Surface

(1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

West Lake Sammamish Parkway roughly parallels the southwest shoreline of Lake Sammamish. The project area is located between 75 and 1,500 feet from the lake. The project also crosses five tributary streams that flow into the lake as listed below in Table 1 (see Figures 2a, 2b, and 2c).

Table 1. Streams in the Project Vicinity

Stream ID	Project Station	Classification[1]	Project Area Channel Description
Vasa Creek 0156	63+80	Perennial Type F Anadromous Salmonid use	The stream crosses the Parkway in a culvert crossing, with open channel downstream to Lake Sammamish

0160	56+00	Perennial Type F Salmonid use	Conveyed under the Parkway by a 716-foot long culvert which extends from upstream of WLSP and discharges directly into Lake Sammamish
Unnamed Stream #1	44+20	Intermittent Type F Salmonid use	Stormwater basin immediately upstream of the Parkway. Conveyed under the Parkway and downstream in pipe system.
0161	32+35	Perennial Type F Salmonid use	The stream crosses the Parkway in a culvert crossing, with open channel downstream to Lake Sammamish
Unnamed Stream #2	15+00	Unknown Assumed Type F and Salmonid Use	Stream is on north side of the Parkway and originates in stormwater basin immediately south of 181st Ave SE. Downstream conveyance is likely in pipe system.

1 Based on Bellevue Critical Areas (20.25H.075(b)) and WDFW stream type classifications

(2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If Yes, please describe and attach available plans.

Yes, portions of the project area are within 200 feet of Lake Sammamish. Construction work in these areas will include concrete and asphalt pavement removal, reconstruction to add the trail and shoulder improvements, and utility relocations/adjustments. Shoreline permit application materials accompany this checklist to the City of Bellevue, which further describes the proposed work within the Shoreline Overlay District.

The project has been designed to avoid in-water work by narrowing the proposed trail and planted buffer widths in certain areas to avoid culvert ends. The project will, however, require work adjacent to the existing culvert crossings for Vasa Creek and Stream 0161 identified above in Table 1. Short walls are proposed at these crossings to accommodate the widened road, and will be constructed outside of the ordinary high water mark (OHWM) to avoid impacting the streams.

(3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

The project will not place fill in or remove dredge material from surface water or wetlands.

(4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No. The project will not require surface water withdrawals or diversions.

(5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Within the project extent, West Lake Sammamish Parkway crosses the FEMA mapped 100-year floodplain in two locations: south of SE 38th Street, and at Vasa Creek (see Figures 2a, 2b, and 2c).

(6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No waste materials would be discharged to surface waters from construction or operation of the proposed project.

b. Ground

(1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description.

During construction, dewatering may be necessary in areas where the underground vaults (chambers) for stormwater treatment are placed. Quantities of water to be withdrawn are unknown at this time. All dewatering will occur in accordance with Department of Ecology requirements.

(2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Runoff from the construction site has the potential to contain sediment and small amounts of equipment-related materials (motor oil, diesel fuel, hydraulic fluid). BMPs (i.e., installation of temporary filter fabric in the existing catch basins) would be implemented to minimize equipment-related materials and sediment from leaving the site and potentially entering surface and ground waters.

c. Water Runoff (Including storm water)

(1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Under existing conditions, stormwater from the area currently receives no treatment or detention. Stormwater from the area currently sheet flows into a series of roadside ditches that drain to either project area streams or into one of several pipe systems that convey stormwater to Lake Sammamish.

In order to meet minimum requirements for redevelopment (Bellevue Municipal Code 24.06.065), the project is only required to treat stormwater from new pollution-generating impervious surfaces (PGIS). For this project, funding is available for the City to provide treatment to all existing PGIS, which is currently untreated, in addition to the new PGIS where treatment is required by City code. As a result, this project will include treatment for all new and existing or equivalent area of PGIS within the project area.

This project will utilize properly-sized pretreatment chambers and media filters for treatment upstream of each of three existing outfalls to Lake Sammamish proposed to receive project area runoff. Lake Sammamish is considered a flow-exempt waterbody under the City of Bellevue's 2011 *Transportation Maintenance and Capital Improvements Project Stormwater Management Guidelines*; therefore, no stormwater detention is required.

Although slight changes to the stormwater collection and conveyance systems will be required, all project-related stormwater will be discharged into Lake Sammamish through existing manmade outfalls. Furthermore, no discharges to project area streams will be required, with the exception of one location where stormwater will be discharged into an existing storm drain that connects with a culverted portion of Stream 0160.

(2) Could waste materials enter ground or surface waters? If so, generally describe.

Waste materials would not enter groundwater. Stormwater runoff would be treated and conveyed to the stormwater collection and conveyance system as described above.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Stormwater from the project area will receive treatment prior to discharge as described above.

During construction, BMPs identified in the TESC Plan and SWPPP would be employed as described in A.1.h. above.

4. Plants

a. Check or circle types of vegetation found on the site:

☐ Deciduous tree: alder, maple, aspen, other

- ☒ evergreen tree: fir, cedar, pine, other
- ☒ shrubs
- ☒ grass
- ☐ pasture
- ☐ crop or grain
- ☒ wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
- ☐ water plants: water lily, eelgrass, milfoil, other
- ☐ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Approximately 33 trees located within the road ROW will be removed to accommodate the widened shoulder. Trees to be removed are generally comprised of big-leaf maple, western red cedar, Douglas fir, and red alder with the following diameters:

- (2) 8" dbh	- (2) 14" dbh	- (2) 20" dbh
- (9) 10" dbh	- (2) 16" dbh	- (2) 24" dbh
- (12) 12" dbh	- (1) 18" dbh	- (1) 36" dbh

c. List threatened or endangered species known to be on or near the site.

The project area is located in an urbanized, upland area. No threatened or endangered plant species or critical habitat are known to be on or near the site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The multi-use trail will be separated from the roadway by a landscaped buffer varying in width between 2 and 5 feet where space is available. The buffer will be planted primarily with species native to this region. Shrub species will include Oregon grape, red flowering currant, common white snowberry, evergreen huckleberry, and nearly wild rose. Tree species will include Pacific sunset maple, starlight dogwood, and sour gum.

5. ANIMALS

a. Check or circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

- ☒ Birds: hawk, heron, eagle, songbirds, other: American crow, sparrows, starlings.
- ☒ Mammals: deer, bear, elk, beaver, other: small mammals
- ☒ Fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

As discussed in the project's Biological Evaluation No Effects Letter (ESA, 2011a), the WDFW Priority Habitats and Species (PHS) database does not indicate the presence of listed fish species in any of the five streams that cross the project area. However, PHS indicates that fall Chinook salmon, winter

steelhead, and bull trout occur within Lake Sammamish. No other PHS species or habitats are reported within or near the project site (WDFW 2011a).

Critical habitat for Puget Sound Chinook salmon and Coastal-Puget Sound bull trout has been designated within Lake Washington, 15 miles downstream of the project area; however, no critical habitat occurs within the project area. Critical habitat for steelhead has not been proposed or designated at this time.

c. Is the site part of a migration route? If so, explain.

The project site is located within the Pacific Flyway, which is a regional flight corridor for migrating waterfowl and other avian fauna, however the area where the project would occur is not considered important habitat for migrating birds.

d. Proposed measures to preserve or enhance wildlife, if any:

Impacts to habitat associated with species of local importance must be mitigated in accordance with the requirements of LUC 20.25H.150 through LUC 20.25H.170.

Construction work near stream crossings will employ BMPs to avoid sedimentation entering streams that could impact fish or fish habitat. The proposed landscape buffer will provide some foraging and nesting habitat for birds. No impacts to wildlife are expected as a result of this project; therefore, no additional measures are proposed to preserve or enhance wildlife.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy need? Describe whether it will be used for heating, manufacturing, etc.

Electric energy and gasoline powered vehicles will be used for roadway construction. Electric energy would be used at the new traffic signal at SE 34th Street.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The project would not affect the use of solar energy by any adjacent properties.

c. What kinds of energy conservation features are included in the plans of the proposal? List other proposed measures to reduce or control energy impacts, if any:

Not applicable.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

There are no anticipated environmental health hazards that would occur as a result of this proposal. During construction, oil or hydraulic fuel spills from heavy machinery could occur.

(1) Describe special emergency services that might be required.

Special emergency services would not be required.

(2) Proposed measures to reduce or control environmental health hazards, if any.

Typical safety measures would be employed during construction, including development of a Spill Prevention, Control, and Countermeasures (SPCC) Plan.

b. Noise

(1) What types of noise exist in the area which may affect your project (for example, traffic, equipment,

operation, other)?

Noise in the project area is primarily traffic noise.

(2) What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example, traffic, construction, operation, other)? Indicate what hours noise would come from the site.

During construction there would be temporary increases in sound levels near active areas of construction and along roadways used for construction vehicles. The increase in sound levels would depend on the type of equipment used and the amount of time it is in use. Typical construction equipment could include loaders, excavators, pavers, haul trucks and other similar machinery.

In the long-term, some residents along the Parkway may experience noise from trail users along the multi-use trail. The noises associated with trail users are minimal and will be minor compared to existing traffic noise along the Parkway.

(3) Proposed measures to reduce or control noise impacts, if any:

Construction of the project is anticipated to occur only during the hours of 7:00 a.m. and 6:00 p.m. on weekdays, and 9:00 a.m. and 6:00 p.m. on Saturdays as allowed by Bellevue City Code. The contractor would be required to meet the requirements and criteria of noise control regulations in Bellevue City Code Chapter 9.18. Noise abatement measures could be required.

Construction and operation noise is regulated by BCC 9.18. The proposed construction must meet the requirements of this section.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

West Lake Sammamish Parkway is a main arterial owned and maintained by the City of Bellevue. The road is currently used by vehicle traffic as well as by bicyclists and pedestrians. Properties adjacent to the Parkway generally include single-family residential houses and uses. Other uses along the project corridor include private park (Vasa Park Resort), private camp (Sambica Camp), and public park (Sunrise Park), and neighborhood commercial businesses.

The proposed project passes through residential land use districts.

b. Has the site been used for agriculture? If so, describe.

The site has not been used for agriculture.

c. Describe any structures on the site.

The only structures in the street right of way are associated with street use (utilities) and retaining walls.

d. Will any structures be demolished? If so, what?

No structures will be demolished as part of this project. Any existing wall structures within the road right-of-way will either remain or be rebuilt as part of this project.

e. What is the current zoning classification of the site?

Zoning for the project area is predominantly Suburban Residential District (R-5). Other zoning designations in the project area include Multifamily Residential District (R-10 and R-20), and Neighborhood Business District (NB).

f. What is the current comprehensive plan designation of the site?

The City of Bellevue's Comprehensive Plan designates this area primarily for high density single-family residential. Other designations include low and medium density multi-family residential, and neighborhood businesses.

g. If applicable, what is the current shoreline master program designation of the site?

Portions of the project area occur within the shoreline jurisdiction of Lake Sammamish, designated by the City of Bellevue as the Shoreline Overlay District.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

The City of Bellevue regulates critical areas under Title 20, Part 20.25H of the Bellevue Land Use Code (LUC). Critical areas regulated by the City include streams, wetlands, shorelines, geologic hazard areas, habitat associated with species of local importance, and areas of special flood hazard (LUC 20.25H.025).

Seven wetlands have been identified in the project area, designated as Wetlands A through F as described in the project's Critical Areas Report (ESA, 2011b). Five streams have been identified crossing the project area as described above in Section 3.a.1 and further described in the project's Critical Areas Report. The project will not result in wetland or stream impacts, but will result in some impacts to their regulated buffers. A Critical Areas Report and Mitigation Plan has been prepared and describes proposed mitigation for wetland and stream buffer impacts (ESA, 2011 b).

Portions of the project site are adjacent to Shoreline designated environmentally critical areas (and within the City's Shoreline Overlay District) between the intersections of SE 40th Place and SE 38th Street. Project construction will not impact any shoreline habitat.

Areas of geologic hazard areas occur on or adjacent to the project area. South of SE 38th Street intersection, the Parkway parallels a hillside to the west mapped as a steep slope for approximately 0.25 mile. Continuing south, the Parkway is located adjacent to other intermittent mapped steep slope areas. The project will not involve work within steep slope or landslide hazard areas.

The road right-of-way is highly unlikely to provide habitat for any of these species designated as species of local importance, although some of the species may occur in the general vicinity.

i. Approximately how many people would reside or work in the completed project?

None.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Not applicable.

l. Proposed measures to ensure the proposal are compatible with existing and projected land uses and plans, if any:

The project will improve safety by separating pedestrians and bicyclists from vehicular traffic along the Parkway.

The project, as a transportation facility, is compatible with the existing land uses. The City of Bellevue Comprehensive Plan (Transportation Element) and the Pedestrian and Bicycle Transportation Facility Plan includes policy and programmatic guidance in support of multi-use trails, and West Lake Sammamish Parkway trail improvements specifically (City of Bellevue, 2006a, 2006b) The trail will be constructed along West Lake Sammamish Parkway which is currently used by bicycle riders, joggers and walkers for recreational and commuting transportation purposes. The trail will be within City of Bellevue ROW that has historically been used for transportation as well as within easement areas acquired for this project.

During the trail planning process, several options were identified for providing the multi-use trail at various meetings with interested citizens, adjacent property owners, City officials and staff, and the trail planning team. The preferred trail configuration was selected based on consideration of user safety, ease of use, property impacts, cost effectiveness, and public input.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Structural components include retaining wall construction, anticipated to be a maximum of 6 feet tall. Retaining walls will include soldier pile and gravity block walls.

b. What views in the immediate vicinity would be altered or obstructed?

The project would not alter or obstruct any views or vistas in the vicinity.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Improvements proposed would be similar in design, character, and height to the existing road and associated facilities in this segment of the Parkway. The addition of a landscaped buffer may be viewed by some people as an aesthetic improvement.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

The roadway improvements would relocate or provide new illumination (street lights) used at night.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No. Street lighting is a safety measure for motorists and pedestrians. The street lights will be designed according to standard street lighting codes and will direct light downward rather than out.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light or glare impacts, if any:

Street lights direct light to the roadway to avoid or minimize light spill. Glare shields may also be installed to prevent back spill of light onto adjacent properties.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Sunrise Park, Sambica Camp, and Vasa Park Resort are located adjacent to the Parkway. Sunrise Park is a City of Bellevue park and includes a children's play area, picnic area, and trails. Sambica Camp is a private camp and retreat with facilities located on both sides of the Parkway at 177th Ave SE. Vasa Park Resort is a private resort area owned and operated by the Vasa Home Association. The resort includes a ballroom, gravel parking lot, and lawn areas on the west side of the road. The resort includes camping facilities, picnic areas, playground, boat launch, and swimming beach on the east side of the Parkway. Although there is no existing formal trail within the project site; the roadway and shoulders are commonly used by cyclists and pedestrians.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Park users may experience temporary noise, traffic and other disruptions during construction. No recreational uses would be displaced by construction or operation of the improvements.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Access to parks would be maintained during construction. Upon completion, the multi-use trail will be separated from vehicle traffic, and will provide a safe north/south trail route for pedestrians and bicyclists along this stretch of the Parkway.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

There are no known historic structures or landmarks within or near the project area listed in the National Register of Historic Landmarks or the Washington Heritage Register. There are three such sites listed in the City of Bellevue, none of which are within 1,000 feet of the site. The proposed project will not be visible or audible from any of these registered historic sites.

b. Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site.

No places or objects of cultural or historical significance are known to exist at or adjacent to the site.

c. Proposed measures to reduce or control impacts, if any:

None.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

West Lake Sammamish Parkway is a main arterial owned and operated by the City of Bellevue that roughly parallels the west shoreline of Lake Sammamish, providing access to I-90 to the south and connections to several arterials to the west and north providing access to I-405 and the city of Bellevue.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

Yes, Metro Transit bus route 890 serves West Lake Sammamish Parkway in the project area with stops at SE 40th Place and SE 38th Street.

c. How many parking spaces would be completed project have? How many would the project eliminate?

None. Existing use of the road shoulder as unofficial/non-designated on-street parking will be signed to discourage this use.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not Including driveways? If so, generally describe (indicate whether public or private).

The proposed project includes improvements to West Lake Sammamish Parkway. No improvements to other roads or streets would occur.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

None. The proposed project would not generate new traffic, but is intended to enhance safety for pedestrians and bicyclists by providing a multi-use trail, landscaped buffer, and shoulder improvements.

The proposed multi-use trail and could potentially reduce the number of vehicle trips in the area. The trail will provide greater connectivity to existing bicycle and pedestrian facilities and provide users with a dedicated, marked pathway and crossings.

g. Proposed measures to reduce or control transportation impacts, if any:

Temporary impacts during construction would be similar to other roadway construction projects. Impacts could include intermittent delays through narrowing of roadways, interruption of traffic for construction vehicles, and temporary closure of driveways occurring intermittently during the construction period. The roadway will remain open during construction; no detours routes are expected. With the exception of short-term closures of driveways, access to businesses would be maintained.

The City of Bellevue will implement the following measures to reduce construction-related traffic impacts:

- The City will work to minimize disruptions during the construction phase and strive to maintain adequate access;
- The City will inform adjacent property owners of work progress;
- The City will conduct advance and continued public outreach during construction to notify residents, businesses, local agencies, school districts, transit agencies, and other stakeholders of expected disruptions or changes in traffic flow;
- Temporary road closures will be minimized;
- The construction contractor will be required to submit a traffic control plan for approval by the City, which the contractor will maintain during construction; and
- Transit stops will be clearly marked.

15. Public Services

a. Would the project result in an increased need for the public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

The project is not expected to generate increased need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

The City of Bellevue will coordinate with fire, emergency medical, and police service providers before

construction to notify them of construction schedule and any planned closures and work with them to establish alternative detour routes, if necessary.

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other fiber communications, cable tv

Numerous utilities indicated above are located within the roadway corridor.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Several utilities located within the project corridor will be relocated in order to accommodate the widened shoulder or to minimize construction disturbance in the road corridor by constructing scheduled utility replacements in advance of, or at the same time as the West Lake Sammamish Parkway Improvements construction. The utility work will include utility pole relocation, lighting modifications, underground conduit and handhole/vault adjustments/relocations, manhole adjustments, and temporary and permanent relocation of overhead wires. This work will be performed by electrical, natural gas, telephone, cable tv, and fiber communication and includes the following activities:

- Electrical and Gas (Puget Sound Energy (PSE)): Relocate utility poles and overhead lines at various locations along project corridor, including the SE 34th intersection. Work may also include installing temporary poles and wires for usage during relocation. In addition, gas main relocation may be necessary in areas.

- Telephone (CenturyLink): Overhead and underground utility relocation along project corridor.

- Cable TV (Comcast): Overhead lines will be relocated with PSE poles. The work may require a temporary auxiliary service during construction (poles, etc.).

-Fiber Communications (LEDCOR/360 Networks): Relocate portions of the fiber duct bank conduit at various locations. The duct bank is located along the west edge of the Parkway's southbound lane from south project limits up to SE 38th St.

Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature.....Paul Kwasch.....

Date Submitted.....11/17/11.....

REFERENCES

City of Bellevue. 2011. Transportation Maintenance and Capital Improvement Projects Stormwater Management Guidelines. April 2011.

City of Bellevue. 2006a. City of Bellevue Comprehensive Plan. Available online at http://www.bellevuewa.gov/comprehensive_plan.htm
.
City of Bellevue. 2006b. Pedestrian and Bicycle Transportation Facility Plan. Available online at http://www.bellevuewa.gov/pdf/PCD/CompPlan_Vol_2_TFP6.PedandBike.pdf

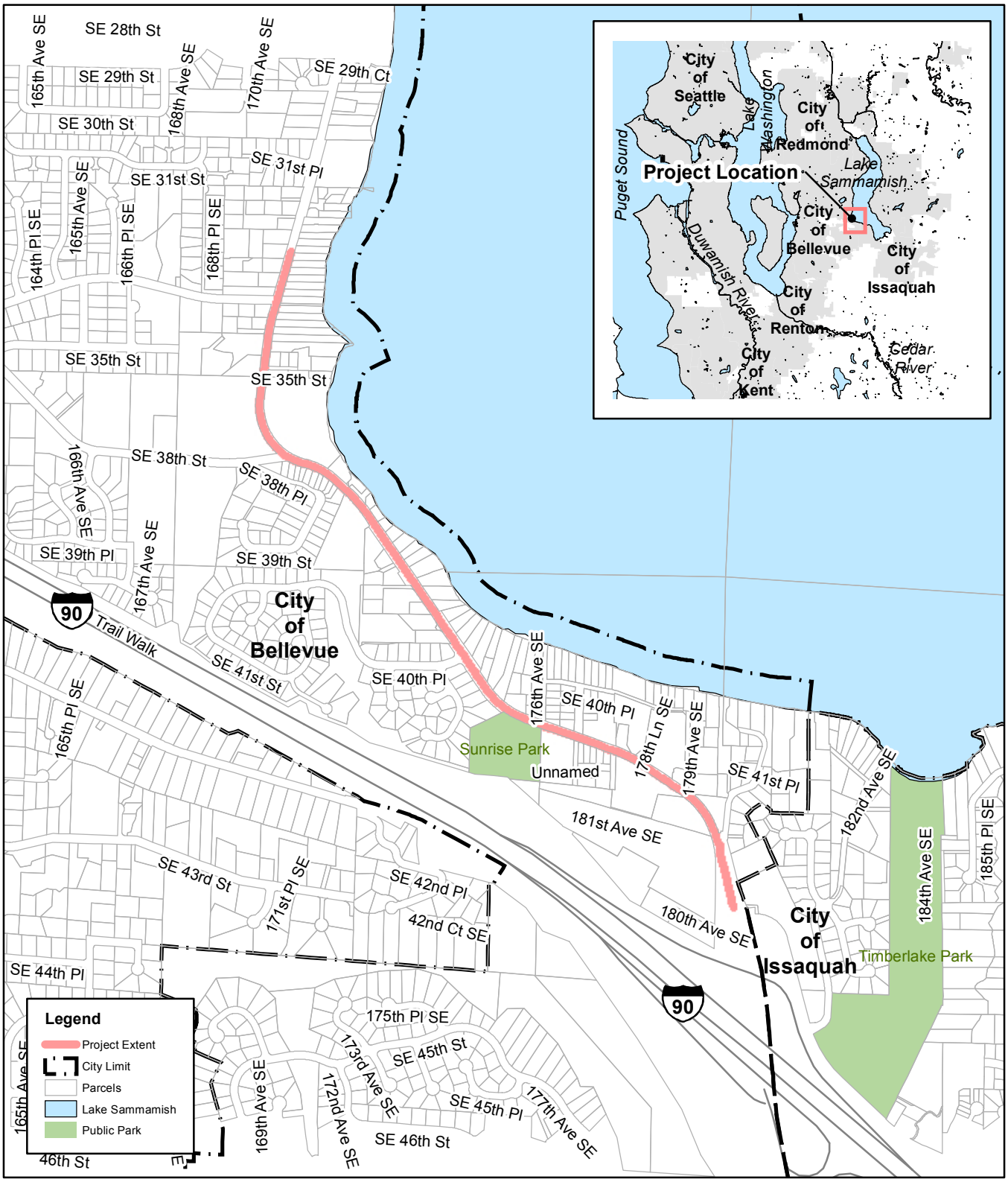
Environmental Science Associates (ESA). 2011a. West Lake Sammamish Parkway Improvements – Phase 1: Biological Evaluation – Letter of No Effect.

Environmental Science Associates (ESA). 2011b. West Lake Sammamish Parkway Improvements – Phase 1: Critical Areas Report and Mitigation Plan. November 2011.

GeoEngineers. 2011. Geologic Hazard Areas Evaluation. West Lake Sammamish Parkway. October 20, 2011.

WDFW (Washington Department of Fish and Wildlife). 2011b. SalmonScape fish database and mapping application. Accessed June 1, 2011. Available online at http://wdfw.wa.gov/mapping/salmonscape/index.html.

FIGURES



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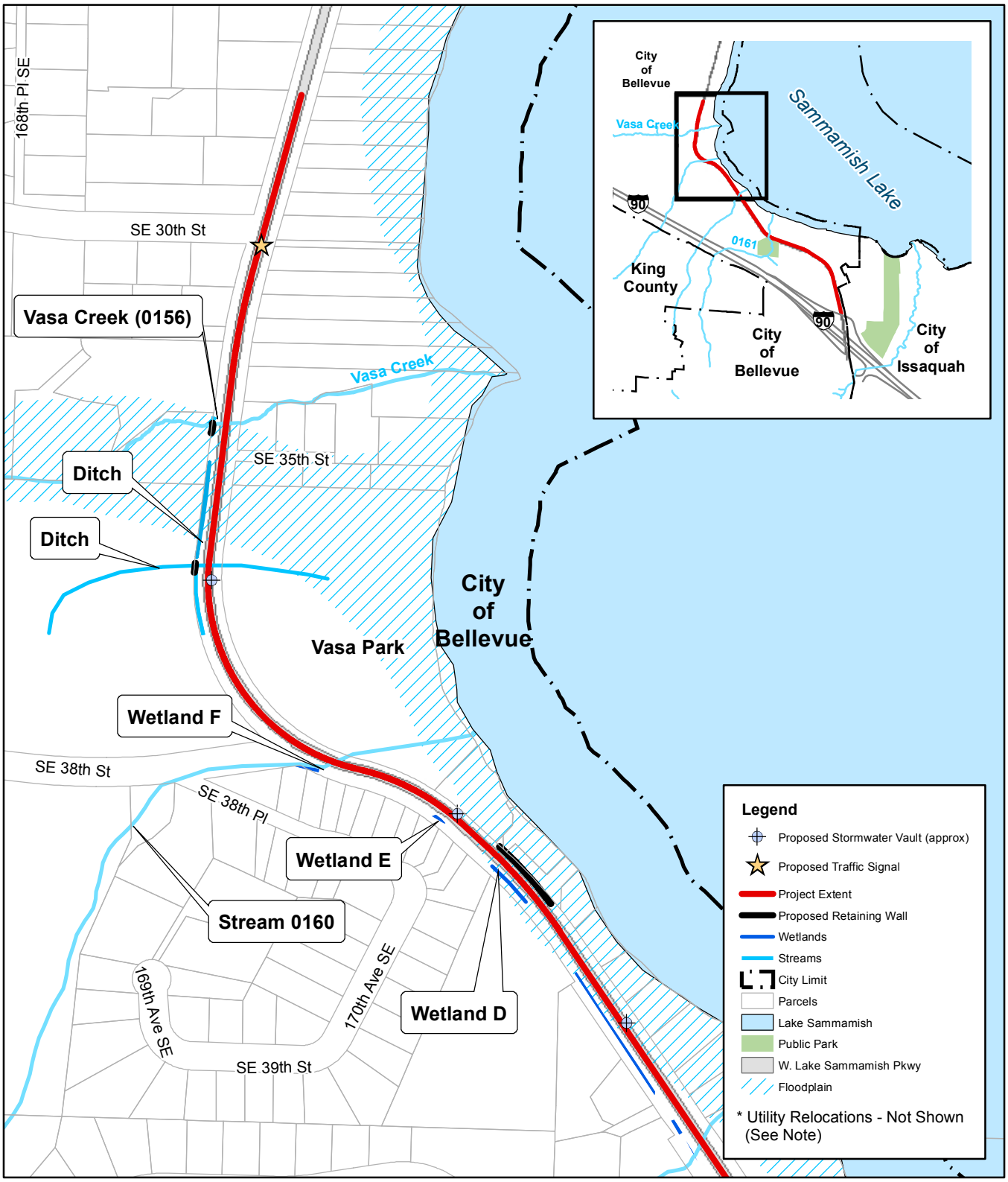
SOURCE: King County, 2007, 2010 (2002 Aerial Imagery); Reid Middelton, 2008

West Lake Sammamish Parkway Improvements. 209364

Figure 1
Vicinity Mapl
Bellevue, WA



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SOURCE: King County, 2007, 2010 (2002 Aerial Imagery); Reid Middelton, 2008

N

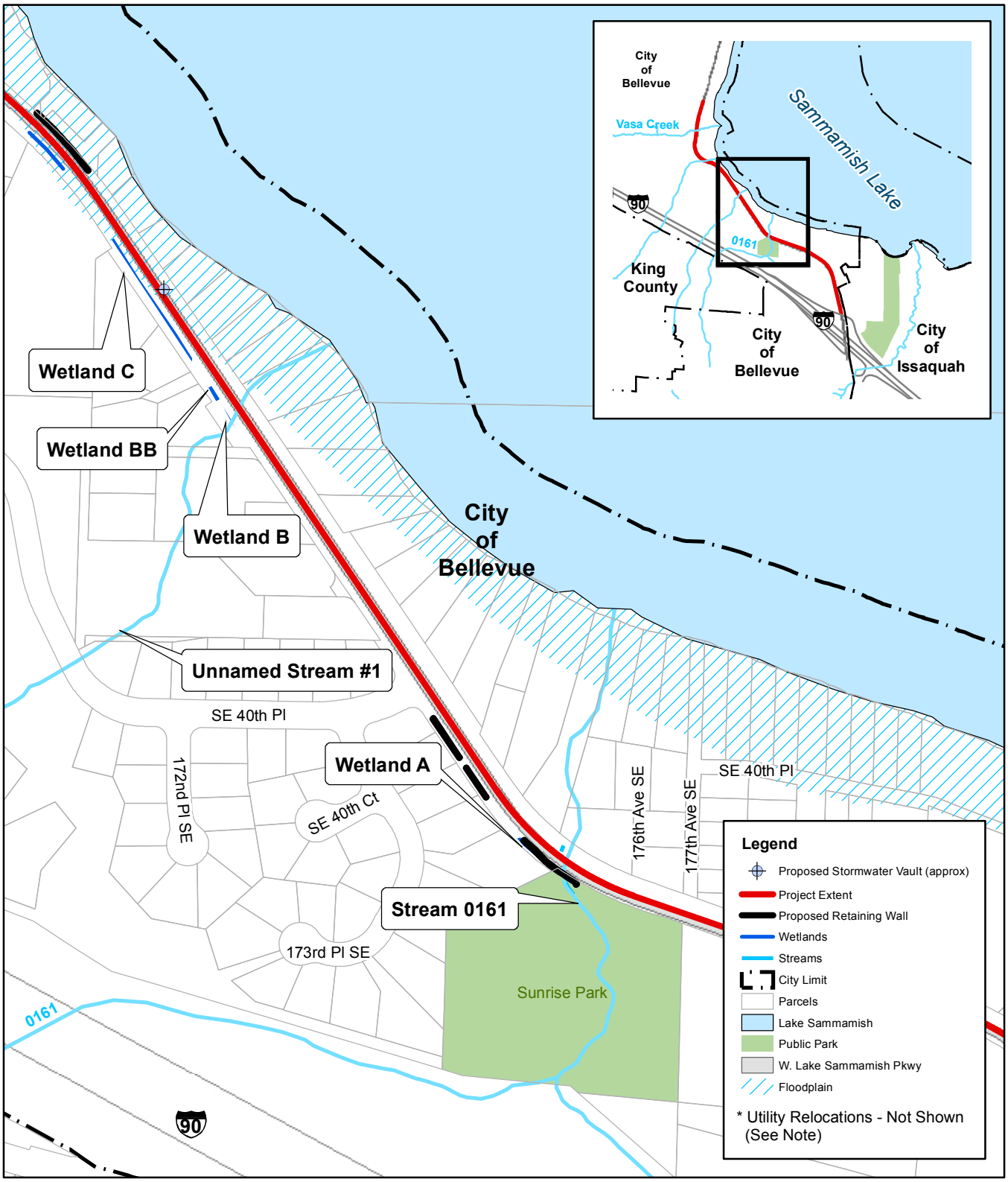
0 75 150 300
Feet

Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

Work to occur within developed road right-of-way.
See attached Plan Sheets for additional detail.

