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. 14-141095-LO

Project Name/Address: PSE Lakeside Substation Upgrade/ 13615 SE 26th St.

Planner: Heidi M. Bedwell

Phone Number: 425-452-4862/ hbedwell@bellevuewa.gov

Minimum Comment Period: October 30, 2014

Materials included in this Notice:

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

OTHERS TO RECEIVE THIS DOCUMENT:

- ☒ State Department of Fish and Wildlife / Sterwart.Reinbold@dfw.gov; Christa.Heller@dfw.wa.gov;
- ☒ State Department of Ecology, Shoreline Planner N.W. Region / Jobu461@ecy.wa.gov; sepaunit@ecy.wa.gov
- ☐ Army Corps of Engineers Susan.M.Powell@nws02.usace.army.mil
- ☐ Attorney General ecyolyef@atg.wa.gov
- ☒ Muckleshoot Indian Tribe Karen.Walter@muckleshoot.nsn.us; Fisheries.fileroom@muckleshoot.nsn.us

Environmental Checklist Reviewed by Heidi M. Bedwell 10/15/2014

City of Bellevue Submittal Requirements	27a

ENVIRONMENTAL CHECKLIST

9/10/2014

If you need assistance in completing the checklist or have any questions regarding the environmental review process, please visit or call Development Services (425-452-6800) between 8 a.m. and 4 p.m., Monday through Friday (Wednesday, 10 to 4). Assistance for the hearing impaired: Dial 711 (Telecommunications Relay Service). .

BACKGROUND INFORMATION

Property Owner: **Puget Sound Energy**

Proponent: **Puget Sound Energy**

Contact Person: **Kerry Kriner, Puget Sound Energy**
(If different from the owner. All questions and correspondence will be directed to the individual listed.)

Address: **PO Box 97034, PSE 9N**
Bellevue, WA 98009

Phone: **425-462-3821**

Proposal Title: **PSE Lakeside Substation Rebuild**

Proposal Location: **13615 SE 26th Street**
(Street address and nearest cross street or intersection) Provide a legal description if available.

Please attach an 8 ½" x 11" vicinity map that accurately locates the proposal site.

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

1. General description: **Rebuild of existing 115 kV electrical substation, including removal of existing equipment, foundations, a maintenance building, and a control house building. The improvements will include replacement of 12 existing 115 kV dead end bays and construction of a new control building within the existing substation and maintenance building footprints. Existing stormwater facilities inside the substation will be reconstructed, with stormwater collected in catch basins and routed to a pond south of the substation fence. The project includes temporary guying or replacement of 11 transmission poles outside the substation fence. Three wood poles will be added on a temporary basis to facilitate the substation construction.**

2. Acreage of site: **4.83 acres**

3. Number of dwelling units/buildings to be demolished: **2**

4. Number of dwelling units/buildings to be constructed: **1**

5. Square footage of buildings to be demolished: **Approximately 3,340 square feet**

6. Square footage of buildings to be constructed: **Approximately 1,560 square feet**

7. Quantity of earth movement (in cubic yards): **Approximately 800 cubic yards**

8. Proposed land use: **electrical substation**

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

The proposed control house will be one story (max roof height 19'-5") and include vertical metal siding with CMU veneer and a metal roof.

10. Other

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

Construction is expected to be completed by December 2016.

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

There are no plans for future additions, expansion or further activity related to this proposal. A 230 kV substation may be constructed on the PSE property to the south within the next 5 years; however that project would be independent of the proposed 115 kV substation project.

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

Critical Areas Report, The Watershed Company, September 2014
Geotechnical Engineering Services Report, GeoEngineers, May 2013

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 applications pending for governmental approvals of other proposals directly affecting the property covered by this proposal.

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.

City of Bellevue Critical Areas Land Use Permit
City of Bellevue Land Use Exemption
City of Bellevue Clearing and Grading Permit
City of Bellevue Building Permit
City of Bellevue Demolition Permit
City of Bellevue SEPA Threshold Determination
Department of Ecology NPDES Coverage

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

X Clearing & Grading Permit
Plan of existing and proposed grading
Development plans

X Building Permit (or Design Review)

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Site plan
Clearing & grading plan

☐ Shoreline Management Permit
Site plan

A. ENVIRONMENTAL ELEMENTS

1. Earth

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

b. What is the steepest slope on the site (approximate percent slope)?

There are areas of slope over 40 percent in grade along the eastern edge of the site.

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.

GeoEngineers reviewed available geologic maps, including the "Geologic map of surficial deposits in the Seattle 30' by 60' quadrangle," (Yount et al., 1993) and the Washington State Department of Natural Resources (DNR) Geologic Information Portal (WA DNR, 2013). The soils mapped in the project vicinity are recessional outwash deposits. Recessional outwash generally consists of moderately sorted and stratified gravel and sand with minor amounts of silt and clay. These materials are deposited in streams emanating from the retreating glaciers and are generally loose to medium dense. The recessional outwash generally overlies glacial till which is mapped to the south and east of the site.

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

There is no surface indications or known history of unstable soils in the immediate vicinity of the project site.

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

Approximately 800 cubic yards of material will be excavated to construct the proposed stormwater pond.

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

Erosion could occur as a result of clearing and construction, but is expected to be minimal. Soil exposure will be limited due to the existing site being either asphalt or yard course, preventing erosion and tracking of material off site from vehicles.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 9.3 percent

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

Project impacts will be reduced through the implementation of a temporary erosion and sedimentation control (TESC) plan. The plan will be designed in accordance with City of Bellevue and PSE standards for erosion and sedimentation control.

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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.

Dust and vehicle exhaust emission will likely result from construction activities. These activities are minor and temporary in nature.

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

No off-site sources of emissions or odor will affect this proposal.

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

If necessary, BMPs will be used to control dust in construction areas.

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.

The Watershed Company identified four stream segments and four wetlands within the project area. These include:

Feature	Category/Type
Wetland BC	III
Wetland D	III
Wetland EE	III
Wetland I	III
Stream B	Type F
Stream C	Type F
Stream D	Type F
Stream F	Type F

(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.

Work will not occur within or over any stream segments. One existing steel pole within Wetland BC will be replaced with two glu laminate poles. Pole replacement and construction of the stormwater pond will occur within wetland and stream buffer areas.

(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.

No fill or dredge material will be placed in or removed from the streams. One existing steel pole located within wetland BC will be replaced with two glu laminate poles. This will account for approximately 9 cubic yards of fill.

(4) Will the proposal require surface water withdrawals or diversions? Give general description,

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purpose, and approximate quantities if known.

The proposal will not require any surface water withdrawals or diversions.

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

The proposal does not lie within a 100-year floodplain.

(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.

The proposal does not involve any discharges of waste materials to surface water.

b. Ground

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

No ground water will be withdrawn or water will be discharged to ground water as a result of this proposal.

(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.

No waste material will be discharged into the ground as a result of this project.

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.

Surface water will be collected within the substation through catch basins and routed to the southwest corner of the site to an existing drainage feature, which is the natural drainage location of the existing storm system.

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

No waste materials are anticipated to enter ground or surface waters as a result of this project.

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

A stormwater pond will be constructed south of the substation fence in compliance with City of Bellevue drainage requirements.

4. Plants

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

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x deciduous tree: alder, maple, aspen, other

x evergreen tree: fir, cedar, pine, other

x shrubs

x grass

☐ pasture

☐ crop or grain

x 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?

No significant vegetation is proposed to be removed as part of this proposal. Ground cover and small shrubs may be brushed in order to facilitate equipment access during construction.

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

No threatened or endangered species 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:

Existing vegetation is proposed to be retained.

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:

X Birds: hawk, heron, eagle, songbirds, other:

☐ Mammals: deer, bear, elk, beaver, other:

☐ Fish: bass, salmon, trout, herring, shellfish, other:

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

No threatened or endangered species are known to be on or near the site.

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

The site is located within the Pacific Flyway.

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

Existing vegetation is proposed to be retained.

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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.

The project involves replacement of existing electrical utility infrastructure. There are no energy needs associated with the completed project.

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

The project will not affect the potential use of solar energy by 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:

The proposed control house will be constructed to current energy efficiency requirements under the building code.

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 known environmental health hazards that will occur as a result of this project. PSE substations and transmission facilities are designed, constructed, and operated in accordance with all applicable federal, state, and local regulations and safety codes.

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

No special emergency service needs are anticipated for this project.

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

No measures are proposed as there are no anticipated hazards.

b. Noise

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

There are no known noise impacts in the area that will affect the project.

(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.

Short-term construction noise impacts will occur from construction equipment and vehicles. Normal construction hours will be observed, generally between 7:00 am and 6:00 pm on weekdays, and 9:00 am and 6:00 pm on Saturdays, if necessary and in accordance with Bellevue City Code 9.18. No work is proposed for Sundays or legal holidays.

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

Noise impacts will be limited to the working hours allowed by code.

8. Land and Shoreline Use

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

There is an existing PSE 115 electrical substation on the site with 11 transmission lines connected to the substation. To the north of the site across SE 26th Street there is existing residential development and PSE's transmission corridor. To the east of the site is an existing private school, to the south is PSE property containing a transmission corridor and pole yard, and to the west is existing industrial development.

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

There is no evidence the site has been used for agriculture.

c. Describe any structures on the site.

There is an existing control house within the substation fence and an existing maintenance building.

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

The existing control house and maintenance building will be demolished.

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

Light Industrial - LI

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

Light Industrial - LI

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

Not applicable.

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

The Watershed Company identified four wetlands and four stream segments that are regulated as critical areas. Additionally, there is an isolated area of slope exceeding 40 percent in grade to the east of the substation, however no work is proposed in this area.

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

The substation does not require dedicated on-site staff. Short duration visits to the site (typically a few hours per month) by PSE personnel or their contractors will be required to perform maintenance and inspection activities.

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

The completed project will not result in the displacement of anyone.

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

The project will not result in displacements; therefore no measures are proposed.

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

The substation will be rebuilt within the existing limits of the current substation. An existing

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maintenance building will be demolished and replaced with a more aesthetically compatible control house that will be partially viewable from SE 26th Street. The site is within an Industrial zoning district and compatible with surrounding development.

9. Housing

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

No housing units are proposed as part of this project.

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

No housing units will be eliminated as part of this project.

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

There will be no housing impacts as a result of this project; therefore no measures are proposed.

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?

The tallest pole will be 75 feet and will replace an existing 75 foot high wood pole. The control house building will be approximately 20 feet in height and include vertical metal siding.

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

No views in the immediate vicinity will be altered or obstructed.

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

No impacts are anticipated; therefore no measures are proposed.

11. Light and Glare

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

Existing substation lighting will be replaced with new light standards, generally 5-6 feet in height. Lighting will be located within the substation fence and shielded downward. Additionally, lighting will be installed above the entrances to the control house. All lighting will produce minimal glare and is required for worker safety.

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

Light and glare from the finished project will not pose a safety hazard or interfere with views.

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

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No known existing off-site sources of light or glare will affect the proposal.

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

Substation lighting will be shielded and directed downward.

12. Recreation

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

A City of Bellevue park (Sunset Park) is located at the intersection of SE 26th Street and 139th Avenue SE east of the site.

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

The proposed project will not displace any existing recreational uses.

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

No measures as proposed to reduce or control impacts as no impacts are anticipated.

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 places or objects listed on, or proposed for, national, state, or local preservation registers on or next to the site.

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

No known landmarks or evidence of historic, archeological, scientific, or cultural importance are on or next to the site.

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

No measures are proposed as no impacts are anticipated. If a potential new historic, archaeological, scientific, or culturally important site is encountered during construction, activities will be halted and local authorities and the DAHP will be notified immediately.

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.

The site is served by SE 26th Street. The existing access driveway will be maintained to serve this project.

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

The site is currently served by public transit.

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

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The project will not include formal parking spaces. There will be sufficient parking onsite for multiple maintenance vehicles adjacent to the driveway and within the substation fence.

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).

No new roads or streets or improvements to roads or streets will be required as part of this proposal.

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

The project will not use water, rail, or air transportation.

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

The completed project will not generate net new vehicle trips. PSE and contract employees involved with inspection and maintenance of the substation and or transmission lines may generate an average of one trip per day.

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

No measures are proposed, as no impacts are anticipated.

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 anticipated to result in an increased need for public services.

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

No measures are proposed, as no impacts are anticipated.

16. Utilities

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

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.

The project involves replacing existing electrical utility infrastructure.

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.

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Signature.....

Date Submitted.....9/12/14.....

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Lakeside 115 kV Substation

VICINITY MAP

PUGET SOUND ENERGY

CRITICAL AREAS REPORT

Puget Sound Energy - Lakeside Substation Rebuild

Prepared for:

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Puget Sound Energy
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The Watershed Company Reference Number:
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The Watershed Company Contact Person:
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CRITICAL AREAS REPORT

PUGET SOUND ENERGY – LAKESIDE SUBSTATION REBUILD

1 INTRODUCTION

1.1 Background and Purpose

The purpose of this report is to document critical areas that may be impacted by the proposed Puget Sound Energy (PSE) Lakeside Substation rebuild. The site presently contains a 115kV substation serving 11 transmission lines. A PSE pole yard is located on property to the south; a commercial warehouse and other business lots border the PSE site to the west; and a private school is located east of the site. Wetland and stream features surround the existing transmission lines.

PSE proposes to rebuild the existing Lakeside Substation which will include replacement or temporary guying of existing transmission poles outside the substation fence. Work within wetland and buffer areas will require issuance of a Critical Areas Land Use Permit, as well as approval of a critical areas report. Specifically, Bellevue Land Use Code (LUC) 20.25H.230 requires compliance with specific critical areas report criteria as part of any modification to a critical area or critical area buffer. This report fulfills these criteria and presents a detailed discussion of the habitat and vegetation on-site and how the proposal can be implemented with no net loss of on-site or off-site critical area functions and values.

1.2 Description of Project Area

The project area includes two adjacent PSE-owned parcels located at 13615 SE 26th Street (parcel 1024059083 and 1024059097) in the City of Bellevue, Washington (Figure 1). The parcels total approximately 4.8 acres in size. There are two additional poles within a PSE easement on parcel 5453300150. One of these poles will be replaced and the other relocated away from its current location between two streams. The project vicinity is a mix of commercial and school property. The developed portions of the two parcels consist of a 115 kV substation, petroleum gas line and associated above ground equipment, and 11 transmission line corridors. The site slopes generally down from east to west, with an average slope of about 11 percent, but the gradient is disrupted by steep stream channels. Site photos are provided in Appendix A.