West Lake Sammamish Parkway Improvements. 209364

Figure 2a
Project Area - North
Bellevue, WA



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SOURCE: King County, 2007, 2010 (2002 Aerial Imagery); Reid Middelton, 2008

West Lake Sammamish Parkway Improvements. 209364

Figure 2b

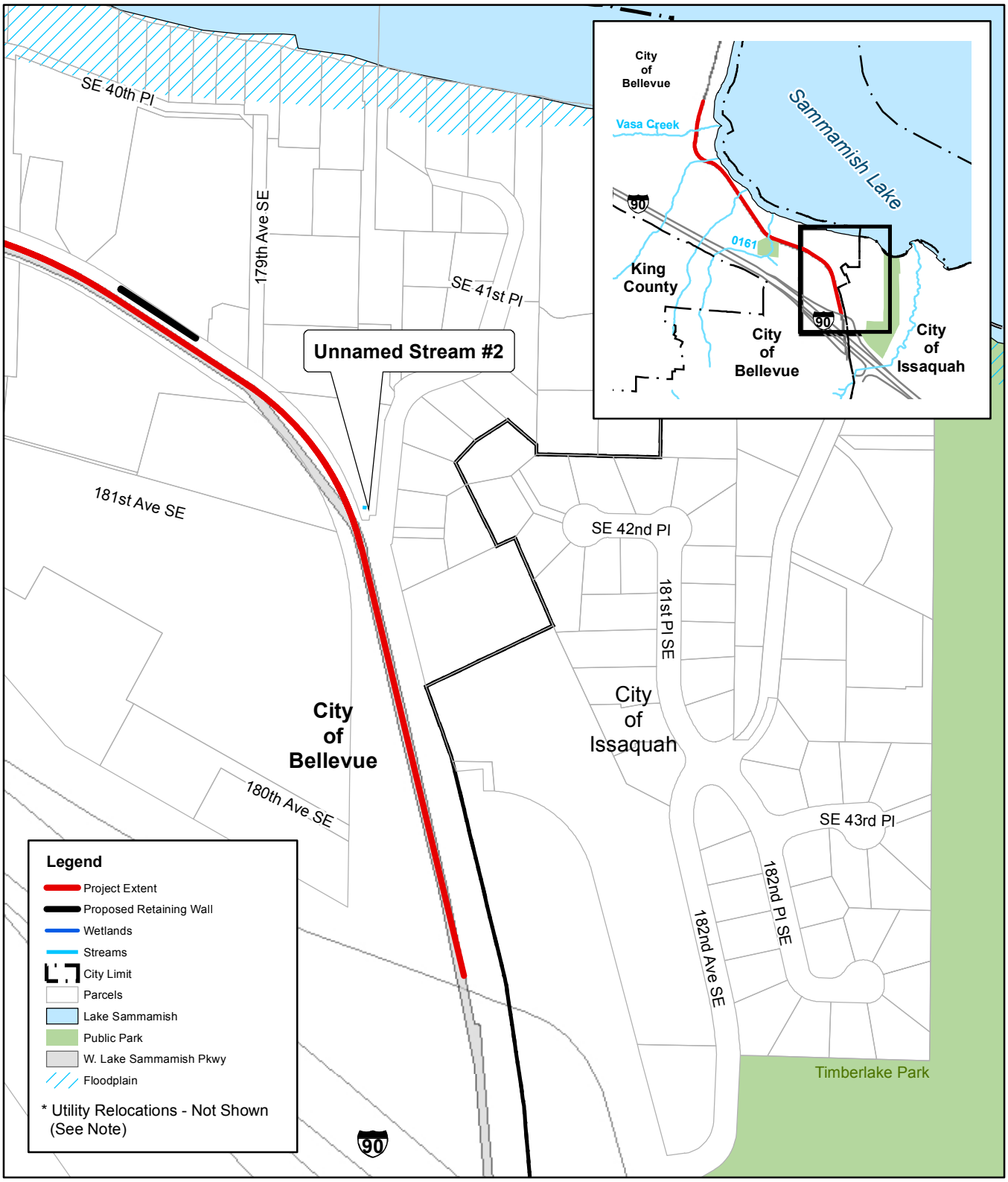
Project Area - Central
Bellevue, WA

N

0 75 150 300
Feet

Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

Work to occur within developed road right-of-way.
See attached Plan Sheets for additional detail.



\\Sfo-gists01\gis\GIS\Projects\209xxx\209364_West_LK_Sammamish_Pkwy\Projects\SEPA Fig 02c.mxd (DLP; 10/27/2011)

SOURCE: King County, 2007 (2002 Aerial Imagery); Reid Middelton, 2008

N

0 75 150 300
Feet

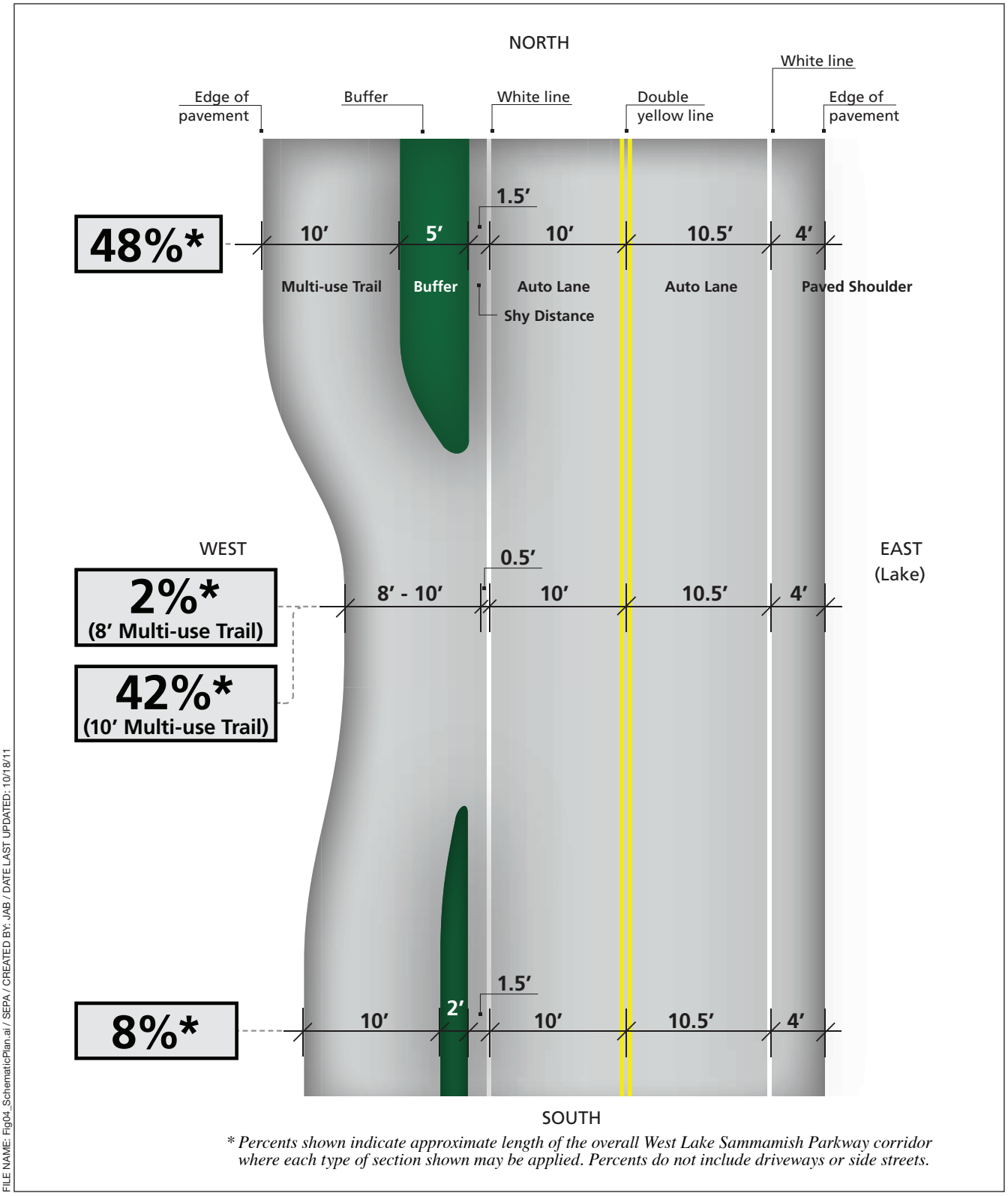
Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

Work to occur within developed road right-of-way.
See attached Plan Sheets for additional detail.

West Lake Sammamish Parkway Improvements. 209364

Figure 2c

Project Area - South
Bellevue, WA



** Percents shown indicate approximate length of the overall West Lake Sammamish Parkway corridor where each type of section shown may be applied. Percents do not include driveways or side streets.*

FILE NAME: Fig04_SchematicPlan.ai / SEPA / CREATED BY: JAB / DATE LAST UPDATED: 10/18/11

SOURCE: City of Bellevue, 2005.

West Lake Sammamish Parkway . 209364

Figure 3
Schematic Plan
Bellevue, Washington

ESA

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Suite 200
Seattle, WA 98107
206.789.9658 phone
206.789.9684 fax

www.esassoc.com

November 16, 2011

David Pyle
City of Bellevue, Development Services
450 - 110th Avenue NE
Bellevue, WA 98009

Subject: City of Bellevue West Lake Sammamish Parkway Improvements (Phase 1) - Project Narrative
File Numbers: 11-115202-WG & 11-115204-LO

Dear Mr. Pyle:

The City of Bellevue Transportation Department is proposing to enhance safety for pedestrians, bicyclists, and vehicular traffic by improving 1.2 miles of West Lake Sammamish Parkway (Parkway). Road improvements include construction of a multi-use trail, landscaped buffer, and widened shoulders. The Transportation Department submitted an application for a Critical Areas Land Use Permit, Shoreline Substantial Development Permit, and SEPA review in the spring of 2011. That application was determined to be incomplete. The purpose of this letter is to provide additional project narrative information in support of the application for the project, as requested in your letter dated July 7, 2011.

This letter first presents a project description and then summarizes the critical areas present along this portion of the Parkway, with references to the enclosed discipline reports that describe these critical areas in full. It then discusses the project's impacts to these resources and proposed mitigation measures. Finally it provides a "technically feasible alternatives" discussion as required by the City for alterations to critical areas or their buffers. The attached figures illustrate the critical areas relative to the proposed project features.

Project Description

This project is the first phase of a broader plan to complete improvements along a total of 4.98 miles of West Lake Sammamish Parkway, beginning just north of the roundabout at I-90 and continuing north to the city limits near NE 24th Street. The overall plan has a total of five independent phases, each constructing approximately one mile of multi-use trail and other improvements per segment. The only phase that is funded is the south segment (Phase 1). Each phase is independent; the trail will connect into existing paved shoulders where each phase terminates.

The Phase 1 project extends along the Parkway from north of Interstate 90 to approximately SE 34th Street (see Figure 1). The project will include minor widening of the existing paved shoulder to accommodate the new multi-use trail and buffer on the west side, and a new 4-foot paved shoulder on the east side of the road. The multi-use trail will vary in width between 8 and 10 feet separated from the roadway by a landscaped buffer varying in width between 2 and 5 feet where space is available. Portions of the project will have no buffer where site constraints dictate. The southbound lane will be reduced from its current width of 10.5 feet to 10 feet in order to accommodate trail and buffer improvements. The width of the northbound lane will remain 10.5 feet. A separate left-turn lane will be constructed at the SE 34th Street intersection for the northbound direction and a new traffic signal will be installed.

The project will not result in an increase in roadway capacity. The project will also include pavement restoration, stormwater treatment, retaining walls, and utility improvements and relocations.

The project will be constructed within the existing City of Bellevue street right-of-way except on the west side of West Lake Sammamish Parkway north of SE 38th Street, where strip acquisition is needed to accommodate the trail and drainage swale relocation. Also, some right-of-way acquisition will be needed at the SE 34th Street intersection vicinity to accommodate the intersection improvements and a new traffic signal.

Several utilities located within the project corridor will be relocated in order to accommodate the widened shoulder, or to minimize construction disturbance in the road corridor by constructing scheduled utility replacements in advance of, or at the same time as, the West Lake Sammamish Parkway Improvements construction. The utility work will include utility pole relocation, lighting modifications, underground conduit and handhole/vault adjustments/relocations, manhole adjustments, and temporary and permanent relocation of overhead wires. This work will be performed by electrical, natural gas, telephone, cable TV, and fiber communication and includes the following activities:

- Electrical and Gas (Puget Sound Energy (PSE)): Relocate utility poles and overhead lines at various locations along project corridor, including the SE 34th intersection. Work may also include installing temporary poles and wires for usage during relocation. In addition, gas main relocation may be necessary in areas.

- Telephone (CenturyLink): Overhead and underground utility relocation along project corridor.

- Cable TV (Comcast): Overhead lines will be relocated with PSE poles. The work may require a temporary auxiliary service during construction (poles, etc.).

- Fiber Communications (LEDCOR/360 Networks): Relocate portions of the fiber duct bank conduit at various locations. The duct bank is located along the west edge of the Parkway's southbound lane from south project limits up to SE 38th St.

Once permits are attained, construction of Phase 1 may begin as early as spring of 2012 and may be completed by winter 2013.

Existing Critical Areas

The City of Bellevue regulates critical areas under Title 20, Part 20.25H of the Bellevue Land Use Code (LUC). Critical areas regulated by the City include shorelines, areas of special flood hazard, streams, wetlands, geologic hazard areas, and habitat associated with species of local importance (LUC 20.25H.025).

The following information about streams, wetlands, and wildlife habitat in the project area is summarized from the enclosed *West Lake Sammamish Parkway Improvements Critical Areas Report and Mitigation Plan.*

Shorelines

The City's shoreline jurisdiction includes areas within 200 feet landward of the ordinary high water mark (OHWM) of Lake Sammamish (Figure 2). The City typically considers the OHWM of the lake to be located at elevation 31.8 feet NAVD 88 (LUC 20.25H.115.B). Because a topographic survey of the lake shore was not available, ESA estimated the OHWM based on recent aerial photography.

The City has established shoreline critical area buffers within which activities are regulated. The shoreline critical area buffers are 50 feet from the OWHM for undeveloped sites and 25 feet on developed sites (LUC 20.25H.115). Within the project extent, approximately 1,000 linear feet of West Lake Sammamish Parkway crosses within the 200-foot shoreline jurisdiction of the lake, in the area south of SE 38th Street. However, the Parkway is a minimum of 75 feet from the OHWM of the lake at its closest point (Figure 2). Therefore, the proposed improvements to the road are outside of the City's regulated shoreline buffers for both undeveloped and developed sites.

Areas of Special Flood Hazard

The City defines areas of special flood hazard to include the 100-year floodplain (LUC 20.25H.175). ESA mapped the 100-year floodplain based on FEMA 2007 mapping (Figure 3). Within the project extent, West Lake Sammamish Parkway crosses the 100-year floodplain in two locations: south of SE 38th Street, and at Vasa Creek.

Streams

ESA identified five streams crossing the project area (Figures 4a, 4b, 4c). Additional drainage ditches identified near the project site were determined to be artificial drainage facilities lacking natural hydrology, and would not be regulated as streams based on evaluation by ESA and the Washington Department of Fish and Wildlife (WDFW). Table 1 describes the five streams in the study area, including fish use documented by the City of Bellevue, ESA field observations, and the likely City classification and buffer requirements.

Table 1. Stream Types and Buffer Requirements

Stream ID	Documented Fish Use*	ESA Field Observations	Classification	City of Bellevue Buffer Requirement
Vasa Creek 0156	Fish use documented in lower reaches of stream closest to Lake Sammamish.	Crosses Parkway in a culvert crossing, with open channel downstream to Lake Sammamish.	Perennial Type F Anadromous Salmonid use	100 feet
0160	Cutthroat present.	Conveyed under Parkway by a 716-foot long culvert which extends from upstream of Parkway and discharges directly into Lake Sammamish.	Perennial Type F Salmonid use	None -piped (10-foot building setback)
Unnamed Stream #1	Fish use possible but unlikely.	Stormwater basin immediately upstream of Parkway. Conveyed under Parkway and downstream in pipe system.	Intermittent Type F Salmonid use	100 feet

Stream ID	Documented Fish Use*	ESA Field Observations	Classification	City of Bellevue Buffer Requirement
0161	Fish use is expected in lower reaches; upstream areas with seasonal flow likely do not support fish.	Crosses Parkway in a culvert crossing, with open channel downstream to Lake Sammamish	Perennial Type F Salmonid use	100 feet
Unnamed Stream #2	Stream not mapped.	Stream is on north side of Parkway and originates in stormwater basin immediately south of 181st Ave SE. Downstream conveyance is likely in pipe system.	Unknown Assumed Type F and Salmonid Use	100 feet

* City of Bellevue. 2006. Drainage basin maps.
Available: http://www.bellevuewa.gov/drainage_basin_maps.htm. Accessed October 2008.

The five identified streams show signs of general degradation, likely caused by urban development within and upstream of the project areas. The riparian areas are generally narrow (less than 100 feet wide) and have been encroached upon by residential development and transportation corridors. Streambed and bank conditions are also degraded, with a general lack of pools and high amounts of fine sediment.

The streams in the study area meet the City's definition of Type F streams (LUC 20.25H.075B). Type F streams contain fish or fish habitat but are not considered "shorelines of the state". The stream buffer widths shown in Table 1 are based on the City's requirements for "undeveloped sites" under LUC 20.25H.075C. Streams that are piped (Stream 0160) do not require a buffer but are subject to a 10-foot building setback (LUC 20.25H.075.D).

City code states that where a legally established right-of-way crosses a stream buffer, the edge of the improved right-of-way shall be the extent of the buffer, if the part of the critical area buffer on the other side of the right-of-way provides insignificant biological or hydrological function in relation to the portion of the buffer adjacent to the stream (LUC 20.25H.075.C.2). The stream buffers in the study area are crossed by West Lake Sammamish Parkway. Based on this definition, we consider the stream buffer to end at the edge of pavement or gravel-surfaced road shoulder of West Lake Sammamish Parkway adjacent to the stream, and that the buffer does not extend into or across the Parkway.

Wetlands

ESA identified seven wetlands in the study area, designated as Wetlands A through F (Table 2; Figures 4a, 4b, and 4c). Table 2 lists the buffers required for "undeveloped sites" for the wetlands in the study area. For all of these wetlands, the portion of the buffer adjacent to West Lake Sammamish Parkway is currently smaller than the standard widths shown in Table 2. Where a legally established transportation right-of-way crosses a wetland buffer, the edge of the improved right-of-way is considered the edge of the buffer if the part of the buffer on the other side of the right-of-way provides insignificant biologic or hydrologic function in relation to the part of the buffer adjacent to the wetland (LUC 20.25H.075(c)(2)(b), 095(c)(2)(b)). Based on this definition, we consider the buffer to end at the edge of pavement or maintained road shoulder of West Lake Sammamish Parkway adjacent to the wetland, and that the buffer does not extend into or across the Parkway.

Table 2. Classification of Wetlands Identified in Phase 1 Study Area

Wetland	Estimated Total Size	Ecology System Rating	Habitat (H) and Water Quality (WQ) Scores	Buffer Requirement (LUC 20.25.H.095(C))
Wetland A	< 0.25 acre	II	H = 10 WQ = 26	75 feet
Wetland B & BB	< 0.25 acre	III	H = 11 WQ = 10	60 feet
Wetland C	< 0.25 acre	III	H = 7 WQ = 20	60 feet
Wetland D	<0.5 acre	IV	H = 3 WQ = 4	40 feet
Wetland E	< 0.25 acre	IV	H = 3 WQ = 2	40 feet
Wetland F	<0.5 acre	IV	H = 2 WQ = 8	40 feet

Geologic Hazard Areas (Steep Slopes)

The City regulates steep slopes as a type of geologic hazard area. Steep slopes are defined as slopes of 40 percent or more that have a rise of at least 10 feet and exceed 1,000 square feet in area (LUC 20.25H.120.A.2). The City provided to ESA a GIS layer with steep slope mapping for the project vicinity. Mapped steep slopes are present in several locations along West Lake Sammamish Parkway (Figures 4a through 4c).

Habitat Associated with Species of Local Importance

Based on Priority Habitats and Species data, the WDFW has not mapped any priority wildlife species or habitat occurrences in the project area. The City of Bellevue has designated the species listed in Table 3 as species of local importance (LUC 20.25H.150). None of the terrestrial wildlife species in Table 3 are likely to make regular use of the road right-of-way or adjacent residential areas because of the high level of human disturbance, traffic noise, stormwater runoff, domestic pets, and lack of intact native vegetation communities adjacent to the roadway. These species are most likely to occur along the shoreline of Lake Sammamish (e.g., great blue heron, bald eagle, osprey) or in the forested habitat of Sunrise Park (e.g., pileated woodpecker, myotis species).

Federally listed fish species (bull trout, Chinook salmon, and steelhead trout) are not expected to occur in any of the streams in the project area, although they may be present in Lake Sammamish. While fish may use the lower reaches of some of the streams near the lake, use by the fish species of local importance listed in Table 3 is unlikely within or adjacent to the proposed construction area due to steep slopes, culverts, and degraded habitat conditions (see Table 1 for documented fish use and field observations of stream conditions).

Table 3. City of Bellevue Species of Local Importance

Common Name	Scientific Name
Bald eagle	*Haliaeetus leucocephalus*
Peregrine falcon	*Falco peregrinus*
Common loon	*Gavia immer*
Pileated woodpecker	*Dryocopus pileatus*
Vaux's swift	*Chaetura vauxi*
Merlin	*Falco columbarius*
Purple martin	*Progne subis*
Western grebe	*Aechmophorus occidentalis*
Great blue heron	*Ardea herodias*
Osprey	*Pandion haliaetus*
Green heron	*Butorides striatus*
Red-tailed hawk	*Buteo jamaicensis*
Western big-eared bat	*Plecotus townsendii*
Keen's myotis	*Myotis keenii*
Long-legged myotis	*Myotis volans*
Long-eared myotis	*Myotis evotis*
Oregon spotted frog	*Rana pretiosa*
Western toad	*Bufo boreas*
Western pond turtle	*Clemmys marmorata*
Chinook salmon	*Oncorhynchus tshawytscha*
Bull trout	*Salvelinus confluentus*
Coho salmon	*Oncorhynchus kisutch*
River lamprey	*Lampetra ayresi*

Project Impacts

Table 4 summarizes the project's impacts to the critical areas described above. Measures the City has taken to avoid and minimize impacts, and proposed compensatory mitigation for unavoidable impacts, are discussed below.

Table 4. Summary of Project Impacts

Type of Critical Area	Impacts
Shorelines	• No impact; work would occur outside of 50-foot shoreline critical area buffers.
Areas of special flood hazard	• Work will occur within approximately 0.85 acre of the mapped 100-year floodplain of Lake Sammamish and Vasa Creek. • No net loss of flood storage capacity (see Attachment A).
Streams and wetlands	• No direct impact to streams or wetlands. Retaining walls and narrower road/trail configuration used to avoid impacts. • Loss of 1,540 square feet of buffer vegetation adjacent to Wetland A/Stream 0161 resulting from road/trail widening near Sunrise Park. • Potential for water quality degradation during construction. • Improvement of stormwater treatment in project area (beneficial impact).
Steep slopes	• Work will occur near the toe and top of mapped steep slope areas.
Habitat associated with species of local importance	• Project will remove trees and shrubs along the Parkway (outside of stream and wetland buffers). • Vegetation to be removed is unlikely to provide important habitat for sensitive species due to the location adjacent to a busy roadway and residences, and availability of higher quality habitat elsewhere in vicinity. No impacts to sensitive wildlife anticipated.

Mitigation Sequencing

The project team has followed the mitigation sequencing steps required in LUC 20.25H.215 to avoid and minimize impacts to critical areas, as discussed below. Because the project involves improvements to an existing roadway, there is no feasible alternative location for the work.

Project Design and Layout

The City has taken steps to avoid and minimize critical areas impacts through design and placement of the proposed improvements:

- In areas where the improvements are located adjacent to a stream or wetland, the road, trail, and/or landscaping has been made as narrow as possible to avoid impacts while ensuring the safety of road and trail users.
- Retaining walls are proposed adjacent to stream crossings and next to some wetlands to limit the area of fill required.
- No in-water work will be required as part of the project. The project has been designed to avoid in-water impacts by narrowing the proposed trail and planted buffer widths in certain areas to avoid culvert ends.
- Riparian vegetation removal will be minimized to the extent practicable. No mature trees will be removed within the riparian zones of project area streams or Lake Sammamish. Any temporarily disturbed areas will be replanted with shrubs and trees, or native hydroseed mix as appropriate.

Because of these measures, no direct impacts to streams or wetlands are proposed and buffer impacts will be minimal.

Protection of Water Quality during Construction

As with any construction project involving heavy equipment and earth moving, there is the potential for erosion of exposed soils. If eroded sediments were to reach streams or wetlands, this could degrade water quality and habitat for aquatic species. Similarly, an accidental spill of fuel, hydraulic fluid, drilling fluid, or other toxic materials would degrade water quality if the material reached a surface water body.

Best Management Practices (BMPs) to protect water quality will be implemented during construction in accordance with the City of Bellevue's Transportation Maintenance and Capital Improvements Project Stormwater Management Guidelines (City of Bellevue, 2011); and Washington Department of Ecology NPDES Construction Stormwater General Permit requirements. As part of these requirements, the Contractor will be required to submit and follow a Stormwater Pollution Prevention Plan (SWPPP); Temporary Erosion and Sediment Control (TESC) plan; and Spill Prevention, Control, and Countermeasures (SPCC) Plan. Construction staging and stockpile areas for the project will be located within previously disturbed areas and outside sensitive areas, such as wetlands and streams. Temporary erosion and sediment control measures and BMPs will at a minimum include: turbidity monitoring; catch basin inserts; covering of utility trenches at the end of each working day; utilization of additional erosion control materials such as plastic sheeting, straw bales, sand bags, pumps, etc.; and avoiding placement of excavated material directly on pavement areas.

Stormwater Management

Under existing conditions, stormwater from the area currently receives no treatment or detention. Stormwater from the area currently sheet flows into a series of roadside ditches that drain to either project area streams or into one of several pipe systems that convey stormwater to Lake Sammamish.

The project will result in a net increase of impervious surface area of approximately 3,000 square feet. However, the project will result in a net reduction in pollution-generating impervious surface (PGIS) as a result of converting existing roadway surface to trail and buffer. In order to meet minimum requirements for redevelopment (LUC 24.06.065), the project is only required to treat stormwater runoff from new PGIS. For this project, funding is available for the City to provide treatment to all existing PGIS, which is currently untreated, in addition to the new PGIS where treatment is required by City code. As a result, this project will include treatment for all new and existing PGIS within the project area.

This project will utilize properly-sized media filter vaults with pre-treatment upstream of each of three existing outfalls to Lake Sammamish proposed to receive project area runoff. Lake Sammamish is considered a flow-exempt waterbody under the City of Bellevue's 2011 Transportation Maintenance and Capital Improvements Project Stormwater Management Guidelines; therefore, no stormwater detention is required.

Although slight changes to the stormwater collection and conveyance systems will be required, all project-related stormwater will be discharged into Lake Sammamish through existing manmade outfalls. Furthermore, no discharges to project area streams will be required, with the exception of one location where stormwater will be discharged into an existing storm drain that connects with a culverted portion of Stream 0160.

Mitigation for Unavoidable Impacts

As summarized earlier in Table 4, the West Lake Sammamish Parkway improvements project would result in the following unavoidable impacts to critical areas:

- Work would be required within areas of the 100-year floodplain.
- Approximately 1,540 square feet of buffer vegetation adjacent to Wetland A/Stream 0161 would be removed.
- Work would be required adjacent to steep slopes in a few locations.

Proposed mitigation for each of these is discussed below.

Flood Storage Capacity

The City requires that development in the 100-year floodplain must not result in a rise in the base flood elevation or 100-year flood (LUC 20.25H.180). Grading or other activity that would reduce the effective storage volume must be mitigated by creating compensatory storage on the site (LUC 20.25H.180.C.6).

There are two areas along the roadway that occur within the 100-year floodplain: an area south of SE 38th Street (Area A) and an area adjacent to Vasa Creek (Area B). An hydraulic analysis of the proposed roadway improvements indicates the project would result in a net increase in flood storage capacity. While there would be a loss in storage volume in Area A, there would be an offsetting increase in storage volume in Area B, resulting in a net increase in storage volume. See Attachment A, Hydraulic Analysis for storage calculations.

Stream/Wetland Buffer Enhancement

Buffer enhancement is proposed to compensate for the loss of 1,540 square feet of buffer vegetation adjacent to Wetland A/Stream 0161. The remaining buffer area within the road right-of-way adjacent to the impact area, totaling 4,204 square feet, would be enhanced by controlling non-native invasive vegetation and replanting with

native species. The proposed enhancement would provide an approximate 2.7:1 mitigation ratio for the proposed buffer impacts. The proposed buffer mitigation plan is described in the enclosed *West Lake Sammamish Parkway Improvements Critical Areas Report and Mitigation Plan*.

Steep Slope Protection

The City requires that activities near steep slopes must meet several performance standards including minimizing alterations to natural contours, retaining vegetation, and minimizing impervious surfaces (standards are listed in LUC 20.25H.125). An Erosion and Sediment Control Plan and a Drainage Plan will be provided to minimize the potential for increased erosion or slope instability (LUC 20.25H.135). Work near steep slopes is described in the enclosed *West Lake Sammamish Parkway Improvements Geologic Hazard Areas Evaluation*.

Technically Feasible Alternative Analysis

When new or expanded facilities are proposed in critical area buffers, the applicant must demonstrate, by meeting several criteria, that there is no "technically feasible alternative" with less impact on the critical area buffer (LUC 20.25H.055(C)(2)(a)).

The proposed project would be located mostly within existing developed road right-of-way that is already paved or gravel surfaced. The project has been designed to avoid impacts to wetlands and streams located near the existing roadway through the use of short retaining walls and by narrowing the proposed trail and landscape buffer widths in certain areas. There would be some encroachment into critical area buffers where the developed roadway would be widened to accommodate the proposed multi-use trail.

The location of the proposed multi-use trail (on the west side of the roadway) provides continuity with the current roadway configuration which has a much wider shoulder on the west side of the roadway than the east. To avoid impacts to wetlands and steep slopes, the roadway alignment will shift 4 feet east along two segments of the project. Constructing the multi-use trail on the west side of the roadway also provides better connections to the north and south of the project termini. Fewer driveways on the west side also result in fewer trail crossings and minimize the potential for conflict. The project went through an extensive public involvement process, in which the public provided input into the alternatives evaluation process, including configuration issues.

The project must meet the following criteria (Table 5) to minimize impacts (LUC 20.25H.055(C)(2)(b)).

Table 5. Project Compliance with LUC 20.25H.055(C)(2) parts (a) and (b)

Code Requirement	Project Compliance Measures
Part a. New or expanded facilities and systems are allowed within the critical area or critical area buffer only where no technically feasible alternative with less impact on the critical area or critical area buffer exists. A determination of technically feasible alternatives will consider:	
i. The location of existing infrastructure;	The proposal is to widen an existing roadway (West Lake Sammamish Parkway). The new facility would be adjacent to the existing roadway.
ii. The function or objective of the proposed new or expanded facility or system;	The objective of the project is to enhance safety for pedestrians, bicyclists, and vehicular traffic along West Lake Sammamish Parkway.
iii. Demonstration that no alternative location or configuration outside of the critical area or critical area buffer achieves the stated function or objective, including construction of new or expanded facilities or systems outside of the critical area;	The proposal is to widen an existing roadway (West Lake Sammamish Parkway). There is no feasible alternate location that would meet the project objective of improving safety along this section of roadway. The existing roadway configuration has a shoulder trail (8’-10’) on the west side of the road. The proposed multi-use trail would maintain continuity with this current configuration.
iv. Whether the cost of avoiding disturbance is substantially disproportionate as compared to the environmental impact of proposed disturbance; and	Measures to avoid impacts to streams, wetlands, and steep slopes such as retaining walls have been incorporated into the project. These measures add to the cost of the project. The measures already incorporated into the project design have avoided wetland fill impacts and impacts to streams. The project design team believes that minimal impacts to critical area buffers are reasonable, given the overall cost and public safety benefits of the project.
v. The ability of both permanent and temporary disturbance to be mitigated.	Temporary construction impacts will be avoided and minimized through the use of appropriate BMPs and will meet the City’s performance standards and Ecology requirements. Very minor impacts to vegetated buffer areas will be compensated through buffer enhancement; see next section.

Code Requirement	Project Compliance Measures
b. If the applicant demonstrates that no technically feasible alternative with less impact on the critical area or critical area buffer exists, then the applicant shall comply with the following:	
i. Location and design shall result in the least impacts on the critical area or critical area buffer;	See previous discussion under part (a).
ii. Disturbance of the critical area and critical area buffer, including disturbance of vegetation and soils, shall be minimized;	The proposed project would be located mostly within existing developed road right-of-way that is already paved or gravel surfaced and located on top of existing roadway fill or adjacent to cut slope. The area of disturbance to native soils or vegetation would be minimal.
iii. Disturbance shall not occur in habitat used for salmonid rearing or spawning or by any species of local importance unless no other technically feasible location exists;	No work within streams would occur. The project would not impact habitat for sensitive terrestrial species because work would occur almost entirely within a paved road right-of-way within a highly developed area.
iv. Any crossing over a wetland or stream shall be designed to minimize critical area and critical area buffer coverage and critical area and critical area buffer disturbance, for example by use of bridge, boring, or open cut and perpendicular crossings, and shall be the minimum width necessary to accommodate the intended function or objective; provided, that the Director may require that the facility be designed to accommodate additional facilities where the likelihood of additional facilities exists, and one consolidated corridor would result in fewer impacts to the critical area or critical area buffer than multiple intrusions into the critical area or critical area buffer;	No wetland crossings or wetland fill would occur as a result of this project. The roadway section will be narrowed in certain areas to accommodate existing culvert ends and avoid stream impacts.
v. All work shall be consistent with applicable City of Bellevue codes and standards;	Compliance with City codes and standards would be ensured through the permit application and review process.

Code Requirement	Project Compliance Measures
vi. The facility or system shall not have a significant adverse impact on overall aquatic area flow peaks, duration or volume or flood storage capacity, or hydroperiod;	The project would result in new impervious surface. Increased runoff would be managed in accordance with the City of Bellevue's Transportation Maintenance and Capital Improvement Projects Stormwater Management Guidelines (2011) to avoid impacts on the hydrology of streams and wetlands. This project will include treatment for all new and existing pollution generating impervious surface (PGIS) within the project area, potentially improving water quality.
vii. Associated parking and other support functions, including, for example, mechanical equipment and maintenance sheds, must be located outside critical area or critical area buffer except where no feasible alternative exists; and	Construction equipment and material storage would be located within existing developed areas and outside of critical areas and buffers.
viii. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210.	Compensatory mitigation for minor permanent buffer impacts will be provided through buffer enhancement. Areas temporarily disturbed during construction would be limited to the road right-of-way and would be restored to pre-construction conditions.

Thank you for reviewing these materials. We have submitted these materials on behalf of the City of Bellevue Transportation Department. Please contact me or Karmen Martin if you have any questions at (206) 789-9658.

Sincerely,

Sara Noland
Project Scientist

Cc: Paul Krawcyzk, City of Bellevue
Mike Wallace, Reid Middleton
Karmen Martin, ESA

Attachments:
Figures
Hydraulic Analysis

FIGURES

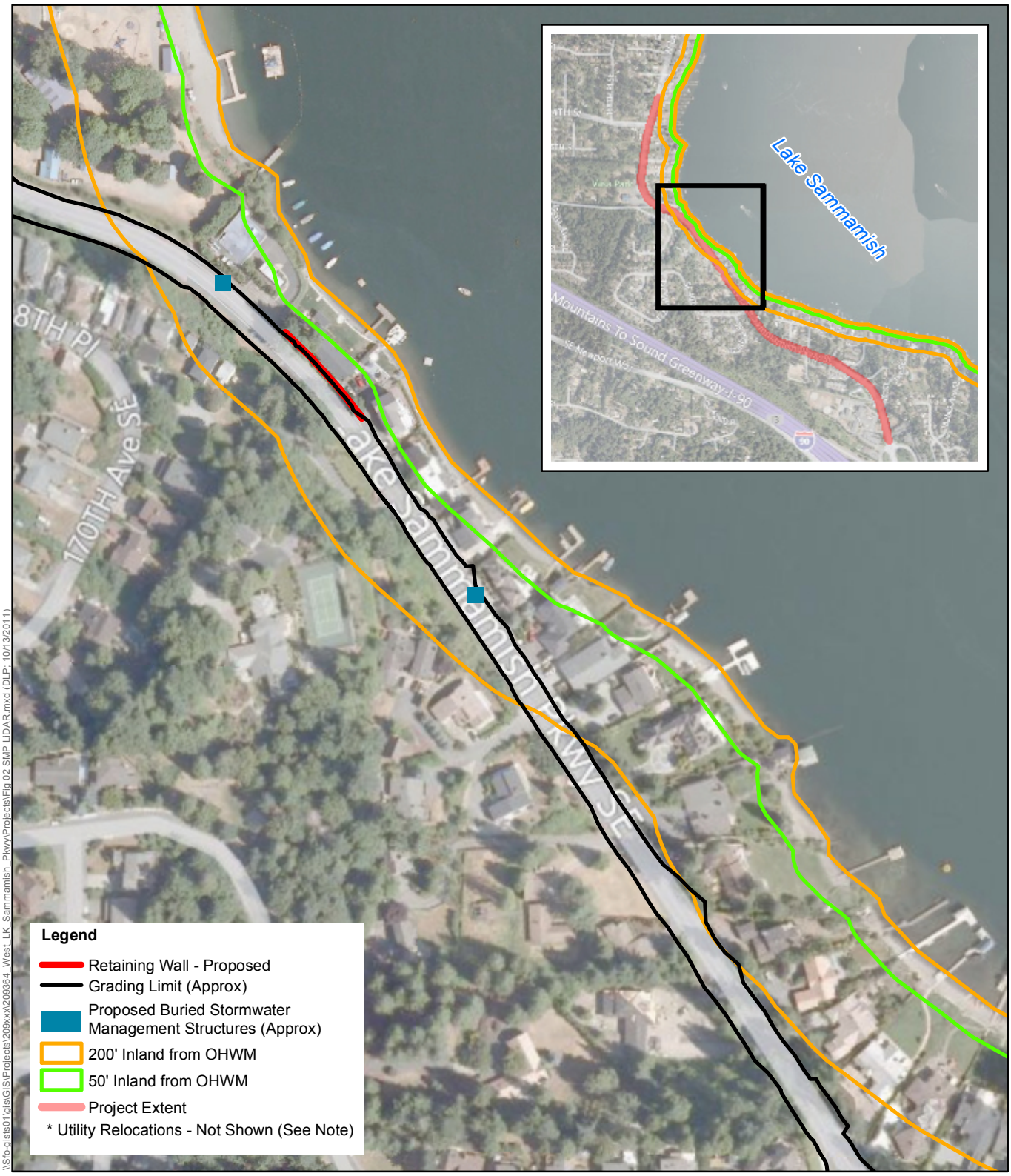
SOURCE: King County, 2009 (2010 BING Imagery).

West Lake Sammamish Parkway Improvements. 209364

Figure 1
Vicinity Map
Bellevue, WA

N

0 500 1,000
Feet



\\Sfo-gists01\gis\GIS\Projects\209xxx\209364_West_LK_Sammamish_PkwyIProjects\Fig 02 SMP LIDAR.mxd (DLP: 10/13/2011)

SOURCE: City of Bellevue, 2011; King County, 2009 (2010 BING Imagery).

N

0 200 Feet

Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

Work to occur within developed road right-of-way.
See attached Plan Sheets PP6-PP10 fo rutility locations within SMA jurisdiction.

West Lake Sammamish Parkway Improvements . 209364

Figure 2

SMA Jurisdictional Limits
Bellevue, WA

SOURCE: King County, 2009 (2010 BING Imagery).

N

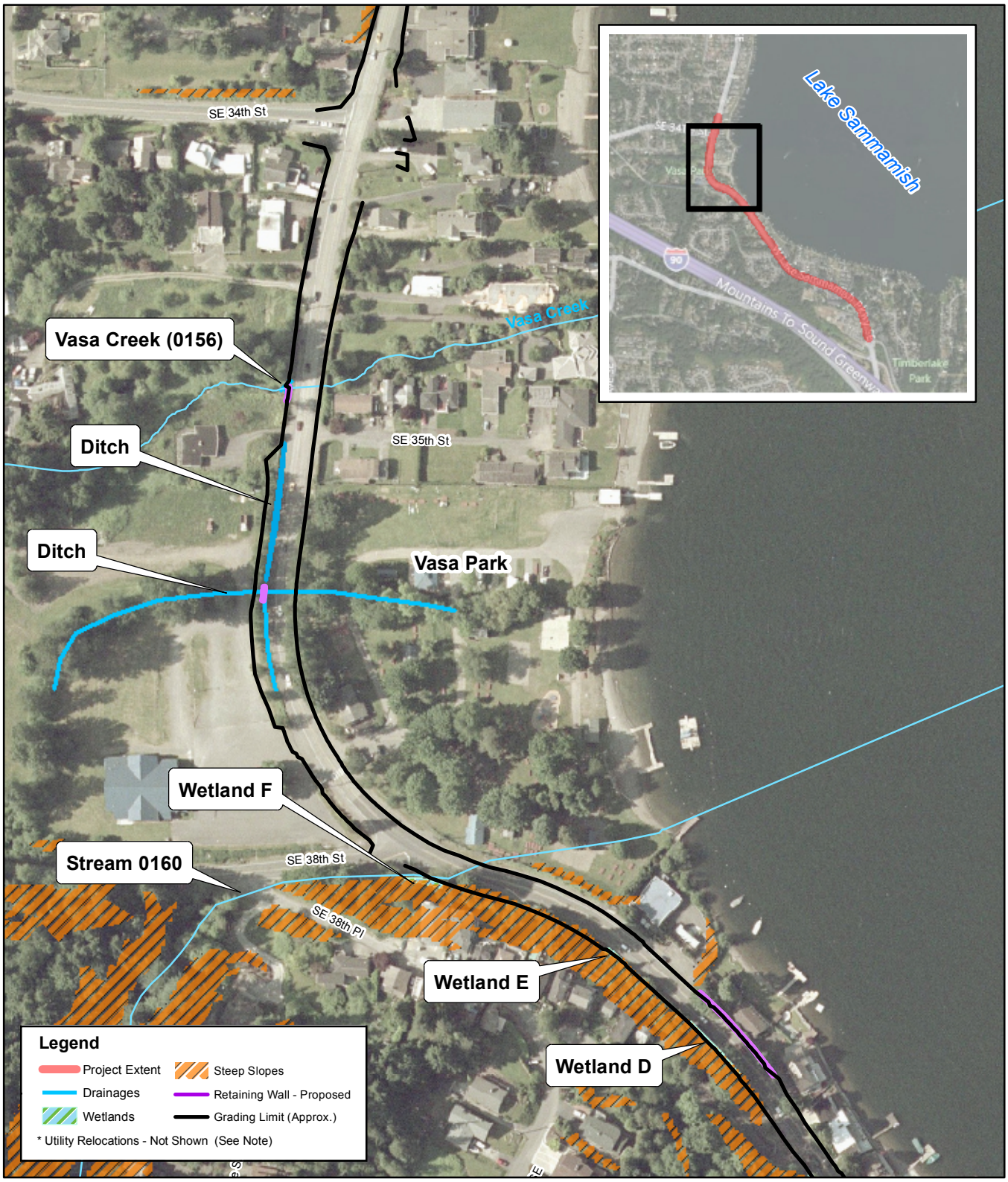
0 200 Feet

West Lake Sammamish Pkwy. 209364

Figure 3

Floodplain Areas

Bellevue, WA



SOURCE: King County, 2007 (2002 Aerial Imagery); Reid Middelton, 2008

N

0 100 200

Feet

Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

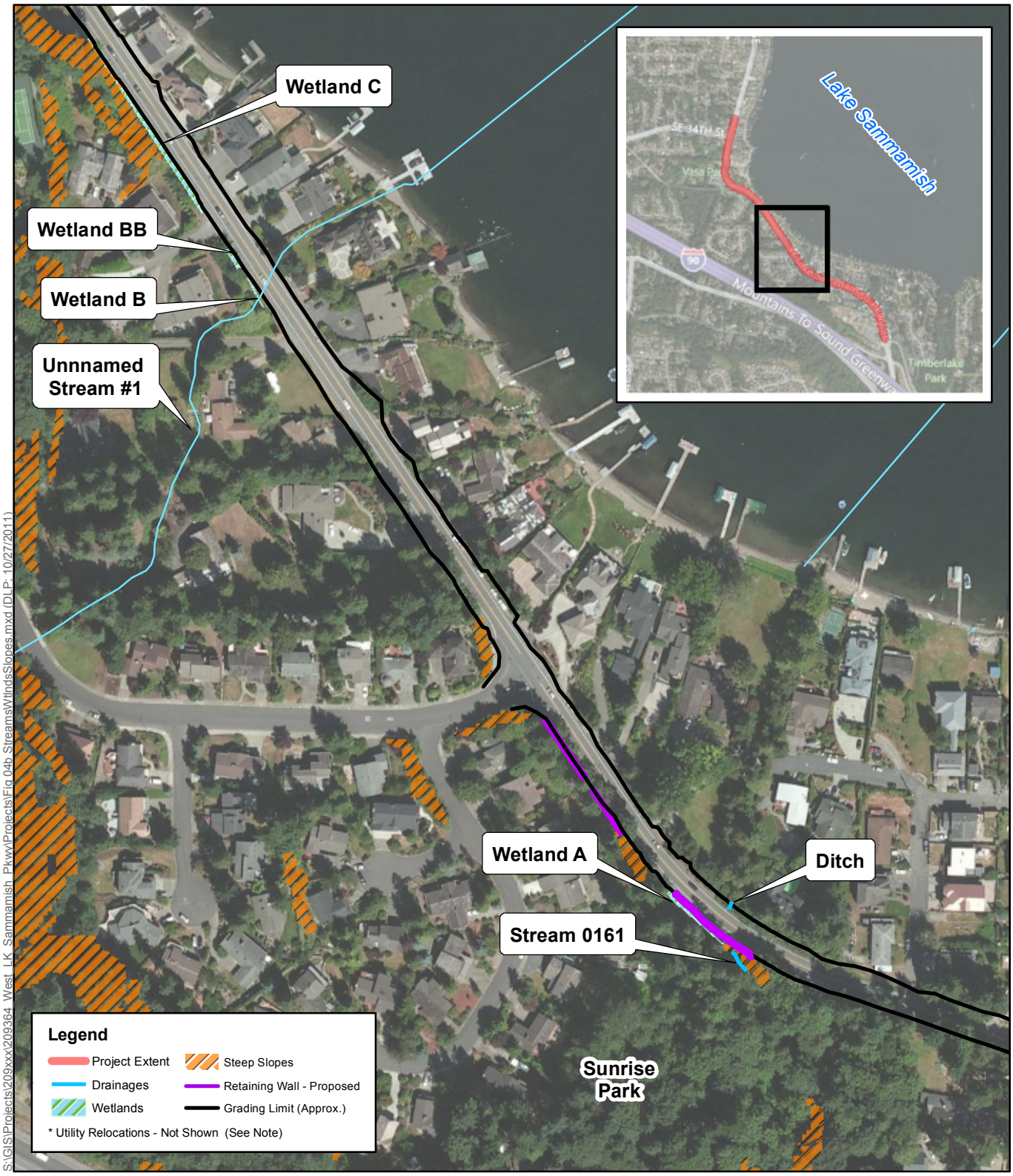
Work to occur within developed road right-of-way.
See attached Plan Sheets for additional detail.

West Lake Sammamish Parkway Improvements. 209364

Figure 4a

Streams, Wetlands, and Steep Slopes - North

Bellevue, WA



SOURCE: King County, 2007 (2009 Aerial Imagery); Reid Middelton, 2008

West Lake Sammamish Parkway Improvements. 209364

Figure 4b

Streams, Wetlands, and Steep Slopes - Central

Bellevue, WA

N

0 100 200

Feet

Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

Work to occur within developed road right-of-way.
See attached Plan Sheets for additional detail.

SOURCE: King County, 2009 (2009 Aerial Imagery); Reid Middelton, 2008

N

0 100 200

Feet

Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

Work to occur within developed road right-of-way.
See attached Plan Sheets for additional detail.

West Lake Sammamish Parkway Improvements. 209364

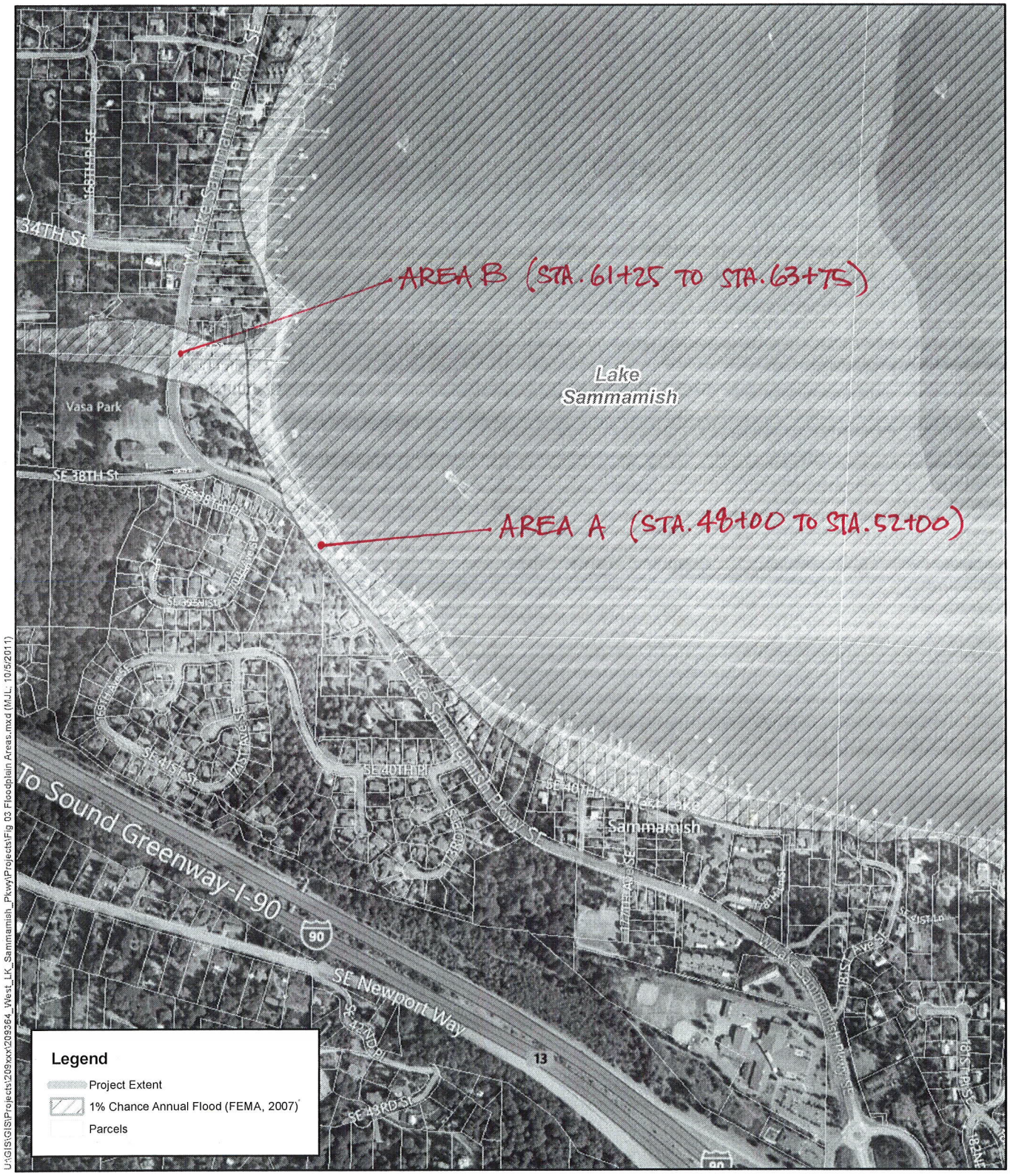
Figure 4c

Streams, Wetlands, and Steep Slopes - South

Bellevue, WA

ATTACHMENT A:
HYDRAULIC ANALYSIS

(Source: R.W. Beck, October 2011)



U:\GIS\GIS\Projects\209xxx\209364_West_LK_Sammamish_Pkwy\Projects\Fig 03_Floodplain Areas.mxd (MJL, 10/5/2011)

SOURCE: King County, 2009 (2010 BING Imagery).

West Lake Sammamish Pkwy. 209364

Figure 3

Floodplain Areas

Bellevue, WA

N

0 250 500

Feet

User Name: kwatanabe
Project: 25-08-010 WLSP Bellevue Phase 1
Subproject: Construction Centerline, 002

Date: 10-13-11
Time: 13:29:53
Page: 1

ROADCALC DESIGN EARTHWORK - RAW VOLUMES (AREA A) - Sta. 48+00 to Sta. 52+00

STATION	MATERIAL	CUT AREA (FT^2)	CUT VOLUME (yd^3)	FILL AREA (FT^2)	FILL VOLUME (yd^3)	ADJUSTED CUT AREA (FT^2)	ADJUSTED CUT VOLUME (yd^3)
48+00.00	Total	18.37	0.00	2.29	0.00	5.37	
48+05.00	Total	18.29	3.39	2.42	0.44	5.29	0.99
48+10.00	Total	18.21	3.38	2.61	0.47	5.21	0.97
48+15.00	Total	18.14	3.37	2.80	0.50	5.14	0.96
48+20.00	Total	18.07	3.35	2.98	0.54	5.07	0.95
48+25.00	Total	18.02	3.34	3.00	0.55	5.02	0.93
48+30.00	Total	17.71	3.31	3.75	0.63	4.71	0.90
48+35.00	Total	17.40	3.25	4.55	0.77	4.40	0.84
48+40.00	Total	17.16	3.20	2.72	0.67	4.16	0.79
48+45.00	Total	17.00	3.16	2.55	0.49	4.00	0.76
48+50.00	Total	16.94	3.14	1.43	0.37	3.94	0.74
48+55.00	Total	16.78	3.12	1.43	0.26	3.78	0.71
48+60.00	Total	16.40	3.07	1.80	0.30	3.40	0.66
48+75.00	Total	17.68	9.46	1.57	0.93	4.68	0.75
48+82.04	Total	16.45	4.45	1.51	0.40	3.45	1.06
49+00.00	Total	29.37	15.24	2.90	1.46	2.37	1.94
49+25.00	Total	31.03	27.97	2.28	2.40	4.03	2.96
49+50.00	Total	30.44	28.46	4.29	3.04	3.44	3.46
49+75.00	Total	30.62	28.29	5.24	4.38	3.62	3.27
50+00.00	Total	29.88	28.03	11.16	7.60	2.88	3.01
50+25.00	Total	30.20	27.84	5.35	7.63	3.20	2.81
50+30.00	Total	30.15	5.59	8.09	1.23	3.15	0.59
50+35.00	Total	29.91	5.57	9.10	1.58	2.91	0.56
50+40.00	Total	29.57	5.51	10.39	1.80	2.57	0.51
50+45.00	Total	29.25	5.45	11.09	1.98	2.25	0.45
50+50.00	Total	28.91	5.39	11.37	2.08	1.91	0.39
50+55.00	Total	28.74	5.34	11.58	2.12	1.74	0.34
50+60.00	Total	28.08	5.26	16.72	2.62	1.08	0.26
50+65.00	Total	28.01	5.19	17.38	3.17	1.01	0.19
50+70.00	Total	28.22	5.21	17.58	3.25	1.22	0.21
50+75.00	Total	28.30	5.23	17.58	3.26	1.30	0.23
50+80.00	Total	28.33	5.24	17.79	3.28	1.33	0.24
50+85.00	Total	28.35	5.25	17.94	3.31	1.35	0.25
50+90.00	Total	28.36	5.25	17.93	3.33	1.36	0.25
50+95.00	Total	28.40	5.26	17.82	3.32	1.40	0.26
51+00.00	Total	28.40	5.26	17.56	3.28	1.40	0.26
51+05.00	Total	28.42	5.26	16.98	3.20	1.42	0.26
51+10.00	Total	28.50	5.27	14.31	2.90	1.50	0.27
51+15.00	Total	30.07	5.43	11.68	2.40	3.07	0.42
51+20.00	Total	30.67	5.63	10.65	2.06	3.67	0.62
51+25.00	Total	31.24	5.74	10.50	1.95	4.24	0.73
51+30.00	Total	32.26	5.89	9.31	1.82	5.26	0.88
51+35.00	Total	31.39	5.90	10.35	1.81	4.39	0.89
51+40.00	Total	31.36	5.82	9.26	1.81	4.36	0.81
51+45.00	Total	32.25	5.90	5.60	1.36	5.25	0.89
51+50.00	Total	31.74	5.93	8.38	1.28	4.74	0.93
51+75.00	Total	31.56	29.34	5.20	6.21	4.56	4.31
52+00.00	Total	31.35	29.14	5.69	4.99	4.35	4.13
	Orig_Surface	1245.95	404.07	406.46	**105.23**	159.95	**49.58**
	Total	1245.93	404.09	406.43	105.23		

Assumed Roadway Cut Area - O/L = 13 SF
Assumed Roadway Cut Area - Full = 27 SF

User Name: kwatanabe
Project: 25-08-010 WLSP Bellevue Phase 1
Subproject: Construction Centerline, 002

Date: 10-13-11
Time: 12:23:06
Page: 1

ROADCALC DESIGN EARTHWORK - RAW VOLUMES (AREA B) - Sta. 61+25 to Sta. 63+75

STATION	MATERIAL	CUT AREA (FT^2)	CUT VOLUME (yd^3)	FILL AREA (FT^2)	FILL VOLUME (yd^3)	ADJUSTED CUT AREA (FT^2)	ADJUSTED CUT VOLUME (yd^3)
61+25.00	Total	25.27	0.00	13.72	0.00	12.27	0.00
61+50.00	Total	27.44	24.40	10.61	11.26	14.44	12.37
61+75.00	Total	30.11	26.64	9.82	9.46	17.11	14.61
62+00.00	Total	31.49	28.52	9.15	8.78	18.49	16.48
62+25.00	Total	31.59	29.20	8.40	8.13	18.59	17.17
62+50.00	Total	38.58	32.48	7.65	7.43	25.58	20.45
62+75.00	Total	49.71	40.87	13.16	9.64	36.71	28.84
63+00.00	Total	13.98	29.49	7.99	9.79	0.98	17.45
63+10.08	Total	14.46	5.31	5.11	2.45	1.46	0.49
63+25.00	Total	13.74	7.79	6.33	3.16	0.74	0.58
63+45.00	Total	14.12	10.32	5.18	4.26	1.12	0.69
63+50.00	Total	31.99	4.27	4.95	0.94	18.99	1.86
63+55.00	Total	31.76	5.90	4.92	0.91	18.76	3.50
63+60.00	Total	31.60	5.87	5.90	1.00	18.60	3.46
63+65.00	Total	31.58	5.85	6.99	1.19	18.58	3.44
63+69.20	Total	31.57	4.91	7.13	1.10	18.57	2.89
63+70.00	Total	31.57	0.94	7.76	0.22	18.57	0.55
63+75.00	Total	31.58	5.85	11.06	1.74	18.58	3.44
	Total (Sum)	512.14	268.61	145.83	**81.46**	278.14	**148.25**
	Total (EP)	512.11	268.60	145.84	81.47		

Assumed Roadway Cut Area - O/L = 13 SF
Assumed Roadway Cut Area - Full = 27 SF

SUMMARY	FILL VOLUME (yd^3)	ADJUSTED CUT VOLUME (yd^3)	NET CHANGE IN FILL VOL (yd^3)
AREA A	105.23	49.58	55.65
AREA B	81.46	148.25	-66.79
TOTALS	186.69	197.83	**-11.14**

* A negative (-) net change in fill volume signifies that this project will not reduce the effective storage volume of the area of special flood hazard.

WEST LAKE SAMMAMISH PARKWAY IMPROVEMENTS – PHASE 1

Wetlands, Streams, and Fish and Wildlife Critical Areas Report and Mitigation Plan

Prepared for

City of Bellevue
Transportation Department

November 2011

ESA

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2a Existing Soils and Stream Mapping (north)

2b Existing Soils and Stream Mapping (south)

3a Survey Map, North Section

3b Survey Map, Middle Section

3c Survey Map, South Section

4 Wetland A and Stream 0161 Buffer Impact and Proposed Enhancement Area

1.0 PROJECT AUTHORIZATION AND SCOPE OF WORK

At the request of the City of Bellevue Transportation Department, ESA has prepared this critical areas report (CAR) and mitigation plan for proposed improvements to West Lake Sammamish Parkway, located in Bellevue, Washington.

The City of Bellevue regulates critical areas under Title 20, Part 20.25H of the Bellevue Land Use Code (LUC). This report addresses the following types of critical areas regulated by the City: streams, wetlands, and habitat associated with species of local importance (LUC 20.25H.025). This report describes the existing conditions of these critical areas, project impacts, and a conceptual mitigation and monitoring plan.

2.0 PROJECT DESCRIPTION AND STUDY AREA

The City of Bellevue Transportation Department is proposing to enhance safety for pedestrians, bicyclists, and vehicular traffic by providing a multi-use trail, landscaped buffer, and shoulder improvements along 1.2 miles of West Lake Sammamish Parkway (Parkway). The project is Phase 1 of a larger plan to provide safety enhancements along the entire West Lake Sammamish Parkway corridor up to Bellevue's northern city limit (Figure 1).

The project site for Phase 1 is located within Sections 12 and 13 of Township 24 North, Range 05 East; and in Section 18 of Township 24 North, Range 05 East, Willamette Meridian. The project is located along West Lake Sammamish Parkway, starting just northwest of the I-90 roundabout and ending just north of SE 34th Street near Vasa Park (Figure 1). The project corridor is bounded by I-90 to the south and roughly parallels the southwestern shoreline of Lake Sammamish.

The project area ranges in elevation from 30 feet to over 160 feet above mean sea level. The topography in most of the study area slopes downward from the west side of the Parkway, east toward Lake Sammamish. Land use is primarily single-family residential, with the majority of the remaining area consisting of public right-of-way. Only a small percentage of the area (less than 5 percent) is composed of open space, which is reflected in the relatively high amount of impervious surface cover in the area (more than 30 percent) (Bellevue, 2003). Lake Sammamish is located approximately 75 to 1,500 feet east of the Parkway. The area between the Parkway and the lake is developed with residences, docks, and landscaping.

The project will include minor widening of the existing paved shoulder to accommodate the multi-use trail and buffer on the west side, and a 4-foot paved shoulder on the east side of the road. The multi-use trail will vary in width between 8 and 10 feet separated from the roadway by a landscaped buffer varying in width between 2 and 5 feet where space is available. Portions of the project will have no buffer where site constraints dictate. The southbound lane will be reduced from its current width by 10.5 feet to 10 feet in order to accommodate trail and buffer improvements. The width of the northbound lane will remain 10.5 feet. A separate left-turn lane will be constructed at the SE 34th Street intersection for the northbound direction and a new traffic signal will be installed. The project will not result in an increase in roadway capacity. The project will also include pavement restoration, stormwater treatment, retaining walls, and utility improvements and relocations.

The project will be constructed within the existing City of Bellevue street right-of-way except on the west side of West Lake Sammamish Parkway north of SE 38th Street, where strip acquisition is needed to accommodate the trail and drainage swale relocation. Also, some right-of-way acquisition will be needed at the SE 34th Street intersection vicinity to accommodate the intersection improvements and a new traffic signal.

Several utilities located within the project corridor will be relocated in order to accommodate the widened shoulder, or to minimize construction disturbance in the road corridor by constructing scheduled utility replacements in advance of, or at the same time as, the West Lake Sammamish Parkway Improvements construction. The utility work will include utility pole relocation, lighting modifications, underground conduit and handhole/vault adjustments/relocations, manhole adjustments, and temporary and permanent relocation of overhead wires. This work will be performed by electrical, natural gas, telephone, cable TV, and fiber communication and includes the following activities:

- Electrical and Gas (Puget Sound Energy (PSE)): Relocate utility poles and overhead lines at various locations along project corridor, including the SE 34th intersection. Work may also include installing temporary poles and wires for usage during relocation. In addition, gas main relocation may be necessary in areas.

- Telephone (CenturyLink): Overhead and underground utility relocation along project corridor.

- Cable TV (Comcast): Overhead lines will be relocated with PSE poles. The work may require a temporary auxiliary service during construction (poles, etc.).

- Fiber Communications (LEDCOR/360 Networks): Relocate portions of the fiber duct bank conduit at various locations. The duct bank is located along the west edge of the Parkway's southbound lane from south project limits up to SE 38th St.

3.0 EXISTING CONDITIONS

3.1 METHODS

ESA performed a review of existing information and on-site investigations for wetlands, streams, and fish and wildlife in the study area and vicinity. The methods used to evaluate existing conditions for each type of critical area are discussed in the applicable sections below.

3.2 WETLANDS

3.2.1 Review of Existing Information

Key documents reviewed included the following:

- Soil Survey of King County, Washington (Snyder et al., 1973);
- City of Bellevue Sensitive Areas Notebook and drainage basin maps (Bellevue, 1987, 2006); and

- Rare plant and vegetation community mapping (WNHP, 2008).