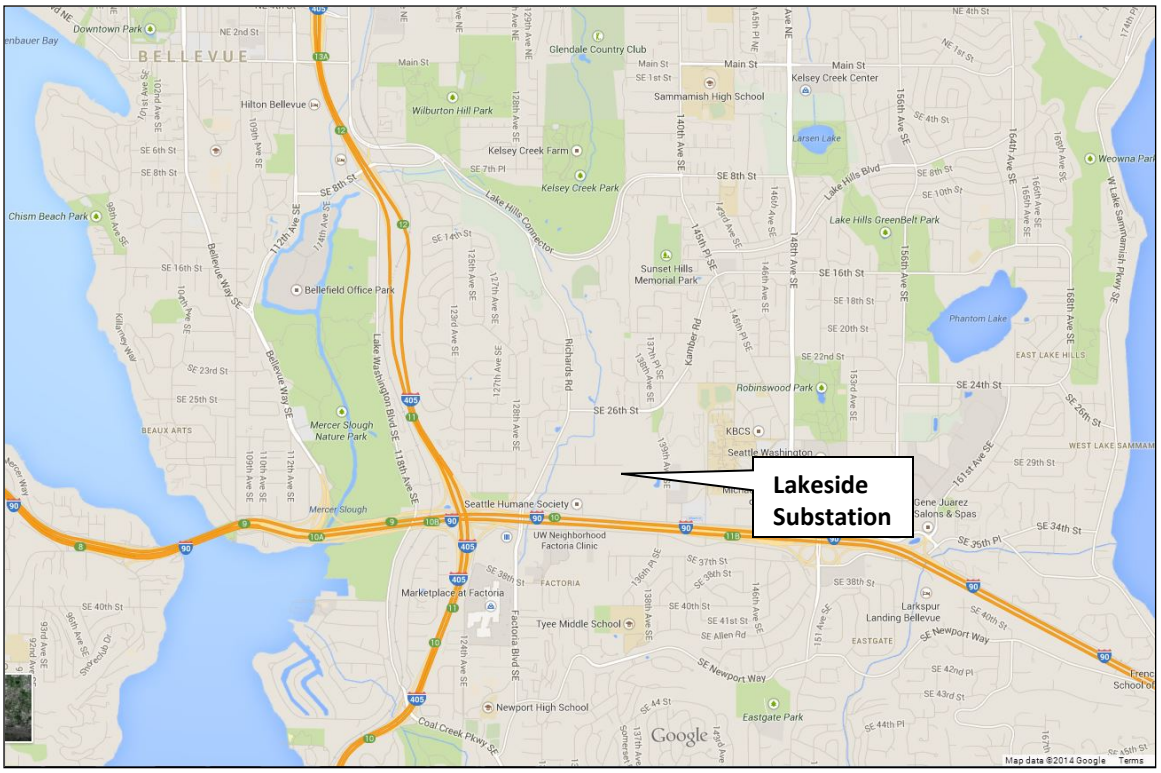


Figure 1. Vicinity Map.

The project area contains, in whole or partially, four wetlands and four stream segments. Each of these features is described in the following sections, and categories and buffer requirements are summarized in Table 1. Wetland data sheets and rating forms are provided in Appendices B and C, respectively. A map of on-site critical areas is included as Appendix D.

1.2.1 Vegetation/Soils

Between the substation and the pole storage yard, the site is undeveloped. Undeveloped areas on the site include forested and scrub-shrub critical areas, associated buffers, and non-wetland areas. Vegetation in buffers and non-wetland is a mix of non-native blackberry brambles, lawn and meadow grasses, and patches of trees and shrubs. Shore pine, red alder, and bigleaf maple are the dominant tree species. Shrub communities are characterized by cherry laurel and salmonberry. Locally dominant clusters of Scotch broom are also present.

Non-wetland soils are primarily very dark grayish brown to very dark brown and brown (10YR 2/2 and 3/2; 2.5YR 2.5/2 and 4/3) sandy loam and gravelly sandy loam, with some areas of high organic content. According to Natural Resources Conservation Service (NRCS) soil maps, the project site is comprised of Urban land (Ur) and Everett gravelly sandy loam, 15 to 30

percent slopes (EvD), and Ragnar-Indianola association, moderately steep (RdE).

1.2.2 Habitat

The vegetation described above provides some habitat along the property fringes. Forest canopy along the riparian corridor along Streams B, D and F, and a few conifers throughout the property provide habitat for songbirds. Small mammals, such as mountain beaver, may find suitable habitat on site fringes. There are a few native and non-native nut- and berry-producing plants on the site, which provide a food source for songbirds and small mammals. However, these resources are not unique to the site or particularly rare in the vicinity.

The location of the property within the surrounding landscape is relevant in characterizing habitat, as it determines whether the opportunity for wildlife to use a site exists. A patchwork of forest and shrub plant communities are broken by numerous street crossings and developments. Breaks in the corridor limit wildlife access and use.

The on-site streams are tributaries to Richards Creek. The lower-gradient stream segments are presumed fish-accessible. On-site streams are at least partially shaded by a forested riparian area.

2 Stream and Wetland Study

2.1 Study Area

As stated above, the study area includes the parcels located at 13615 SE 26th Street (parcels 1024059083 and 1024059097). They total approximately 4.8 acres.

2.2 Methods

Public-domain information on the subject property was reviewed for this delineation study. These sources include USDA Natural Resources Conservation Service Soil maps, U.S. Fish and Wildlife Service National Wetland Inventory maps, Washington Department of Fish and Wildlife interactive mapping programs (PHS on the Web), City of Bellevue Critical Area maps, and King County's GIS mapping website (iMAP).

The study area was evaluated for wetlands using methodology from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (Regional Supplement) (US Army Corps of Engineers [Corps] May 2010). The wetland boundary was determined on the basis of an examination of vegetation, soils, and hydrology. Areas

meeting the criteria set forth in the Regional Supplement were determined to be wetland. Soil, vegetation, and hydrologic parameters were sampled at several locations along the wetland boundary to make the determination. Data points on-site were marked with yellow- and black-striped flags. Delineated wetlands were classified using the *Western Washington Wetland Rating System* (Ecology, Aug 2004, version 2) (Rating System).

The ordinary high water mark (OHWM) of streams in the study area was determined based on the definition provided by the Washington Department of Fish and Wildlife and WAC 220-110-020(69). The OHWM is located by examining the bed and bank physical characteristics and vegetation to ascertain the water elevation for mean annual floods. Areas meeting the definition were determined to be the OHWM and flagged. The land surveyor also mapped 1-foot contours in the vicinity so top-of-bank could be determined. Field observations were used to classify streams according to the City of Bellevue Critical Areas Ordinance.

The project site was initially screened for critical areas as part of a larger study in August 2012; wetland and stream features were delineated and GPS-located using a hand-held Trimble Geo-XH unit. A delineation study specific to this project was done in May 2014. The 2014 study was limited to areas around the planned utility work; those delineation flags were surveyed. The 2014 survey and 2012 GPS maps were combined to provide one comprehensive stream and wetland map for the site (Appendix D).

2.3 Findings

Four wetlands and four stream segments are located on the project site. These features are described in the following sections; and categories and buffer requirements are summarized in Section 3, Local Regulations. A stream and wetland delineation map is provided on sheet 1 of the conceptual mitigation plan (Appendix D).

2.3.1 Wetlands

Wetland BC

This wetland extends across the southeast corner of the project site and extends off-site to the south, east and west. Although parts of the wetland are contiguous with adjacent stream segments, hydrology comes mainly from seeps and generally slopes in one direction, draining to each stream without being impounded. It therefore is classified as a slope wetland.

The Wetland BC rating unit includes forested, shrub, and emergent areas, as well as areas with all of these vegetation classes together. Forested portions of the wetland unit are made up of red alder, western red cedar, bigleaf maple, black

cottonwood, cascara, red elderberry, red flowering currant, vine maple, salmonberry, beaked hazelnut, Scouler's willow, red-osier dogwood, Sitka willow, fringecup, skunk cabbage, stinging nettle, giant horsetail, sword fern, lady fern, reed canarygrass, and sedges. Emergent portions of the wetland unit are dominated by reed canarygrass. The on-site portion of Wetland BC is characterized by reed canarygrass at the west end and transitions to native emergents, shrub, and forest at the east end. Soils are very dark brown to black (2.5 Y 2.5/1) sandy loam with high organic content. Soils were saturated to the surface and a water table was present at two inches below the soil surface during the site visit.

Wetland BC provides the highest quality wildlife habitat of the onsite wetlands due to its size, interspersion of vegetation classes, and features such as snags and undercut banks. It is confined by development on much of its boundary, but has vegetated buffer in areas to the north and east.

Wetland D

Wetland D is a small wetland located at the southwest corner of the property and it continues off-site a short distance to the west. It is on a slope bordered by Streams B, C, and D. Stream B appears to sheet-flow through Wetland D during high flow events. Therefore, Wetland D is classified as a riverine wetland. The wetland is comprised of palustrine scrub-shrub and emergent plant communities, characterized by salmonberry, reed canarygrass, and stinging nettle. Soils were saturated to the surface at the time of the May 2014 delineation study.

Wetland EE

This wetland is north of the substation. It is a slope wetland that drains to a ditch that is present along the eastern half of the substation. It contains emergent, scrub-shrub, and forested vegetation communities. Dominant plants include shore pine, alder, and English hawthorn in the canopy with willow species, cattail, soft rush, and giant horsetail common in the understory. Hydrology comes from groundwater and is supplemented by surface water. Soils are a dark brown (10 YR 3/1) sandy loam and gravelly sandy loam with redoximorphic features (RMF) present along pore linings. Soils were saturated at seven inches below the soil surface during the site visit.

Wetland I

Wetland I is located in the northwest corner of the study area. It is a relatively small, narrow wetland located at the toe of a slope and is rated as depressional. Wetland I contains a forested vegetation community dominated by weeping willow, red alder, and black cottonwood in the canopy with Himalayan blackberry, giant horsetail, soft rush, and grasses in the understory. Hydrology comes from groundwater and is supplemented by surface water. Soils are a dark

brown (10 YR 3/1) gravelly sandy clay loam with organics masking RMF. Soils were saturated to the surface and a water table was present at nine inches below the soil surface at the time of the site visit.

2.3.2 Streams

Stream B

This short tributary to Stream C originates in Wetland BC, near the edge of a fill area that extends out from the developed PSE property to the north. The origin appears to be a seep, although it is possible that a well-buried culvert exists in the ground. The stream runs west to the northwest corner of the property, where, it drains to Stream C. Flow is likely intermittent, although the stream was running during site visits in May and June 2012 and May 2014. Fish use of Stream B cannot be precluded from the field study alone, as gradients are not steep enough to prevent fish passage.

Stream C

The King County iMAP database depicts Stream C as originating in two tributaries southeast of the PSE pole yard and running through off-site wetlands before flowing west along the south edge of the pole yard, and then north in the vicinity of the pole to be replaced on the easement west of the pole yard. It eventually collects water from Stream B and Stream D and then flows west, where the iMAP database shows it to continue roughly west in a mix of natural channels and pipes or culverts.

Stream C appears to have perennial flow. Both stream banks were delineated in May 2014. The left bank in this area is bounded by fill from the adjacent development. The right bank is bordered by vegetated buffer and Wetland BC, which drains to the stream. The City of Bellevue stream inventory map depicts Stream C as Type F, fish bearing, and WDFW Priority Habitats and Species maps indicate the presence of resident cutthroat trout in the stream.

Stream D

This short tributary to Stream C is located on the southwest corner of the existing Lakeside Substation property. It runs southwest for a brief length and drains to Stream C at the confluence of Streams B and C and continues as Stream C, as described above. Although this appears to be an excavated feature, fish access from Stream C cannot be precluded; the low gradient does not present a barrier. The stream is not shown on either the King County iMAP database or the City of Bellevue stream inventory map.

Stream F

The confluence of Stream F and Stream B occurs on the south property boundary. Stream F is a very short reach originating from either a seep or a

buried culvert in a steep slope at the edge of Wetland BC and flowing north to Stream B. It is very deeply incised, but the gradient is not high enough to preclude fish access from Stream B. It is not shown on King County or City of Bellevue stream maps.

3 LOCAL REGULATIONS

3.1 Local Regulations

3.1.1 Wetlands

In the City of Bellevue, wetlands and streams are regulated under the Critical Areas Ordinance (LUC 20.25H). Wetland buffer widths are determined based on site condition (developed or undeveloped), wetland category, and habitat score as determined using Ecology's Wetland Rating System. Bellevue defines a developed site as "any site where the wetland and wetland buffer have been included within an NGPE or NGPA approved and recorded prior to August 1, 2006." Wetlands on developed sites maintain the NGPA/NGPE recorded buffer width. If no NGPA/NGPE was previously recorded for the onsite wetland and buffer, then the site is treated as undeveloped, "regardless of whether the site contains a primary structure" (LUC 20.25H.095.C.1.a). None of the development on the property fits the definition of a primary structure.

Delineated wetlands were rated under the 2004 (Annotated Version) Ecology Wetland Rating System. Rating forms are included in Appendix C. The wetlands addressed in this study are Category III. Because the habitat score for Wetland BC is greater than or equal to 20 and less than 29, the required buffer is wider than that for the Category III wetlands with a lower habitat score. Table 1 shows the categories and regulatory buffers for all delineated wetlands. Category III wetlands require an additional structure setback of 15 feet.

Table 1. Aquatic feature ratings and regulatory buffers.

Feature	Category/Type	Habitat Score	Buffer (feet)	Structure Setback (feet)
Wetland BC	III	22	110	15
Wetland D	III	16	60	15
Wetland EE	III	14	60	15
Wetland I	III	5	60	15
Stream B	Type F	N/A	100	20
Stream C	Type F	N/A	100	20
Stream D	Type F	N/A	100	20
Stream F	Type F	N/A	100	20

3.1.2 Streams

Streams in Bellevue are rated as one of four types based on inventory status as Shorelines of the State, fish use, and connectivity to other streams. As with wetlands, stream buffer widths are determined based on a combination of the stream type and whether the site is "developed" or "undeveloped." Additional structure setbacks are dependent upon the stream type.

None of the onsite streams is a Shoreline of the State due to low flow volumes. The identified streams are all rated as Type F, non-Shorelines of the State containing fish or fish habitat, and require 100-foot regulatory buffers. It should be noted that Stream B is rated as non-fish bearing on the City of Bellevue stream inventory map. However, because it is connected to Stream C by surface water and no fish barrier between the streams was observed during site visits, this report categorizes Stream B as Type F. Structure setbacks are also required on streams and vary by water-type rating. Stream buffer and structure setback requirements for the site are summarized in Table 1, above.

3.1.3 Alteration of Critical Areas and Buffers

In general, the City of Bellevue will not allow critical areas to be filled or altered. The City Code requires that an applicant adjust proposed site plans to avoid and/or minimize impacts to critical areas and their respective buffers. Buffers may be modified under two options detailed in LUC 20.25H.075 and LUC 20.25H.230. Stream and wetland buffers and setbacks can only be modified through an approved critical areas report. The applicant must demonstrate that the modifications to the stream buffer and setback, combined with any restoration efforts, will result in equivalent or better protection of stream/wetland functions and values than would result from adhering to the standard application of the regulations. Restoration of the critical area may involve restoring the buffer by removing invasive plant species and/or planting native vegetation within the buffer.

For impacts to wetland or stream buffers, mitigation is generally required at a 1-to-1 ratio. Any plan drafted to reduce buffer widths must be approved by the City of Bellevue through a review process. Pursuant to LUC 20.25H.225: "The director may encourage, facilitate, and approve innovative mitigation projects that are based on the best available science." An approved mitigation plan would require monitoring and maintenance in accord with LUC 20.25H.210.

Any permanent unavoidable wetland impacts must be mitigated at the following ratios for replacement using wetland creation - Category III: 2-to-1; Category IV: 1.5-to-1 (LUC 20.25H.105.C). Impacts to wetland critical area functions may alternatively be mitigated by enhancement of existing significantly degraded

wetlands, pursuant to LUC 20.25H.230 and LUC 20.25H.110. Temporary wetland impacts are typically restored in-place at a 1-to-1 ratio.

3.2 State and Federal Regulations

Wetlands of any size are also regulated by the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act. Any filling of Waters of the United States, including wetlands (except isolated wetlands), would require notification and permits from the Corps. Onsite wetlands would likely not be considered isolated. Federally permitted actions that could affect endangered species (i.e. salmon or bull trout) may also require a biological assessment study and consultation with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service. Application for Corps permits may also require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination from Ecology.

In general, neither the Corps nor Ecology regulates wetland buffers, unless direct impacts are proposed. When direct impacts are proposed, mitigated wetlands may be required to employ buffers based on Corps and Ecology joint regulatory guidance.

4 PROJECT DESCRIPTION

Project Purpose

PSE is rebuilding the existing 115 kV substation to replace aging equipment and upgrade system reliability. In order to perform the substation construction, increased stability of the existing transmission poles serving the Lakeside Substation is required for safety and system reliability. A total of 10 poles (including 2 H-frames) require increased stability to support additional wire weight during construction. While the substation is under construction, existing transmission lines will be "long-lined", which means they will be connected to continue service while the substation is not in service. Some poles will be replaced and others will receive new guy-wire anchors. Three temporary poles will also be installed. In addition to pole maintenance, a new detention pond will be constructed outside the substation fence.

Mitigation Sequencing

Pursuant to LUC 20.25H.215, attempts to avoid and minimize impacts to the on-site critical areas and associated buffers have been taken.

Avoidance: Completely avoiding impacts to all critical areas that surround the existing transmission lines is not feasible. Placement of poles and associated guy-wires is limited by existing infrastructure, including the Lakeside Substation, Olympic Gas pipeline, and

adjacent developments. The project will incur unavoidable permanent and temporary wetland impacts, and permanent and temporary buffer impacts. However, PSE is abandoning one pole that is surrounded by wetland and streams to avoid direct stream and wetland impacts as feasible.

Minimization: Minimization techniques were utilized during the design process in order to limit impacts to the wetlands, streams, and buffers. Minimization measures included:

1. Locating construction access as far away from critical areas as feasible.

2. Limiting the construction disturbance to the minimum feasible size around each pole and access point.

3. Designing pole improvement to achieve reliable transmission line operations with minimal site disturbance. For example, guy-wire anchors will be installed instead of complete pole replacement where feasible.

4. Site disturbance will primarily span areas dominated by invasive plants, such as Himalayan blackberry and reed canarygrass.

Mitigation: To off-set unavoidable impacts for pole replacement associated with the substation improvement project, proposed mitigation includes restoration of temporary impacts, and wetland and buffer enhancement planting. Proposed mitigation is summarized in Table 2 below and on the conceptual mitigation plan (Appendix D).

Table 2. Impact and Mitigation Summary

Critical Area	Impact Type	Impact Area	Mitigation Action	Mitigation Area	Ratio
Wetland	Permanent	57 SF	Wetland enhancement	1,061 SF	18.6:1
Wetland buffer	Permanent	9,613 SF	Buffer enhancement	9,959 SF	1.04:1
Wetland	Temporary	779 SF	Hydro-seed with native seed mix	11,433 SF	1:1
Wetland buffer	Temporary	10,654			
	Total Impacts	**21,103 SF**	**Total Mitigation**	**22,453 SF**	

Wetland and buffer enhancements must adhere to the vegetation height restrictions for clearance from transmission lines as required to meet PSE safety standards. Therefore, proposed enhancements are limited to native shrub and groundcover species. A suggested mitigation plant list, sorted by sun-shade tolerance is provided on sheet 2 of the conceptual mitigation plan (Appendix D). The areas identified for enhancement are generally dominated by invasive weedy vegetation and/or sparsely vegetated;

enhancement planting will improve wetland and buffer functions. Overall, a net improvement in critical area functions is proposed.

5 IMPACT ASSESSMENT / LIFT ANALYSIS

For the purposes of this section, an assessment of the proposed impacts resulting from the project will compare the pre-existing condition to the proposed condition. A summary of these impacts along with the proposed restoration is presented in the Table 2 above.

As documented in the site photos provided in Appendix A – Site Photos, the proposed impact and mitigation areas are generally characterized by invasive plants, such as non-native blackberry, Scotch broom, reed canarygrass, and cherry laurel. Areas of mowed lawn and meadow grass are also present. Table 3 below summarizes impacts, existing conditions, and proposed conditions. An analysis of the specific functions and values provided by the pre-existing site and the post-project site is also provided in Table 3.

Table 3. Site specific descriptions of impact area conditions and proposed changes.

Impact Location	Existing condition	Proposed action
Wetland I buffer	The impact area contains lawn and ornamental shrubs, including laurel.	Remove non-native trees, hedge and invasive weeds. Apply a native grass seed mix to allow access to pole.
	The remainder of the buffer is characterized by non-native blackberry brambles (south), and lodgepole pine, and arborvitae with a grass understory.	Remove invasive plants and enhance with native shrubs and groundcover.
Wetland I	Wetland I is characterized by weedy emergent plants, reed canarygrass, and weeping willow.	Enhance entire wetland with native shrubs.
Wetland EE buffer	The temporary impact area is characterized by mowed lawn, non-native blackberry brambles and reed canarygrass mixed with native shrubs.	Remove invasive plants and restore with native seed mix. Existing native shrubs will be maintained as feasible.
Wetland BC buffer, south of substation (proposed detention pond)	This area contains a rip-rap lined ditch, compact dirt and gravel walkway (substation perimeter) and beyond that is characterized by meadow grass mixed with non-native blackberry, Scotch broom, and other herbaceous weeds. Some ferns are present.	Permanent buffer impact will be offset through wetland I buffer enhancement (summarized above).

Impact Location	Existing condition	Proposed action
Wetland BC buffer, pole replacements	Meadow grass, reed canarygrass and non-native blackberry cover the area up to the existing tree line. Non-native blackberry brambles and Scotch broom form locally dominant patches throughout the area.	Remove invasive plants and restore with native seed mix. Existing native shrubs will be maintained as feasible.
Wetland BC, permanent impact	Willows, emergent wetland plants, and reed canarygrass characterize the area. Non-native blackberry vines have encroached into the surrounding wetland area.	Remove invasive plants and restore with native seed mix. Existing native shrubs will be maintained as feasible. Additionally, Wetland I will be enhanced as summarized above.
Stream C buffer	The impact area is characterized by reed canarygrass and non-native blackberry vines.	Remove invasive plants and restore with native seed mix. Existing native shrubs will be maintained as feasible.

Proposed mitigation maintains wetland and buffer functions and values through wetland and buffer enhancement, and temporary impact restoration. Permanent wetland impacts will be mitigated through enhancement of degraded wetland areas at ratio of 18.6 to 1. The proposed enhancement exceeds Ecology recommendations of an 8:1 wetland enhancement ratio for Category III wetlands (Ecology Publication No. 05-06-008, Appendix 8-C). Permanent buffer impacts, required for long-term pole access and a new detention pond, will be offset through a combination of hydroseeding, and buffer enhancement. Temporary buffer impacts will be restored with native grass seed mix.

A greater area of native habitat will result from the proposal. The property will be more suitable overall for urban songbird and small mammal species than it is presently; the understory will contain more woody vegetation and a greater structural complexity, which is more attractive to songbirds and small mammals than is low-growing, homogeneous vegetation. As well, a greater mix of flowering, fruiting and seeding plants will provide forage over a longer yearly timespan than the relatively uniform existing invasive vegetation and sparse understory areas. Wildlife species of the Pacific Northwest are also better adapted to forage provided by native plants than non-native species.

6 PERMIT NARRATIVE

Repair and maintenance of utility facilities are allowed pursuant to LUC 20.25H.055 and the associated performance standards. Wetland, stream, and buffer impacts must adhere to LUC 20.25H.055.C.1. Stream impacts are allowed pursuant to LUC 20.25H.080.A and wetland impacts are allowed pursuant to LUC 20.25H.100. New or

expanded stormwater facilities are allowed pursuant to LUC 20.25H.055.C.2, LUC 20.25H.080.A and B, and LUC 20.25H.100.

Additionally, critical areas and structure setbacks may be modified pursuant to LUC 20.25H.230. Wetland enhancement may be considered as mitigation for wetland impacts pursuant to LUC 20.25H.110 and LUC 20.25H.230. The Director may approve modifications if it can be shown that, through restoration, the modification will result in equivalent or better protection of critical area functions and values.

City Code provisions, which must be met for the proposed site improvements, are listed below. A project-specific description follows each code provision and documents compliance; code is italicized.

6.1 LUC 20.25H.230

A critical areas report is a mechanism by which the requirements of this part, certain requirements of Part 20.25E LUC as set forth in that part, and the impervious surface standards set forth in LUC 20.20.010 may be modified for a specific proposal.

The critical areas report is intended to provide flexibility for sites where the expected critical area functions and values are not present due to degraded conditions or other unique site characteristics, or for proposals providing unique design or protection of critical area functions and values not anticipated by this part. The scope and complexity of information required in a critical areas report will vary, depending on the scope and complexity and magnitude of impact on critical areas and critical area buffers associated with the proposed development. Generally, the critical areas report must demonstrate that the proposal with the requested modifications leads to equivalent or better protection of critical area functions and values than would result from the application of the standard requirements. Where the proposal involves restoration of degraded conditions in exchange for a reduction in regulated critical area buffer on a site, the critical areas report must demonstrate a net increase in certain critical area functions.

The existing transmission line corridor crosses wetlands and streams; non-native vegetation occupies a majority of the onsite buffers, non-native blackberry brambles are common. Reed canarygrass forms locally dominant patches in the wetland areas. The proposed mitigation includes wetland enhancement, buffer enhancement, buffer addition, and restoration with native grass seed mix. These mitigation actions will offset the project's temporary and permanent critical area disturbances. Once implemented, the mitigation plan will provide for substantially improved critical area and buffer functions and values relative to the existing condition. A conceptual mitigation plan is included in this report in Appendix D.

6.2 LUC 20.25H.055.C.1 and 2

LUC 20.25H.055.C.1 and 2 provides general performance standards for wetland, stream, and/or buffer impacts.

C. Performance Standards.

The following performance standards apply as noted in the table in subsection B of this section. The critical areas report may not be used to modify the performance standards set forth in this subsection C:

1. Repair and Maintenance and/or Construction Staging.

a. Work shall be consistent with all applicable City of Bellevue codes and standards;

Proposed site improvements are consistent with applicable City code.

b. Removal of significant trees is prohibited; and

No significant tree removal is proposed; pole installation allows for flexibility to shift locations slightly to avoid removal of trees.

c. Areas of temporary disturbance associated with the work shall be restored to pre-project conditions, pursuant to a restoration plan meeting the requirements of LUC 20.25H.210.

As documented on the mitigation plan (Appendix D), all areas of temporary disturbance will either be enhanced with native shrubs and groundcover plants or seeded with a native grass seed mix.

6.3 LUC 20.25H.080.A and LUC 20.25H.100

Modification of a stream/wetland buffer requires the applicant to show compliance with the specific performance standards for streams/wetlands as set forth in LUC 20.25H.080.A and LUC 20.25H.100, respectively. Compliance with the applicable criteria listed in LUC 20.25H.080.A and LUC 20.25H.100 is addressed below.

Development on sites with a type S or F stream, wetland, or associated critical area buffer shall incorporate the following performance standards in design of the development, as applicable:

Lights shall be directed away from the stream.

There is existing lighting within the substation fence that will be replaced. Light standards are generally 5 to 6 feet tall, the lights are shielded and directed downward, and will not have any impacts on streams.

Activity that generates noise such as parking lots, generators, and residential uses shall be located away from the stream or any noise shall be minimized through use of design and insulation techniques.

The proposed improvements will be maintaining an existing transmission line, no new noise generating land use is proposed.

Toxic runoff from new impervious area shall be routed away from the stream.

The transmission line pole improvements will not generate new impervious surface area. A new detention pond is proposed to manage stormwater runoff from the existing substation.

Treated water may be allowed to enter the stream critical area buffer.

Existing site drainage will be improved through the addition of a detention pond. Detaining stormwater will improve water quality prior to discharge. Stormwater quality treatment is not required.

The outer edge of the stream critical area buffer shall be planted with dense vegetation to limit pet or human use.

The Lakeside Substation site is not accessible to the public. Portions of wetland and stream buffers must be kept clear for safety, long-term maintenance and site access. There are also vegetation height restrictions for the transmission line corridor. The proposed wetland buffer enhancement will increase native plant density and diversity in two areas where planting is compatible with site operations.

Use of pesticides, insecticides and fertilizers within 150 feet of the edge of the stream critical area buffer shall be in accordance with the City of Bellevue's "Environmental Best Management Practices," now or as hereafter amended.

Generally, weed control efforts in the stream buffer will employ manual removal. If any persistent weed or pest problems require pesticide control, the City would be contacted to verify compliance with City of Bellevue BMPs and, if allowed, a licensed pesticide applicator would be hired.

2. New and Expanded Uses or Development. As used in this section, "facilities and systems" is a general term that encompasses all structures and improvements associated with the allowed uses and development described in the table in subsection B of this section:

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 proposed detention pond is cited over an existing rip-rap drainage ditch. Existing development, site grade, and utility lines also limit potential detention pond locations.

ii. The function or objective of the proposed new or expanded facility or system;

The new detention pond will improve water quality of runoff leaving the substation and better manage flows.

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;

Due to constraints posed by site gradient and existing development/utility infrastructure, there is no feasible alternative location for the detention pond outside critical areas.

iv. Whether the cost of avoiding disturbance is substantially disproportionate as compared to the environmental impact of proposed disturbance; and

Potential alternatives to the proposed detention pond may include a vertical wall pond, which would be significantly more costly and still require additional wetland and buffer disturbance during construction.

v. The ability of both permanent and temporary disturbance to be mitigated.

As documented above, existing buffer conditions are degraded; invasive plants dominate most buffer areas on the Lakeside Substation property.

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;

The proposed detention pond is located over an existing stormwater ditch within the outer wetland and stream buffer.

ii. Disturbance of the critical area and critical area buffer, including disturbance of vegetation and soils, shall be minimized;

Grading necessary to create the detention pond will disturb vegetation and soil in the specified area. Impacts will be minimized to the smallest feasible footprint and the existing substation road will be used for construction access.

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;

The existing rip-rap ditch in this location is not fish-accessible. However, it does drain to fish-accessible Stream D. BMPs will be employed during construction to ensure water leaving the site is not laden with contaminants or sediment.

iv. Any crossing over of 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 crossings are proposed for the detention pond.

v. All work shall be consistent with applicable City of Bellevue codes and standards;

All required permits and conditions will be followed.

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 proposed detention pond should generally maintain the existing site drainage patterns.

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

No maintenance sheds or parking is proposed. Maintenance vehicles will access the site periodically via established access points.

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.

The conceptual mitigation plan (Appendix D) demonstrates compliance with the City's compensatory mitigation requirements. Mitigation sequencing for this project is documented in Section 4 above. The current mitigation plan is conceptual; a complete description of goals and objectives, performance standards, and a monitoring and maintenance protocol will accompany the permit plan set.

6.4 LUC 20.25H.080.B

B. Modification of Stream Channel.

1. *When Allowed. A stream channel shall not be modified by relocating the open channel, or by closing the channel through pipes or culverts unless in connection with the following uses allowed under LUC 20.25H.055:*

    a. *A new or expanded utility facility or system;*

    b. *A new or expanded essential public facility;*

    c. *Public flood control measures;*

    d. *In-stream structures;*

    e. *New or expanded public right-of-way, private roads, access easements or driveways;*

    f. *Habitat improvement project; or*

    g. *Reasonable use exception; provided, that a modification may be allowed under this section for a reasonable use exception only where the applicant demonstrates that no other alternative exists to achieve the allowed development.*

No stream channel modification nor in-stream work is proposed. Not applicable.