No wetlands have been mapped within the study area by the National Wetland Inventory or the City of Bellevue Sensitive Areas Notebook (1987). Soil units mapped by the Natural Resources Conservation Service in the study area (Figures 2a and 2b) are largely gravelly sandy loams, which are not considered hydric (or wetland soils), but may contain small areas of unmapped wetland soils. Hydric soil is mapped west of the Parkway near Vasa Creek and near the I-90 interchange (Figures 2a and 2b).

3.2.2 Methods

3.2.2.1 Field Methods

The study area for the delineation of wetlands included the City road right-of-way along this portion of West Lake Sammamish Parkway. Based on direction from the project engineer, Reid Middleton, the right-of-way was assumed to extend approximately 30 to 40 feet in both directions from the centerline of the Parkway.

The characteristics of an area that result in its classification as "wetland" have been formally defined by federal and state agencies, as described in Appendix A. Methods defined in Regional Supplements to the U.S. Army Corps of Engineers 1987 Wetlands Delineation Manual were used to determine the presence and extent of wetlands in the study area. The Washington State Department of Ecology repealed WAC 173-22-080 (the state wetland delineation manual) and replaced it with a revision of WAC 173-22-035 that states that delineations should be done according to the currently approved federal manual and supplements (effective March 14, 2011).

The Corps worked with states, federal agencies, and others to develop supplemental regional criteria to refine the 1987 delineation manual. Two regions fall within the state of Washington: The Arid West (dry lands west of the Continental Divide, from Idaho and eastern Washington south to the U.S. - Mexico border) and the Western Mountains, Valleys, and Coast. Interim Regional Supplements to the Corps of Engineers 1987 Wetlands Delineation Manual have been completed by the Corps for both regions in Washington, and the appropriate supplement is now used when conducting delineations in those regions (Corps, 2008, 2010).

The methodology outlined in the manuals is based upon three essential characteristics of wetlands: (1) hydrophytic vegetation; (2) hydric soils; and (3) wetland hydrology. Field indicators of these three characteristics must all be present in order to determine that an area is a wetland (unless problem areas or atypical situations are encountered).

The "routine on-site determination method" was used to determine the wetland boundaries. The routine method is used for areas equal to or less than five acres in size, or for larger areas with relatively homogeneous vegetative, soil, and hydrologic properties.

Formal data plots were established where information regarding each of the three wetland parameters (vegetation, soils, and hydrology) was recorded. This information was used to distinguish wetlands from non-wetlands. If wetlands were determined to be present on the subject property, the wetland boundaries were delineated. Wetland boundaries were identified

with sequentially numbered colored flagging imprinted with the words WETLAND DELINEATION. Data plot locations were also marked with colored flagging.

The methods used to assess wetland characteristics are described in greater detail in Appendix A. Please note that common plant names are used throughout this text; the scientific names are presented in Appendix B.

3.2.2.2 Classifying Wetlands

Two classification systems are commonly used to describe wetlands. The hydrogeomorphic (HGM) system describes wetlands in terms of their position in the landscape and the movement of water in the wetland (Brinson, 1993). The U.S. Fish and Wildlife Service classification system (Cowardin et al., 1979) describes wetlands in terms of their vegetation communities; these include, for example, emergent, scrub-shrub, and forested community types.

3.2.2.3 Assessing Wetland Functions

Wetlands and buffers play important roles that provide valuable benefits to the environment and society. Because detailed scientific knowledge of wetland functions is limited, evaluations of the functions of individual wetlands are somewhat qualitative and dependent upon professional judgment.

For this project, wetland functions were assessed using the Washington State Department of Ecology's *Wetland Rating System for Western Washington* (Hruby, 2004). Although this system is designed to rate wetlands, it is based on whether a particular wetland performs a particular function and the relative level to which the function is performed. An assessment of wetland functions is inherent in the rating system. This system was developed by Ecology to differentiate wetlands based on their sensitivity to disturbance, their significance, their rarity, our ability to replace them, and the beneficial functions they provide to society. Appendix C provides additional information about the rating system wetland categories and completed rating forms for the project.

3.2.3 Results of Field Investigation

ESA identified seven wetlands in the study area, designated as Wetlands A through F (Figures 3a, 3b, and 3c). The wetland boundaries flagged by ESA were surveyed by Reid Middleton. Representative photos are provided in Appendix D. Data sheets for the data plots completed in representative wetland and upland areas are provided in Appendix E.

3.2.3.1 Wetland A

Overview. Wetland A is less than 0.25 acre in size and located on the west side of West Lake Sammamish Parkway near Sunrise Park (Photo 1; Figure 3b). The wetland is located in a depressional area at the toe of the roadway fill slope. Data plot (DP) 1 characterizes Wetland A. Only the edge of the wetland nearest the Parkway was delineated; the wetland continues beyond the right-of-way to the southwest.

Hydrology. Wetland hydrology indicators observed in Wetland A included saturation to the surface and relatively high water table (14 inches below the surface during June). Sources of water to Wetland A include groundwater and surface runoff from West Lake Sammamish Parkway. Wetland A drains toward the southeast into Drainage 1.

Soils. Soil conditions observed at DP-1 in Wetland A are summarized in the table below. The observed soils were consistent with hydric soil indicator F6 (redox dark surface).

Table 1. Soil Characteristics at Data Plot 1, Wetland A

Depth below Surface (inches)	Matrix Color	Redox Features	Texture
0-4	Dark gray 2.5Y 4/1	None	Clay loam
4-11	Very dark gray 2.5Y 3/1	Dark yellowish brown 10YR 4/6 (10%)	Clay loam
11-16	Dark gray 2.5Y 4/1	Grayish brown (2.5Y 5/2) and dark yellowish brown (10YR 4/6) (30%)	

Vegetation. Wetland A contains a palustrine forested community with an overstory dominated by western red cedar. Dominant understory species include Himalayan blackberry, thimbleberry, creeping buttercup, and bitter nightshade. Vegetation on the roadway slope adjacent to the wetland was recently mowed.

Wetland Functions. The results of the functions assessment for the wetland areas are presented in Appendix C. Wetland A has the capacity to slow the flow of surface runoff and filter pollutants that might otherwise enter Drainage 1. The wetland's clay soils and dense herbaceous vegetation contribute to its water quality improvement functions. Because it contains a fairly simple vegetation community and lacks special habitat features such as downed logs, the wetland provides only moderate wildlife habitat functions.

3.2.3.2 Wetlands B and BB

Overview. Wetland B is a slope/depressional wetland located on the west side of West Lake Sammamish Parkway (Photo 2; Figure 3b). Wetland BB is a roadside ditch that slopes southeast toward Wetland B (Photo 3). The two wetlands are separated by a small upland hummock. Because of their small size (less than 0.25 acre total) and close proximity, these two wetlands are described together here. Only the edge of Wetland B nearest the Parkway was delineated; the wetland continues beyond the right-of-way to the southwest. Data plots could not be completed due to access restrictions, but the following describes conditions observed from the roadway.

Hydrology. The lower, depressional part of Wetland B is surrounded by riprap and appears to have been either created or modified at some time in the past to detain surface water. The upper, slope portion of the wetland contains a small stream that drains downslope into the lower

depressional area. Wetland hydrology indicators observed in Wetland B included soil saturation to the surface and standing water (Photo 2). During the June 2008 site visit, surface water less than one inch deep was flowing out of Wetland B into an outlet grate on the west side of the Parkway.

Soils. Soils could not be sampled in these wetlands due to property access restrictions. Part of Wetland B was covered in cobbles located near the mouth of the small inlet stream (Photo 2).

Vegetation. Wetlands B and BB contain a palustrine emergent and scrub-shrub vegetation community. Emergent species dominate the depressional part of Wetland B and Wetland BB, and include creeping buttercup, reed canarygrass, horsetail, and watercress. The slope portion of Wetland B is dominated by Himalayan blackberry and Japanese knotweed. The road slope of the Parkway adjacent to Wetland B had been recently mowed prior to the June 2008 site visit.

Wetland Functions. The results of the functions assessment for the wetland areas are presented in Appendix C. Because Wetland B is surrounded by riprap, forming a ponded area, it has the capacity to store surface water runoff. The water quality functions of Wetlands B/BB are enhanced by the presence of seasonal ponding in the lower part of Wetland B. These wetlands have a fairly simple vegetation community and limited habitat functions.

3.2.3.3 Wetland C

Overview. Wetland C is a depressional wetland located on the west side of West Lake Sammamish Parkway (Figure 3b). Data plot (DP) 2 characterizes Wetland C. This wetland is less than 0.25 acre in size and is located in a linear swale or ditch between the toe of the roadway prism and a steep slope to the west (Photo 4).

Hydrology. Wetland hydrology indicators observed in Wetland C included saturation to the surface and surface water ponding two inches deep. Sources of water to Wetland C include surface runoff from surrounding impervious areas and precipitation. No outlet from the wetland was observed.

Soils. Soil conditions observed at DP-2 in Wetland C are summarized in the table below. The soil was considered hydric due to its dark chroma to a depth of 18 inches (similar to F12, thick dark surface) and the topographic position of the wetland which results in soils being saturated or inundated into the summer season.

Table 2. Soil Characteristics at Data Plot 2, Wetland C

Depth below Surface (inches)	Matrix Color	Redox Features	Texture
0-18	Black 10YR 2/1	None	Silt

Vegetation. Wetland A contains a palustrine emergent vegetation community dominated by water-cress, small-fruited bulrush, and willowherb.

Wetland Functions. The results of the functions assessment for the wetland areas are presented in Appendix C. Wetland C has the ability and opportunity to provide a relatively high level of hydrologic and water quality improvement functions. The wetland lacks a surface outlet and is therefore able to store surface runoff. The dense emergent vegetation in the wetland allows for the settling and filtering of pollutants. The wetland has a simple vegetation community and does not provide high-quality wildlife habitat.

3.2.3.4 Wetland D

Overview. Wetland D is a slope wetland, less than 0.5 acre in size, located on the south side of West Lake Sammamish Parkway near 170th Avenue SE (Photo 5; Figure 3a). Data plot (DP) 3 characterizes Wetland D. ESA delineated only the lower portion of the wetland adjacent to the roadway; the wetland continues upslope beyond the right-of-way.

Hydrology. Wetland hydrology indicators observed in Wetland D included saturation to the surface, a high water table (10 inches below the surface), and surface water one to two inches deep. During the June 2008 site visit, ESA observed water seeping from the wetland onto the roadway pavement (Photo 5). The major source of water to Wetland D appears to be groundwater seepage from the hillslope.

Soils. Soil conditions observed at DP-3 in Wetland D are summarized in the table below.

Table 3. Soil Characteristics at Data Plot 3, Wetland D

Depth below Surface (inches)	Matrix Color	Redox Features	Texture
0-14	Very dark brown 10YR 2/2	None	Gravelly sandy loam
14-16	Dark greenish gray 10Y 4/1	Dark yellowish brown 10YR 4/6 (40%)	Diatomaceous earth

Vegetation. Wetland D contains a palustrine scrub-shrub community dominated by Himalayan blackberry, lady-fern, and creeping buttercup.

Wetland Functions. The results of the functions assessment for the wetland areas are presented in Appendix C. The hydrologic and water quality functions of Wetland D are limited by the wetland's steep slope. Wetland D does not provide high-quality wildlife habitat due to its relatively simple vegetation community, presence of invasive Himalayan blackberry, lack of special habitat features such as snags, and proximity to developed areas.

3.2.3.5 Wetland E

Overview. Wetland E is a slope wetland, less than 0.25 acre in size, located on the south side of West Lake Sammamish Parkway near 170th Avenue SE (Photo 6; Figure 3a). Data plot (DP) 4 characterizes Wetland E. ESA delineated only the lower portion of the wetland adjacent to the roadway; the wetland continues upslope beyond the right-of-way.

Hydrology. Wetland hydrology indicators observed in Wetland E included saturation to the surface and a high water table (12 inches below the surface). During the June 2008 site visit, ESA observed water seeping from the wetland onto the roadway pavement. The major source of water to Wetland E appears to be groundwater seepage from the hillslope.

Soils. Soil conditions observed at DP-4 in Wetland E are summarized in the table below. The observed soils were consistent with hydric soil indicator F6 (redox dark surface).

Table 4. Soil Characteristics at Data Plot 4, Wetland E

Depth below Surface (inches)	Matrix Color	Redox Features	Texture
0-13	Very dark brown 10YR 2/2	Yellowish brown (10YR 5/4), gray (10YR 5/1), dark yellowish brown (10YR 4/4) (40% total)	Sandy loam
13-16	Dark grayish brown 10YR 4/2	Strong brown (7.5YR 4/6) (30%) Very dark gray (10YR 3/1) (15%)	Sandy clay loam

Vegetation. Wetland E contains a palustrine emergent community dominated by Himalayan blackberry, creeping buttercup, and lady-fern.

Wetland Functions. The results of the functions assessment for the wetland areas are presented in Appendix C. The hydrologic and water quality functions of Wetland E are limited by the wetland's steep slope. Wetland E does not provide high-quality wildlife habitat due to its relatively simple vegetation community, presence of invasive Himalayan blackberry, lack of special habitat features such as snags, and proximity to developed areas.

3.2.3.6 Wetland F

Overview. Wetland F is a slope/depressional wetland less than 0.5 acre in size located on the south side of West Lake Sammamish Parkway near SE 38th Street (Photo 7; Figure 3a). Data plot (DP) 5 characterizes Wetland F.

Hydrology. Wetland hydrology indicators observed in Wetland F included saturation to the surface and a high water table (2 inches below the surface). The major sources of water to Wetland F are groundwater seepage from the hillslope and surface water runoff from the adjacent roadway. The wetland appeared to be a closed depression with no outlet.

Soils. Soil conditions observed at DP-5 in Wetland F are summarized in the table below. The observed soils were consistent with hydric soil indicator F8 (redox depressions).

Table 5. Soil Characteristics at Data Plot 5, Wetland F

Depth below Surface (inches)	Matrix Color	Redox Features	Texture
0-17	Very dark gray (10YR 3/1)	Dark yellowish brown (10YR 4/6) (10%) Gray (10YR 5/1) (30%)	Sandy clay loam

Vegetation. Wetland F contains a palustrine emergent community. Dominant species include creeping buttercup, bentgrass, and reed canarygrass.

Wetland Functions. The results of the functions assessment for the wetland areas are presented in Appendix C. While Wetland F does not have an outlet, the wetland does not have the capacity to store much surface runoff, and it lacks dense unmowed vegetation that would help to filter surface flows. Therefore its hydrologic and water quality functions are low. Wetland F also lacks a complex vegetation community or other habitat features for wildlife.

3.2.4 City of Bellevue Regulations

Wetlands are regulated under LUC 20.25H.095. The City requires wetlands to be rated into one of four categories according to the Washington State Department of Ecology's *Wetland Rating System for Western Washington* (Hruby, 2004; LUC 20.25.H.095(B)). Using this rating system, ESA categorized the seven wetlands in the study area as shown in Table 6. Appendix C describes the rating system and provides completed rating forms for the wetlands in the project area.

The City's buffer requirement for wetlands are based on the wetland ratings and scores for habitat and water quality improvement (LUC 20.25.H.095(C)). Table 6 lists the buffers required for "undeveloped sites" for the wetlands in the study area, even though some of the parcels contain structures. The use of buffer widths for "developed sites" depends on whether the wetlands have been previously been placed into a Native Growth Protection Area (NGPA), which is unknown at this time.

Table 6. Classification of Wetlands Identified in Phase 1 Study Area

Wetland	Estimated Total Size	Ecology System Rating	Habitat (H) and Water Quality (WQ) Scores	Buffer Requirement (LUC 20.25.H.095(C))
Wetland A	< 0.25 acre	II	H = 10 WQ = 26	75 feet
Wetland B & BB	< 0.25 acre	III	H = 11 WQ = 10	60 feet
Wetland C	< 0.25 acre	III	H = 7 WQ = 20	60 feet

Wetland	Estimated Total Size	Ecology System Rating	Habitat (H) and Water Quality (WQ) Scores	Buffer Requirement (LUC 20.25.H.095(C))
Wetland D	<0.5 acre	IV	H = 3 WQ = 4	40 feet
Wetland E	< 0.25 acre	IV	H = 3 WQ = 2	40 feet
Wetland F	<0.5 acre	IV	H = 2 WQ = 8	40 feet

The boundaries of the wetlands identified in Table 6 extend outside of the road right-of-way, and therefore the exact size of the wetlands is not known. Category IV wetlands smaller than 2,500 square feet do not require a buffer setback (LUC 20.25.H.095(C)). Since the three Category IV wetlands in the study area (Wetlands D, E, and F) extend outside of the road right-of-way and their total size cannot be determined, we have assumed they may be larger than 2,500 square feet and would require a buffer of 40 feet wide.

For all of the wetlands in the study area, the portion of the buffer adjacent to West Lake Sammamish Parkway is currently smaller than the standard widths shown in Table 6. Where a legally established transportation right-of-way crosses a wetland buffer, the edge of the improved right-of-way is considered the edge of the buffer if the part of the buffer on the other side of the right-of-way provides insignificant biologic or hydrologic function in relation to the part of the buffer adjacent to the wetland (LUC 20.25H.075(c)(2)(b), 095(c)(2)(b)). Based on this definition, we consider the buffer to end at the edge of pavement or maintained road shoulder of West Lake Sammamish Parkway adjacent to the wetland, and that the buffer does not extend into or across the Parkway.

3.3 STREAMS AND FISH

3.3.1 Review of Existing Information

This section of the CAR addressed streams and fish habitat observed or reported near the project area. Key documents reviewed included the following:

- City of Bellevue Sensitive Areas Notebook and drainage basin maps (Bellevue, 1987, 2006);
- Washington Department of Fish and Wildlife Salmonscape mapping (WDFW, 2011b); and
- West Lake Sammamish Parkway Improvements Project - Biological Evaluation Letter of "No Effect" (ESA, 2011).

The project is located in Water Resource Inventory Area (WRIA) 8–Lake Washington/Cedar/ Sammamish Watershed. The project corridor crosses through two drainage basins, the South Sammamish Area basin and the Vasa Creek basin. Four streams have been previously mapped as crossing the study area (Figures 2a and 2b) (Table 7).

Table 7. Previously Mapped Streams in Phase 1 Study Area

Stream Name	Documented Fish Use
Vasa Creek	Fish use documented in lower reaches of stream closest to Lake Sammamish (City of Bellevue, 2006).
Stream 0160	Cutthroat present (City of Bellevue, 2006).
Unnamed Stream	Fish use possible but unlikely (City of Bellevue, 2006).
Stream 0161	Fish use is expected in lower reaches; upstream areas with seasonal flow likely do not support fish (City of Bellevue, 2006).
Sources: Williams et al., 1975; City of Bellevue, 1987, 2006; WDFW, 2007; WDFW, 2008; drainage and outfall map provided by Reid Middleton.	

Both the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) provide listings of threatened and endangered species under their jurisdiction (Appendix F). The current listings from NMFS indicate the potential presence of the Puget Sound Evolutionary Significant Unit (ESU) of Chinook salmon (*Oncorhynchus tshawytscha*) and the Puget Sound Distinct Population Segment (DPS) of steelhead (*O. mykiss*) within the project vicinity. Additionally, the USFWS lists Coastal/Puget Sound DPS of bull trout (*Salvelinus confluentus*) within the project vicinity.

The potential presence of listed species within the project area was further evaluated by reviewing Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) data (WDFW, 2011a), the Salmonscape database (WDFW 2011b), and the WDFW Stock Inventory Data (WDFW 1998, 2002, 2004).

The WDFW PHS database does not indicate the presence of listed fish species in any of the streams that cross the project area. However, PHS indicates that fall Chinook salmon, winter steelhead, and bull trout occur within Lake Sammamish. No other PHS species or habitats are reported within or near the project site (WDFW 2011a).

Critical habitat for Puget Sound Chinook salmon (NMFS 2005) and Coastal-Puget Sound bull trout (USFWS 2010) has been designated within Lake Washington, 15 miles downstream of the project area; however, no critical habitat occurs within the project action area. Critical habitat for steelhead has not been proposed or designated at this time.

3.3.2 Field Methods

The study area for the delineation of streams included the City road right-of-way along this portion of West Lake Sammamish Parkway. Based on direction from the project engineer, Reid Middleton, the right-of-way was assumed to extend approximately 30 feet in both directions from the centerline of the Parkway.

ESA flagged the ordinary high water mark (OHWM) of streams in the study area. For purposes of determining its lateral jurisdiction under the Clean Water Act (33 CFR 328.3(e)), the U.S Army Corps of Engineers defines the OHWM as: “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line

impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (Corps, 2005). Other physical characteristics that should be used to determine the OHWM include wracking; vegetation matted down, bent, or absent; sediment sorting; leaf litter disturbed or washed away; scour; deposition; multiple observed flow events; bed and banks; water staining; and a change in plant community (Corps,2005).

ESA marked the OHWM in the field with sequentially numbered colored flagging. Biologists also made general observations of in-stream habitat, such as depth of surface water, streambed substrate, streambank erosion, and in-stream habitat features such as large wood, boulders, riffles, and pools. The condition of riparian (streamside) vegetation was also recorded, including plant species, canopy cover, and evidence of human disturbance.

3.3.3 Results of Field Investigation

ESA identified five drainage features (streams) crossing the project area; each is discussed below. The streams show signs of general degradation, likely caused by urban development within and upstream of the project areas. The riparian areas are generally narrow (less than 100 feet wide) and have been encroached upon by residential development and transportation corridors. The riparian zones consist of deciduous forest, with some coniferous cover in places. The shrub vegetation is dominated by non-native species, primarily Himalayan blackberry and reed canarygrass. Other cover types within the project vicinity include impervious surface, residential structures, compacted soil/bare earth, and maintained lawns and ornamental landscaping species.

Streambed and bank conditions are also degraded, with a general lack of pools and high amounts of fine sediment. Gravel deposits are very localized, limiting salmonid spawning opportunities within the project area. The lack of suitable spawning habitat is typical of flow alterations caused by undetained or under-retained stormwater flow, as significant portions of this area were developed prior to detention and water quality regulations currently in place.

3.3.3.1 Vasa Creek (Stream 0156)

Vasa Creek, or stream 0156, crosses the project area north of Vasa Park (Figures 2a and 3a). The stream channel west of the Parkway is 5 to 7 feet wide, with the riparian zone dominated by invasive vegetation (reed canarygrass and Himalayan blackberry) (Photo 8). The stream crosses the Parkway in a culvert crossing, with an open channel downstream to Lake Sammamish. The stream channel east of the Parkway is located on private property and was not flagged in the field.

3.3.3.2 Stream 0160

Stream 0160 is mapped as crossing the Parkway near SE 38th Place (Figure 2a). However, the stream is conveyed under the Parkway by a 716-foot-long culvert, which extends from upstream of the Parkway and discharges directly into Lake Sammamish. No open stream channel is present within the road right-of-way and the stream channel was therefore not flagged.

3.3.3.3 Stream 0161

Stream 0161 is a mapped stream that drains through Sunrise Park toward Lake Sammamish, crossing West Lake Sammamish Parkway (Figures 2b and 3b). Wetland A drains to the stream on the west side of the Parkway. The stream crosses the Parkway in a culvert crossing, with an open channel downstream to Lake Sammamish. Within the study area west of the Parkway, the stream channel is approximately 5 feet wide, with small pools, medium cobble, and large woody debris present in the channel. Riparian vegetation within the park consists of native forest (Photo 9).

3.3.3.4 Unnamed Stream #1

Unnamed stream #1 has been previously mapped as "unnamed creek" (Figure 2a). It is located west of and drains into Wetland B (Figure 3b). The stream is located outside of the road right-of-way and was not flagged in the field. It originates in a stormwater basin immediately upstream of West Lake Sammamish Parkway, and drains down a steep slope into Wetland B (Photo 10). Surface flows from the wetland enter a culvert under the Parkway.

3.3.3.5 Unnamed Stream #2

Unnamed stream #2 has not been previously mapped. It is located at the southwest corner of 181st Avenue SE and the Parkway (Figure 3c). Riparian vegetation is largely invasive species (Himalayan blackberry) with a few native trees (Photo 11). The stream channel in the study area is approximately 4 feet wide. The stream originates in a stormwater basin immediately south of 181st Avenue SE. The downstream conveyance is likely in a pipe system.

3.3.3.6 Drainage Ditches

ESA identified three drainage ditches in the project area (Figures 3a and 3b). These ditches do not meet wetland criteria. They are artificial drainage features lacking natural hydrology. Based on evaluation by ESA and the Washington Department of Fish and Wildlife (WDFW), these ditches would not be regulated as streams at the state or local level. The U.S. Army Corps of Engineers will likely take jurisdiction over the ditch located south of Vasa Creek and west of the Parkway (Photo 12). The project would require filling this ditch. The City has submitted to the Corps a plan to recreate (replace) this ditch west of its currently location.

3.3.4 City of Bellevue Regulations

The City of Bellevue defines stream types as follows (LUC 20.25H.075B):

- Type S water: Shorelines of the state and associated wetlands.
- Type F water: Segments of waters that are not type S waters, and that contain fish or fish habitat.
- Type N water: Segments of waters that are not type S or type F waters and that are physically connected to Type S or F waters by an above ground channel system, stream or wetland.

- Type O water: Segments of waters that are not Type S, F or N waters and that are not physically connected to Type S, F or N waters by an above ground channel system, stream, or wetland.

Based on this classification system, the streams in the study area meet the City's definition of Type F streams. The required stream buffers are shown in Table 8. This table lists the City's stream buffer requirements for "undeveloped sites" under LUC 20.25H.075C, even though some of the parcels contain structures. The use of buffer widths for "developed sites" depends on whether the wetlands have been previously been placed into a Native Growth Protection Area (NGPA), which is unknown at this time. Streams that are piped (Stream 0160) do not require a buffer but are subject to a 10-foot building setback (LUC 20.25H.075.D).

In addition, the City of Bellevue has designated bull trout, Chinook salmon, coho salmon, and river lamprey as species of local importance; see Section 3.4.4 (LUC 20.25H.150). If habitat associated with species of local importance will be impacted by a proposal, the applicant must implement the wildlife management plan developed by WDFW for such species (LUC 20.25H.160).

City code states that where a legally established right-of-way crosses a stream buffer, the edge of the improved right-of-way shall be the extent of the buffer, if the part of the critical area buffer on the other side of the right-of-way provides insignificant biological or hydrological function in relation to the portion of the buffer adjacent to the stream (LUC 20.25H.075.C.2). The stream buffers in the study area are crossed by West Lake Sammamish Parkway. Based on this definition, we consider the stream buffer to end at the edge of pavement or gravel-surfaced road shoulder of West Lake Sammamish Parkway adjacent to the stream, and that the buffer does not extend into or across the Parkway.

Table 8. Stream Types and Buffer Requirements

Stream ID	Classification[1]	City of Bellevue Buffer Requirement
Vasa Creek Stream 0156	Perennial Type F Anadromous Salmonid use	100 feet
Stream 0160	Perennial Type F Salmonid use	None -piped (10-foot building setback)
Unnamed Stream #1	Intermittent Type F Salmonid use	100 feet
Stream 0161	Perennial Type F Salmonid use	100 feet
Unnamed Stream #2	Unknown Assumed Type F and Salmonid Use	100 feet

1. Based on Bellevue Critical Areas (LUC 20.25H.075(b)) and WDFW stream type classifications. Salmonid use based on Bellevue Utilities 2003; WSCC 2001; WDFW 2011a, b.

3.4 WILDLIFE

3.4.1 Review of Existing Information

The majority of the species on the USFWS species list for King County (Appendix F) were either not historically distributed within the action area, and/or the action area does not contain suitable habitat to support these species. For example, no mature forested areas occur within the project area containing habitat elements suitable for either northern spotted owl (*Strix occidentalis*) or marbled murrelet (*Brachyramphus marmoratus*). Therefore, species without suitable habitats in the project area, such as Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), grizzly bear (*Ursus a. horribilis*), northern spotted owl, and marbled murrelet, will not be addressed in this report.

The potential presence of listed species within the project area was further evaluated by reviewing the WDFW Priority Habitats and Species (PHS) data (WDFW, 2011a). The WDFW has not mapped any priority wildlife species or habitat occurrences in the project area.

3.4.2 Field Methods

ESA performed a general assessment of wildlife habitat types and species during the wetland delineation fieldwork. This included general observations of vegetation types, constructed features, and sources of disturbance that could affect wildlife using the area. This project did not include any formal wildlife surveys.

3.4.3 Results of Field Investigation

The dominant land use along West Lake Sammamish Parkway within the study area is single-family residential. Some residences along the Parkway have large mowed lawns, while others have ornamental trees and shrubs near the roadway. Sunrise Park, in the central portion of the study area (Figure 3b) provides upland forested habitat dominated by native tree species such as big-leaf maple, Douglas fir, western red cedar, and Pacific madrone. Vasa Park, in the north part of the study area, has larger mowed areas and parking lots west of the Parkway (Figure 3a). Development is most intensive in the south part of the study area, with commercial and multi-family residential land uses (Figure 3c). Non-native invasive plants such as Himalayan blackberry and English ivy are prevalent near developed areas. Photos 13 and 14 provide representative views of these areas.

Wildlife species observed in the study area are those that tolerate some level of human disturbance and are common in suburban areas. ESA observed eastern gray squirrel, American crow, American robin, Steller's jay, red-breasted nuthatch, barn swallow, spotted towhee, dark-eyed junco, northern flicker, and black-capped chickadee. Sunrise Park provides habitat for species more commonly found in forested areas, including red-breasted sapsucker and Douglas squirrel. Raccoon and black-tailed deer tracks were noted in wetlands just north of the study area.

Other species of birds, mammals, reptiles, and amphibians in addition to those observed are expected to use habitat on the project site. For example, nocturnal species may be present that

were not active during the site visit, or other species may only be highly visible or present in this area during certain seasons.

3.4.4 City of Bellevue Regulations

The City of Bellevue has designated the species listed in Table 9 as species of local importance (LUC 20.25H.150). None of these species are likely to make regular use of the West Lake Sammamish Parkway right-of-way or adjacent residential areas because of the high level of human disturbance, traffic noise, stormwater runoff, domestic pets, and lack of intact native vegetation communities adjacent to the roadway. These species are most likely to occur along the shoreline of Lake Sammamish (e.g., great blue heron, bald eagle, osprey) or in the forested habitat of Sunrise Park (e.g., pileated woodpecker, myotis species). As discussed earlier, Chinook salmon and bull trout (both federally listed species) occur in Lake Sammamish (WDFW, 2011a).

The road right-of-way of West Lake Sammamish Parkway is highly unlikely to provide habitat for any of these species, although some of the species may occur in the general vicinity. If habitat associated with species of local importance will be impacted by a proposal, the applicant must implement the wildlife management plan developed by WDFW for such species (LUC 20.25H.160).

Table 9. City of Bellevue Species of Local Importance

Common Name	Scientific Name
Bald eagle	*Haliaeetus leucocephalus*
Peregrine falcon	*Falco peregrinus*
Common loon	*Gavia immer*
Pileated woodpecker	*Dryocopus pileatus*
Vaux's swift	*Chaetura vauxi*
Merlin	*Falco columbarius*
Purple martin	*Progne subis*
Western grebe	*Aechmophorus occidentalis*
Great blue heron	*Ardea herodias*
Osprey	*Pandion haliaetus*
Green heron	*Butorides striatus*
Red-tailed hawk	*Buteo jamaicensis*

Common Name	Scientific Name
Western big-eared bat	*Plecotus townsendii*
Keen's myotis	*Myotis keenii*
Long-legged myotis	*Myotis volans*
Long-eared myotis	*Myotis evotis*
Oregon spotted frog	*Rana pretiosa*
Western toad	*Bufo boreas*
Western pond turtle	*Clemmys marmorata*
Chinook salmon	*Oncorhynchus tshawytscha*
Bull trout	*Salvelinus confluentus*
Coho salmon	*Oncorhynchus kisutch*
River lamprey	*Lampetra ayresi*

4.0 PROJECT IMPACTS

4.1 Construction

The project includes structural, roadway, landscaping, utility, and hydraulic elements (see drawings in Appendix G). Structural components include: roadway/trail embankment fill; retaining wall construction; and concrete curb. Roadway components include surface and paving activities. Landscaping includes planter strips and wetland/buffer enhancement. Utility work is discussed in Section 2. Hydraulic elements of the project include the construction of media filter vaults with pretreatment, the installation of conveyance features including pipe systems leading to the vaults, and the relocation of an existing ditch along the west side of the roadway north of SE 38th Street. Additional work activities include clearing and grubbing, asphalt and concrete removal, excavation and embankment, utility relocation, traffic signal installation, grading, drainage features, erosion control and planting, driveway revisions, sign structures, permanent signage, pavement marking, construction detours, and traffic control setup and removal.

Construction is tentatively scheduled to begin in spring 2012 and will take approximately eight months to complete. Typical construction equipment could include loaders, excavators, pavers, haul trucks and other similar machinery. The general sequence of major construction activities is as follows:

1. Mobilization and installation of best management practices (BMPs) including runoff and erosion control (temporary erosion and sediment control [TESC] plan implementation).

2. Site preparation and demolition; clearing and grubbing; pavement removal; relocation of poles/installation of mast arm lights.
3. Earthwork/grading.
4. Stormwater installation.
5. Install walls.
6. Paving.
7. Install signal system and lighting at SE 34th Avenue.
8. Channelization/striping and install signing.
9. Remove BMPs and implement final vegetation planting.
10. Cleanup and demobilization.

4.2 Streams and Wetlands

The project has been designed to avoid direct impacts to streams or wetlands, and to prevent hydrologic or water quality impacts following construction. Work would occur adjacent to streams and wetlands along the Parkway (Appendix G, site plan drawings). Proper implementation of construction BMPs would avoid and minimize impacts to these resources during construction. See Section 5.1, Mitigation Sequencing, for further discussion.

The project would result in the loss of 1,540 square feet of buffer vegetation adjacent to Wetland A and Stream 0161 resulting from road/trail widening near Sunrise Park. This is the only area along the project alignment where unmaintained vegetation located within a stream or wetland buffer would be affected. While the project would remove trees and ornamental shrubs along the Parkway (see Section 4.3), these are not located within stream or wetland buffers.

The impacted buffer area adjacent to Wetland A and Stream 0161 currently consists of unmowed grass and Himalayan blackberry. This area provides only a limited level of buffer function for the adjacent stream and wetland.

4.3 Wildlife

The improvements to the Parkway would require the removal of trees and shrubs located near the roadway (outside of stream and wetland buffers). Approximately 33 trees will be removed along or adjacent to the roadway, including big-leaf maple, western red cedar, Douglas fir, and red alder. Of the 33 trees to be removed, 11 trees measure 8 to 10 inches diameter at breast height (dbh); 12 trees measure 12 inches dbh; 5 trees are 14 to 16 inches dbh; and 5 trees are 20 to 36 inches dbh.

The vegetation to be removed is unlikely to provide habitat for sensitive species due to the location adjacent to a busy roadway and residences, and availability of higher quality habitat elsewhere in vicinity. No impacts to sensitive wildlife species would occur.

Common wildlife species that are tolerant of human disturbance may use this vegetation as part of larger foraging areas (e.g., house sparrow, American crow). The multi-use trail will be separated from the roadway by a landscaped buffer varying in width between 2 and 5 feet where space is available. The landscaped buffer will be planted with a mix of native and ornamental species including Pacific sunset maple, starlight dogwood, sour gum, Oregon grape, red flowering currant, common white snowberry, evergreen huckleberry, and nearly wild rose. The landscaping will help to offset the minor loss of vegetation and wildlife habitat resulting from the road improvements.

5.0 MITIGATION PLAN

5.1 Mitigation Sequencing

The project team has followed the mitigation sequencing steps required in LUC 20.25H.215 to avoid and minimize impacts to critical areas, as discussed below.

Project Design and Layout

The City has taken steps to avoid and minimize critical areas impacts through design and placement of the proposed improvements:

- In areas where the improvements are located adjacent to a stream or wetland, the road, trail, and/or landscaping was narrowed to avoid impacts while ensuring the safety of road and trail users.
- Retaining walls are proposed adjacent to stream crossings and next to some wetlands to avoid placing fill within streams or wetlands.
- No in-water work will be required as part of the project. The project has been designed to avoid in-water impacts by narrowing the proposed trail and planted buffer widths in certain areas to avoid culvert ends. Existing manmade storm drainage lake outfalls will be used.
- Riparian vegetation removal will be minimized to the extent practicable. No mature trees will be removed within the riparian zones of project area streams or Lake Sammamish. Any temporarily disturbed areas will be replanted with native shrubs and trees, or native hydroseed mix as appropriate.

Because of these measures, no direct impacts to Lake Sammamish, streams, or wetlands are proposed and buffer impacts will be minimal.

Protection of Water Quality during Construction

As with any construction project involving heavy equipment and earth moving, there is the potential for erosion of exposed soils. If eroded sediments were to reach streams or wetlands, this could degrade water quality and habitat for aquatic species. Similarly, an accidental spill of fuel, hydraulic fluid, drilling fluid, or other toxic materials would degrade water quality if the material reached a surface water body.

Best Management Practices (BMPs) to protect water quality will be implemented during construction in accordance with the City of Bellevue's Transportation Maintenance and Capital Improvements Project Stormwater Management Guidelines (City of Bellevue, 2011); and Washington Department of Ecology NPDES Construction Stormwater General Permit requirements. As part of these requirements, the Contractor will be required to submit and follow a Stormwater Pollution Prevention Plan (SWPPP); Temporary Erosion and Sediment Control (TESC) plan; and Spill Prevention, Control, and Countermeasures (SPCC) Plan. Construction staging and stockpile areas for the project will be located within previously disturbed areas and outside sensitive areas, such as wetlands and streams. Temporary erosion and sediment control measures and BMPs will at a minimum include: turbidity monitoring; catch basin inserts; covering of utility trenches at the end of each working day; utilization of additional erosion control materials such as plastic sheeting, straw bales, sand bags, pumps, etc.; and avoiding placement of excavated material directly on pavement areas.

Stormwater Management

Under existing conditions, stormwater from the area currently receives no treatment or detention. Stormwater from the area currently sheet flows into a series of roadside ditches that drain to either project area streams or into one of several pipe systems that convey stormwater to Lake Sammamish.

The project will result in a net increase of impervious surface area of approximately 3,000 square feet. However, the project will result in a net reduction in pollution-generating impervious surface (PGIS) as a result of converting existing roadway surface to trail and buffer. In order to meet minimum requirements for redevelopment (LUC 24.06.065), the project is only required to treat stormwater runoff from new PGIS. For this project, funding is available for the City to provide treatment to all existing PGIS, which is currently untreated, in addition to the new PGIS where treatment is required by City code. As a result, this project will include treatment for all new and existing PGIS within the project area.

This project will utilize properly-sized media filter vaults with pre-treatment upstream of each of three existing outfalls to Lake Sammamish proposed to receive project area runoff. Lake Sammamish is considered a flow-exempt waterbody under the City of Bellevue's 2011 Transportation Maintenance and Capital Improvements Project Stormwater Management Guidelines; therefore, no stormwater detention is required.

Although slight changes to the stormwater collection and conveyance systems will be required, all project-related stormwater will be discharged into Lake Sammamish through existing manmade outfalls. Furthermore, no discharges to project area streams will be required, with the exception of one location where stormwater will be discharged into an existing storm drain that connects with a culverted portion of Stream 0160.

5.2 Wetland and Buffer Enhancement

The project would result in the unavoidable loss of 1,540 square feet of buffer vegetation between Wetland A/Stream 0161 and the Parkway. To compensate for these impacts, the remaining portion of the road right-of-way north of the Sunrise Park parking area would be

enhanced (Figure 4). The enhancement area totals approximately 4,204 square feet and includes both Wetland A and the upland buffer adjacent to the wetland and Stream 0161. The enhancement would include controlling non-native invasive vegetation and replanting with native species (Figure 4). A proposed plant list for the enhancement area is shown in Table 10. The plant species selected are native to western Washington and are present in the adjacent forest in Sunrise Park.

Table 10. Wetland/Buffer Enhancement Plant List

Common Name	Scientific Name	Approximate Spacing	Estimated Quantity
Trees			
Western red cedar	*Thuja plicata*	9 ft on center	12
Big-leaf maple	*Acer macrophyllum*	9 ft on center	12
Shrubs			
Vine maple	*Acer circinatum*	3 ft on center	55
Beaked hazelnut	*Corylus cornuta*	3 ft on center	55
Salmonberry	*Rubus spectabilis*	3 ft on center	75
Black twinberry	*Lonicera involucrata*	3 ft on center	20
Herbs			
Sword fern	*Polystichum munitum*	3 ft on center	55
Total			**284**

Prior to installing the enhancement plantings, existing native trees and shrubs in the mitigation area will be marked on the ground so they can be protected and retained. Non-native invasive vegetation (primarily Himalayan blackberry and reed canarygrass) will be cut using hand-held weed whackers or brush cutters. Himalayan blackberry roots will then be hand grubbed and disposed offsite. A layer of wood fiber or arborist mulch will be placed across the entire mitigation area to retain moisture and suppress weeds. The enhancement plantings will then be installed.

5.2.1 Functions Assessment

The City requires mitigation of buffer impacts at a 1:1 replacement ratio (LUC 20.25H.105.C.3). There is insufficient space within the road right-of-way to enlarge the buffer of Wetland A or Stream 0161. Therefore, this mitigation plan proposes to enhance the existing wetland and remaining buffer area to improve their functions. The proposed enhancement of 4,204 square feet of wetland and buffer would provide an approximate 2.7:1 mitigation ratio for the 1,540 square feet of buffer impact.

The buffer area that would be impacted by the project is directly adjacent to the Parkway and consists of grasses and Himalayan blackberry (Photos 15 and 16). The proposed enhancement plantings would improve the functions of the remaining buffer and Wetland A within the right-of-way. Because Wetland A drains to Stream 0161, enhancement of the wetland along with the adjoining upland buffer within the right-of-way would also increase protection for the stream.

To evaluate how the proposed enhancement project would affect the functions of Wetland A and the adjacent buffer, ESA referred to the Washington State Department of Ecology's synthesis of the science about wetland buffer functions in Washington (Sheldon et al., 2005). The Ecology document discusses several types of functions provided by wetland buffers. ESA made a qualitative assessment of the level of existing functions within the right-of-way and how they would be affected by the proposed enhancement project (Table 11).

This qualitative assessment indicates the proposed enhancement would improve the water quality, habitat, and screening functions of Wetland A and the adjacent buffer within the right-of-way. The existing forested buffer adjacent to Stream 0161 would not be disturbed by the project.

Table 11. Buffer Functions - Existing and with Proposed Enhancement*

Buffer Function	Existing Condition (Wetland A and Buffer)	With Proposed Project
Water Quality Improvement: Removing sediment Removing excess nutrients Removing toxics	Dense herb and shrub vegetation within wetland and adjacent buffer likely serves to slow surface runoff and filter sediments, nutrients, and toxics. Vegetation within the buffer area adjacent to the paved roadway that would be removed for the project likely provides a lower level of function because it is periodically mowed and dominated by invasive grasses (photos 15 and 16).	Project would remove a strip of grassy vegetation directly adjacent to the paved roadway surface, resulting in a minor loss of function. Proposed buffer and wetland enhancement would maintain or slightly improve function. Installation of additional woody vegetation adjacent to expanded roadway and downslope of residential development to the west. Increased vertical woody stems of shrub vegetation would serve to further slow surface runoff, allowing additional time for filtration.
Wildlife Habitat: Providing habitat adjacent to stream or wetland Maintaining habitat connectivity	Vegetation in wetland and buffer currently dominated by Himalayan blackberry and invasive herbs.	Project would increase diversity of native vegetation and reduce invasive species over time. Quality of wildlife habitat would be improved. Existing trees would be preserved.

* For Wetland A and the upland area within the road right-of-way. Does not include forested buffer within Sunrise Park.

6.0 GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

This section provides goals, objectives, and performance standards for the buffer enhancement mitigation project. The goal of the mitigation plan is to provide for no net loss of wetland or buffer function as a result of the project. This is assumed to occur through achievement of the following objective:

- Enhancement of 4,204 square feet of Wetland A and adjacent buffer.

The mitigation area will be monitored for success for a minimum of five years following complete installation. The mitigation plan will be deemed successful if the performance standards listed in Table 12 have been met. The evaluation of installed plant success will focus on percent survival for the first two years, switching to percent cover during the last three years of monitoring.

Table 12. Performance Standards

Criteria	Performance Standards
Survival of Installed Plants	• Year 1: 100% survival (landscaper's guarantee period) • Year 2: 90% survival
Percent Cover of Installed Plants *Can include desirable native volunteers*	• Year 3: 25% cover • Year 4: 30% cover • Year 5: 35% cover
Percent Cover Non-native Invasive Vegetation	Less than 10% cover each year of species included on the current King County Class A Noxious Weed mandatory control list. Does not include reed canarygrass.

7.0 MONITORING AND MAINTENANCE

7.1 Monitoring

A pre-construction meeting will be held for the biologist or landscape architect to advise on site preparation. An as-built inspection will be conducted to record the results of the enhancement plantings. The mitigation areas will be monitored for success for five years following complete installation.

Monitoring of mitigation success will begin upon City acceptance of the as-built or record drawing, and continue for five years. A professional biologist or wetland specialist will perform all monitoring. Construction monitoring will occur during the grading and planting to ensure that the contractor is following the design elements of this mitigation plan, and that temporary erosion and sediment control measures are effective at protecting wetlands and other vegetated areas on the site. Post-construction monitoring will include assessment of both vegetative success and successful establishment of wetland conditions.

During the initial site visit the biologist will verify the as-built conditions, inspect the plants, recommend replacement if necessary, and establish sample plots and photo point locations. Permanent plots or transects for monitoring will be selected to represent the planting areas. The appropriate number and location of plots or transects will be determined on site during the as-built site inspection. Permanent photo points will be located to provide a representative visual

documentation of site progress. The photo points and sample plots/transects will be shown on the planting plan.

The site will be monitored according to the schedule and methods shown in Table 13. During each year of the monitoring period, the site will be monitored in the early spring for the presence of non-native invasive vegetation. This will allow time for maintenance of the site if needed to remove weeds during the early growing season before seed set, and to remove trash and debris if necessary. A second site visit in the late summer or early fall will be made to assess vegetation cover and survival against the project performance standards.

Table 13. Monitoring Schedule

Year	Criteria		
	Percent Survival	**Percent Cover Native**	**Percent Cover Invasive**
1	Spring: General assessment of plant health Fall: Plant survival count	n/a	Spring: Assessment of overall invasive cover and maintenance recommendations Fall: Measurement of percent cover and effectiveness of maintenance actions
2	Same as Year 1	n/a	Same as Year 1
3	n/a	Spring: General assessment of plant health Fall: Sample plot or transect data collection	Same as Year 1
4	n/a	Same as Year 3	Same as Year 1
5	n/a	Same as Year 3	Same as Year 1

An as-built or record drawing will be provided to the City within 90 days of mitigation installation.

Following the spring site visits, the biologist will provide a brief memo or email to the project owner, outlining general site conditions and maintenance recommendations. Monitoring reports will be prepared annually following the fall monitoring visit during Years 1 through 5 to document the findings of the monitoring site visits. An explanation of plant success or failures and representative photographs will be included in the monitoring reports. Any maintenance or contingency actions, if needed, will be noted. The fall monitoring reports will be submitted to the City by December 31 of each calendar year during the five-year monitoring period.

7.2 Maintenance

Maintenance of the mitigation areas will begin after acceptance of the as-built report and continue for five years. After initial planting acceptance by the professional biologist, the landscaping contractor will be responsible for plant survival for a period of one year. After this period, maintenance will be performed by City personnel or a qualified consultant. Maintenance will occur a minimum of three times per year, and the activities will be recorded in the project file and included in the annual monitoring reports. Maintenance will include, but is not limited to:

- Irrigation of installed plants for the first two summers following planting.
- Installation of additional plantings if the combination of installed plants and regrowth of native volunteer species does not meet the minimum performance standards discussed above.
- Removing invasive, non-native plant species in the planting areas.
- Stabilizing eroded areas using bioengineering techniques that are appropriate if mulching, hydroseeding or other standard erosion control methods fail.

8.0 CONTINGENCY PLAN

The City will implement a contingency plan in conjunction with the permitting authorities if the mitigation site fails to meet the success criteria. The above-described maintenance section may remedy specific problems such as the failure of any species specified by the planting plan, before a formal contingency plan is required. Contingency plans are prepared on a case-by-case basis to remedy the aspect of the restoration that does not meet the goals and objectives of the mitigation plan. For example, if plant success rates are not meeting the success criteria even after maintenance replanting is performed, contingency actions will be enacted.

9.0 LIMITATIONS

Within the limitations of schedule, budget, scope-of-work, and seasonal constraints, we warrant that this study was conducted in accordance with generally accepted environmental science practices, including the technical guidelines and criteria in effect at the time this study was performed, as outlined in the Methods section. The results and conclusions of this report represent the authors' best professional judgment, based upon information provided by the project proponent in addition to that obtained during the course of this study. No other warranty, expressed or implied, is made.

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FIGURES

SOURCE: King County, 2009 (2010 BING Imagery).

West Lake Sammamish Parkway Improvements. 209364

Figure 1
Vicinity Map
Bellevue, WA

N

0 500 1,000
Feet

G:\ENVIR IMPACTS\2009 Projects\209364_West_Lake_Sammamish\05_Graphics_GIS_Modeling\GIS\Fig02a_Soils.mxd (ATR: 4/11/2011)

SOURCE: King County, 2007 (2002 Aerial Imagery); NRCS, 2005; Reid Middelton, 2008

West Lake Sammamish Pkwy. 209364

Figure 2a

Existing Soils and Stream Mapping

King County, WA

G:\ENVIR IMPACTS\2009 Projects\209364_West_Lake_Sammamish\05_Graphics_GIS_Modeling\GIS\Fig02b_Soils.mxd (ATR: 4/11/2011)

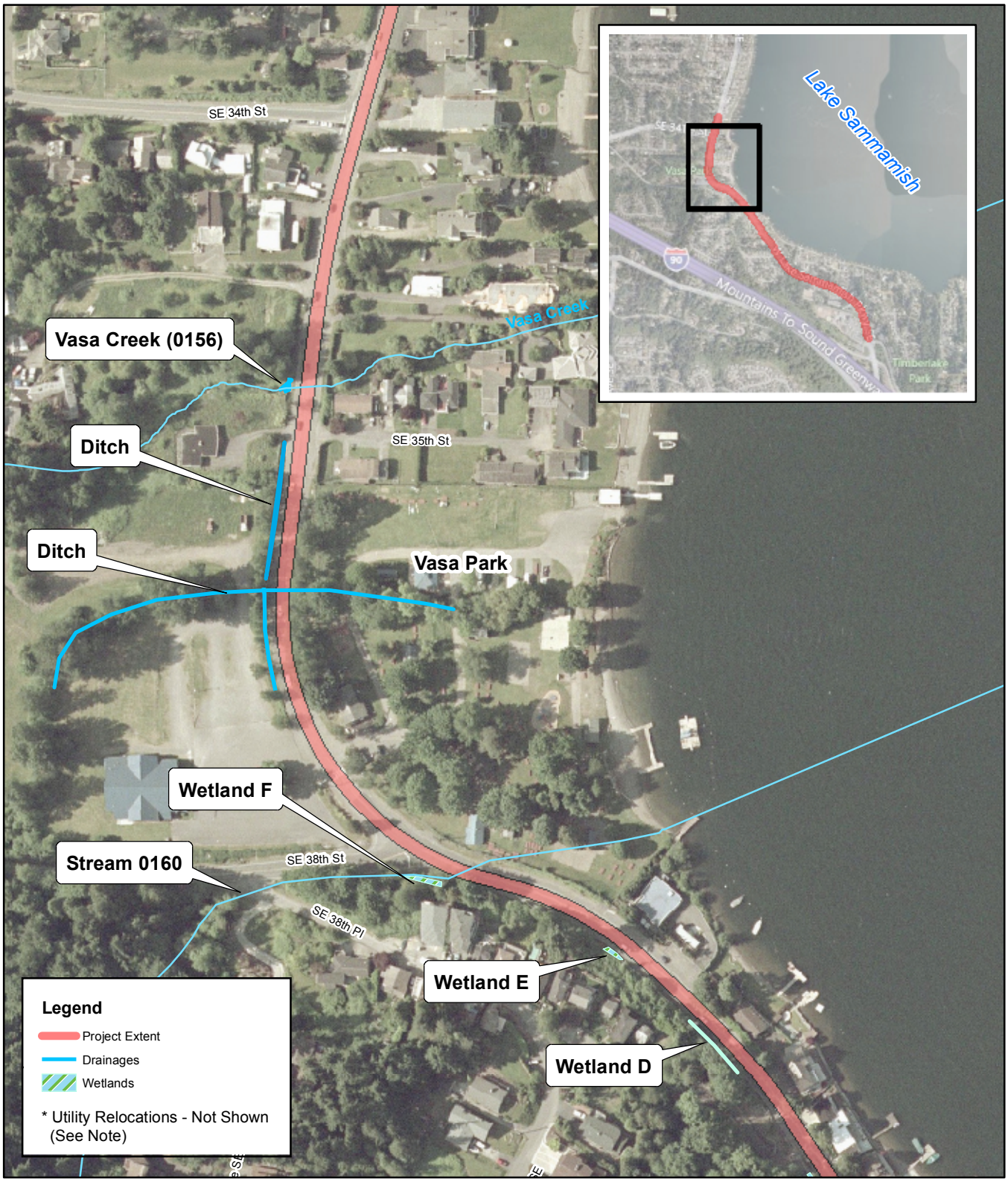
SOURCE: King County, 2007 (2002 Aerial Imagery); NRCS, 2005; Reid Middelton, 2008

West Lake Sammamish Pkwy. 209364

Figure 2b

Existing Soils and Stream Mapping

King County, WA



SOURCE: King County, 2007 (2002 Aerial Imagery); Reid Middelton, 2008

N

0 100 200
Feet

Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

Work to occur within developed road right-of-way.
See attached Plan Sheets for additional detail.

West Lake Sammamish Parkway Improvements. 209364

Figure 3a

Streams and Wetlands - North
Bellevue, WA

SOURCE: King County, 2007 (2009 Aerial Imagery); Reid Middelton, 2008

West Lake Sammamish Parkway Improvements. 209364

Figure 3b

Streams and Wetlands - Central

Bellevue, WA

N

0 100 200

Feet

Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

Work to occur within developed road right-of-way.
See attached Plan Sheets for additional detail.

\\Sfo-gists01\gis\GIS\Projects\209xxx\209364_West_LK_Sammamish_Pkwy\Projects\Fig_04c Streams and Wetlands.mxd (DLP: 10/13/2011)

SOURCE: King County, 2009 (2009 Aerial Imagery); Reid Middelton, 2008

N

0 100 200

Feet

Note:
Utility relocations (not shown) will include:
- utility pole;
- street light modifications;
- underground pipe, conduit;
- vault replacements;
- manhole adjustments;

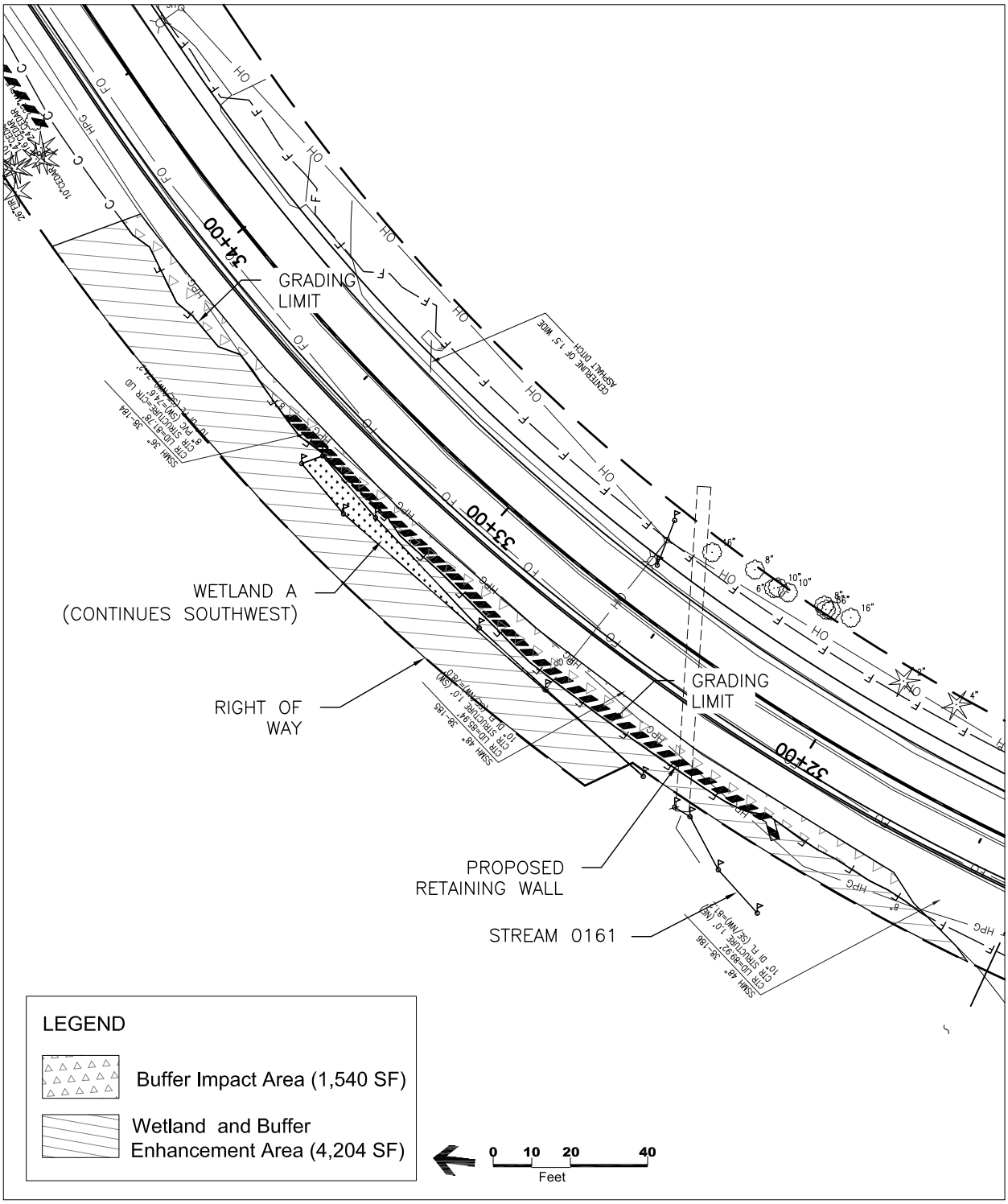
Work to occur within developed road right-of-way.
See attached Plan Sheets for additional detail.

West Lake Sammamish Parkway Improvements. 209364

Figure 3c

Streams and Wetlands - South

Bellevue, WA



reference # G:\ENVIR IMPACTS\2009 Projects\209364_West_Lake_Sammamish\05_Graphics_GIS_Modeling\CAD\ESA_Files\ESA_ConceptMitig_WLKSAMM.dwg
Created by: DLP, 09/2011

West Lake Sammamish Parkway . 209364

SOURCE: Reid Middleton 2011; ESA 2011

Figure 4

Wetland A & Stream 0161 Buffer Impact and Proposed Enhancement Area
Bellevue, Washington

APPENDIX A:
METHODS USED TO EVALUATE WETLAND CHARACTERISTICS

Wetland Definition

Wetlands are formally defined by the U.S. Army Corps of Engineers (Corps) (Federal Register 1982), the Environmental Protection Agency (EPA) (Federal Register 1988), the Washington Shoreline Management Act (SMA) of 1971 (Ecology, 1991) and the Washington State Growth Management Act (GMA) (Ecology, 1992) as

> *… those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas* (Federal Register, 1982, 1986).

In addition, the SMA and the GMA definitions add:

> *Wetlands do not include those artificial wetlands intentionally created from non-wetland site, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990 that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificially created wetlands intentionally created from non-wetland areas to mitigate the conversion of wetlands.*

Methods defined in the *Washington State Wetlands Identification and Delineation Manual* (Ecology, 1997) were used to determine the presence and extent of wetlands on the subject property. Washington state and all local governments must use the state delineation manual to implement the Shoreline Management Act and/or the local regulations adopted pursuant to the Growth Management Act.

The Washington state manual is consistent with the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987). The Corps has been working with states, federal agencies, and others to develop supplemental regional criteria to refine the 1987 delineation manual. Two regions fall within the state of Washington: The Arid West (dry lands west of the Continental Divide, from Idaho and eastern Washington south to the U.S. - Mexico border) and the Western Mountains, Valleys, and Coast. Interim Regional Supplements to the Corps of Engineers 1987 Wetlands Delineation Manual have been completed by the Corps for both regions in Washington, and the appropriate supplement is now used, along with the Washington State Delineation Manual, when conducting delineations in those regions (Corps, 2008, 2010).

The methodology outlined in the manuals is based upon three essential characteristics of wetlands: (1) hydrophytic vegetation; (2) hydric soils; and (3) wetland hydrology. Field indicators of these three characteristics must all be present in order to determine that an area is a wetland (unless problem areas or atypical situations are encountered). These characteristics are discussed below.

Vegetation

Plants must be specially adapted for life under saturated or anaerobic conditions to grow in wetlands. The U.S. Fish and Wildlife Service (USFWS) has determined the estimated probability of each plant species' occurrence in wetlands and has accordingly assigned a "wetland indicator status" (WIS) to each species (USFWS, 1988, 1993). Plants are categorized as obligate (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), upland (UPL), not listed (NL), or no indicator status (NI). Definitions for each indicator status are listed below. Species with an indicator status of OBL, FACW, or FAC are considered adapted for life in saturated or anaerobic soil conditions. Such species are referred to as "hydrophytic" vegetation.

Key to Wetland Indicator Status codes – Northwest Region (Source: USFWS, 1988, 1993):

OBL	Obligate: species that almost always occur wetlands under natural conditions (est. probability >99%).
FACW	Facultative wetland : species that usually occur in wetlands (est. probability 67 to 99%), but are occasionally found in non-wetlands.
FAC	Facultative: Species that are equally likely to occur in wetlands or non-wetlands (est. probability 34 to 66%).
FACU	Facultative upland: species that usually occur in non-wetlands (est. probability 67 to 99%), but are occasionally found in wetlands.
UPL	Upland: species that almost always occur in non-wetlands under normal conditions (est. probability >99%).
NL	Not listed: species that are not listed by USFWS (1988, 1993) and are presumed to be upland species.
NI	No indicator: species for which insufficient information is available to determine status, or which were not evaluated by USFWS.

Areas of relatively homogeneous vegetative composition can be characterized by "dominant" species. The indicator status of the dominant species within each vegetative stratum is used to determine if the plant community may be characterized as hydrophytic. The vegetation of an area is considered to be hydrophytic if more than 50% of the dominant species have an indicator status of OBL, FACW, or FAC. The Regional Supplements provide additional tests for evaluating the presence of hydrophytic vegetation communities including the prevalence index, morphological adaptations, and wetland non-vascular plants. The Supplements also address difficult situations where hydrophytic vegetation indicators are not present but hydric soils and wetland hydrology are observed.

Soils

Hydric soils are indicative of wetlands. Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (Federal Register, 1994). The Natural Resources Conservation Service (NRCS), in cooperation with the National Technical Committee for Hydric Soils, has compiled lists of hydric soils (NRCS, 1995). These lists identify soil series mapped by the NRCS that meet hydric soil criteria. It is common, however, for a map unit of non-wetland (non-

hydric) soil to have inclusions of hydric soil, and vice versa. Therefore, field examination of soil conditions is important to determine if hydric soil conditions exist.

The NRCS has developed a guide for identifying field indicators of hydric soils (NRCS, 2010). This list of hydric soil indicators is considered to be dynamic; revisions are anticipated to occur on a regular basis as a result of ongoing studies of hydric soils. In general, anaerobic conditions create certain characteristics in hydric soils, collectively known as "redoximorphic features," that can be observed in the field (Vepraskas, 1999). Redoximorphic features include high organic content, accumulation of sulfidic material (rotten egg odor), greenish- or bluish-gray color (gley formation), spots or blotches of different color interspersed with the dominant or matrix color (mottling), and dark soil colors (low soil chroma) (NRCS, 2010; Vepraskas, 1999). Soil colors are described both by common color name (for example, "dark brown") and by a numerical description of their hue, value, and chroma (for example, 10YR 2/2) as identified on a Munsell soil color chart (Munsell Color, 2000). Soil color is determined from a moist soil sample.