A critical areas report may not be used to modify the uses set forth in this subsection B.1.

2. Critical Areas Report Required. Any proposal to modify a stream channel under this section may be approved only through a critical areas report.

Not applicable.

3. Relocation of Closed Stream Channel. Any proposal to relocate an existing closed stream channel may be approved only through a critical areas report.

Not applicable.

6.5 LUC 20.25H.110

A. Limitation on Modification.

A critical areas report may not be used to fill a wetland critical area, except where filling is required to allow a use set forth in LUC 20.25H.055.

As detailed above, the proposed site utility maintenance and stormwater improvements are allowed under LUC 20.25H.055

B. Additional Content.

In addition to the general requirements of LUC 20.25H.230, a critical areas report for wetlands shall include a written assessment and accompanying maps of the wetlands and buffers within 300 feet of the project area, including the following information at a minimum:

1. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing wetlands and restore any wetlands that were degraded prior to the current proposed land use activity.

Mitigation sequencing measures are detailed in Section 4 above.

2. A habitat and native vegetation conservation strategy that addresses methods to protect and enhance on-site habitat and wetland functions.

The proposed mitigation will improve habitat by adding native food sources, creating vegetation structural diversity, and improving wetland-landscape corridor connections.

3. Functional evaluation for the wetland and adjacent buffer using a local or state agency staff-recognized method and including the reference of the method and all data sheets.

Wetland determination data sheets and wetland rating forms are provided in Appendices B and C. Section 3, Table 1 summarizes wetland and stream classifications and associated buffer widths.

7 MITIGATION PLAN

The proposed mitigation plan is designed to restore and enhance critical areas surrounding the substation in a sustainable manner. The plan accounts for long-term pole access and maintenance needs, the existing gas pipeline, site topography, habitat connectivity, and vegetation height restrictions. Proposed impacts and mitigation are confined to the Lakeside Substation property and an existing transmission corridor easement.

This is a concept-level plan (Appendix D). The final permit plan set will include notes that fulfill the requirements of LUC 20.25H.220.B and provide clear direction for mitigation goals, performance standards, monitoring and maintenance protocols, and contingencies for the duration of the 5-year monitoring period. A suggested mitigation plant list is provided on sheet 2 of the conceptual plan.

8 SUMMARY

Replacement and temporary guying of existing transmission poles associated with rebuilding the Lakeside Substation will incur unavoidable wetland, and stream and wetland buffer impacts at this highly encumbered site. A proposed detention pond will also cause permanent stream and wetland buffer impacts. Mitigation is proposed to maintain and improve critical area functions and values, while allowing current and long-term maintenance and management of existing utility infrastructure to proceed. Current degraded wetland and buffer conditions provide sufficient opportunity to mitigate onsite. A detailed impact and mitigation summary is provided in the enclosed conceptual mitigation plan (Appendix D).

9 GENERAL DISCLAIMER

Please note that the findings of this report, including wetland classification and resulting buffer width determinations, are subject to the verification and agreement of local, state and/or federal regulatory authorities.

APPENDIX A

Site Photos

Wetland I: Looking south from the north end

Wetland I buffer: (left) Looking north from SW corner; (right) Looking NE from north end of wetland.

Pole in the buffer of Wetland I: (left) Looking east from west side; (right) Looking west from east side; pole will be accessed from the east side. Note: Non-native laurel in area of temporary disturbance.

Wetland EE: Looking SE from NW portion of buffer.

Wetland EE buffer:

Proposed detention pond location: (left) Looking west from NE corner; (right) Looking east from west end.

Wetland BC buffer, temporary impact area NE of proposed detention pond: Looking east toward wetland.

Wetland BC and buffer: Looking west from existing grass-covered access.

Wetland BC, proposed temporary impact area: (left) Looking south toward the pole; (right) guy-wire in emergent wetland area north of pole.

APPENDIX B

Wetland Determination Data Forms

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 1E

Project Site:	**PSE Lakeside**	Sampling Date:	**5/2/2014**
Applicant/Owner:	**Puget Sound Energy**	Sampling Point:	DP- **1E**
Investigator:	**N. Lund, K. Crandall**	City/County:	**Bellevue**
Sect., Township, Range	S **10** T **24N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc)	**Hillslope** Slope (%) **2-5**	Local relief (concave, convex, none)	**Slightly concave**
Subregion (LRR)	**A** Lat	Long	Datum
Soil Map Unit Name	**Ur – Urban Land**	NWI classification	**N/A**

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation ☐, Soil, ☐, or Hydrology ☐ significantly disturbed?
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
Hydric Soils Present? ☒ Yes ☐ No
Wetland Hydrology Present? ☒ Yes ☐ No

Is this Sampling Point within a Wetland? ☒ Yes ☐ No

Remarks: **Wetland E in-pit**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Pinus contorta (rooted upslope)***	**5**	**Y**	**FAC**
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size 3m diam.)			
1. ***Salix sitchensis***	**2**	**Y**	**FACW**
2. ***Salix lucida***	**2**	**Y**	**FACW**
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size 1m diam.)			
1. ***Poa sp.***	**80**	**Y**	**FAC***
2. ***Holcus lanatus***	**25**	**N**	**FAC**
3. ***Juncus effuses***	**10**	**N**	**FACW**
4. ***Equisetum arvense***	**5**	**N**	**FAC**
5. ***Ranunculus repens***	**5**	**N**	**FAC**
6. ***Trifolium repens***	**5**	**N**	**FAC**
7. ***Carex sp.***	**1**	**N**	**--**
8.			
9.			
10.			
11.			
	131	= Total Cover	
Woody Vine Stratum (Plot size)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum			

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	**4**	(A)
Total Number of Dominant Species Across All Strata:	**4**	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	**100**	(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 test is ≤ 3.0 *
	Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
	Wetland Non-Vascular Plants *
	Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: ***Presumed FAC**

SOIL

Sampling Point – DP-1E

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	**10 YR 3/1**	**95**	**7.5 YR ¾**	**5**	**C**	**PL**	**Sandy loam**	
4-12	**10 YR 3/1**	**80**	**7.5 YR 3//4**	**20**	**C**	**PL**	**Gravelly sandy loam with cobbles**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

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

Hydric soil present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ 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)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present?	☐ Yes	☒ No	Depth (in):		
Water Table Present?	☐ Yes	☒ No	Depth (in):		
Saturation Present? (includes capillary fringe)	☒ Yes	☐ No	Depth (in):	**7" BGS**	

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 2E

Project Site:	**PSE Lakeside**	Sampling Date:	**5/2/2014**
Applicant/Owner:	**Puget Sound Energy**	Sampling Point:	DP- **2E**
Investigator:	**N. Lund, K. Crandall**	City/County:	**Bellevue**
Sect., Township, Range	S **10** T **24N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc)	**Hillslope** Slope (%) **5-10**	Local relief (concave, convex, none)	**None**
Subregion (LRR)	**A** Lat	Long	Datum
Soil Map Unit Name	**Ur – Urban Land**	NWI classification	**N/A**

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation ☐, Soil, ☐, or Hydrology ☐ significantly disturbed?
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	**Is this Sampling Point within a Wetland?** ☐ Yes ☒ No
Hydric Soils Present?	☐ Yes	☒ No	
Wetland Hydrology Present?	☐ Yes	☒ No	

Remarks: **Wetland E out-pit**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Pinus contorta***	**5**	**Y**	**FAC**
2.			
3.			
4.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size 1m diam.)			
1. ***Meadow grass***	**80**	**Y**	**FAC***
2. ***Trifolium repens***	**70**	**Y**	**FAC**
3. ***Taraxacum officinale***	**30**	**N**	**FACU**
4. ***Ranunculus repens***	**20**	**N**	**FAC**
5. ***Holcus lanatus***	**5**	**N**	**FAC**
6. ***Vicia sp.***	**5**	**N**	**--**
7. ***Equisetum arvense***	**5**	**N**	**FAC**
8.			
9.			
10.			
11.			
		= Total Cover	

Woody Vine Stratum (Plot size)			
1.			
2.			
		= Total Cover	

% 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:	**3**	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	**100**	(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 test is ≤ 3.0 *
	Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
	Wetland Non-Vascular Plants *
	Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: ***Presumed FAC**

SOIL

Sampling Point – DP-2E

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
0-10	**10 YR 2/2**	**100**					**Gravelly sandy loam**	
10-12	**10 YR 2/2**	**70**					**Gravelly sandy loam with cobbles**	**Mixed matrix**
	7.5 YR 3/4	**30**						**Mixed matrix**

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

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

Hydric soil present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ 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)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present?	☐ Yes	☒ No	Depth (in):
Water Table Present?	☐ Yes	☒ No	Depth (in):
Saturation Present? (includes capillary fringe)	☐ Yes	☒ No	Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks: **Damp, not saturated.**

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 3

Project Site:	**PSE Lakeside**	Sampling Date:	**5/2/2014**
Applicant/Owner:	**Puget Sound Energy**	Sampling Point:	DP- **3 (ditch)**
Investigator:	**N. Lund, K. Crandall**	City/County:	**Bellevue**
Sect., Township, Range	S **10** T **24N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc)	**Ditch** Slope (%) **~2**	Local relief (concave, convex, none)	**Concave**
Subregion (LRR)	**A** Lat	Long	Datum
Soil Map Unit Name	**Ur – Urban Land**	NWI classification	**N/A**

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation ☐, Soil, ☐, or Hydrology ☐ significantly disturbed?
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	**Is this Sampling Point within a Wetland?** ☒ Yes ☐ No
Hydric Soils Present?	☒ Yes	☐ No	
Wetland Hydrology Present?	☒ Yes	☐ No	

Remarks: **Ditch with wetland characteristics**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Pinus contorta***	**90**	**Y**	**FAC**
2.			
3.			
4.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size 1m diam.)			
1. ***Equisetm arvense***	**10**	**Y**	**FAC**
2. ***Poa sp.***	**10**	**Y**	**FAC***
3. ***Ranunculus repens***	**5**	**N**	**FAC**
4. ***Athyrium filix-femina***	**3**	**N**	**FAC**
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		= Total Cover	

Woody Vine Stratum (Plot size)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 65

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	**3**	(A)
Total Number of Dominant Species Across All Strata:	**3**	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	**100**	(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 test is ≤ 3.0 *
	Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
	Wetland Non-Vascular Plants *
	Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: ***Presumed FAC**

SOIL

Sampling Point – DP- 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
0-2	**10 YR 3/2**	**100**					**Gravelly sandy loam**	
2-10	**5 GY 5/1**	**85**	**10 YR 3/6**	**15**	**C**	**M**	**Gravelly sand clay loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

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

Hydric soil present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ 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)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present?	☐ Yes	☒ No	Depth (in):	
Water Table Present?	☒ Yes	☐ No	Depth (in):	**5" BGS**
Saturation Present? (includes capillary fringe)	☒ Yes	☐ No	Depth (in):	**0" BGS**

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: **Some surface water in ditch (~1/8" to surface saturation)**

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 4

Project Site:	**PSE Lakeside**	Sampling Date:	**5/2/2014**
Applicant/Owner:	**Puget Sound Energy**	Sampling Point:	DP- **4**
Investigator:	**N. Lund, K. Crandall**	City/County:	**Bellevue**
Sect., Township, Range	S **10** T **24N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc)	**Hillslope** Slope (%) **<5**	Local relief (concave, convex, none)	**Concave**
Subregion (LRR)	**A** Lat	Long	Datum
Soil Map Unit Name	**Ur – Urban Land**	NWI classification	**N/A**

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation ☐, Soil, ☐, or Hydrology ☐ significantly disturbed?
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	**Is this Sampling Point within a Wetland?** ☒ Yes ☐ No
Hydric Soils Present?	☒ Yes	☐ No	
Wetland Hydrology Present?	☒ Yes	☐ No	

Remarks: **Wetland I in-pit**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Salix babylonica***	**55**	**Y**	**FACW**
2. ***Pinus contorta***	**10**	**Y**	**FAC**
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size 3m diam.)			
1. ***Alnus rubra (sapling)***	**3**	**Y**	**FAC**
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size 1m diam.)			
1. ***Meadow grass***	**99**	**Y**	**FAC**
2. ***Equisetum arvense***	**3**	**N**	**FAC**
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		= Total Cover	
Woody Vine Stratum (Plot size)			
1. ***Rubus armeniacus***	**20**	**Y**	**FACU**
2.			
		= Total Cover	
% Bare Ground in Herb Stratum			

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	**4**	(A)
Total Number of Dominant Species Across All Strata:	**5**	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	**80**	(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 test is ≤ 3.0 *
	Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
	Wetland Non-Vascular Plants *
	Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

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
0-12	**10 YR 3/1**	**100**					**Gravelly sandy clay loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☒ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

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

Hydric soil present? Yes ☒ No ☐

Remarks: **Organics masking redox**

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ 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)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present?	☐ Yes	☒ No	Depth (in):	
Water Table Present?	☒ Yes	☐ No	Depth (in):	**9" BGS**
Saturation Present? (includes capillary fringe)	☒ Yes	☐ No	Depth (in):	**0" BGS**

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 5

Project Site:	**PSE Lakeside**	Sampling Date:	**5/2/2014**
Applicant/Owner:	**Puget Sound Energy**	Sampling Point:	DP- **5**
Investigator:	**N. Lund, K. Crandall**	City/County:	**Bellevue**
Sect., Township, Range	S **10** T **24N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc)	**Hillslope** Slope (%) **>10**	Local relief (concave, convex, none)	**None**
Subregion (LRR)	**A** Lat	Long	Datum
Soil Map Unit Name	**Ur – Urban Land**	NWI classification	**N/A**

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation ☐, Soil, ☐, or Hydrology ☐ significantly disturbed?
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	**Is this Sampling Point within a Wetland?** ☐ Yes ☒ No
Hydric Soils Present?	☐ Yes	☒ No	
Wetland Hydrology Present?	☐ Yes	☒ No	

Remarks: **Wetland I out-pit**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1. ***Pinus contorta***	**40**	**Y**	**FAC**
2.			
3.			
4.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size 1m diam.)			
1. ***Meadow grass***	**60**	**Y**	**FAC***
2. ***Phalaris arundinacea***	**45**	**Y**	**FACW**
3. ***Equisetum arvense***	**15**	**N**	**FAC**
4. ***Solanum dulcamara***	**5**	**N**	**FAC**
5. ***Taracacum officinale***	**5**	**N**	**FACU**
6.			
7.			
8.			
9.			
10.			
11.			
		= Total Cover	

Woody Vine Stratum (Plot size)			
1. ***Rubus armeniacus***	**15**	**Y**	**FACU**
2.			
		= Total Cover	

% 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:	**4**	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	**75**	(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 test is ≤ 3.0 *
	Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
	Wetland Non-Vascular Plants *
	Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: ***Presumed FAC**

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
0-10	**7.5 YR 3/2**	**100**					**Sandy loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):
Type: _____

Depth (inches): _____

Hydric soil present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ 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)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present?	☐ Yes	☒ No	Depth (in):
Water Table Present?	☐ Yes	☒ No	Depth (in):
Saturation Present? (includes capillary fringe)	☐ Yes	☒ No	Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks: **Damp, not saturated**

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 6

Project Site:	**PSE Lakeside**	Sampling Date:	**5/2/2014**
Applicant/Owner:	**Puget Sound Energy**	Sampling Point:	DP- **6**
Investigator:	**N. Lund, K. Crandall**	City/County:	**Bellevue**
Sect., Township, Range	S **10** T **24N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc)	**Hillslope** Slope (%) **~5**	Local relief (concave, convex, none)	**Concave**
Subregion (LRR)	**A** Lat	Long	Datum
Soil Map Unit Name	**Ur – Urban Land**	NWI classification	**N/A**