The Regional Supplements provide methods for difficult situations where hydric soil indicators are not observed, but indicators of hydrophytic vegetation and wetland hydrology are present.

Hydrology

Water must be present in order for wetlands to exist; however, it need not be present throughout the entire year. Wetland hydrology is considered to be present when there is permanent or periodic inundation or soil saturation at or near the soil surface for more than 12.5% of the growing season (typically two weeks in lowland Pacific Northwest areas). Areas that are inundated or saturated for between 5% and 12.5% of the growing season in most years may or may not be wetlands. Areas inundated or saturated for less than 5% of the growing season are non-wetlands (Ecology, 1997).

Indicators of wetland hydrology include observation of ponding or soil saturation, water marks, drift lines, drainage patterns, sediment deposits, oxidized rhizospheres, water-stained leaves, and local soil survey data. Where positive indicators of wetland hydrology are observed, it is assumed that wetland hydrology occurs for a sufficient period of the growing season to meet the wetland criteria, as described by Ecology (1997). The Regional Supplements provide methods for evaluating situations in wetlands that periodically lack indicators of wetland hydrology but where hydric soils and hydrophytic vegetation are present.

APPENDIX B:
COMMON AND SCIENTIFIC NAMES OF PLANTS AND THEIR WETLAND INDICATOR STATUS

PLANT SPECIES LIST FOR THE WEST LAKE SAMMAMISH PARKWAY IMPROVEMENTS PROJECT

COMMON NAME	SCIENTIFIC NAME	WETLAND INDICATOR STATUS*
Trees		
big-leaf maple	*Acer macrophyllum*	FACU
black cottonwood	*Populus trichocarpa (Populus balsamifera ssp. trichocarpa)*	FAC
Douglas fir	*Pseudotsuga menziesii*	FACU
Lombardy poplar	*Populus nigra*	NL
red alder	*Alnus rubra*	FAC
western red cedar	*Thuja plicata*	FAC
Shrubs		
beaked hazelnut	*Corylus cornuta*	FACU
black twin-berry	*Lonicera involucrata*	FAC
common snowberry	*Symphoricarpos albus*	FACU
devil's club	*Oplopanax horridum (Oplopanax horridus)*	FAC
Douglas' spiraea	*Spiraea douglasii*	FACW
dull Oregongrape	*Berberis nervosa*	NL
English holly	*Ilex aquifolium*	NL
evergreen blackberry	*Rubus laciniatus*	FACU
Himalayan blackberry	*Rubus discolor (Rubus armenicus)*	FACU
Indian plum (osoberry)	*Oemleria cerasiformis*	FACU
Japanese knotweed	*Polygonum cuspidatum*	FACU
laurel cherry	*Prunus laurocerasus*	NL
Pacific willow	*Salix lasiandra (Salix lucida ssp. lasiandra)*	FACW
red huckleberry (red bilberry)	*Vaccinium parvifolium*	NL
red-osier dogwood (western red osier)	*Cornus stolonifera (Cornus sericea)*	FACW
salal	*Gaultheria shallon*	FACU
salmonberry	*Rubus spectabilis*	FAC
Scot's broom	*Cytisus scoparius*	NL
tall Oregongrape	*Berberis aquifolium*	NL
thimbleberry	*Rubus parviflorus*	FAC
trailing blackberry	*Rubus ursinus*	FACU
vine maple	*Acer circinatum*	FAC
Herbs		
annual bluegrass	*Poa annua*	FAC
bracken fern	*Pteridium aquilinum*	FACU
cleavers	*Galium Cymosum*	FAC W

COMMON NAME	SCIENTIFIC NAME	WETLAND INDICATOR STATUS*
climbing nightshade (bittersweet)	*Solanum dulcamara*	FAC
colonial bentgrass	*Agrostis tenuis (Agrostis capillaris)*	FAC
common cattail	*Typha latifolia*	OBL
common dandelion	*Taraxacum officinale*	FACU
common plantain	*Plantago major*	FACU
common velvetgrass	*Holcus lanatus*	FAC
creeping buttercup	*Ranunculus repens*	FACW
duckweed	*Lemna minor*	OBL
English ivy	*Hedera helix*	NL
field horsetail	*Equisetum arvense*	FAC
giant horsetail	*Equisetum telmateia*	FACW
hairy cats-ear	*Hypochaeris radicata*	FACU
hedge bindweed	*Convolvulus sepium (Calystegia sepium)*	FAC
herb Robert	*Geranium robertanium*	NL
lady fern	*Athyrium filix-femina*	FAC
licorice fern	*Polypodium glycyrrhiza*	NL
morning glory	*Convolvulus arvensis*	
orchard-grass	*Dactylis glomerata*	FACU
Oregon bentgrass	*Agrostis oregonensis*	FAC
Pacific bedstraw	*Galium cymosum (Galium trifidum)*	FACW
Pacific blackberry (dewberry)	*Rubus ursinus*	FACU
red clover	*Trifolium pratense*	FACU
red fescue	*Festuca rubra*	FAC
reed canarygrass	*Phalaris arundinacea*	FACW
sawbeak sedge	*Carex stipata*	NL
skunk cabbage	*Lysichitum americanum (Lysichiton americanus)*	OBL
small-fruited bulrush	*Scirpus microcarpus*	OBL
Common smartweed	*Polygonum persicaria*	?
soft rush	*Juncus effusus*	FACW
sword fern	*Polystichum munitum*	FACU
tall fescue	*Festuca arundinacea (Lolium arundinaceum)*	FAC
water cress	*Rorippa nasturtium-aquaticum*	OBL
Watson's willow-weed	*Epilobium watsonii (Epilobium ciliatum ssp. watsonii)*	FACW
western trillium	*Trillium ovatum*	FACU
white clover	*Trifolium repens*	FAC

*Key to Wetland Indicator Status codes – Northwest Region (Source: USFWS, 1988, 1993):

OBL	Obligate: species that almost always occur wetlands under natural conditions (est. probability >99%).
FACW	Facultative wetland : species that usually occur in wetlands (est. probability 67 to 99%), but are occasionally found in non-wetlands.
FAC	Facultative: Species that are equally likely to occur in wetlands or non-wetlands (est. probability 34 to 66%).
FACU	Facultative upland: species that usually occur in non-wetlands (est. probability 67 to 99%), but are occasionally found in wetlands.
UPL	Upland: species that almost always occur in non-wetlands under normal conditions (est. probability >99%).
NL	Not listed: species that are not listed by USFWS (1988, 1993) and are presumed to be upland species.
NI	No indicator: species for which insufficient information is available to determine status, or which were not evaluated by USFWS.

APPENDIX C: WASHINGTON STATE WETLAND RATING SYSTEM AND RATING FORMS

Washington State Wetland Rating System

The observed wetlands were rated using the Washington State Department of Ecology's *Wetland Rating System for Western Washington* (Hruby, 2004). This system was developed by Ecology to differentiate wetlands based on their sensitivity to disturbance, their significance, their rarity, our ability to replace them, and the beneficial functions they provide to society. Wetlands are categorized using the Ecology rating system according to the following criteria:

Category I wetlands represent a unique or rare wetland type; or are more sensitive to disturbance; or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.

Category II wetlands are difficult, though not impossible, to replace, and provide high levels of some functions.

Category III wetlands have a moderate level of function. They have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.

Category IV wetlands have the lowest levels of functions and are often heavily disturbed.

WLSP

Wetland name or number A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated June 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): A Date of site visit: 6/08

Rated by Sara Noland Trained by Ecology? Yes X No___ Date of training 2006

SEC: ___ TWNSHP: ___ RNGE: ___ Is S/T/R in Appendix D? Yes___ No X

See below Map of wetland unit: Figure A Estimated size <.25 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II ✓ III___ IV___

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

Score for Water Quality Functions	26
Score for Hydrologic Functions	20
Score for Habitat Functions	10
TOTAL score for Functions	56

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) **II**

Summary of basic information about the wetland unit

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

Wetland name or number A

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

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

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

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

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

T24N-R5E-S13, 12, 1

T25N-R5E-S36, 30

Wetland name or number A

Classification of Wetland Units in Western Washington

If the 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 (i.e. except during floods)?
   NO – go to 2 YES – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? YES – **Freshwater Tidal Fringe** NO – **Saltwater Tidal Fringe (Estuarine)**
   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 rated as an Estuarine wetland. Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 **both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
   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 <3ft diameter and less than 1 foot deep).*
   NO – go to 5 YES – The wetland class is **Slope**

Wetland name or number _____

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 two years.
   NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.
   NO – go to 6 YES – The wetland class is **Riverine**

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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.

Wetland name or number A

D	Depressional and Flats Wetlands WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	Points (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	(see p.38)
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 X Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Provide photo or drawing	Figure ___ 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* (YES) points = 4 NO points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) X Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 X Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure ___ 2
D	**Total for D 1** *Add the points in the boxes above*	13
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other ___ (YES multiplier is 2) NO multiplier is 1	(see p. 44) multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	26

Wetland name or number A

D	Depressional and Flats Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	Points (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	(see p.46)
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 3 X Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 X The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	5
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 X The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	10
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other ___ (YES multiplier is 2) NO multiplier is 1	(see p. 49) multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	20

Wetland name or number A

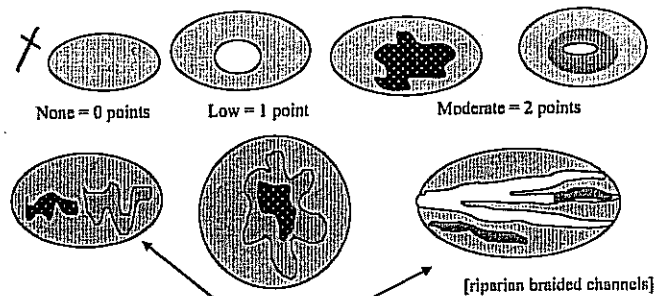
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	Points (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ___Aquatic bed ___Emergent plants ___Scrub/shrub (areas where shrubs have >30% cover) X Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* X 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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ___ 1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___Permanently flooded or inundated — 4 or more types present — points = 3 X Seasonally flooded or inundated — 3 types present — points = 2 ___Occasionally flooded or inundated — 2 types present — point = 1 X Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ *Lake-fringe wetland* = 2 points ___ *Freshwater tidal wetland* = 2 points Map of hydroperiods	Figure ___ 1
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)* *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 X 5 - 19 species — points = 1 < 5 species — points = 0 *List species below if you want to:*	1

Total for page 3

Wetland name or number _____

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

Figure ___
0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

___Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).
___Standing snags (diameter at the bottom > 4 inches) in the wetland
___Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)
___Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
___At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)*
___Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

3

Comments

Wetland name or number A

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5 — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4 — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4 — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3 — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3 **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — Heavy grazing in buffer. Points = 1 — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland Points = 0. X Buffer does not meet any of the criteria above. Points = 1 Aerial photo showing buffers	Figure ___ 1
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = 4 points *(go to H 2.3)* NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points *(go to H 2.3)* NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = 1 point NO = 0 points	2

Total for page 4

Wetland name or number _____

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

Wetland name or number A

H 2.4 Wetland Landscape *(choose the one description of the landscape around the wetland that best fits) (see p. 84)* There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 X There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	7
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	10

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO	
SC 1.1 Is the wetland unit 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? YES = Category I NO go to SC 1.2	Cat. I
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	Cat. I Cat. II Dual rating I/II

Wetland name or number A

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ✓ YES____ – contact WNHP/DNR (see p. 79) and go to SC 3.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ____	Cat. I
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.* 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No___ Is not a bog for purpose of rating	Cat. I

Wetland name or number _____

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests:** (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ___	Cat. I
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	Cat. I Cat. II

Wetland name or number A

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO __ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	Cat. II Cat. III
Category of wetland based on Special Characteristics *Choose the highest rating if wetland falls into several categories, and record on p. 7* If you answered NO for all types enter "Not Applicable" on p.	N/A

Wetland name or number B/BB

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): Wetland B & BB. Date of site visit: 6/08

Rated by Sara Noland Trained by Ecology? Yes✓ No___ Date of training 2006

SEC: ___ TWNSHP: ___ RNGE: ___ Is S/T/R in Appendix D? Yes___ No___

See WL.A **Map of wetland unit: Figure** B **Estimated size** < .25 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III✓ IV___

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

Score for Water Quality Functions	10
Score for Hydrologic Functions	20
Score for Habitat Functions	11
TOTAL score for Functions	41

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply**___

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

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

Wetland name or number B

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

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

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

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

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

Wetland name or number 5

Classification of Wetland Units in Western Washington

If the 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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** **NO – Saltwater Tidal Fringe (Estuarine)**

*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 rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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?**
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 <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number _____

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 two years.
NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.
NO - go to 6 **YES** – The wetland class is **Riverine**

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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.

Wetland name or number B/BB

D	D. Depressional and Flats Wetlands — WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	Points
D	**D 1. Does the wetland unit have the potential to improve water quality?**	(see p.38)
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and **no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Provide photo or drawing	Figure 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 (X NO) points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 X Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure 1
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 X Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure 2
D	**Total for D 1** *Add the points in the boxes above*	5
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other (YES multiplier is 2) NO multiplier is 1	(see p. 44) multiplier —
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	10

Wetland name or number _____

D	D. Depressional and Flats Wetlands — HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	Points
D	**D 3. Does the wetland unit have the potential to reduce flooding and erosion?**	(see p.46)
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 X Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and **no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland points = 5 X Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet (points = 5) Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	5
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 X The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	10
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other (YES multiplier is 2) NO multiplier is 1	(see p. 49) multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	20

Wetland B contained 2-3 ft of ponded water in NOV. 2008. Water was barely trickling into outlet grate.

Wetland name or number B / BB

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - indicators that a unit functions to provide important habitat	Points (only one score per question)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ___Aquatic bed X Emergent plants X Scrub/shrub (areas where shrubs have >30% cover) ___Forested (areas where trees have >30% cover) *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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 X 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	Figure 1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___Permanently flooded or inundated X Seasonally flooded or inundated ___Occasionally flooded or inundated X Saturated only ___Permanently flowing stream or river in, or adjacent to, the wetland X Seasonally flowing stream in, or adjacent to, the wetland ___*Lake-fringe wetland* = 2 points ___*Freshwater tidal wetland* = 2 points 4 or more types present — points = 3 X 3 types present — points = 2 2 types present — point = 1 1 type present — points = 0 Map of hydroperiods	Figure 2
H 1.3. Richness of Plant Species *(see p. 75)* 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)* *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 X 5 - 19 species — points = 1 < 5 species — points = 0 *List species below if you want to:*	1

Total for page 5

Stream flows down a steep rocky channel into Wetland B.

Wetland name or number B

	Figure
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none. None = 0 points Low = 1 point Moderate = 2 points High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	1
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ___Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ___Standing snags (diameter at the bottom > 4 inches) in the wetland ___Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ___Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ___At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	5

Comments

Wetland name or number B/OB

H 2. Does the wetland unit have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

X Buffer does not meet any of the criteria above. **Points = 1**

Aerial photo showing buffers

Figure units

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).*

YES = **4 points** *(go to H 2.3)* NO = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** *(go to H 2.3)* NO = H 2.2.3

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** NO = **0 points**

1

Total for page 3

Wetland name or number _____

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

These are DFW definitions. Check with your local DFW biologist if there are any questions.

X **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

____ **Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____ **Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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.

____ **Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space:** A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines:** Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

1

Wetland name or number B

H 2.4 Wetland Landscape *(choose the one description of the landscape around the wetland that best fits) (see p. 84)* There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 X There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	6
TOTAL for H 1 from page 14	5
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	11

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met*	Category
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO	
SC 1.1 Is the wetland unit 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? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number ____ B / DD

SC 2.0 Natural Heritage Wetlands *(see p. 87)* — **Cat. I**

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*

S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site X

YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?

YES = Category I NO X not a Heritage Wetland

SC 3.0 Bogs *(see p. 87)*

Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2
2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?
   Yes - go to Q. 3 No - Is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?
   Yes – Is a bog for purpose of rating No - go to Q. 4
   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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.

1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*

2. YES = Category I No X Is not a bog for purpose of rating — **Cat. I**

Wetland name or number _____

SC 4.0 Forested Wetlands *(see p. 90)*

Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.

NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.

— **Mature forests:** (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

YES = Category I NO X not a forested wetland with special characteristics — **Cat. I**

SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)*

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 surface 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 X not a wetland in a coastal lagoon

SC 5.1 Does the wetland meets 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 invasive plant species (see list of invasive species on p. 74).

— 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. — **Cat. I**

— The wetland is larger than 1/10 acre (4350 square feet)

YES = Category I NO = Category II — **Cat. II**

Wetland name or number B/BB

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ___ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics If you answered No for all types enter "Not Applicable" on page 1	N/A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): Wetland C Date of site visit: 6/08

Rated by Sara Noland Trained by Ecology? Yes ✓ No___ Date of training 2006

SEC: ___ TWNSHP: ___ RNGE: ___ Is S/T/R in Appendix D? Yes___ No___

Map of wetland unit: Figure ___ Estimated size <.25 acres

See WRA

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III ✓ IV___

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

Score for Water Quality Functions	20
Score for Hydrologic Functions	20
Score for Habitat Functions	7
TOTAL score for Functions	47

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

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

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

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

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

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

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

Wetland name or number C

Classification of Wetland Units in Western Washington

If the 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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*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 rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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?**
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 <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number _____

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 two years.
NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.
NO - go to 6 **YES** – The wetland class is **Riverine**

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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.

Wetland name or number C

	D. Depressional and Flats Wetlands — WATER QUALITY FUNCTIONS — Indicators that the wetland unit functions to improve water quality	Points
D	**D 1. Does the wetland unit have the potential to improve water quality?**	(see p.38)
D	D 1.1 Characteristics of surface water flows out of the wetland: X Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure 3
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 X NO points = 0 Silt	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) X Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure 5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 X Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure 2
D	**Total for D 1** *Add the points in the boxes above*	10
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other YES multiplier is 2 NO multiplier is 1	(see p. 44) multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	20

June 08 prior to mowing

Visited wetland again in NOV. 2008. Veg. had been mowed, no outlet was visible.

Wetland name or number _____

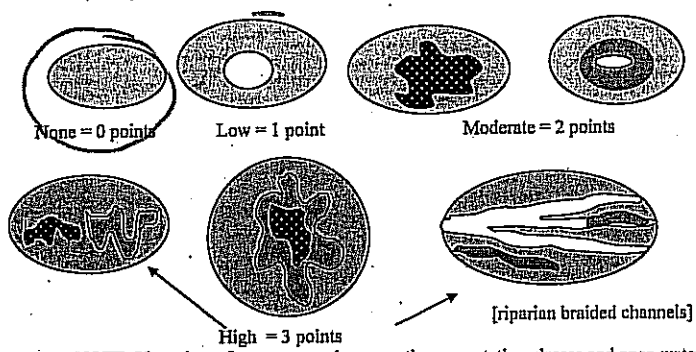
	D. Depressional and Flats Wetlands — HYDROLOGIC FUNCTIONS — Indicators that the wetland unit functions to reduce flooding and stream degradation	Points
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	(see p.46)
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 X Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 X The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	10
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems X Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other YES multiplier is 2 NO multiplier is 1	(see p. 49) multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	20

Wetland name or number C

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	Points
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed X Emergent plants ____Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 X 1 structure — points = 0 Map of Cowardin vegetation classes	Figure 0
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 X Seasonally flooded or inundated — 3 types present — points = 2 ____Occasionally flooded or inundated — X 2 types present — point = 1 X Saturated only — 1 type present — points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure 1
H 1.3. Richness of Plant Species *(see p. 75)* 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)* *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 X 5 - 19 species — points = 1 < 5 species — points = 0 *List species below if you want to:*	1

Total for page 2

Wetland name or number ____

	Figure
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	2

Comments

Wetland name or number C

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure 1 1
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** *(go to H 2.3)* NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** *(go to H 2.3)* NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 2

Wetland name or number _____

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

Wetland name or number C

H 2.4 Wetland Landscape *(choose the one description of the landscape around the wetland that best fits) (see p. 84)* There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 X There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
TOTAL for H 1 from page 14	2
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	7

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	Category
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO Y	
SC 1.1 Is the wetland unit 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? YES = Category I NO go to SC-1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands *(see p. 87)* — **Cat. I**

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*

S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site X

YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?

YES = Category I NO X not a Heritage Wetland

SC 3.0 Bogs *(see p. 87)*

Does the wetland unit **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2
2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?
   Yes - go to Q. 3 No - Is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?
   Yes – Is a bog for purpose of rating No - go to Q. 4
   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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.

1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*

2. YES = Category I No X Is not a bog for purpose of rating — **Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)*

Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.

NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.

— **Mature forests:** (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

YES = Category I NO X not a forested wetland with special characteristics — **Cat. I**

SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)*

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 surface 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 X not a wetland in a coastal lagoon

SC 5.1 Does the wetland meets 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 invasive plant species (see list of invasive species on p. 74).

— 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. — **Cat. I**

— The wetland is larger than 1/10 acre (4350 square feet)

YES = Category I NO = Category II — **Cat. II**

Wetland name or number C

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO – not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *If you chose the higher rating for wetlands with multiple ratings, record on page 1.* *If you answered NO for all types, enter "Not Applicable" on page 1.*	N/A

Wetland name or number _____

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): Wetland D Date of site visit: 6/08

Rated by Sara Noland Trained by Ecology? Yes ✓ No___ Date of training 2006

SEC: ___ TWNSHP: ___ RNGE: ___ Is S/T/R in Appendix D? Yes___ No___

See WRA

Map of wetland unit: Figure ___ **Estimated size** <.5 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

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

Score for Water Quality Functions	4
Score for Hydrologic Functions	10
Score for Habitat Functions	3
TOTAL score for Functions	17

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** ✓

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

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

Wetland name or number _____

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

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

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

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

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

Wetland name or number 1

Classification of Wetland Units in Western Washington

If the 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 (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** **NO – Saltwater Tidal Fringe (Estuarine)**

   *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 rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
   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 <3ft diameter and less than 1 foot deep).*
   NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number _____

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 two years.
   NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.
   NO - go to 6 **YES** – The wetland class is **Riverine**

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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.

Wetland name or number D

S	Slope Wetlands — WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	Points
S	**S 1. Does the wetland unit have the potential to improve water quality?**	*(see p.64)*
S	S 1.1 Characteristics of average slope of unit: Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 X Slope is greater than 5% points = 0	0
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points (NO = 0 points)	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 X Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure 6.5 2
S	**Total for S 1** *Add the points in the boxes above*	2
S	**S 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150ft — Untreated stormwater discharges to wetland — Tilled fields, logging, or orchards within 150 feet of wetland X Residential, urban areas, or golf courses are within 150 ft upslope of wetland — Other _____ YES multiplier is 2 NO multiplier is 1	*(see p.67)* multiplier 2
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 *Add score to table on p. 1*	4

Comments

Wetland name or number _____

S	Slope Wetlands — HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion	Points
	S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?	*(see p.68)*
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, rigid vegetation covers > 90% of the area of the wetland. points = 6 X Dense, uncut, rigid vegetation > 1/2 area of wetland points = 3 Dense, uncut, rigid vegetation > 1/4 area points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	5
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* — Wetland has surface runoff that drains to a river or stream that has flooding problems — Other controls runoff onto road *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* YES multiplier is 2 NO multiplier is 1	*(see p. 70)* multiplier 2
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 *Add score to table on p. 1*	10

Comments

Wetland name or number D

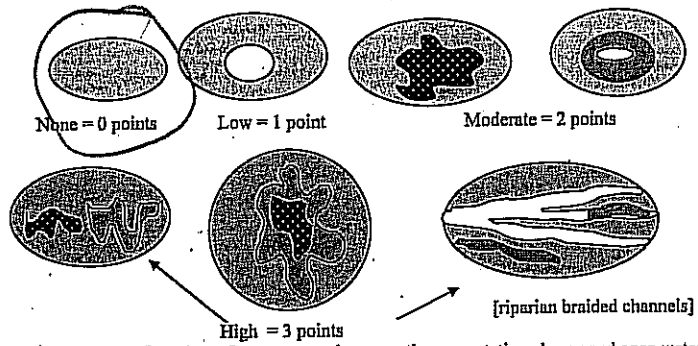
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	Points
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ____Emergent plants X Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 X 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ____ 0
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ____Seasonally flooded or inundated — 3 types present — points = 2 ____Occasionally flooded or inundated — 2 types present — point = 1 X Saturated only — X 1 type present — points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure ____ 0
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)* *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 X 5 - 19 species — points = 1 < 5 species — points = 0 *List species below if you want to:*	1

Total for page 1

Wetland name or number _____

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

Figure ____ 0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*

____Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5 1

Comments

Total 1

Wetland name or number D

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure 50 1
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = 4 **points** *(go to H 2.3)* NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** *(go to H 2.3)* NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 2

Wetland name or number _____

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

Wetland name or number D

H 2.4 Wetland Landscape *(choose the one description of the landscape around the wetland that best fits) (see p. 84)* There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	2
TOTAL for H 1 from page 14	1
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	3

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *(Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.)*	Category
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X	
SC 1.1 Is the wetland unit 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? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands *(see p. 87)* — **Cat. I**

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*

S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ✓

YES___ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? ✓

YES = Category I NO ___ X not a Heritage Wetland

SC 3.0 Bogs *(see p. 87)*

Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2
2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?
   Yes - go to Q. 3 No - Is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?
   Yes – Is a bog for purpose of rating No - go to Q. 4
   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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.

1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*

2. YES = Category I No X Is not a bog for purpose of rating — **Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)*

Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.

NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.

— **Mature forests:** (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

YES = Category I NO X not a forested wetland with special characteristics — **Cat. I**

SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)*

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 surface 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 X not a wetland in a coastal lagoon

SC 5.1 Does the wetland meets 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 invasive plant species (see list of invasive species on p. 74).

— 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. — **Cat. I**

— The wetland is larger than 1/10 acre (4350 square feet)

YES = Category I NO = Category II — **Cat. II**

Wetland name or number D

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO X not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *If you chose the "highest" rating if wetland falls into several categories, and it can be on the "highest" rating if wetland falls into several categories, and it can be on* *If you answered NO for all types enter "Not Applicable" on page*	N/A

Wetland name or number _____

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): Wetland E Date of site visit: 06/08

Rated by Sara Noland Trained by Ecology? Yes ✓ No___ Date of training 2006

SEC: ___ TWNSHP: ___ RNGE: ___ Is S/T/R in Appendix D? Yes___ No___

Map of wetland unit: Figure ___ **Estimated size** 2.25 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

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

Score for Water Quality Functions	2
Score for Hydrologic Functions	6
Score for Habitat Functions	3
TOTAL score for Functions	11

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** ✓

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

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

Wetland name or number _____

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

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

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

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

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

Wetland name or number E

Classification of Wetland Units in Western Washington

If the 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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** **NO – Saltwater Tidal Fringe (Estuarine)**

*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 rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number _____

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 two years.
NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.
NO - go to 6 **YES** – The wetland class is **Riverine**

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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.

Wetland name or number E

	Slope Wetlands WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	Points
S	**S 1. Does the wetland unit have the potential to improve water quality?**	*(see p.64)*
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 X Slope is greater than 5% 60% points = 0	0
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points (NO = 0 points)	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 1/2 of area points = 3 Dense, woody, vegetation > ½ of area points = 2 X Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure 1
S	**Total for S 1** *Add the points in the boxes above*	1
S	**S 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150ft — Untreated stormwater discharges to wetland — Tilled fields, logging, or orchards within 150 feet of wetland X Residential, urban areas, or golf courses are within 150 ft upslope of wetland — Other_____ (YES multiplier is 2) NO multiplier is 1	*(see p.67)* multiplier 2
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 *Add score to table on p. 1*	2

Comments

Wetland name or number C

	Slope Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion	Points
	S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?	*(see p.68)*
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland. points = 6 Dense, uncut, **rigid** vegetation > 1/2 area of wetland points = 3 X Dense, uncut, **rigid** vegetation > 1/4 area points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0	1
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. (YES points = 2) NO___ points = 0	2
S	*Add the points in the boxes above*	3
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* — Wetland has surface runoff that drains to a river or stream that has flooding problems — Other Precludes runoff onto road Bed *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* (YES multiplier is 2) NO multiplier is 1	*(see p. 70)* multiplier 2
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 *Add score to table on p. 1*	6

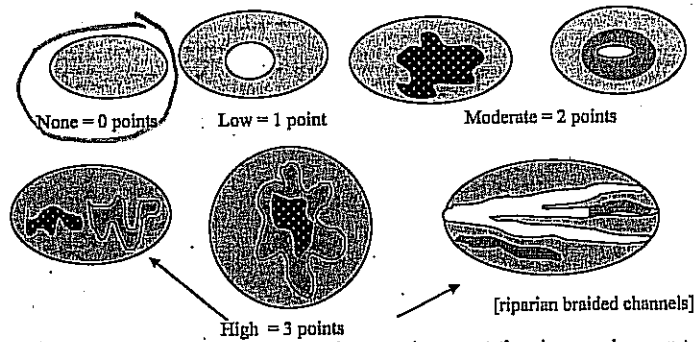
Comments

Wetland name or number E

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - indicators that unit functions to provide important habitat	Points
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed X Emergent plants ____Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 X 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ____ 0
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated ____Seasonally flooded or inundated ____Occasionally flooded or inundated X Saturated only ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** 4 or more types present — points = 3 3 types present — points = 2 2 types present — point = 1 X 1 type present — points = 0 Map of hydroperiods	Figure ____ 0
H 1.3. Richness of Plant Species *(see p. 75)* 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)* *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 X 5 - 19 species — points = 1 < 5 species — points = 0 *List species below if you want to:*	1

Total for page 1

Wetland name or number _____

	Figure ____
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points; Low = 1 point; Moderate = 2 points; High = 3 points; [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	1

Comments

Wetland name or number E

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** ✓ Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure 1
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** *(go to H 2.3)* NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** *(go to H 2.3)* NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR ✗ within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 2

Wetland name or number _____

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

Wetland name or number E

H 2.4 Wetland Landscape *(choose the one description of the landscape around the wetland that best fits) (see p. 84)* There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	2
TOTAL for H 1 from page 14	1
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	3

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands ***(see p. 86)*** Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X	
SC 1.1 Is the wetland unit 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? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands *(see p. 87)* — **Cat. I**

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*

S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site X

YES ___ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?

YES = Category I NO X not a Heritage Wetland

SC 3.0 Bogs *(see p. 87)*

Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2
2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?
   Yes - go to Q. 3 No - Is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?
   Yes – Is a bog for purpose of rating No - go to Q. 4
   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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.

1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*

2. YES = Category I No X Is not a bog for purpose of rating — **Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)*

Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.

NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.

— **Mature forests:** (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

YES = Category I NO X not a forested wetland with special characteristics — **Cat. I**

SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)*

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 surface 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 X not a wetland in a coastal lagoon

SC 5.1 Does the wetland meets 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 invasive plant species (see list of invasive species on p. 74).

— 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. — **Cat. I**

— The wetland is larger than 1/10 acre (4350 square feet)

YES = Category I NO = Category II — **Cat. II**

Wetland name or number E

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics If you chose the "Yes" for any of the questions above, rate the wetland as a mosaic of the highest rating for all units in the mosaic, and record on the last page. If you answered NO for all types enter "Not Applicable" on page 1.	N/A

Wetland name or number _____

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): WETLAND F Date of site visit: 6/08

Rated by Sam Wetland Trained by Ecology? Yes ✓ No___ Date of training 2006

SEC: ___ TWNSHP: ___ RNGE: ___ Is S/T/R in Appendix D? Yes___ No___

See WL A

Map of wetland unit: Figure ___ Estimated size 2.5 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV✓

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

Score for Water Quality Functions	8
Score for Hydrologic Functions	8
Score for Habitat Functions	2
TOTAL score for Functions	18

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply✓

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

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

Wetland name or number _____

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

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

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

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

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

Wetland name or number F

Classification of Wetland Units in Western Washington

If the 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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*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 rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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?**
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 <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number _____

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 two years.
NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.
NO - go to 6 **YES** – The wetland class is **Riverine**

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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.