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation ☐, Soil, ☐, or Hydrology ☐ significantly disturbed?
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
Hydric Soils Present? ☒ Yes ☐ No
Wetland Hydrology Present? ☒ Yes ☐ No

Is this Sampling Point within a Wetland? ☒ Yes ☐ No

Remarks: **Wetland BCD in-pit**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size 1m diam.)			
1. ***Phalaris arundinacea***	**100**	**Y**	**FACW**
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		= Total Cover	

Woody Vine Stratum (Plot size)			
1. ***Rubus armeniucus***	**Trace**	**N**	**FACU**
2.			
		= Total Cover	

% Bare Ground in Herb Stratum

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC:	**1**	(A)
Total Number of Dominant Species Across All Strata:	**1**	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	**100**	(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 test is ≤ 3.0 *
	Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
	Wetland Non-Vascular Plants *
	Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

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
0-12	**2.5 Y 2.5/1**	**100**					**Sandy loam**	**High organic content**

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☒ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

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

Hydric soil present? Yes ☒ No ☐

Remarks: **Organics masking redox**

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ 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)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present?	☐ Yes	☒ No	Depth (in):	
Water Table Present?	☒ Yes	☐ No	Depth (in):	**2" BGS**
Saturation Present? (includes capillary fringe)	☒ Yes	☐ No	Depth (in):	**0" BGS**

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland, Washington 98033
(425) 822-5242
watershedco.com

WETLAND DETERMINATION DATA FORM

Western Mountains, Valleys, and Coast Supplement to the 1987 COE Wetlands Delineation Manual

DP- 7

Project Site:	**PSE Lakeside**	Sampling Date:	**5/2/2014**
Applicant/Owner:	**Puget Sound Energy**	Sampling Point:	DP-
Investigator:	**N. Lund, K. Crandall**	City/County:	**Bellevue**
Sect., Township, Range	S **10** T **24N** R **05E**	State:	**WA**
Landform (hillslope, terrace, etc)	**Hillslope** Slope (%) **> 10**	Local relief (concave, convex, none)	**None**
Subregion (LRR)	**A** Lat	Long / Datum	
Soil Map Unit Name	**Ur – Urban Land**	NWI classification	**N/A**

Are climatic/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in remarks.)
Are "Normal Circumstances" present on the site? ☒ Yes ☐ No
Are Vegetation ☐, Soil, ☐, or Hydrology ☐ significantly disturbed?
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	**Is this Sampling Point within a Wetland?** ☐ Yes ☒ No
Hydric Soils Present?	☐ Yes	☒ No	
Wetland Hydrology Present?	☐ Yes	☒ No	

Remarks: **Wetland BCD out-pit**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size 5m diam.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size 3m diam.)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size 1m diam.)			
1. ***Phalaris arundinacea***	**50**	**Y**	**FACW**
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		= Total Cover	

Woody Vine Stratum (Plot size)			
1. ***Rubus armeniacus***	**65**	**Y**	**FACU**
2.			
		= Total Cover	

% Bare Ground in Herb Stratum

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		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

	Dominance test is > 50%
	Prevalence test is ≤ 3.0 *
	Morphological Adaptations * (provide supporting data in remarks or on a separate sheet)
	Wetland Non-Vascular Plants *
	Problematic Hydrophytic Vegetation * (explain)

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

SOIL

Sampling Point – DP-7

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
0-12	**7.5 YR 3/2**	**100**					**Gravelly sandy loam with cobbles**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Loc: PL=Pore Lining, 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]

- ☐ 2cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (explain in remarks)
- ☐

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

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

Hydric soil present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- ☐ 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)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (**except MLRA 1, 2, 4A & 4B**) (B9)
- ☐ 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) (**MLRA 1, 2, 4A & 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks

Field Observations

Surface Water Present?	☐ Yes	☒ No	Depth (in):
Water Table Present?	☐ Yes	☒ No	Depth (in):
Saturation Present? (includes capillary fringe)	☐ Yes	☒ No	Depth (in):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks: **Slightly moist, not saturated.**

APPENDIX C

Wetland Rating Forms

Wetland name or number: BC

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

Name of wetland (if known): PSE Lakeside Substation, Wetland BC Date of site visit: 5/4/12 and 5/2/14

Rated by: NL, HM NL, KC Trained by Ecology? Yes ☒☐ No ☐☐ Date of Training 2007 2008

SEC: 1 TWNSHP: 24N RNGE: 05E Is S/T/R in Appendix D? Yes ☐☐ No ☒☐

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	6
Score for Hydrologic Functions	10
Score for Habitat Functions	23
TOTAL score for functions	**39**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐☐ II ☐☐ Does not Apply ☒☐

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

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
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	☐

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

* The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web http://wdfw.wa.gov/mapping/phs/.

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. Classifying the wetland first simplifies the questions needed to answer how it 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: BC

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 wetland 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 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 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 types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☐☐NO – go to 5 ☒☐**YES –** The wetland class is **Slope**

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 classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within 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 you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number: BC

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
S	**S 1. Does the wetland have the potential to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of wetland: Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation horizontal distance) for every 100 ft* ..... points = 3 Slope is 1% - 2% ..... points = 2 Slope is 2% - 5% ..... points = 1 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. 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, ungrazed, herbaceous vegetation > 90% of the wetland area ..... points = 6 Dense, ungrazed, herbaceous vegetation > 1/2 of area ..... points = 3 Dense, woody, vegetation > ½ of area ..... points = 2 Dense, ungrazed, herbaceous vegetation > 1/4 of area ..... points = 1 Does not meet any of the criteria above for vegetation ..... points = 0	3
S	**Total for S 1** *Add the points in the boxes above*	3
S	**S 2. Does the wetland have the opportunity to improve water quality?** ***(see p. 67)*** 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, logging 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, or golf courses are within 150 ft upslope of wetland ☒☐ Other_____turbid runoff observed, gravel pole yard, parking_____ **YES** multiplier is **2** **NO** multiplier is **1**	multiplier 2
S	**TOTAL - Water Quality Functions** Multiply the score from S 1 by S 2 ***Add score to table on p. 1***	**6**

Wetland name or number: BC

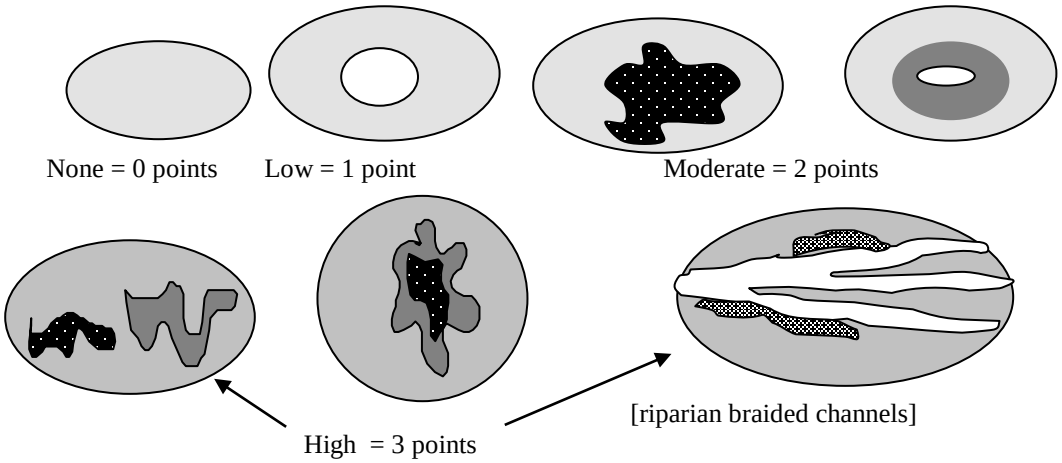
S	Slope Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	
	S 3. Does the wetland have the potential to reduce flooding and erosion?	***(see p. 68)***
S	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *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 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	**Total for S 3** *Add the points in the boxes above*	5
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** ***(see p. 70)*** 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_____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	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: BC

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat**	
H 1. Does the wetland 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) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☐☐ Aquatic bed ☒☐ Emergent plants ☒☐ Scrub/shrub (areas where shrubs have >30% cover) ☒☐ Forested (areas where trees have >30% cover) ☒☐ Forested areas have 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 types that qualify. If you have:* 4 structures or more ..... points = 4 3 structures ..... points = 2 2 structures ..... points = 1 1 structure ..... points = 0	4
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 ..... points = 1 ☒☐ Saturated only — 1 types 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**	3
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 *List species below if you want to:* 5 - 19 species..... points = 1 < 5 species ..... points = 0	2

Wetland name or number: BC

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 vegetation types or three vegetation types and open water the rating is always "high".	3
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 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 ☐☐ 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.*	3
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	15

Wetland name or number: BC

H 2. Does the wetland 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. 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 developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) ..... 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	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**	0

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☐☐ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 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. ☐☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☒☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐☐ **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. ☒ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. 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 wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	4

Wetland name or number: BC

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	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	8
TOTAL for H1 from page 14	15
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	**23**

Wetland name or number __D____

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

Name of wetland (if known): PSE Lakeside Substation – Wetland D Date of site visit: 5/2/2014

Rated by: N.Lund K. Crandall Trained by Ecology? Yes ☒☐ No ☐☐Date of Training 10/2008

SEC: 10 TWNSHP: 24N RNGE: 5E Is S/T/R in Appendix D? Yes ☐☐ No ☒☐

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	16
Score for Hydrologic Functions	12
Score for Habitat Functions	16
TOTAL score for functions	**44**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐☐ II ☐☐ Does not Apply ☒☐

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

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		**Depressional**	
Natural Heritage Wetland		**Riverine**	**X**
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	**X**

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

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

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. Classifying the wetland first simplifies the questions needed to answer how it 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 __D____

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 wetland 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 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 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 types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☐☐NO – go to 5 ☐☐**YES –** The wetland class is **Slope**

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 classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within 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 you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number __D____

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
R	**R 1. Does the wetland have the potential to improve water quality?**	*(see p. 52)*
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover >3/4 area of wetland ..... points = 8 Depressions cover > 1/2 area of wetland ..... points = 4 Depressions present but cover < 1/2 area of wetland ..... points = 2 No depressions present ..... points = 0	2
R	R 1.2 Characteristics of the vegetation in the wetland (areas with > 90% cover at person height): Forest or shrub > 2/3 the area of the wetland ..... points = 8 Forest or shrub > 1/3 area of the wetland ..... points = 6 Ungrazed, emergent plants > 2/3 area of wetland ..... points = 6 Ungrazed emergent plants > 1/3 area of wetland ..... points = 3 Forest, shrub, and ungrazed emergent < 1/3 area of wetland ..... points = 0	6
R	**Total for R 1** *Add the points in the boxes above*	8
R	**R 2. Does the wetland have the opportunity to improve water quality?** ***(see p. 53)*** 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.* ☐☐ 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 ☒☐ Residential, urban areas, golf courses are within 150 ft of wetland ☐☐ The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality ☐☐ Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	multiplier __2
R	**TOTAL - Water Quality Functions** Multiply the score from R 1 by R 2 ***Add score to table on p. 1***	**16**

Comments

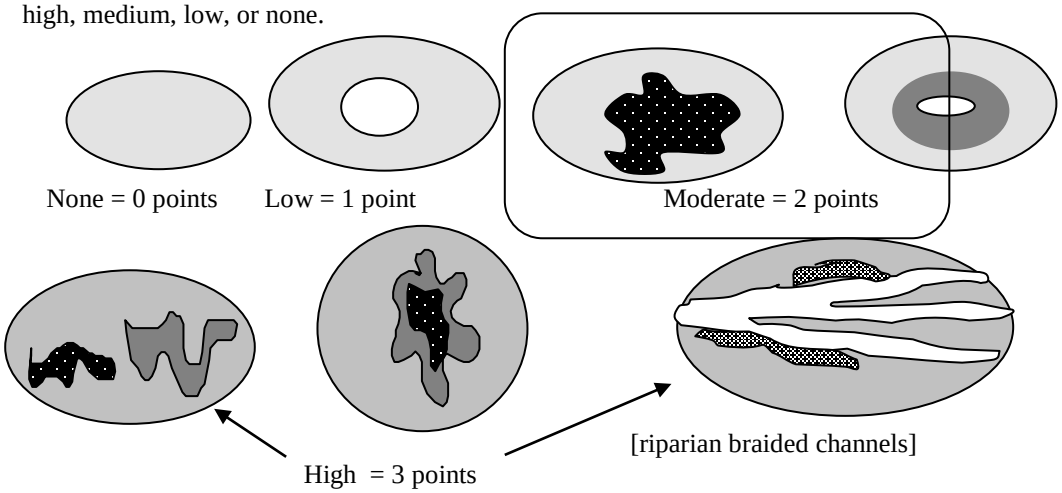
Wetland name or number __D____

R	Riverine and Freshwater Tidal Fringe Wetlands	
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	
	R 3. Does the wetland have the potential to reduce flooding and erosion?	***(see p. 54)***
R	R 3.1 Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (width of wetland)/(width of stream).* If the ratio is more than 20 ..... points = 9 If the ratio is between 10 – 20 ..... points = 6 If the ratio is 5- <10 ..... points = 4 If the ratio is 1- <5 ..... points = 2 If the ratio is < 1 ..... points = 1	2
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.* (polygons need to have >90% cover at person height NOT Cowardin classes) Forest or shrub for >1/3 area OR Emergent plants > 2/3 area ..... points = 7 Forest or shrub for > 1/10 area OR Emergent plants > 1/3 area ..... points = 4 Vegetation does not meet above criteria ..... points = 0	4
R	**Total for R 3** *Add the points in the boxes above*	6
R	**R 4. Does the wetland have the opportunity to reduce flooding and erosion?** ***(see p. 57)*** Answer YES if the wetland 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. *Note which of the following conditions apply.* ☒☐ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ☒☐ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ☐☐ Other_____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	(see p. 57) multiplier 2
R	**TOTAL - Hydrologic Functions** Multiply the score from R 3 by R 4 ***Add score to table on p. 1***	**12**

Wetland name or number __D____

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat**	
H 1. Does the wetland 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) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☐☐ Aquatic bed ☒☐ Emergent plants ☒☐ Scrub/shrub (areas where shrubs have >30% cover) ☐☐ Forested (areas where trees have >30% cover) ☐☐ Forested areas have 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 types that qualify. If you have:* 4 structures or more ..... points = 4 3 structures ..... points = 2 2 structures ..... points = 1 1 structure ..... points = 0	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 ☐☐ Seasonally flooded or inundated — 3 types present..... points = 2 ☐☐ Occasionally flooded or inundated — 2 types present ..... points = 1 ☒☐ Saturated only — 1 types 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**	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 *List species below if you want to:* 5 - 19 species..... points = 1 < 5 species ..... points = 0	1

Wetland name or number __D____

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 vegetation types or three vegetation types and open water the rating is always "high".	2
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 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 ☐☐ 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.*	1
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	6

Wetland name or number __D____

H 2. Does the wetland 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. 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 developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) ..... 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	3
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**	0

Wetland name or number __D____

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☐☐ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 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. ☐☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☒☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐☐ **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. ☒ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. 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 wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	4

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	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	10
TOTAL for H1 from page 14	6
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	**16**

Wetland name or number __EE____

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

Name of wetland (if known): PSE Lakeside – Wetland EE Date of site visit: 5/2/2014

Rated by: N. Lund, K. Crandall Trained by Ecology? Yes ☒☐ No ☐☐Date of Training 10/2008

SEC: 10 TWNSHP: 24N RNGE: 05E Is S/T/R in Appendix D? Yes ☐☐ No ☒☐

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	6
Score for Hydrologic Functions	10
Score for Habitat Functions	14
TOTAL score for functions	**30**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐☐ II ☐☐ Does not Apply ☒☐

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

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
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	☐

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

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

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. Classifying the wetland first simplifies the questions needed to answer how it 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 __EE____

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 wetland 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 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 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 types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☐☐NO – go to 5 ☒☐**YES –** The wetland class is **Slope**

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 classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within 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 you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number __EE____

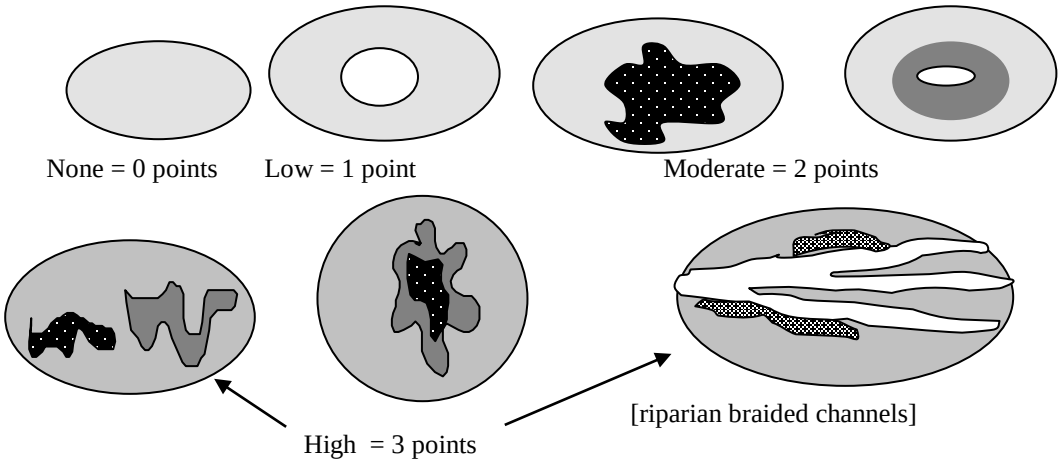
S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
S	**S 1. Does the wetland have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of wetland: Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation horizontal distance) for every 100 ft* ..... points = 3 Slope is 1% - 2% ..... points = 2 Slope is 2% - 5% ..... points = 1 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. 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, ungrazed, herbaceous vegetation > 90% of the wetland area ..... points = 6 Dense, ungrazed, herbaceous vegetation > 1/2 of area ..... points = 3 Dense, woody, vegetation > ½ of area ..... points = 2 Dense, ungrazed, herbaceous vegetation > 1/4 of area ..... points = 1 Does not meet any of the criteria above for vegetation ..... points = 0	3
S	**Total for S 1** *Add the points in the boxes above*	3
S	**S 2. Does the wetland have the <u>opportunity</u> to improve water quality?** ***(see p. 67)*** 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, logging 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, 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	**<u>TOTAL</u> - Water Quality Functions** Multiply the score from S 1 by S 2 ***Add score to table on p. 1***	**6**

S	Slope Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	
	S 3. Does the wetland have the <u>potential</u> to reduce flooding and 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 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	**Total for S 3** *Add the points in the boxes above*	5
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** ***(see p. 70)*** 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_____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **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 __EE____

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat**	
H 1. Does the wetland have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☐☐ Aquatic bed ☒☐ Emergent plants ☒☐ Scrub/shrub (areas where shrubs have >30% cover) ☒☐ Forested (areas where trees have >30% cover) ☐☐ Forested areas have 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 types that qualify. If you have:* 4 structures or more ..... points = 4 3 structures ..... points = 2 2 structures ..... points = 1 1 structure ..... points = 0	2
H 1.2. <u>Hydroperiods</u> ***(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 ..... points = 1 ☒☐ Saturated only — 1 types 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**	1
H 1.3. <u>Richness of Plant Species</u> ***(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 *List species below if you want to:* 5 - 19 species..... points = 1 < 5 species ..... points = 0	2

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 [riparian braided channels] High = 3 points NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".	3
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 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 ☐☐ 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.*	2
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	10

Wetland name or number __EE____

H 2. Does the wetland 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. 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 developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) ..... 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	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**	0

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☐☐ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 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. ☐☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☐☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☐ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐☐ **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. ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. 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 wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	0

Wetland name or number __EE____

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	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
TOTAL for H1 from page 14	10
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	14

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

Name of wetland (if known): PSE Lakeside – Wetland I Date of site visit: 5/2/2014

Rated by: N. Lund, K. Crandall Trained by Ecology? Yes ☒☐ No ☐☐Date of Training 10/2008

SEC: 10 TWNSHP: 24N RNGE: 05E Is S/T/R in Appendix D? Yes ☐☐ No ☒☐

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	8
Score for Habitat Functions	5
TOTAL score for functions	**33**

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐☐ II ☐☐ Does not Apply ☒☐

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

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
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	**X**

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

***The study area was reviewed for the presence of endangered, threatened, and priority species using WDFW online Priority Habitat and Species Data, PHS on the Web (http://wdfw.wa.gov/mapping/phs/).**

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. Classifying the wetland first simplifies the questions needed to answer how it functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

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 wetland 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 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 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 types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

☐☐NO – go to 5 ☒☐**YES –** The wetland class is **Slope**

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

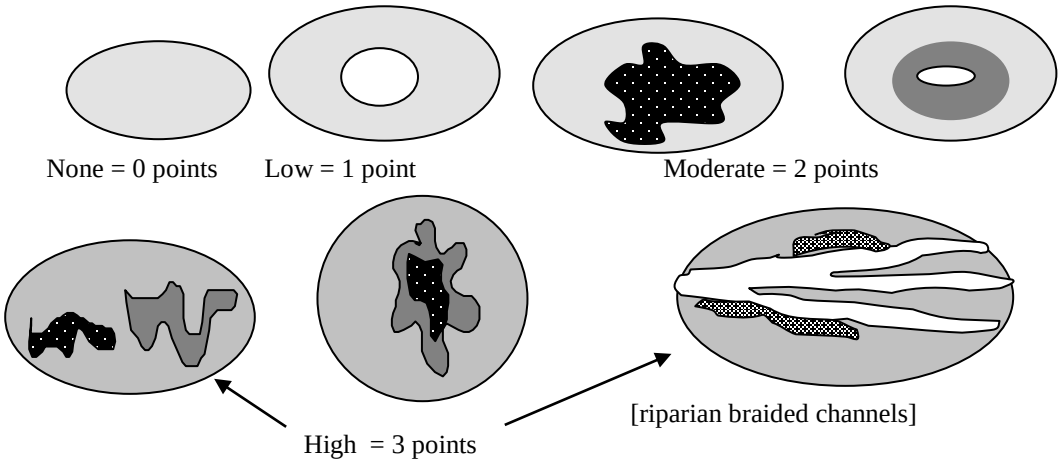
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number __I____

D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the <u>potential</u> 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"*)	<u>3</u>
D	D 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	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 Wetland has persistent, ungrazed vegetation > = 1/10 of area ..... points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area..... points = 0	3
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 Area seasonally ponded is > ¼ total area of wetland..... points = 2 Area seasonally ponded is < ¼ total area of wetland..... points = 0 NOTE: *See text for indicators of seasonal and permanent inundation.*	4
D	**Total for D 1** *Add the points in the boxes above*	10
D	**D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface <u>water coming into the wetland</u> 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 ☒☐ Residential, urban areas, golf courses are within 150 ft of wetland ☐☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐☐ Other_____ **YES** multiply score in D 1. **by 2** **NO** multiply score in D 1. **by 1**	***(see p. 44)*** multiplier <u>2</u>
D	**<u>TOTAL</u> - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	**20**

D	Depresssional and Flats Wetlands	
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> 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 at least 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 Marks of ponding less than 0.5 ft..... points = 0	0
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 the unit ..... points = 5 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	0
D	**Total for D 3** *Add the points in the boxes above*	4
D	**D 4. Does the wetland unit have the <u>opportunity</u> 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 conditions 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 <u>2</u>
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	**8**

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat**	
H 1. Does the wetland have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin) if the class is ¼ acre or covers more than 10% of the area of the wetland if unit smaller than 2.5 acres.* ☐☐ Aquatic bed ☐☐ Emergent plants ☐☐ Scrub/shrub (areas where shrubs have >30% cover) ☒☐ Forested (areas where trees have >30% cover) ☐☐ Forested areas have 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 types that qualify. If you have:* 4 structures or more ..... points = 4 3 structures ..... points = 2 2 structures ..... points = 1 1 structure ..... points = 0	0
H 1.2. <u>Hydroperiods</u> ***(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 ..... points = 1 ☐☐ Saturated only — 1 types 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**	0
H 1.3. <u>Richness of Plant Species</u> ***(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 *List species below if you want to:* 5 - 19 species..... points = 1 < 5 species ..... points = 0	1

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 vegetation types or three vegetation types and open water the rating is always "high".	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 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 ☐☐ 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

H 2. Does the wetland 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. 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 developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) ..... 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	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**	0

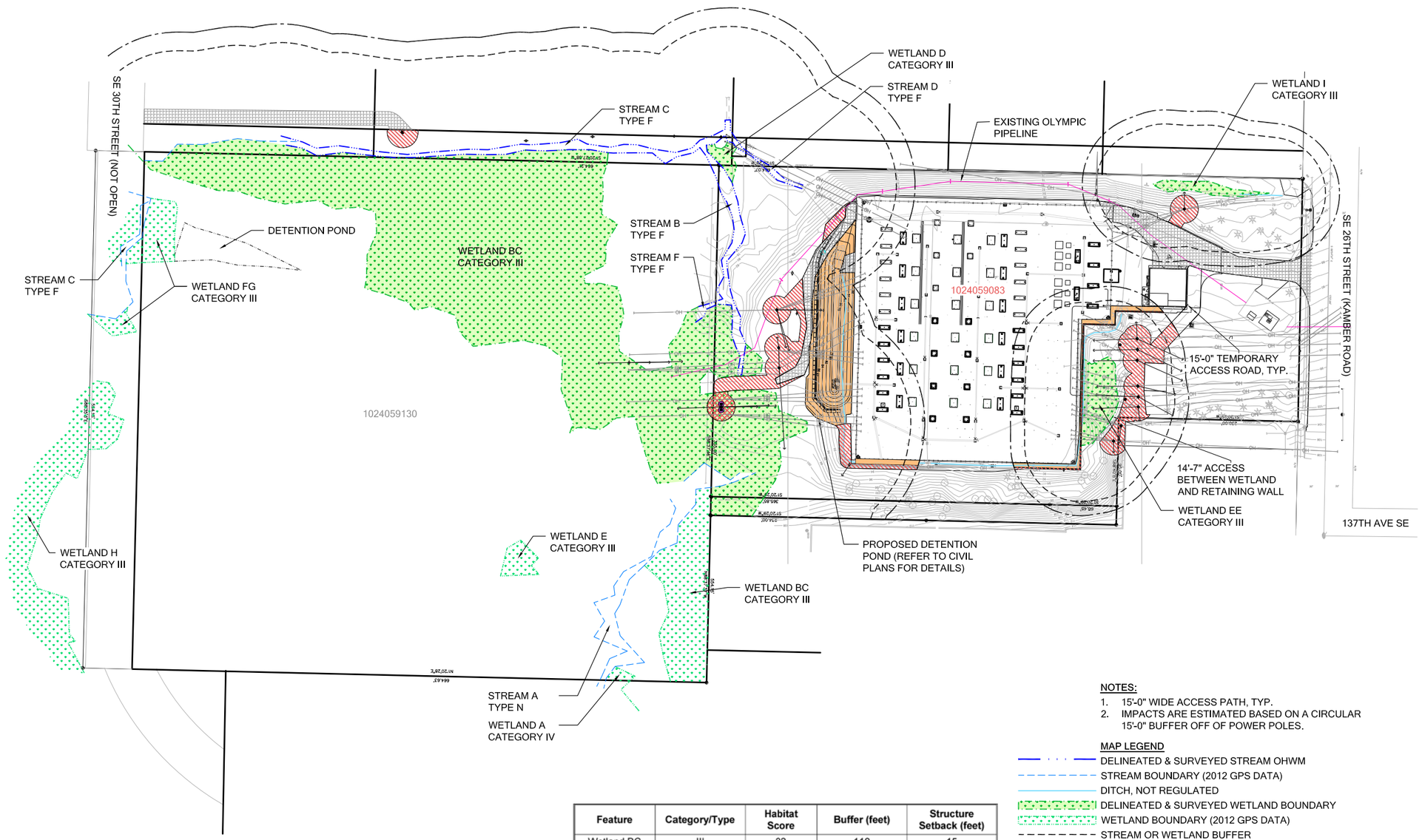
H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland? *(NOTE: the connections do not have to be relatively undisturbed)* ☐☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acres). ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full description in WDFW PHS report p. 152*) ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☐☐ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 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. ☐☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158.)* ☐☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*) ☐ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. *(full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A.)* ☐☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐☐ **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. ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of >51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30cm (12 in) in diameter at the largest end, and > 6m (20 ft) long. 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 wetland are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H2.4.*	0

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	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
TOTAL for H1 from page 14	1
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	5

APPENDIX D

Conceptual Mitigation Plan

PSE LAKESIDE 115 kV SUBSTATION



NOTES:

1. 15'-0" WIDE ACCESS PATH, TYP.
2. IMPACTS ARE ESTIMATED BASED ON A CIRCULAR 15'-0" BUFFER OFF OF POWER POLES.