Wetland name or number F

D Depressional and Flats Wetlands — Points

WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality

D 1. Does the wetland unit have the potential to improve water quality? (see p. 38)

D 1.1 Characteristics of surface water flows out of the wetland: — Figure 3

- X Unit is a depression with no surface water leaving it (no outlet) — points = 3
- Unit has an intermittently flowing, OR highly constricted permanently flowing outlet — points = 2
- Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) — points = 1
- Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and **no obvious natural outlet** and/or outlet is a man-made ditch — points = 1
- (*If ditch is not permanently flowing treat unit as "intermittently flowing"*)

Provide photo or drawing

S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) — 0

- YES — points = 4
- (NO) — points = 0

D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) — Figure 1

- Wetland has persistent, ungrazed, vegetation > = 95% of area — points = 5
- Wetland has persistent, ungrazed, vegetation > = 1/2 of area — points = 3
- X Wetland has persistent, ungrazed vegetation > = 1/10 of area — points = 1
- Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0

Map of Cowardin vegetation classes

D1.4 Characteristics of seasonal ponding or inundation. — Figure 0

This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.

- Area seasonally ponded is > ½ total area of wetland — points = 4
- Area seasonally ponded is > ¼ total area of wetland — points = 2
- X Area seasonally ponded is < ¼ total area of wetland — points = 0

Map of Hydroperiods

Total for D 1 *Add the points in the boxes above* — 4

D 2. Does the wetland unit have the opportunity to improve water quality? (see p. 44)

Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.*

- — Grazing in the wetland or within 150 ft
- — Untreated stormwater discharges to wetland
- — Tilled fields or orchards within 150 ft of wetland
- — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging
- X Residential, urban areas, golf courses are within 150 ft of wetland
- — Wetland is fed by groundwater high in phosphorus or nitrogen
- — Other

(YES multiplier is 2) NO multiplier is 1

multiplier 2

TOTAL - Water Quality Functions Multiply the score from D1 by D2 — 8

Add score to table on p. 1

No outlet found –
A roadside ditch along SE 38th
St. drains downhill to wetland

Wetland name or number F

D Depressional and Flats Wetlands — Points

HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation

D 3. Does the wetland unit have the potential to reduce flooding and erosion? (see p. 46)

D 3.1 Characteristics of surface water flows out of the wetland unit — 4

- Unit is a depression with no surface water leaving it (no outlet) — points = 4
- Unit has an intermittently flowing, OR highly constricted permanently flowing outlet — points = 2
- Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and **no obvious natural outlet** and/or outlet is a man-made ditch — points = 1
- (*If ditch is not permanently flowing treat unit as "intermittently flowing"*)
- Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) — points = 0

D 3.2 Depth of storage during wet periods — 0

Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).

- Marks of ponding are 3 ft or more above the surface or bottom of outlet — points = 7
- The wetland is a "headwater" wetland" — points = 5
- Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet — points = 5
- Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet — points = 3
- Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water — points = 1
- X Marks of ponding less than 0.5 ft — points = 0

D 3.3 Contribution of wetland unit to storage in the watershed — 0

Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.

- The area of the basin is less than 10 times the area of unit — points = 5
- The area of the basin is 10 to 100 times the area of the unit — points = 3
- X The area of the basin is more than 100 times the area of the unit — points = 0
- Entire unit is in the FLATS class — points = 5

Total for D 3 *Add the points in the boxes above* — 4

D 4. Does the wetland unit have the opportunity to reduce flooding and erosion? (see p. 49)

Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.*

- — Wetland is in a headwater of a river or stream that has flooding problems
- — Wetland drains to a river or stream that has flooding problems
- — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems
- — Other

(YES multiplier is 2) NO multiplier is 1

multiplier 2

TOTAL - Hydrologic Functions Multiply the score from D 3 by D 4 — 8

Add score to table on p. 1

Wetland name or number F

These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland unit have the potential to provide habitat for many species?	

H 1.1 Vegetation structure *(see p. 72)* — Figure ___

Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.

___ Aquatic bed
X Emergent plants
___ Scrub/shrub (areas where shrubs have >30% cover)
___ Forested (areas where trees have >30% cover)

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

Add the number of vegetation structures that qualify. If you have:

4 structures or more	points = 4
3 structures	points = 2
2 structures	points = 1
1 structure	points = 0

Map of Cowardin vegetation classes

0

H 1.2. Hydroperiods *(see p. 73)* — Figure ___

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)

___ Permanently flooded or inundated
X Seasonally flooded or inundated
___ Occasionally flooded or inundated
X Saturated only
___ Permanently flowing stream or river in, or adjacent to, the wetland
___ Seasonally flowing stream in, or adjacent to, the wetland
___ ***Lake-fringe wetland* = 2 points**
___ ***Freshwater tidal wetland* = 2 points**

4 or more types present	points = 3
3 types present	points = 2
2 types present	point = 1
1 type present	points = 0

Map of hydroperiods

1

H 1.3. Richness of Plant Species *(see p. 75)*

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)*

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
5 - 19 species	points = 1
< 5 species	points = 0

List species below if you want to:

Buttercup (RCG) (HBB) Salmonberry Avens (Guy)

0

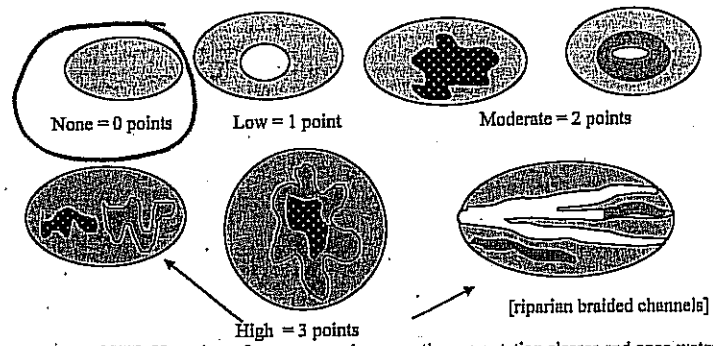
Total for page _____

PEM only - trees overhang but are rooted on bank above WL

Wetland name or number _____

H 1.4. Interspersion of habitats *(see p. 76)* — Figure ___

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

___ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).
___ Standing snags (diameter at the bottom > 4 inches) in the wetland
___ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)
___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
___ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*
___ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5 — 1

Comments

Wetland name or number F

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	Figure
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	0
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = 4 points (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = 2 points (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = 1 point NO = 0 points	1

Total for page 1

Wetland name or number _____

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

Wetland name or number F

H 2.4 Wetland Landscape *(choose the one description of the landscape around the wetland that best fits) (see p. 84)* There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	1
TOTAL for H 1 from page 14	1
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	2

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check for any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met*	Category
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ✓	
SC 1.1 Is the wetland unit 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? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands *(see p. 87)* — **Cat. I**

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*

S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site X

YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?

YES = Category I NO X not a Heritage Wetland

SC 3.0 Bogs *(see p. 87)*

Does the wetland unit **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2
2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?
   Yes - go to Q. 3 No - Is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?
   Yes – Is a bog for purpose of rating No - go to Q. 4
   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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.

1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*

2. YES = Category I No X Is not a bog for purpose of rating — **Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)*

Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.

NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.

— **Mature forests:** (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

YES = Category I NO X not a forested wetland with special characteristics — **Cat. I**

SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)*

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 surface 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 X not a wetland in a coastal lagoon

SC 5.1 Does the wetland meets 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 invasive plant species (see list of invasive species on p. 74).

— 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. — **Cat. I**

— The wetland is larger than 1/10 acre (4350 square feet)

YES = Category I NO = Category II — **Cat. II**

Wetland name or number F

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO __ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2	**Cat. II**
SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. III**
Category of wetland based on Special Characteristics *(Choose the highest category if wetland falls into several categories, and record on page 1)* If you answered NO for all types enter "Not Applicable" on page 1	N/A

APPENDIX D: PHOTOS

Representative Photos - West Lake Sammamish Parkway Phase 1

Photo 1. Wetland A (June 2008)

Photo 2. Wetland B (June 2008)

Photo 3. Wetland BB (June 2008)

Photo 4. Wetland C (June 2008)

Photo 5. Wetland D (June 2008)

Photo 6. Wetland E (June 2008)

Photo 7. Wetland F (Sept 2011	Photo 8. Vasa Creek (Stream 0156) (June 2008)
Photo 9. Stream 0161 west of West Lake Sammamish Parkway (June 2008)	Photo 10. Unnamed stream #1 entering Wetland B (June 2008)
Photo 11. Unnamed stream #2 (June 2008)	Photo 12. Drainage ditch near Vasa Park (June 2008)

Photo 13. Typical view of West Lake Sammamish Parkway upland area (June 2008)	Photo 14. Upland forested area adjacent to Parkway (Sunrise Park) (June 2008)
Photo 15. Buffer of Wetland A looking northwest (Sept. 2011)	Photo 16. Buffer of Stream 0161 looking SE toward Sunrise Park parking area (Sept. 2011).

DRAFT

APPENDIX E: DATA PLOT FORMS

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

Project/Site: W.L.K. Samm.PRKWY (WLSP) City/County: Bellevue Sampling Date: 6/17/08

Applicant/Owner: City of Bellevue. (C.O.B) State: WA Sampling Point: DP-1

Investigator(s): L. Thoreson, S. Noland Section, Township, Range: Wetland A

Landform (hillslope, terrace, etc.): Roadside Local relief (concave, convex, none): concave Slope (%): ~2

Subregion (LRR): A Lat: Long: Datum:

Soil Map Unit Name: Kitsap silt loam, 15-30% slope NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: wetland A – near Sunrise Park – swale-like, drains to stream 0161

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Thuja plicata	30	Y	FAC
2.			
3.			
4.			
Total Cover:	30		
Sapling/Shrub Stratum			
1. Rubus discolor	30	Y	FACW
2. Rubus parviflorus	10	Y	FACU
3.			
4.			
5.			
Total Cover:	40		
Herb Stratum			
1. Ranunculus repens	60	Y	FACW
2. Galium cymosum	10	N	FACW
3. Equisetum telmateia	10	N	FACW
4. Epilobium watsonii	5	N	FACW
5. Athyrium felix-femina	5	N	FAC
6.			
7.			
8.			
Total Cover:	90		
Woody Vine Stratum			
1. Solanum dulcamara	10	Y	FAC
2.			
Total Cover:	10		

% Bare Ground in Herb Stratum —

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W.LK.STMM.PRKWY

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 4/1		—				cl. loam	
4-11	2.5Y 3/1	90	10YR 4/6	10	C	M	cl. loam	
			2.5Y 5/2	30	C	M		
11-16	2.5Y 4/1	70	10YR 4/6					

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:
Soil compact, in Roadside/ditch-swale

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9) **(except NW coast)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(NW coast)**
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Frost-Heave Hummocks (D4)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 14

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

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

Remarks:
Water source for wetland appears to be runoff from WLSP + ground water

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

Project/Site: WLSP City/County: Bellevue Sampling Date: 6/17/8

Applicant/Owner: C.O.B State: WA Sampling Point: 2

Investigator(s): L. THORESON Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Roadside swale Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Kitsap silt loam 15-30%, slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.) Wetland C

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: WLC –

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. trees ornamental planted			
3. & not rooted in wetland			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Rubus discolor	40	Y	FACU
2.			
3.			
4.			
5.			
Total Cover:	40		
Herb Stratum			
1. Rorippa nasturtium-aquaticum	60	Y	OBL
2. Scirpus microcarpus	20	N	OBL
3. Juncus effusus	10	N	FACW
4. Epilobium watsonii	20	N	FACW
5.			
6.			
7.			
8.			
Total Cover:	110		
Woody Vine Stratum			
1.			
2.			
Total Cover:	110		

% Bare Ground in Herb Stratum Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	80	x 1 = 80
FACW species	30	x 2 = 60
FAC species	—	x 3 = —
FACU species	40	x 4 = 160
UPL species	—	x 5 = —
Column Totals:	150 (A)	300 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

WLSP

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/1	100					silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:
Data plot located between toe of slope and road bank - seems likely to pond water for at least 2 weeks of growing season.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9) **(except NW coast)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(NW coast)**
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Frost-Heave Hummocks (D4)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 2" above ground

Water Table Present? Yes X No ___ Depth (inches): 2" above ground

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

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

Remarks:
Plot location is inundated.

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

Project/Site: WLSP City/County: Bellevue Sampling Date: 6/17/8

Applicant/Owner: C.O.B State: WA Sampling Point: 3

Investigator(s): L.THORESON, S.NOLAND Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hill slope Local relief (concave, convex, none): steep slope Slope (%): 60

Subregion (LRR): A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Kitsap silt loam 15-30% slope NWI classification: PSS Wetland D

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
WL. D.
DP3 · slope WL – near Vasa park

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum Don't have full view of shrub layer due to steepness of slope			
1. Rubus discolor	20	Y	FACW
2. Oemleria cerasiformis	20	Y	FACU
3. Corylus cornuta	5	N	FAC
4.			
5.			
Total Cover: 45			
Herb Stratum			
1. Ranunculus repens	80	Y	FACW
2. Athyrium felix-femina	70	N	FAC
3. Agrostis sp.	20	N	FAC
4.			
5.			
6.			
7.			
8.			
Total Cover: 110			
Woody Vine Stratum			
1.			
2.			
Total Cover: 155			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	80	x 2 = 160
FAC species	35	x 3 = 105
FACU species	40	x 4 = 160
UPL species		x 5 =
Column Totals:	155 (A)	425 (B)

Prevalence Index = B/A = 2.7

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

WLSP

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 2/2	100	—	—			gr.Sa. loam	
14-16	10Y 4/1	60	10YR 4/6	40	C	M	Diatomaceous Earth	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:
Plot is at toe of slope in a groundwater seep area, and contains diatomaceous earth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9) **(except NW coast)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(NW coast)**
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Frost-Heave Hummocks (D4)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): Flow <1"

Water Table Present? Yes X No ___ Depth (inches): 10

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

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

Remarks:
Surface water exiting wetland is visible on road pavement – ponding 1-2" deep in some areas.

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

Project/Site: W. Lk Sammamish Pkway City/County: Bellevue Sampling Date: 6/17/08
Applicant/Owner: City of Bellevue State: WA Sampling Point: DP-4
Investigator(s): SN, TL Section, Township, Range: Wetland E
Landform (hillslope, terrace, etc.): Base of slope Local relief (concave, convex, none): Step Slope Slope (%): 60
Subregion (LRR): A Lat: Long: Datum:
Soil Map Unit Name: Kitsap silt loam 15-30% NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (if no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes X	No
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes X No

Remarks: Wetland E

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. none			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Rubus armeniacus	40%	Y	FACU
2.			
3.			
4.			
5.			
Total Cover:	40		
Herb Stratum			
1. Ranunculus repens	60	Y	FACW
2. Athyrium felix femina	20	Y	FAC
3. Holcus lanatus	15	N	
4. Epilobium watsonii	2	N	FACW
5. Cretanivum thermarilum	2	N	NI
6. Agrostis sp.	5	N	FAC
7.			
8.			
Total Cover:	104		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

WL SP

SOIL

Sampling Point: DP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 2/2	60%	10YR 5/4		C	M	Sa. loam	redox dark
			10YR 5/1	40%	D	M		surface
			10YR 4/4		C	PL		
13-16	10YR 4/2	55%	7.5YR 4/6	30%	C	M	Si. clay loam	depleted matrix
	10YR 5/1		10YR 3/1	15%	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:
Redox dark surface extends to 13" depth (not 12" as in F6 definition) - however the rest of the F6 definition is consistent w/ soil dat. Area is near road & soil profile is likely disturbed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9) **(except NW coast)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(NW coast)**
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Frost-Heave Hummocks (D4)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

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

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Ø

Wetland Hydrology Present? Yes X No ___

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

Remarks:
Sat. at surface!
free water at 12"

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

Project/Site: W Lk Samm Pkwy City/County: Bellevue Sampling Date: 6-17-08

Applicant/Owner: City of Bellevue State: WA Sampling Point: DP-5

Investigator(s): SN, LT Section, Township, Range: Wetland F

Landform (hillslope, terrace, etc.): Base of slope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): A Lat: Long: Datum:

Soil Map Unit Name: Everett gravelly sandy loam 0-5% NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Wetland F

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Corylus cornuta - rooted outside			
2. Acer macrophyllum - " "	N/A - rooted outside		
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. none			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Ranunculus repens	50	Y	FACW
2. Phalaris arundinacea	15	N	FACW
3. Geranium robertianum	2	N	NI
4. Agrostis sp	20	Y	FAC
5.			
6.			
7.			
8.			
Total Cover: 87			
Woody Vine Stratum			
1. Hedera helix	20	Y	NI
2.			
Total Cover: 20			

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

WL SP

SOIL

Sampling Point: DP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 3/1	60	10YR 4/6	10	C	M	S. clay loam	
			10YR 5/1	30	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9) **(except NW coast)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(NW coast)**
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Frost-Heave Hummocks (D4)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 2

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

next to 2249 WLSP

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

Project/Site: WLSP City/County: Bellevue Sampling Date: 6/17/8

Applicant/Owner: C.O.B. State: WA Sampling Point: 6

Investigator(s): L. THORESON / S. NOLAND Section, Township, Range: _____

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): in low point next to steep slope

Subregion (LRR): A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Everett gravelly sandy loam 15-30% slope NWI classification: N/A - upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Representative upland forest in a steep ravine. Plot is upslope of a culvert/stream channel (dry now).

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pseudotsuga menziesii	20	Y	FACU
2. Acer macrophyllum	30	Y	FACU
3.			
4.			
Total Cover: 50			
Sapling/Shrub Stratum			
1. Acer macrophyllum	10	Y	FACU
2.			
3.			
4.			
5.			
Total Cover: 10			
Herb Stratum			
1. Galium cymosum	20	Y	FACU
2. Urtica dioica	20	Y	FAC
3. Herb Rdbent	20	Y	NI
4. Agropyron sp.	20	Y	FAC
5.			
6.			
7.			
8.			
Total Cover: 80			
Woody Vine Stratum			
1. Rubus ursinus	20	Y	FACU
2.			
Total Cover: 20			

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 38% not >50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	20	x 2 = 40
FAC species	40	x 3 = 120
FACU species	80	x 4 = 320
UPL species	0	x 5 = 0
Column Totals:	140 (A)	480 (B)

Prevalence Index = B/A = 3.4

480/140

Hydrophytic Vegetation Indicators:

NO Dominance Test is >50%

NO Prevalence Index is ≤3.0[1]

NO Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

N Wetland Non-Vascular Plants[1]

NO Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

WSP

SOIL

Sampling Point: DP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	100	—	—			gravelly loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9) **(except NW coast)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(NW coast)**
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Frost-Heave Hummocks (D4)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ___ No X

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

Remarks: DRY

APPENDIX F: NMFS AND USFWS SPECIES LISTS

Endangered Species Act Status of West Coast Salmon & Steelhead

(Updated July 1, 2009)

Species[1]			*Current Endangered Species Act Listing Status*[2]	*ESA Listing Actions Under Review*
Sockeye Salmon (*Oncorhynchus nerka*)	1	Snake River	***Endangered***	
	2	Ozette Lake	***Threatened***	
	3	Baker River	*Not Warranted*	
	4	Okanogan River	*Not Warranted*	
	5	Lake Wenatchee	*Not Warranted*	
	6	Quinalt Lake	*Not Warranted*	
	7	Lake Pleasant	*Not Warranted*	
Chinook Salmon (*O. tshawytscha*)	8	Sacramento River Winter-run	***Endangered***	
	9	Upper Columbia River Spring-run	***Endangered***	
	10	Snake River Spring/Summer-run	***Threatened***	
	11	Snake River Fall-run	***Threatened***	
	12	Puget Sound	***Threatened***	
	13	Lower Columbia River	***Threatened***	
	14	Upper Willamette River	***Threatened***	
	15	Central Valley Spring-run	***Threatened***	
	16	California Coastal	***Threatened***	
	17	Central Valley Fall and Late Fall-run	***Species of Concern***	
	18	Upper Klamath-Trinity Rivers	*Not Warranted*	
	19	Oregon Coast	*Not Warranted*	
	20	Washington Coast	*Not Warranted*	
	21	Middle Columbia River spring-run	*Not Warranted*	
	22	Upper Columbia River summer/fall-run	*Not Warranted*	
	23	Southern Oregon and Northern California Coast	*Not Warranted*	
	24	Deschutes River summer/fall-run	*Not Warranted*	
Coho Salmon (*O. kisutch*)	25	Central California Coast	***Endangered***	
	26	Southern Oregon/Northern California	***Threatened***	
	27	Lower Columbia River	***Threatened***	• Critical habitat
	28	Oregon Coast	***Threatened***	
	29	Southwest Washington	*Undetermined*	
	30	Puget Sound/Strait of Georgia	***Species of Concern***	
	31	Olympic Peninsula	*Not Warranted*	
Chum Salmon (*O. keta*)	32	Hood Canal Summer-run	***Threatened***	
	33	Columbia River	***Threatened***	
	34	Puget Sound/Strait of Georgia	*Not Warranted*	
	35	Pacific Coast	*Not Warranted*	
Steelhead (*O. mykiss*)	36	Southern California	***Endangered***	
	37	Upper Columbia River	***Threatened***	
	38	Central California Coast	***Threatened***	
	39	South Central California Coast	***Threatened***	
	40	Snake River Basin	***Threatened***	
	41	Lower Columbia River	***Threatened***	
	42	California Central Valley	***Threatened***	
	43	Upper Willamette River	***Threatened***	
	44	Middle Columbia River	***Threatened***	
	45	Northern California	***Threatened***	
	46	Oregon Coast	***Species of Concern***	
	47	Southwest Washington	*Not Warranted*	
	48	Olympic Peninsula	*Not Warranted*	
	49	Puget Sound	***Threatened***	• Critical habitat
	50	Klamath Mountains Province	*Not Warranted*	
Pink Salmon (*O. gorbuscha*)	51	Even-year	*Not Warranted*	
	52	Odd-year	*Not Warranted*	

1 The ESA defines a "species" to include any distinct population segment of any species of vertebrate fish or wildlife. For Pacific salmon, NOAA Fisheries Service considers an evolutionarily significant unit, or "ESU," a "species" under the ESA. For Pacific steelhead, NOAA Fisheries Service has delineated distinct population segments (DPSs) for consideration as "species" under the ESA.

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CRITICAL HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN
IN KING COUNTY
AS PREPARED BY
THE U.S. FISH AND WILDLIFE SERVICE
WASHINGTON FISH AND WILDLIFE OFFICE

(Revised December 15, 2010)

LISTED

Bull trout *(Salvelinus confluentus)* – Coastal-Puget Sound DPS
Canada lynx *(Lynx canadensis)*
Gray wolf *(Canis lupus)*
Grizzly bear *(Ursus arctos = U. a. horribilis)*
Marbled murrelet *(Brachyramphus marmoratus)*
Northern spotted owl *(Strix occidentalis caurina)*

Major concerns that should be addressed in your Biological Assessment of project impacts to listed animal species include:

1. Level of use of the project area by listed species.

2. Effect of the project on listed species' primary food stocks, prey species, and foraging areas in all areas influenced by the project.

3. Impacts from project activities and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to listed species and/or their avoidance of the project area.

Castilleja levisecta (golden paintbrush) [historic]

Major concerns that should be addressed in your Biological Assessment of project impacts to listed plant species include:

1. Distribution of taxon in project vicinity.

2. Disturbance (trampling, uprooting, collecting, etc.) of individual plants and loss of habitat.

1. Changes in hydrology where taxon is found.

DESIGNATED

Critical habitat for bull trout
Critical habitat for the marbled murrelet
Critical habitat for the northern spotted owl

PROPOSED

Revised critical habitat for bull trout

CANDIDATE

Fisher *(Martes pennanti)* – West Coast DPS
North American wolverine *(Gulo gulo luteus)* – contiguous U.S. DPS
Oregon spotted frog *(Rana pretiosa)* [historic]
Yellow-billed cuckoo *(Coccyzus americanus)*

SPECIES OF CONCERN

Bald eagle *(Haliaeetus leucocephalus)*
Beller's ground beetle *(Agonum belleri)*
Cascades frog *(Rana cascadae)*
Hatch's click beetle *(Eanus hatchi)*
Larch Mountain salamander *(Plethodon larselli)*
Long-eared myotis *(Myotis evotis)*
Long-legged myotis *(Myotis volans)*
Northern goshawk *(Accipiter gentilis)*
Northern sea otter *(Enhydra lutris kenyoni)*
Northwestern pond turtle *(Emys (= Clemmys) marmorata marmorata)*
Olive-sided flycatcher *(Contopus cooperi)*
Pacific lamprey *(Lampetra tridentata)*
Pacific Townsend's big-eared bat *(Corynorhinus townsendii townsendii)*
Peregrine falcon *(Falco peregrinus)*
River lamprey *(Lampetra ayresi)*
Tailed frog *(Ascaphus truei)*
Valley silverspot *(Speyeria zerene bremeri)*
Western toad *(Bufo boreas)*
Aster curtus (white-top aster)
Botrychium pedunculosum (stalked moonwort)
Cimicifuga elata (tall bugbane)

APPENDIX G. PLAN SHEETS

(to be provided)

GEOENGINEERS

Memorandum

8410 154th Avenue NE, Redmond, WA 98052, Telephone: 425.861.6000, Fax: 425.861.6050

www.geoengineers.com

To:	Mike Wallace, PE/ Reid Middleton, Inc
From:	Thomas A. Tobin, PE and Daniel P. Ciani, PE
Date:	October 20, 2011
File:	0526-135-01
Subject:	Geologic Hazard Areas Evaluation SEPA Discipline Report West Lake Sammamish Parkway Bellevue, Washington

DANIEL P. CIANI
STATE OF WASHINGTON
46349
REGISTERED
PROFESSIONAL ENGINEER

10-20-11

INTRODUCTION

This memorandum provides a summary of our evaluation of the geologic conditions and landslide hazards for the Phase 1 portion of the West Lake Sammamish Parkway (WLSP) in Bellevue, Washington. Specifically, we were requested to provide input regarding sensitive areas to aid in preparing the SEPA document for the project. Our project understanding is based on email correspondence and plans of the project alignment which show the landslide and steep slope hazard areas along with the proposed wall locations provided in an email dated October 10, 2011 from Mike Wallace with Reid Middleton. We understand that outside of the wall locations the project limits will not extend beyond the existing limits of the existing roadway and shoulder areas.

GEOLOGIC CONDITIONS

The regional geology is based on published geologic information for the project vicinity by the United States Geological Survey (USGS) map of the Seattle 30' x 60' Quadrangle (Yount et al., 1993). The surficial soils in the immediate vicinity of the site are mapped as glacial till, recessional outwash, and younger alluvium. The glacial till and recessional outwash are the result of glacial and postglacial processes. The glacial deposits are derived from several regional glaciations, the most recent of which occurred from about 13,500 to 15,000 years ago and are known as the Vashon glaciation. Recent alluvium is present along portions of the shoreline of Lake Sammamish where existing grades are only slightly higher than that of the lake. Fill soils associated with roadway construction and utilities are also anticipated.

Glacial till typically consists of a medium dense to very dense heterogeneous mixture of sand, gravel, cobbles and occasional boulders in a silt and clay matrix. The glacial till was deposited beneath a glacier, subsequently over-ridden, and glacially consolidated.

Recessional outwash deposits in the region are described as consisting of stratified sand and gravel, moderately to well sorted, and well-bedded silty sand to silty clay deposited in proglacial and ice-marginal environments. Recessional outwash deposits have not been glacially consolidated and are typically loose to medium dense.

We anticipate that alluvial soils along the shoreline consist of loose sand and compressible deposits of silt and peat. However, the limits of the Phase 1 project are generally outside mapped limits of alluvial soils in this area.

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.

In summary, we anticipate that the soils along the Phase 1 alignment generally consist of fill placed for the roadway and medium dense to very dense sand with variable amounts of silt.

LANDSLIDE HAZARD AREAS

Landslide areas are defined in City of Bellevue Code (20.25H.120) as slopes of 15 percent or more with more than 10 feet of vertical rise which also display indications of failures, movement, instability, or susceptibility to instability due to subsurface conditions. Steep slope hazard areas are defined as slopes of 40 percent or more with at least 10 feet of rise and exceed 1,000 square feet in area.

Mapped slope areas along the alignment where walls are proposed include Station 20+00 to about Station 20+75 on the east side, Station 31+50 to Station 33+50 on portions of both sides, Station 34+50 to Station 36+50 on the west side, and Station 38+25 to Station 39+00 on the west side.

We completed a site reconnaissance at each wall location to evaluate whether the existing slopes show any surficial features suggesting instability or past slope failures. The existing slopes in the vicinity of Station 20+00 and Station 31+00 both appear to consist of fill embankments supporting the existing roadway. We did not observe any surficial indication of instability or failure, although at about Station 32+60 on the east side, roadway runoff is directed to an asphalt concrete lined ditch which extends down the east fill embankment to an existing creek channel. This could be an area of potential instability if heavy runoff resulted in significant erosion of the adjacent fill slope. Based on discussions with Reid Middleton the project will address this issue by collecting and routing the roadway runoff to three existing lake outfalls. The project will include catch basins and associated pipe to route the existing outfalls and provide treatment. It is our understanding that improvements will significantly reduce the storm water flow rates in the asphalt ditch described above at Station 32+60. The proposed walls north of Station 34+50 will be situated within existing cut slopes; we did not observe any indication of instability in these cut slopes between Station 34+00 and Station 39+00.

CONCLUSIONS

In conclusion, we did not observe surface indications of unstable soils in the immediate vicinity of the proposed walls, although the west side of the roadway near Station 32+60 could be subject to erosion during periods of heavy runoff.

We trust that this provides the information that you requested. Please call if you have any questions or require additional information.

DPC:TAT:nlu

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August 5, 2011

Paul Krawczyk, PE
City of Bellevue, Transportation Department
P.O. Box 90012
Bellevue, WA 98009

Subject: West Lake Sammamish Parkway Improvements Project - Biological Evaluation Letter of "No Effect"

Dear Mr. Krawczyk:

The City of Bellevue Transportation Department (City) is proposing to enhance safety for pedestrians, bicyclists, and vehicular traffic by providing a multi-use trail, landscaped buffer, and shoulder improvements along 1.2 miles of West Lake Sammamish Parkway (WLSP) (Figure 1). Federal permits are required from the U.S. Army Corps of Engineers, creating a federal nexus for this project. The Endangered Species Act requires federal agencies to ensure that their actions do not jeopardize the continued existence of threatened or endangered species or their critical habitats. This document addresses project-related effects to federally listed species under the jurisdiction of the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS).

Listed Species Potentially Present

Both NMFS and USFWS provide listings of threatened and endangered species under their jurisdiction. The current listings from NMFS indicate the potential presence of the Puget Sound Evolutionary Significant Unit (ESU) of Chinook salmon (*Oncorhynchus tshawytscha*) and the Puget Sound Distinct Population Segment (DPS) of steelhead (*O. mykiss*) within the project vicinity. Additionally, the USFWS lists Coastal/Puget Sound DPS of bull trout (*Salvelinus confluentus*) within the project vicinity.

The majority of the species on the USFWS species list for King County were either not historically distributed within the action area, and/or the action area does not contain suitable habitat to support these species. For example, no mature forested areas occur within the project area containing habitat elements suitable for either northern spotted owl (*Strix occidentalis*) or marbled murrelet (*Brachyramphus marmoratus*). Therefore, species without suitable habitats in the project area, such as Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), grizzly bear (*Ursus a. horribilis*), northern spotted owl, and marbled murrelet, will not be addressed in this report. Species lists from NMFS and USFWS are provided in Attachment 1.

The potential presence of listed species within the project area was further evaluated by reviewing Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) data (WDFW, 2011a), the Salmonscape database (WDFW 2011b), and the WDFW Stock Inventory Data (WDFW 1998, 2002, 2004).

Project Location

The proposed project would construct 1.2 miles of paved trail and roadway improvements along West Lake Sammamish Parkway within the City of Bellevue (Figure 1). The project site is located within Sections 12 and 13 of Township 24 North, Range 05 East; and in Section 18 of Township 24 North, Range 05 East , Willamette Meridian (WM). The entire project is located within the 6th Field Hydrologic Unit Code (HUC) 171100120202, the Lake Sammamish – Sammamish River basin.

The project is located along West Lake Sammamish Parkway, starting just northwest of the I-90 roundabout and ending just north of SE 34th Street (Figure 1). The project corridor is bounded by I-90 to the south and Lake Sammamish to the north and roughly parallels the southwestern shoreline of Lake Sammamish. The project crosses five tributary streams that flow into the lake (Table 1). All of the waterbodies potentially affected by the project are located in Water Resource Inventory Area (WRIA) 8–Lake Washington/Cedar/ Sammamish Watershed. The project corridor crosses through two drainage basins; the South Sammamish Area basin and the Vasa Creek basin.

Table 1. Streams in the Project Vicinity

Stream ID	Project Station	Classification[1]	Project Area Channel Description [2]
Vasa Creek 0156	63+80	Perennial Type F Anadromous Salmonid use	The stream crosses WLSP in a culvert crossing, with open channel downstream to Lake Sammamish
0160	56+00	Perennial Type F Salmonid use	Conveyed under WLSP by a 716-foot long culvert which extends from upstream of WLSP and discharges directly into Lake Sammamish
Unnamed Stream #1	44+20	Intermittent Type F Salmonid use	Stormwater basin immediately upstream of WLSP. Conveyed under WLSP and downstream in pipe system.
0161	32+35	Perennial Type F Salmonid use	The stream crosses WLSP in a culvert crossing, with open channel downstream to Lake Sammamish
Unnamed Stream #2	15+00	Unknown Assumed Type F and Salmonid Use	Stream is on north side of WLSP and originates in stormwater basin immediately south of 181st Ave SE. Downstream conveyance is likely in pipe system.

1 Based on Bellevue Critical Areas (20.25H.075(b)) and WDFW stream type classifications, while salmonid use based on Bellevue Utilities 2003; WSCC 2001; WDFW 2011a, b).

2 Channel descriptions based on ESA field investigations conducted in June 2011.

The two drainage basins that contain the project range in elevation from 30 feet to over 1,000 feet above mean sea level (msl). Land use is primarily single-family residential, with the majority of the remaining area consisting of public right-of-way. Only a small percentage of the area (<5 percent) is composed of open space, which is reflected in the relatively high amount of impervious surface cover in the area (> 30%) (Bellevue 2003).

Under existing conditions, stormwater runoff from the project area receives no treatment or detention. Stormwater from the area currently sheet flows into a series of roadside ditches that drain to either project area streams or into one of several pipe systems that convey stormwater to Lake Sammamish. A total of 2.83 acres of existing pollution generating impervious surface is present within the project area, distributed among three threshold discharge areas (TDAs). TDA #1 drains the majority of the project area, including the entire southern portion of the project area (approximately 4,700 linear feet of roadway). The discharge for TDA #1 is located

adjacent to an existing boat ramp located approximately 850 feet south of SE 38th Street. TDA #2 is the smallest TDA in the project area. Runoff from TDA #2 is piped through a King County owned parcel (Metro Sewer Lift Station) where it enters a pipe that conveys Stream 0161 to Lake Sammamish. The lake discharge is located under a dock approximately 300 feet south of SE 38th Street. TDA #3 collects runoff from the northern portion of the project area. The discharge for TDA #3 is located on the shoreline of Vasa Park, approximately 460 feet north of SE 38th Street.

Project Description

The overall project includes structural, roadway, and hydraulic elements. Structural components include: roadway/trail embankment fill; retaining wall construction; and concrete curb. Roadway components include surface and paving activities. Hydraulic elements of the project include the construction of three wet vaults with media filter cartridges, the installation of conveyance features including pipe systems leading to the wet vaults, and the relocation of an existing ditch along the west side of the roadway. Additional work activities include clearing and grubbing, asphalt and concrete removal, excavation and embankment, utility relocation, traffic signal installation, grading, drainage features, erosion control and planting, driveway revisions, sign structures, permanent signage, pavement marking, construction detours, and traffic control setup and removal.

The project will involve minor widening to the existing paved shoulder to accommodate a multi-use trail and planted buffer on the west side, and provide a four-foot shoulder on the east side. The multi-use trail would vary in width between 8 and 10 feet and would be separated from the roadway by a landscaped buffer varying in width between 2 and 5 feet, where space is available. The southbound lane will be reduced from its current width of 10.5 feet to 10 feet in order to accommodate trail and buffer improvements. The width of the northbound lane will remain 10.5 feet. A separate left-turn lane will constructed at the SE 34th Street intersection for the northbound direction. No increase in traffic capacity will result from completion of the project and traffic volumes will remain unchanged. The project will also include pavement restoration, stormwater treatment and underground utility improvements. The project will be constructed both within the existing street right of way and areas of private property where small amounts of strip acquisition will be necessary.

While the project will add 0.22 acres of new PGIS consisting of roadway shoulder and turn pockets, the conversion of existing roadway surface to trail surface and buffer will result in a 0.52-acre net decrease of PGIS in the project area (Table 2). In order to meet minimum requirements for redevelopment (Bellevue Municipal Code 24.06.065), the project is only required to treat stormwater from new PGIS. For this project, funding is available for the City to provide treatment to all existing PGIS, which is currently untreated, in addition to the new PGIS where treatment is required by City code. As a result, this project will include treatment for all new and existing PGIS within the project area) (Table 2).

Media filters were chosen as an appropriate stormwater best management practice (BMP), as phosphorous control is required by the City of Bellevue. These commercial media filters are manufactured by KriStar Inc. and are currently approved for general use as enhanced stormwater BMPs by Ecology. Ecology also requires pre-treatment of media filters to remove total suspended solids (TSS). This project will utilize properly-sized wet vaults with media filters for pre-treatment upstream of each of three existing outfalls to Lake Sammamish

proposed to receive project area runoff. Lake Sammamish is considered a flow-exempt waterbody under the City of Bellevue's 2011 *Transportation Maintenance and Capital Improvements Project Stormwater Management Guidelines*; therefore, no stormwater detention is required.

Table 2. Pre-project and Post-project Stormwater Treatment

TDA Number	Outfall Location	Existing PGIS (acres)[1]	+	New PGIS (acres)	-	Existing PGIS Converted to Non-PGIS (acres)[2]	=	Total Post-Project PGIS Receiving Treatment (acres)
1	Lake Sammamish - Existing Outfall	3.86		0.15		0.63		3.38
2	Lake Sammamish - Existing Outfall	0.54		0.03		0.08		0.49
3	Lake Sammamish - Existing Outfall	1.22		0.04		0.03		1.23
	TOTALS	**5.62**		**0.22**		**0.74**		**5.10**

[1] All existing (pre-project) PGIS is untreated.
[2] Existing PGIS is converted to non-PGIS through conversion of roadway surface to trail surface and buffer.

Although slight changes to the stormwater collection and conveyance systems will be required, all project-related stormwater will be discharged into Lake Sammamish through existing manmade outfalls. Furthermore, no discharges to project area streams will be required, with the exception of TDA #2 where stormwater will be discharged into an existing storm drain that connects with a culverted portion of Stream 0160. No in-water work (below the ordinary high water mark of a lake or stream) will occur during construction of the stormwater collection, conveyance, or treatment facilities associated with the project.

Approximately 1.2 acres of clearing and grading will be required; however, no mature trees (>6-inch diameter) will be removed within the riparian areas of any streams within the project area. The project will require the import of 1,900 cubic yards of clean gravel borrow.

Construction machinery that will be used includes typical equipment such as flatbed trucks, loaders, excavators, curb machines, dump trucks, rollers, backhoes, and pickup trucks. A constructed retaining wall is required approximately 500 feet south SE 38th Street on the east side of the road. Approximately 24 piles will be drilled to construct the 140-foot-long wall, which will be backfilled with concrete. In addition, approximately 425 linear feet of gravity block wall (less than 4.5 feet tall) will be installed in various locations. No impact pile driving, blasting, or other activities that produce high noise levels will be conducted as part of this project.

All construction stockpiling and staging areas for the project will be within already developed and cleared areas and away from streams and sensitive areas. A potential staging area has been identified on the west side of WLSP at the Vasa Park parking area.

Construction Sequence and Schedule

Construction is tentatively scheduled to begin in spring 2012 and will take approximately 6 months to complete. It should be noted that this schedule is only a likely representation of what the actual schedule may be and that variations in work timing may occur due to contractor delays or adverse weather conditions. The general sequence of major construction activities is as follows:

1. Mobilization and installation of best management practices (BMPs) including runoff and erosion control (temporary erosion and sediment control [TESC] plan implementation) (2 weeks)
2. Site preparation and demolition (of existing fences and footings, if needed) (6 weeks)
    - clearing and grubbing
    - pavement removal
    - relocation of poles/installation of mast arm lights
3. Earthwork/grading (6 weeks)
4. Stormwater installation (6 weeks)
5. Install walls (4 weeks)
6. Paving (4 weeks)
7. Install signal system at SE 34th Avenue (4 weeks)
8. Channelization/striping and install signing (1 week)
9. Remove BMPs and implement final vegetation planting (1 week)
10. Cleanup and demobilization.

Impact Avoidance and Minimization Measures

Impact minimization measures and appropriate best management practices that will be applied as part of the proposed project include the following:

- No in-water work will be required as part of the project. The project has been designed to avoid in-water impacts by narrowing the proposed trail and planted buffer widths in certain areas to avoid culvert ends.

- Riparian vegetation removal will be minimized to the extent practicable. No mature trees will be removed within the riparian zones of project area streams or Lake Sammamish. Any temporarily disturbed areas will be replanted with native shrubs and trees, or native hydroseed mix as appropriate.

- Construction staging and stockpile areas for the project will be located within previously disturbed areas and outside sensitive areas, such as wetlands and streams. Stormwater from all existing new and existing PGIS will be treated for water quality.

- Water quality treatment will be accomplished through the use of media filters, a method approved by the Washington Department of Ecology. In addition to treating all new PGIS, the wet vaults and filters system will be sized to treat all existing PGIS within the project area. A total of 5.10 acres (100 percent) of combined existing and proposed PGIS will be treated.

Action Area

Based upon the geographic extent of anticipated project impacts, the terrestrial portion of the action area for the project includes the project footprint and terrestrial habitat extending within a 0.5 mile radius. This represents the area in which increased noise and human presence during construction may cause disturbance, in a noisy, urban environment. The action area for hydrologic and water quality effects includes the project footprint and 100 feet downstream of all streams and drainage features, as this would represent the maximum distance that sedimentation from the project would affect project area streams due to the absence of in-water work and application of appropriate BMPs. In addition, the project has the potential to affect aquatic species within Lake Sammamish through chemical contaminants that are present in runoff from PGIS. However, as the subsequent analysis indicates, the project will likely decrease contaminant loads and concentrations. Nonetheless, it is conservatively assumed that the action area extends a distance of 10 feet in a radius around each of the three existing outfalls that will discharge project-generated stormwater.

Habitat Description and Listed Species/Critical Habitat Occurrence

An ESA scientist visited the project area in June 2011. The site visit was conducted to identify habitat for listed species in the project vicinity and to evaluate potential effects of the proposed project. The five streams crossed by the project (Table 1) show signs of general degradation, likely caused by urban development within and upstream of the project areas. The riparian areas are generally narrow (<100 feet) and have been encroached upon by residential development and transportation corridors. The riparian zones consist of deciduous forest, with some coniferous cover in places. The shrub vegetation is dominated by non-native species, primarily Himalayan blackberry and reed canarygrass. Other cover types within the project vicinity include impervious surface, residential structures, compacted soil/bare earth, and maintained lawns and ornamental landscaping species.

Streambed and bank conditions are also degraded with a general lack of pools and high amounts of fine sediment. Gravel deposits are very localized, limiting salmonid spawning opportunities within the project area. The lack of suitable spawning habitat is typical of flow alterations caused by undetained or underretained stormwater flow, as significant portions of this area were developed prior to detention and water quality regulations currently in place.

The WDFW Priority Habitats and Species (PHS) database does not indicate the presence of listed fish species in any of the streams that cross the project area. However, PHS indicates that fall Chinook salmon, winter steelhead,

and bull trout occur within Lake Sammamish. No other PHS species or habitats are reported within or near the project site (WDFW 2011a).

Critical habitat for Puget Sound Chinook salmon (NMFS 2005) and Coastal-Puget Sound bull trout (USFWS 2010) has been designated within Lake Washington, 15 miles downstream of the project area; however, no critical habitat occurs within the project action area. Critical habitat for steelhead has not been proposed or designated at this time.

Interrelated and Interdependent Actions

The project is one of five phases in overall project improvements along 4.98 miles of the WLSP beginning just north of the roundabout at I-90 and continuing north to the city limits near NE 24th Street. The combined projects, each approximately one mile in length, will provide for a multi-use trail on the west side of the road and a 4-foot wide paved shoulder on the east shoulder. The proposed project is currently the only phase that is funded. Each of the five phases of the project has independent utility for traffic and pedestrian safety and mobility improvements, and are not dependent on the other phases. The trail will connect into existing paved shoulders where each phase terminates.

Impacts Assessment

No listed species are known to occur within any of the streams within or adjacent to the project alignment. The closest waterbody potentially supporting listed fish species is Lake Sammamish and the project will not require any in-water work within the Lake or its tributary streams. Modification of vegetated riparian areas will be limited, and no mature trees (>6-inch diameter) will be removed in these areas. In addition, loading of pollutants generated by PGIS into project area waterbodies would not increase. The following text discusses these potential impacts in greater detail.

Although the project will add a small amount of PGIS (0.22 acres), overall PGIS in the project area will be reduced by 0.52 acres due to the conversion of existing PGIS to non-PGIS (roadway shoulder to trail surface). All stormwater from new PGIS within the project area will be treated with enhanced treatment stormwater BMPS, where no such treatment currently exists. To further reduce any risk of potential effects on listed fish species that may be present in Lake Sammamish, additional stormwater runoff treatment is proposed for existing PGIS in the project area. This will be accomplished by providing enhanced treatment for all existing PGIS within the project area. The project will result in retrofitting almost 5 acres of existing PGIS (currently untreated) by providing enhanced treatment via media filters contained in wet vaults. The amount of existing PGIS receiving water quality treatment will be approximately 40 times the amount of new PGIS. Upon project completion, 100 percent of the PGIS within the project limits will receive water quality treatment (Table 2).

The WSDOT Highway Runoff Dilution and Loading (HI-RUN) model was used to determine the amount of additional area that should be treated in order to avoid an increase in pollutant loading in fish-bearing waters that support listed species. The model's end-of-pipe loading subroutine was run using dissolved zinc as the parameter of interest to determine whether the proposed project will result in a significant increase in pollutant loading over baseline conditions. Dissolved zinc was chosen for this initial screening step because monitoring data compiled

by WSDOT for this parameter have generally shown it to be a good indicator of stormwater treatment system performance (WSDOT 2011).

As illustrated by the HI-RUN model results (Attachment 2), with the treatment of additional existing PGIS, the project is not expected to result in increased pollutant loading in Lake Sammamish. According to model output, treatment of all remaining existing PGIS (in addition to the 0.22 acres of new PGIS) is expected to result in post-project P(exceed) values less than 0.35 for dissolved zinc in the project area. According to the HI-RUN Model User's Guide, P(exceed) values less than 0.50 represent conditions under which stormwater runoff quality is expected to improve. A threshold value of 0.45 was selected to provide a level of confidence that proposed conditions would not be degraded when compared to background conditions, given the inherent uncertainty and variability in the data (WSDOT 2011). Based on the proposed treatment levels summarized in Attachment 2, the load analysis P(exceed) values for dissolved zinc in the overall project area is 0.29. Under a scenario of maximum loading (worst-case scenario), the project would result in substantial reductions of TSS, dissolved copper, and dissolved zinc within Lake Sammamish. For example, the maximum loading of dissolved zinc would decrease from 107 pounds/year to about 11 pounds a year (Attachment 2). The HI-RUN model output indicates that other stormwater pollutant constituents, including dissolved copper and TSS would have loading decreases of similar scale. Furthermore, the HI-RUN model indicates that end-of-pipe pollutant concentrations would be expected to decrease for each pollutant constituent in all three TDAs (Attachment 2). Based on this analysis, the enhanced treatment of all existing and new PGIS exceeds the levels required to ensure that water quality conditions in Lake Sammamish are not degraded. Constituent stormwater pollutants will either be maintained, or decrease somewhat due to the project, and would have no potential negative effects on listed species within the lake.

The trail will be constructed alongside WLSP within the street right-of-way. Project activities will result in no physical modifications to wetlands, streams, and only minor alterations of riparian areas. The proposed project will result in a small amount of riparian clearing, limited to grass and shrub species. All vegetation disturbance would take place more than 200 feet from Lake Sammamish and no larger trees will be removed within the riparian areas. Based on the limited amount of riparian disturbance and location of the disturbance at a distance from Lake Sammamish, no riparian functions will be impacted, including LWD recruitment, sediment filtration, leaf litter production, and shade/stream temperature functions. In addition, with the implementation of project BMPs for sediment and erosion control and a SPCC plan, no sedimentation or contaminants from project construction runoff would enter fish-bearing surface waters.

The proposed project is consistent with existing land use patterns and does not add transportation capacity (new roadway or lane capacity). Therefore, the project will not induce growth in the project vicinity. Although the project is the first stage of a larger roadway and trail improvement program, the project has independent utility and no other development or transportation plans or projects depend upon this project as a requirement for completion. Therefore, based on the scope and scale of the proposed project, there are no anticipated changes in land use, transportation concurrency, or induced growth that have the potential to negatively affect listed species.

Effects Determinations

Based on the above, we have determined that the proposed project will have **no effect** on **Puget Sound Chinook salmon**, **Puget Sound steelhead**, or **Coastal-Puget Sound bull trout** for the following reasons:

- Bull trout, Chinook salmon, and steelhead trout are not expected to occur in any of the streams in the action area, although they may be present in Lake Sammamish.

- No in-water work will be required as part of the project and only limited riparian vegetation removal occur.

- The amount of total PGIS within the project area will decrease by 0.52 acre as a result of the project.

- Enhanced stormwater BMPs will treat all new and existing PGIS (which is currently untreated) and will prevent the negative effects from stormwater contaminants in Lake Sammamish. Based on output of the HI-RUN model, the project is expected to result in decreased pollutant loading and end-of-pipe concentrations in Lake Sammamish.

- Sedimentation from project runoff will not enter fish-bearing surface waters, based on the implementation of a project Temporary Erosion and Sediment Control plan, as well as the distance between the project area and receiving waters.

Additionally, for the same reasons discussed above, the proposed project will have *no effect* on designated critical habitat for designated Puget Sound ESU Chinook or Coastal/Puget Sound DPS bull trout, of which none is located in the action area.

In compliance with the Magnuson-Stevens Fishery Conservation and Management Act, Essential Fish Habitat (EFH) was assessed for the proposed project. Designated EFH for the Pacific salmon fishery occurs in the vicinity of the proposed project. Potential effects to Pacific salmon EFH, including Chinook, coho, and pink salmon habitat, is similar to that discussed in the body of this letter. No areas of EFH are present for other federally managed species including coastal pelagic species and Pacific coast groundfish. It was determined that the project will have *no adverse affect* on EFH for Pacific Salmon, Coastal Pelagic species, or Pacific coastal groundfish.

If the scope of the project should change to include elements not discussed herein or if new species or critical habitat are listed prior to construction activities, potential project effects on listed species will be re-evaluated at that time.

Please contact me at 206-789-9658 if you have any questions or concerns about this assessment.

Sincerely,

Peter Lawson

Pete Lawson, Senior Fisheries Biologist
ESA

Attachments:

Project Vicinity Map
Attachment 1: Species Lists
Attachment 2: HI-RUN Stormwater Modeling Results

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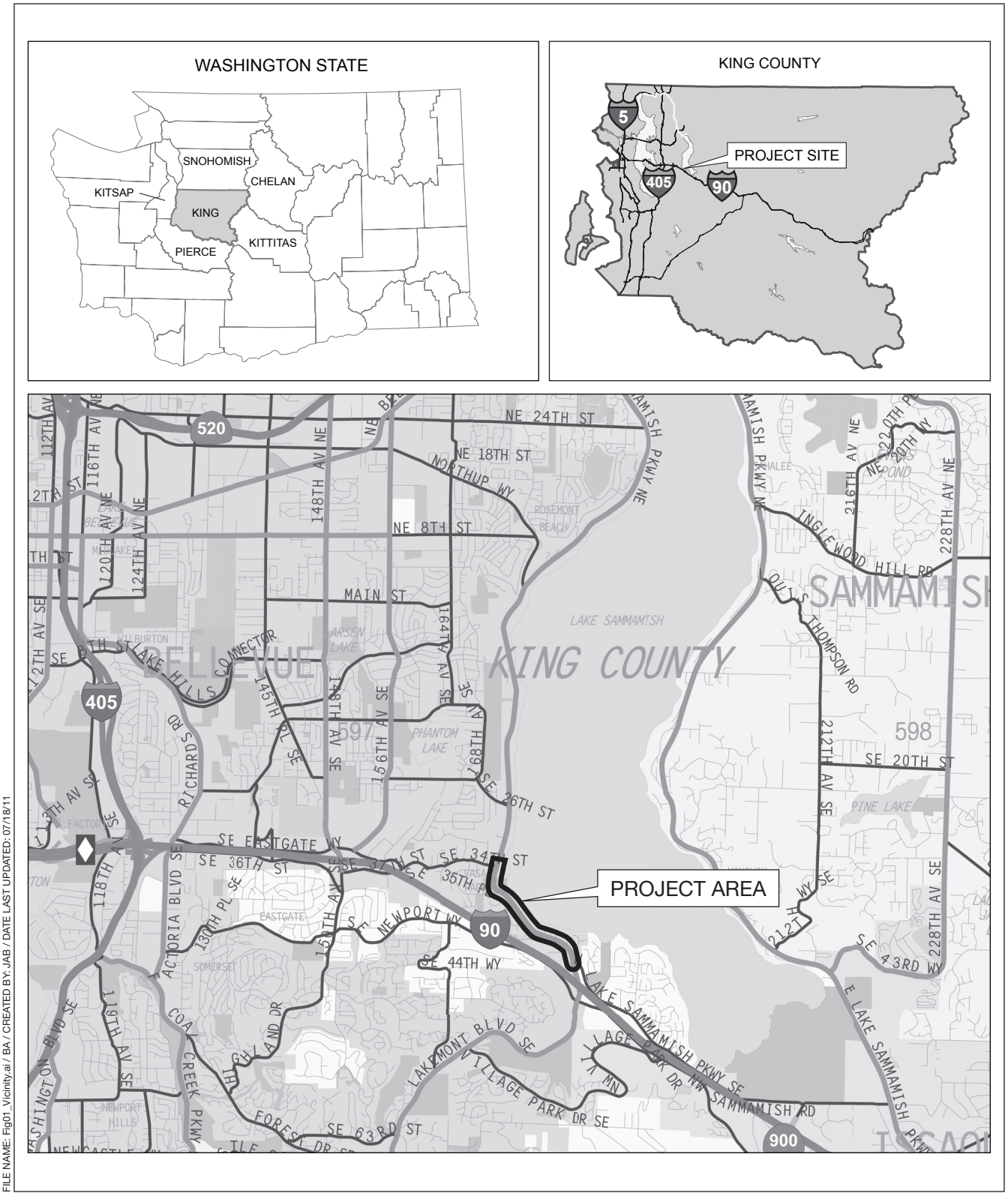
Figure 1 – Project Vicinity Map



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SOURCE: Rand McNally & Company, 2006.

West Lake Sammamish Parkway . 209364

Figure 1
Vicinity Map
Bellevue, Washington

Attachment 1 – Species Lists

Endangered Species Act Status of West Coast Salmon & Steelhead

(Updated July 1, 2009)

Species[1]			*Current Endangered Species Act Listing Status*[2]	*ESA Listing Actions Under Review*
Sockeye Salmon (*Oncorhynchus nerka*)	1	Snake River	***Endangered***	
	2	Ozette Lake	***Threatened***	
	3	Baker River	*Not Warranted*	
	4	Okanogan River	*Not Warranted*	
	5	Lake Wenatchee	*Not Warranted*	
	6	Quinalt Lake	*Not Warranted*	
	7	Lake Pleasant	*Not Warranted*	
Chinook Salmon (*O. tshawytscha*)	8	Sacramento River Winter-run	***Endangered***	
	9	Upper Columbia River Spring-run	***Endangered***	
	10	Snake River Spring/Summer-run	***Threatened***	
	11	Snake River Fall-run	***Threatened***	
	12	Puget Sound	***Threatened***	
	13	Lower Columbia River	***Threatened***	
	14	Upper Willamette River	***Threatened***	
	15	Central Valley Spring-run	***Threatened***	
	16	California Coastal	***Threatened***	
	17	Central Valley Fall and Late Fall-run	***Species of Concern***	
	18	Upper Klamath-Trinity Rivers	*Not Warranted*	
	19	Oregon Coast	*Not Warranted*	
	20	Washington Coast	*Not Warranted*	
	21	Middle Columbia River spring-run	*Not Warranted*	
	22	Upper Columbia River summer/fall-run	*Not Warranted*	
	23	Southern Oregon and Northern California Coast	*Not Warranted*	
	24	Deschutes River summer/fall-run	*Not Warranted*	
Coho Salmon (*O. kisutch*)	25	Central California Coast	***Endangered***	
	26	Southern Oregon/Northern California	***Threatened***	
	27	Lower Columbia River	***Threatened***	• Critical habitat
	28	Oregon Coast	***Threatened***	
	29	Southwest Washington	*Undetermined*	
	30	Puget Sound/Strait of Georgia	***Species of Concern***	
	31	Olympic Peninsula	*Not Warranted*	
Chum Salmon (*O. keta*)	32	Hood Canal Summer-run	***Threatened***	
	33	Columbia River	***Threatened***	
	34	Puget Sound/Strait of Georgia	*Not Warranted*	
	35	Pacific Coast	*Not Warranted*	
Steelhead (*O. mykiss*)	36	Southern California	***Endangered***	
	37	Upper Columbia River	***Threatened***	
	38	Central California Coast	***Threatened***	
	39	South Central California Coast	***Threatened***	
	40	Snake River Basin	***Threatened***	
	41	Lower Columbia River	***Threatened***	
	42	California Central Valley	***Threatened***	
	43	Upper Willamette River	***Threatened***	
	44	Middle Columbia River	***Threatened***	
	45	Northern California	***Threatened***	
	46	Oregon Coast	***Species of Concern***	
	47	Southwest Washington	*Not Warranted*	
	48	Olympic Peninsula	*Not Warranted*	
	49	Puget Sound	***Threatened***	• Critical habitat
	50	Klamath Mountains Province	*Not Warranted*	
Pink Salmon (*O. gorbuscha*)	51	Even-year	*Not Warranted*	
	52	Odd-year	*Not Warranted*	

1 The ESA defines a "species" to include any distinct population segment of any species of vertebrate fish or wildlife. For Pacific salmon, NOAA Fisheries Service considers an evolutionarily significant unit, or "ESU," a "species" under the ESA. For Pacific steelhead, NOAA Fisheries Service has delineated distinct population segments (DPSs) for consideration as "species" under the ESA.

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CRITICAL HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN
IN KING COUNTY
AS PREPARED BY
THE U.S. FISH AND WILDLIFE SERVICE
WASHINGTON FISH AND WILDLIFE OFFICE

(Revised December 15, 2010)

LISTED

Bull trout *(Salvelinus confluentus)* – Coastal-Puget Sound DPS
Canada lynx *(Lynx canadensis)*
Gray wolf *(Canis lupus)*
Grizzly bear *(Ursus arctos = U. a. horribilis)*
Marbled murrelet *(Brachyramphus marmoratus)*
Northern spotted owl *(Strix occidentalis caurina)*

Major concerns that should be addressed in your Biological Assessment of project impacts to listed animal species include:

1. Level of use of the project area by listed species.

2. Effect of the project on listed species' primary food stocks, prey species, and foraging areas in all areas influenced by the project.

3. Impacts from project activities and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to listed species and/or their avoidance of the project area.

Castilleja levisecta (golden paintbrush) [historic]

Major concerns that should be addressed in your Biological Assessment of project impacts to listed plant species include:

1. Distribution of taxon in project vicinity.

2. Disturbance (trampling, uprooting, collecting, etc.) of individual plants and loss of habitat.

1. Changes in hydrology where taxon is found.

DESIGNATED

Critical habitat for bull trout
Critical habitat for the marbled murrelet
Critical habitat for the northern spotted owl

PROPOSED

Revised critical habitat for bull trout

CANDIDATE

Fisher *(Martes pennanti)* – West Coast DPS
North American wolverine *(Gulo gulo luteus)* – contiguous U.S. DPS
Oregon spotted frog *(Rana pretiosa)* [historic]
Yellow-billed cuckoo *(Coccyzus americanus)*

SPECIES OF CONCERN

Bald eagle *(Haliaeetus leucocephalus)*
Beller's ground beetle *(Agonum belleri)*
Cascades frog *(Rana cascadae)*
Hatch's click beetle *(Eanus hatchi)*
Larch Mountain salamander *(Plethodon larselli)*
Long-eared myotis *(Myotis evotis)*
Long-legged myotis *(Myotis volans)*
Northern goshawk *(Accipiter gentilis)*
Northern sea otter *(Enhydra lutris kenyoni)*
Northwestern pond turtle *(Emys (= Clemmys) marmorata marmorata)*
Olive-sided flycatcher *(Contopus cooperi)*
Pacific lamprey *(Lampetra tridentata)*
Pacific Townsend's big-eared bat *(Corynorhinus townsendii townsendii)*
Peregrine falcon *(Falco peregrinus)*
River lamprey *(Lampetra ayresi)*
Tailed frog *(Ascaphus truei)*
Valley silverspot *(Speyeria zerene bremeri)*
Western toad *(Bufo boreas)*
Aster curtus (white-top aster)
Botrychium pedunculosum (stalked moonwort)
Cimicifuga elata (tall bugbane)

Attachment 2 – HI-RUN Stormwater Modeling Results

Highway Runoff Dilution and Loading model (HI-RUN) Version 2.0

End of Pipe Loading Subroutine Report

This model is for stormwater analysis associated with biological assessments, and is not a design tool.

Input Summary

Run Date/Time: 8/5/11 08:19
Outfall ID: WLSP
Rain Gauge: Puget East 40
Description: August 5, 2011 - Final WLSP Loading Analysis

Discharge Areas

Subbasin 1 - Baseline Conditions - 3.86 acres
no treatment - 0% infiltration - 3.86 acres

Subbasin 1 - Proposed Conditions - 3.38 acres
enhanced treatment - 0% infiltration - 3.38 acres

Subbasin 2 - Baseline Conditions - 0.54 acres
no treatment - 0% infiltration - 0.54 acres

Subbasin 2 - Proposed Conditions - 0.49 acres
enhanced treatment - 0% infiltration - 0.49 acres

Subbasin 3 - Baseline Conditions - 1.22 acres
no treatment - 0% infiltration - 1.22 acres

Subbasin 3 - Proposed Conditions - 1.23 acres
enhanced treatment - 0% infiltration - 1.23 acres

Load Analysis

	TSS Load (lb/yr)		Dissolved Copper Load (lb/yr)		Dissolved Zinc Load (lb/yr)	
	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed
Max	266301	52717	5.24	1.8	107	11
75th Percentile	5215	488	0.267	0.18	2.15	0.93
Median	2536	214	0.152	0.11	1.12	0.59
25th Percentile	1239	93	0.085	0.073	0.587	0.37
Min	22.3	1	0.004	0.007	0.017	0.028
P (exceed)		0.064		0.394		0.292

Concentration Analysis

Subbasin 1	TSS Conc (mg/L)		Dissolved Copper Conc (mg/L)		Dissolved Zinc Conc (mg/L)	
	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed
Max	4515.156	912.71	0.106	0.037	2.395	0.294
75th Percentile	123.963	12.936	0.006	0.005	0.051	0.024
Median	61.27	5.675	0.004	0.003	0.027	0.016
25th Percentile	30.053	2.51	0.002	0.002	0.014	0.01
Min	0.996	0.015	0	0	0.001	0.001
P (exceed)		0.068		0.431		0.315

Subbasin 2	TSS Conc (mg/L)		Dissolved Copper Conc (mg/L)		Dissolved Zinc Conc (mg/L)	
	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed
Max	6492.314	1131.112	0.096	0.034	1.375	0.261
75th Percentile	125.366	12.803	0.006	0.005	0.051	0.024
Median	61.52	5.634	0.004	0.003	0.027	0.016
25th Percentile	30.51	2.498	0.002	0.002	0.014	0.01
Min	0.693	0.032	0	0	0	0.001
P (exceed)		0.067		0.428		0.314

Subbasin 3	TSS Conc (mg/L)		Dissolved Copper Conc (mg/L)		Dissolved Zinc Conc (mg/L)	
	Baseline	Proposed	Baseline	Proposed	Baseline	Proposed
Max	6115.989	1071.61	0.111	0.038	2.134	0.275
75th Percentile	124.892	12.985	0.006	0.005	0.052	0.024
Median	61.647	5.674	0.004	0.003	0.027	0.016
25th Percentile	30.356	2.516	0.002	0.002	0.014	0.01
Min	0.698	0.022	0	0	0	0.001
P (exceed)		0.068		0.429		0.314