MAP LEGEND

- DELINEATED & SURVEYED STREAM OHWM
- STREAM BOUNDARY (2012 GPS DATA)
- DITCH, NOT REGULATED
- DELINEATED & SURVEYED WETLAND BOUNDARY
- WETLAND BOUNDARY (2012 GPS DATA)
- STREAM OR WETLAND BUFFER
- STREAM OR WETLAND BUFFER BSBL

PROJECT IMPACTS AND MITIGATION

- PRE-EXISTING IMPERVIOUS SURFACE, NO NEW IMPACT
- PROPOSED PERMANENT WETLAND BUFFER IMPACT = 9,613 SF
- PROPOSED TEMPORARY WETLAND BUFFER IMPACT = 10,654 SF
- PROPOSED PERMANENT WETLAND IMPACT = 57 SF
- PROPOSED TEMPORARY WETLAND IMPACT = 779 SF

TOTAL = 21,103 SF

Feature	Category/Type	Habitat Score	Buffer (feet)	Structure Setback (feet)
Wetland BC	III	22	110	15
Wetland D	III	16	60	15
Wetland EE	III	14	60	15
Wetland I	III	5	60	15
Stream B	Type F	N/A	100	20
Stream C	Type F	N/A	100	20
Stream D	Type F	N/A	100	20
Stream F	Type F	N/A	100	20

CRITICAL AREAS IMPACT ASSESSMENT PLAN

SCALE 1"=60'

0 30' 60' 120' 240'

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THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242
www.watershedco.com
Science & Design

PSE EASTSIDE - LAKESIDE 115kV SUBSTATION
CRITICAL AREAS MITIGATION PLAN
PREPARED FOR PUGET SOUND ENERGY
PARCEL # 1024059083

BELLEVUE, WA 98007

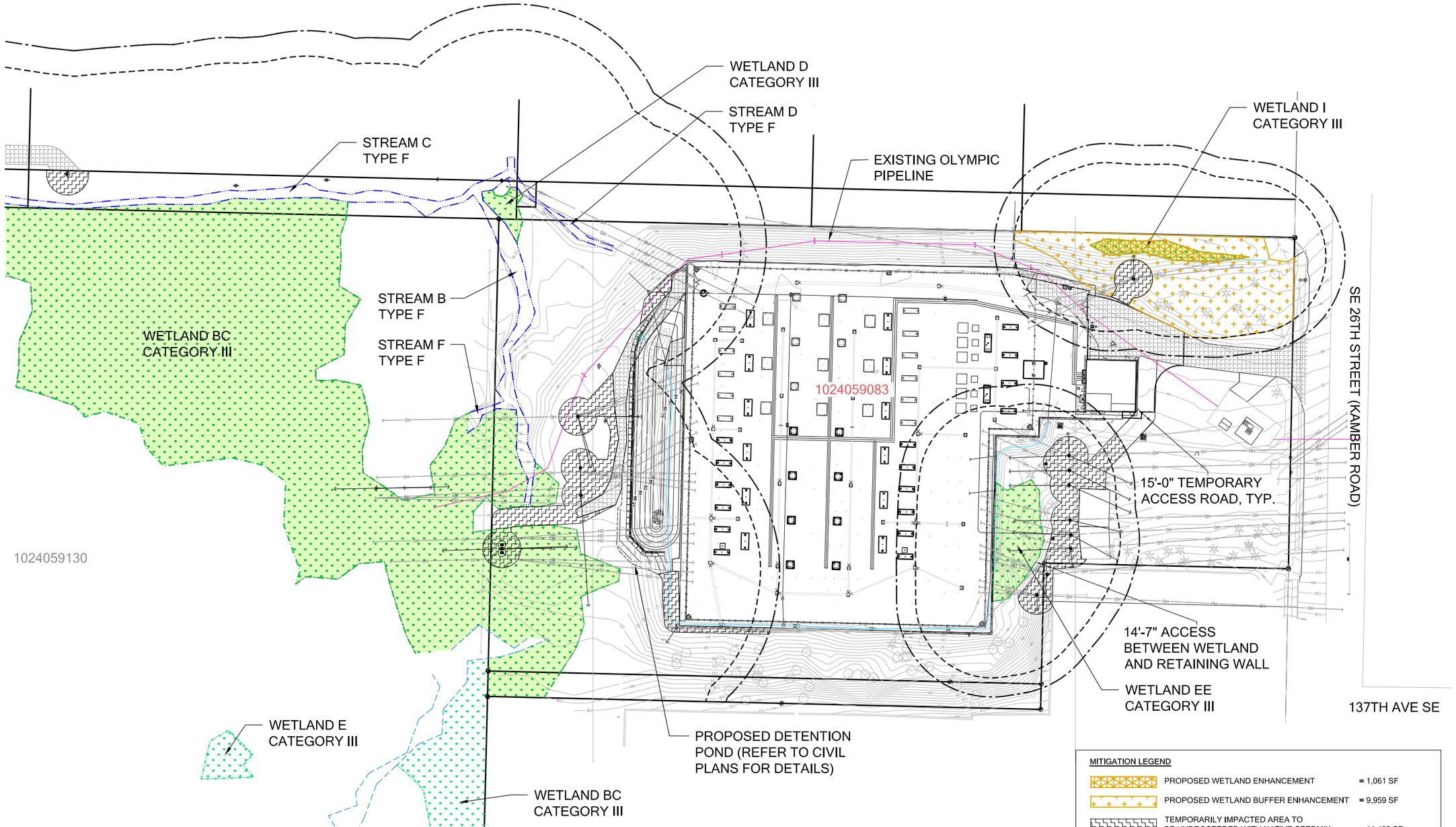
SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	06-04-14	DELINEATION PLAN	GB
2	08-08-14	MITIGATION CONCEPT PLAN	GB
3	09-09-14	REVISE IMPACT CALC	GB

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: JC
DESIGNED: GB
DRAFTED: GB, MF
CHECKED: JC, NL
JOB NUMBER:
111103.1
SHEET NUMBER:
1 OF 2

DATE 9/9/2014 | PRINTED BY GRACE BERGMAN | FILENAME 111103.1_MIT-CONCEPT_LAKESIDE_V4.DWG



MITIGATION LEGEND

PROPOSED WETLAND ENHANCEMENT	= 1,061 SF
PROPOSED WETLAND BUFFER ENHANCEMENT	= 9,959 SF
TEMPORARILY IMPACTED AREA TO BE HYDROSEEDED WITH NATIVE SEEDMIX	= 11,433 SF
	TOTAL = 22,453 SF

SUGGESTED MITIGATION PLANT LIST

WETLAND SPECIES	*WETLAND BUFFER SPECIES*
ATHYRIUM FELIX-FEMINA	MAHONIA AQUIFOLIUM
CORNUS SERICEA	MAHONIA NERVOSA
JUNCUS EFFUSUS	OEMLARIA CERASIFORMIS
LONICERA INVOLUCRATA	POLYSTICHUM MUNITUM
RUBUS SPECTABILIS	RIBES SANGUINEUM
	RUBUS PARVIFLORUS
	SYMPHORICARPOS ALBUS
	VACCINUM OVATUM

MAP LEGEND

- DELINEATED & SURVEYED STREAM OHWM
- STREAM BOUNDARY (2012 GPS DATA)
- DITCH, NOT REGULATED
- DELINEATED & SURVEYED WETLAND BOUNDARY
- WETLAND BOUNDARY (2012 GPS DATA)
- STREAM OR WETLAND BUFFER
- STREAM OR WETLAND BUFFER BSBL

CRITICAL AREAS MITIGATION CONCEPT PLAN

SCALE 1"=40'

0 20' 40' 80' 160'

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Science & Design

PSE EASTSIDE - LAKESIDE 115kV SUBSTATION

CRITICAL AREAS MITIGATION PLAN
PREPARED FOR PUGET SOUND ENERGY
PARCEL # 1024059083

BELLEVUE, WA 98007

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	06-04-14	DELINEATION PLAN	GB
2	08-08-14	MITIGATION CONCEPT PLAN	GB
3	09-09-14	REVISE IMPACT CALC	GB

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

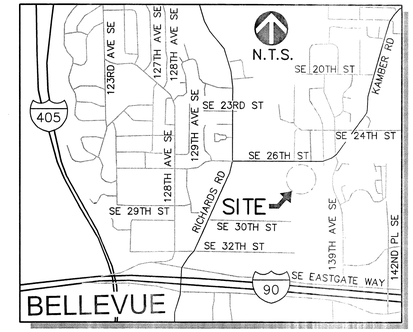
PROJECT MANAGER: JC
DESIGNED: GB
DRAFTED: GB, MF
CHECKED: JC, NL
JOB NUMBER:
111103.1
SHEET NUMBER:
2 OF 2

DATE 9/9/2014 | PRINTED BY GRACE BERGMAN | FILENAME 111103_MIT-CONCEPT_LAKESIDE_V4.DWG

PUGET SOUND ENERGY

LAKESIDE 115kV SUBSTATION

SECTION 10,T.24 N., R.5E., W.N.



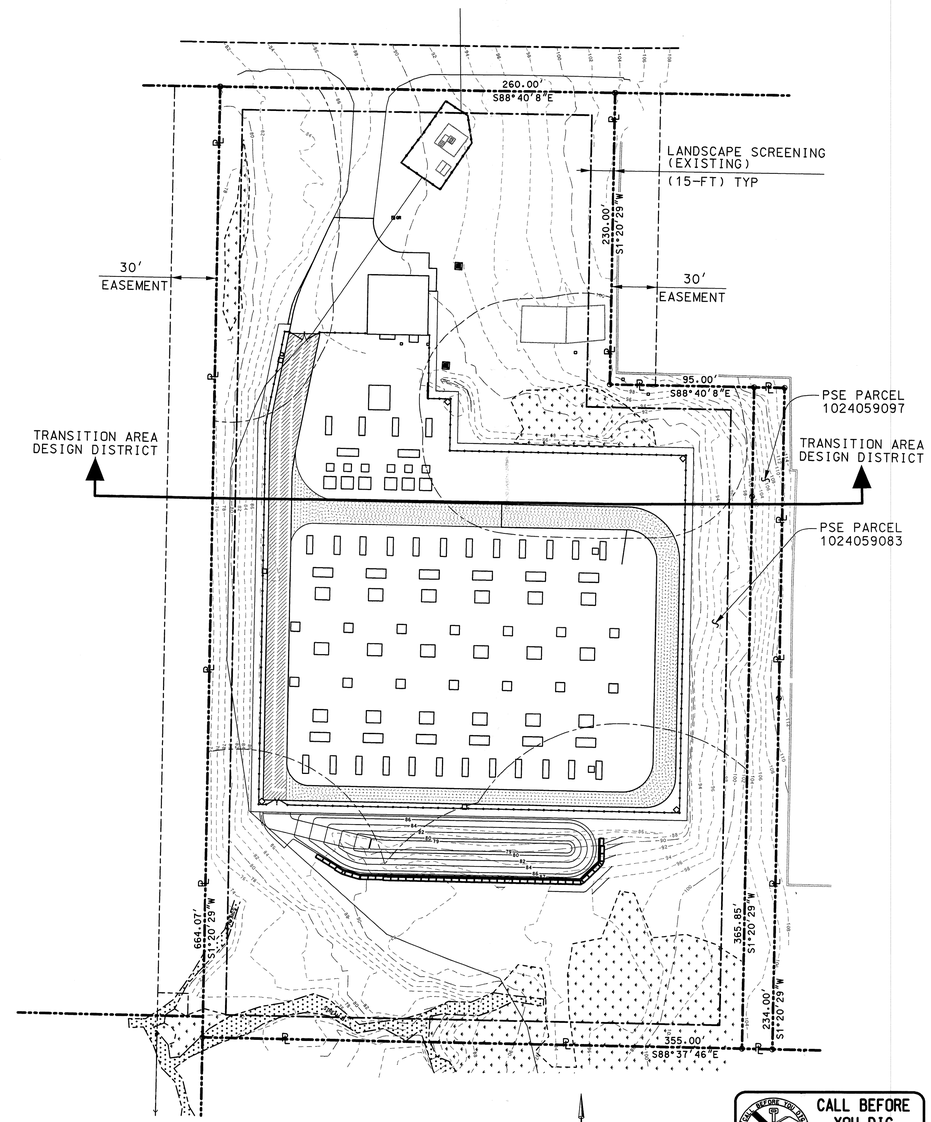
SURVEY NOTES:

1. PURPOSE OF THIS SURVEY THIS SURVEY REPRESENTS EXISTING CONDITIONS AT THE LAKESIDE SUBSTATION. THE SURVEY WAS PERFORMED IN APRIL AND MAY, 2013. SUPPLEMENTAL MAPPING ADDED IN MAY, 2014.
2. BASIS OF BEARING WASHINGTON COORDINATE SYSTEM, NORTH ZONE, NAD-83/07. VARIOUS PUBLIC RECORDS WERE USED FOR SECTION BREAKDOWNS AND ROAD CENTERLINES. VERIFICATION OF SECTION CORNERS AND OTHER MONUMENTS SHOWN ON SAID PUBLIC RECORDS WAS PERFORMED BY CONVENTIONAL AND OR GPS SURVEY METHODS.
3. VERTICAL DATUM NAVD-88
   NOTE: NGVD 29 = NAVD 88 MINUS 3.5'. SOURCE - CORPSCON FOR WINDOWS CONVERSION SOFTWARE VER 5.11.08.
   NOTE: THIS DATUM CONVERSION IS A GENERAL STATEMENT OF THE DIFFERENCE BETWEEN DATUMS IN THE VICINITY OF THE PROJECT SITE. FOR AN ACCURATE DETERMINATION OF THE DATUM CONVERSION FOR A SPECIFIC BENCHMARK, SURVEY MEASUREMENTS TO SAID BENCHMARK ARE REQUIRED.
4. BENCHMARKS DEA #3000 - 4"X4" CONCRETE MONUMENT WITH 1-3/4" DIAMETER BRASS CAP WITH PUNCH IN CASE AT THE INTERSECTION BETWEEN 137TH AVE SE AND SE 26TH ST.
   NORTH=217042.58
   EAST=131679.56
   ELEV=118.24

   DEA #3003 - MAGNAIL AND WASHER
   NORTH=216839.95
   EAST=1313331.30
   ELEV=87.33
5. METHODOLOGY FIELD MEASUREMENT FOR THIS SURVEY WERE PERFORMED USING A LEICA 1201 TOTAL STATION AND LEICA 1230GG GPS RECEIVERS. THIS SURVEY COMPLIES WITH THE MINIMUM REQUIRED "ERROR OF CLOSURE" OF 1:10,000 FOR WASHINGTON STATE PLANE COORDINATES AS SET FORTH PER W.A.C. 332-130-090 (AND POSITIONAL TOLERANCE LEVELS OF LESS THAN 0.011 METERS)
6. PROPERTY LINES THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES SHOWN HEREON ARE BASED UPON READILY AVAILABLE PLATS/SURVEYS/RIGHT OF WAY PLANS/KING COUNTY ASSESSOR INFORMATION AND ARE SHOWN FOR GRAPHIC PURPOSES ONLY.
7. ENCUMBRANCES THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT. ACCORDINGLY, ANY EASEMENTS OR RESTRICTIONS OF RECORD WHICH MAY BE REVEALED IN A TITLE REPORT HAVE NOT BEEN INCLUDED HEREON.
8. UNDERGROUND UTILITIES SHOWN REPRESENT FIELD SURVEYED PAINT MARKS AS PLACED ON THE GROUND BY A UTILITY LOCATE SERVICE TOGETHER WITH AVAILABLE UTILITY AS-BUILT AND REFERENCE DRAWINGS. NO GUARANTEE IS MADE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED OR THAT THE UNDERGROUND UTILITIES ARE SHOWN IN THEIR EXACT LOCATION. THE UTILITIES ARE SHOWN AS ACCURATELY AS POSSIBLE FROM AVAILABLE INFORMATION.
9. CONTOUR INTERVAL 1 FOOT AND 2 FOOT AS NOTED.
10. SUBSURFACE CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THIS SURVEY.
11. 1-800-424-5555 MUST BE CALLED NOT LESS THAN 48 HOURS BEFORE BEGINNING EXCAVATION WHERE ANY UNDERGROUND UTILITIES MAY BE LOCATED. FAILURE TO DO SO COULD MEAN BEARING SUBSTANTIAL REPAIR COSTS. (UP TO THREE TIMES THE COST OF REPAIRS TO THE SERVICE).

SHEET INDEX:

DRAWING NO:	SHEET	TITLE:
D- 18141	1	SITE PLAN B COVER SHEET
D- 18141	2	SITE PLAN B EXISTING PROPERTY AND SUBSTATION
D- 18141	3	SITE PLAN B PROPOSED SUBSTATION IMPROVEMENTS
D- 18141	4	SITE PLAN B PROPOSED TRANSMISSION POLE IMPROVEMENTS



AREA PLAN

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

SITE INFORMATION:

PARCEL NO:	1024059083 & 1024059097
ADDRESS:	13615 SE 26TH ST BELLEVUE, WA 98005
ZONING:	LI (LIGHT INDUSTRIAL)
ZONING DISTRICT:	TRANSITION AREA DESIGN DISTRICT (LI TO SF)
BUILDING SETBACKS:	FRONT 15-FT SIDE 8-FT REAR 8-FT
EXISTING LANDSCAPE SCREENING:	SHOWN (15-FT)

NOTES:

1. ALL SIGNIFICANT TREES TO BE RETAINED. NO TREE REMOVAL IS PROPOSED AS PART OF THIS PROPOSAL.
2. NO NEW LANDSCAPING IS PROPOSED.
3. CRITICAL AREAS AND ASSOCIATED BUFFERS (WETLAND AND STREAM) ARE DEPICTED ON SHEET 2.
4. EXISTING CONTOURS ARE SHOWN ON SHEET 2. NO GRADE CHANGES ARE PROPOSED. EXCEPT FOR DETENTION POND INSTALLATION.
5. A MAXIMUM 5-FOOT TALL ECOLOGY BLOCK WALL IS PROPOSED, SEE SHEET 3.
6. THE EXISTING CONTROL HOUSE WILL BE DEMOLISHED ONCE THE NEW CONTROL HOUSE IS CONSTRUCTED AND ALL NEW EQUIPMENT AND CABLES ARE ENERGIZED, SEE SHEET 2.
7. THE EXISTING MAINTENANCE BUILDING WILL BE DEMOLISHED AND THE NEW CONTROL HOUSE WILL BE LOCATED IN ITS PLACE, SEE SHEET 3.
8. EXISTING AND PROPOSED IMPERVIOUS AREAS ARE SHOWN ON SHEET 2 AND 3.
9. THE PROPOSED CONTROL HOUSE WILL BE UTILIZED TO OPERATE AND CONTROL ELECTRICAL EQUIPMENT WITHIN THE SUBSTATION.

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REVISION DESCRIPTION:	WO NUMBER: SEE NOTE
ORIGINAL ISSUE	

		DATE (M/D/Y)
CAD	E. DAHL	09/12/14
ENGINEER		/ /
REVIEWED	R. Stewart	09/12/14
APPROVED	FML	9/12/14

SITE PLAN B
COVER SHEET
LAKESIDE SUBSTATION

PUGET SOUND ENERGY — SUBSTATION ENGINEERING DEPARTMENT

SCALE: NTS — CLASS: SITE — CADD NO: D-18141_01.dgn

DRAWING NO: D-18141 — REV NO: 0 — SHEET: 1 OF 4 — FILE NO: — CODE:

USER: eddhl
9/12/2014
c:\pwworking\projectwise\eddhl\dms16047\D-18141_01.dgn

EXISTING FENCE (TO BE REBUILT IN SAME LOCATION SEE SHEET 3)

EXISTING FOUNDATIONS TO BE REMOVED

EXISTING RETAINING WALL

PROPERTY LINE (TYP)

234.00'
S1°20'29"W
365.85'
S1°20'29"W

℄ EXISTING DITCH

30' WIDE EASEMENT AFN 5139975

EXISTING SIDEWALK

WETLAND EE

60' BUFFER

110' BUFFER

EXISTING TRANSMISSION POLE W/ GUY ANCHORS

WETLAND BG

EXISTING TREES (NO REMOVAL PROPOSED)

EXISTING PETROLEUM FACILITY

110' BUFFER

SE 26TH STREET (KAMBER ROAD)

EXISTING ASPHALT DRIVEWAY

60' BUFFER

STREAM B

100' BUFFER

STREAM D

WETLAND D

STREAM C

WETLAND I

EXISTING PETROLEUM GAS LINE TO REMAIN

EXISTING GRAVEL MAINTENANCE ROAD

MAINTENANCE BUILDING TO BE REMOVED, NEW CONTROL HOUSE TO BE BUILT, SEE SHEET 3

30' WIDE EASEMENT AFN 5309538

CONTROL HOUSE TO BE REMOVED

EXISTING CONTOURS

EXISTING DRAINAGE TO BE REMOVED, SEE SHEET 3

±5' GRAVEL SHOULDER ADJACENT TO ENTIRE FENCE

15'x20' EASEMENT AFN 5964336

30' WIDE EASEMENT AFN 5298899

TOTAL SITE AREA: = 4.83 AC
TOTAL EXISTING IMPERVIOUS AREA: = 27,997 SF (0.64 AC)

MAINTENANCE BUILDING	=	2,423 SF
CONTROL HOUSE	=	917 SF
ASPHALT DRIVEWAY	=	6,338 SF
GRAVEL MAINTENANCE ROAD	=	8,076 SF
EXISTING FOUNDATIONS	=	10,223 SF

30 0 30 60 120
1 INCH = 30 FEET

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1-800-424-5555

REVISION DESCRIPTION:	WO NUMBER: 111021421		SITE PLAN B EXISTING PROPERTY AND SUBSTATION LAKESIDE SUBSTATION			
		DATE (M/D/Y)	PUGET SOUND ENERGY	SUBSTATION ENGINEERING DEPARTMENT	DRAWING NO D-18141	REV NO 0
CAD	E. DAHL	09/12/14			SHEET: 2 OF 4	
ENGINEER		/ /			FILE NO:	
REVIEWED	R Stewart	09/12/14	SCALE: 1"=30'-0"	CLASS: SITE	CODE:	
APPROVED	FML	9/12/14	CADD NO: D-18141_02.dgn			

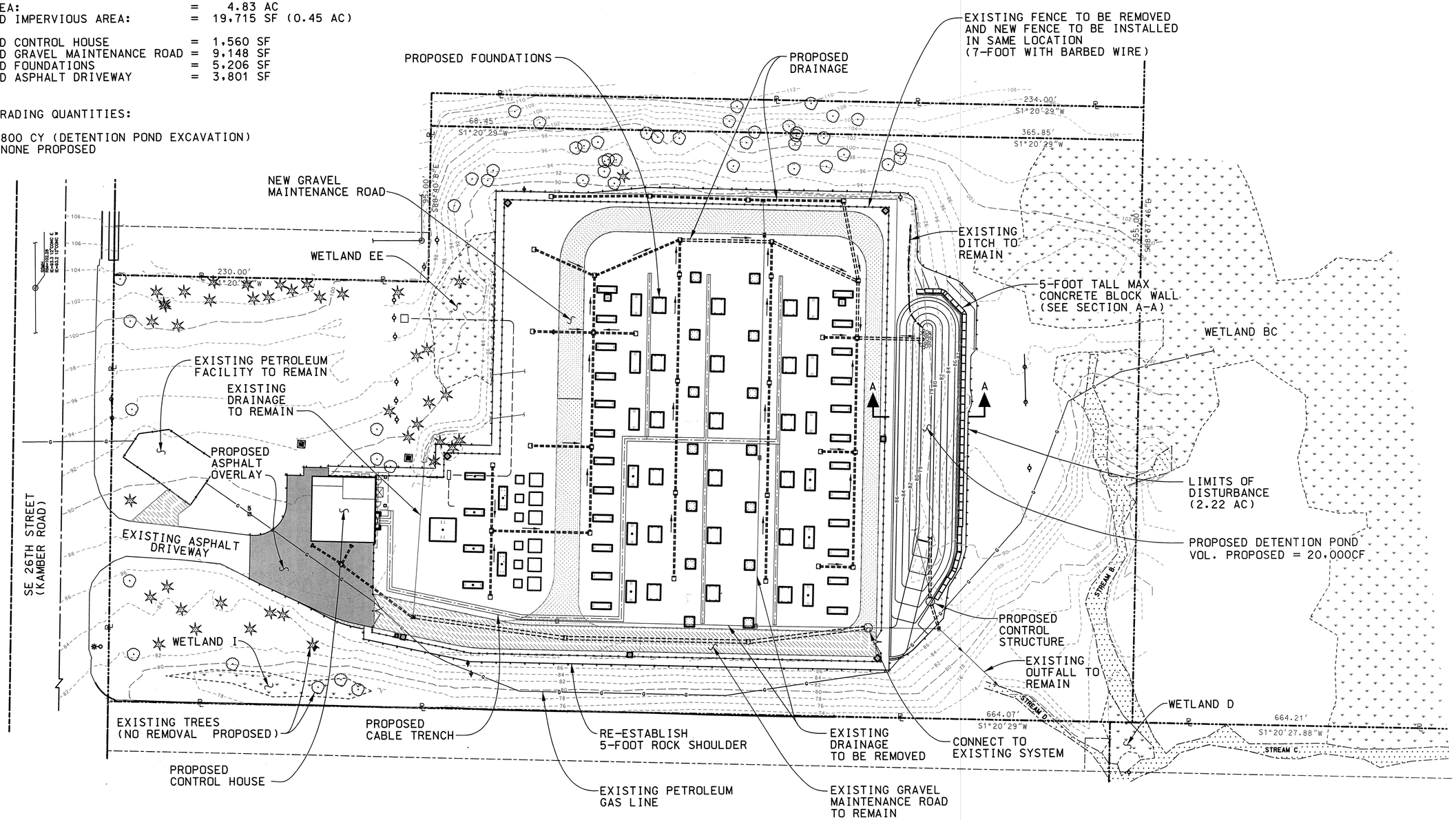
USER: edahl
9/12/2014
c:\pwworking\projectwise\edahl\dms16047\D-18141_02.dgn

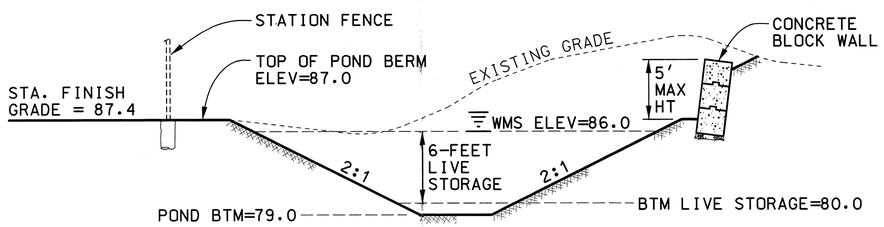
TOTAL SITE AREA: = 4.83 AC
TOTAL PROPOSED IMPERVIOUS AREA: = 19,715 SF (0.45 AC)

PROPOSED CONTROL HOUSE = 1,560 SF
PROPOSED GRAVEL MAINTENANCE ROAD = 9,148 SF
PROPOSED FOUNDATIONS = 5,206 SF
PROPOSED ASPHALT DRIVEWAY = 3,801 SF

APPROXIMATE GRADING QUANTITIES:

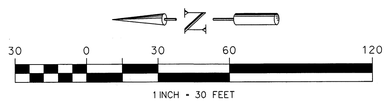
CUT = 800 CY (DETENTION POND EXCAVATION)
FILL = NONE PROPOSED





DETENTION POND & ECOLOGY BLOCK SECTION A-A

NTS



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REVISION DESCRIPTION:	WO NUMBER: 111021421		SITE PLAN B PROPOSED SUBSTATION IMPROVEMENTS LAKESIDE SUBSTATION		
		DATE (M/D/Y)	PUGET SOUND ENERGY	SUBSTATION ENGINEERING DEPARTMENT	DRAWING NO D-18141 / REV NO 0
CAD	E. DAHL	09/12/14			SHEET: 3 OF 4
ENGINEER		/ /			FILE NO:
REVIEWED	R. Stewart	09/12/14	SCALE: 1"=30'-0"	CLASS: SITE	CODE:
APPROVED	FML	9/12/14	CADD NO: D-18141_03.dgn		

USER: edahl
9/12/2014
c:\pwworking\projectwise\edahl\dms16047\D-18141_03.dgn

POLE LEGEND:

RTP #X — REPLACE WOOD TRANSMISSION POLE

TTP #X — TEMPORARY WOOD TRANSMISSION POLE

PARCEL #1024059097

234.00'
S1°20'29"W

68.45'
S1°20'29"W

365.85'
S1°20'29"W

95.00'
S88°40'8"E

355.00'
S88°37'46"E

30' WIDE
EASEMENT
AFN 5139975

WETLAND EE

RTP #1

RTP #2

TTP #3

RTP #4

TTP #6

RTP #5

TEMPORARY TRANSMISSION POLES

EXISTING PETROLEUM
FACILITY TO REMAIN

PARCEL #1024059083

#9
STEEL POLE TO BE REPLACED
W/2 WOOD LAMINATE POLES

WETLAND BC

RTP #10

RTP #11

RTP #12

PARCEL #1024059130

TEMPORARY TRANSMISSION POLE

TTP #7

EXISTING ASPHALT
DRIVEWAY

PROPOSED
CONTROL HOUSE

SE 26TH STREET (KAMBER ROAD)

WETLAND I

RTP #8

STREAM B

STREAM D

WETLAND D

64.07'
S1°20'29"W

664.21'
S1°20'27.88"W

STREAM C

EXISTING PETROLEUM
GAS LINE

30' WIDE
EASEMENT
AFN 5309538

15'x20'
EASEMENT
AFN 5964336

RTP #13

30' WIDE
EASEMENT
AFN 5298899

RTP #14

30 0 30 60 120

1 INCH = 30 FEET

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USER: edahl

9/12/2014

REVISION DESCRIPTION:	WO NUMBER: 111021421		SITE PLAN B PROPOSED TRANSMISSION POLE IMPROVEMENTS LAKESIDE SUBSTATION			
		DATE (M/D/Y)	PUGET SOUND ENERGY	SUBSTATION ENGINEERING DEPARTMENT	DRAWING NO D-18141	REV NO 0
CAD	E. DAHL	09/12/14			SHEET: 4 OF 4	
ENGINEER	A. LIGHTFOOT	9/12/14				
REVIEWED		/ /	SCALE: 1"=30'-0"	CLASS: SITE	FILE NO:	
APPROVED	R. Stuart	09/12/14	CADD NO: D-18141_04.dgn		CODE:	

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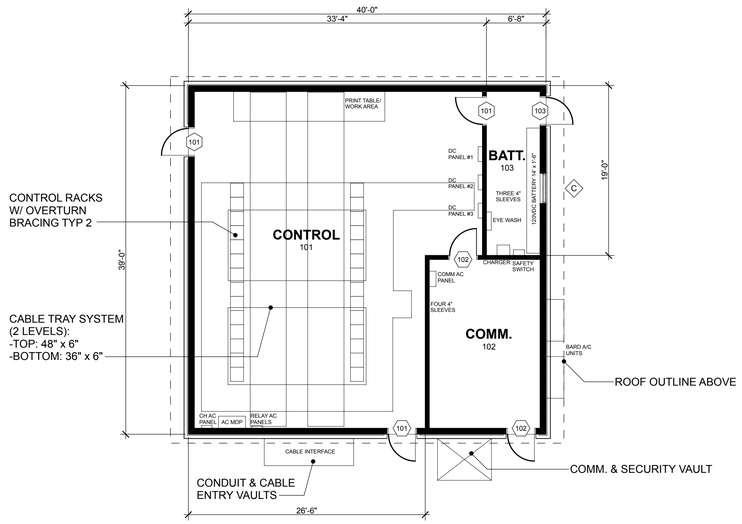
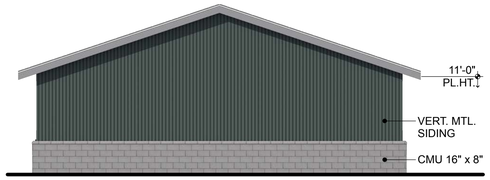


1 FLOOR PLAN

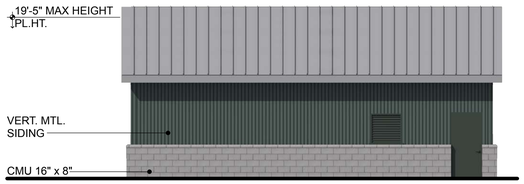
1/8" = 1'-0"

N



2 NORTH ELEVATION

1/8" = 1'-0"

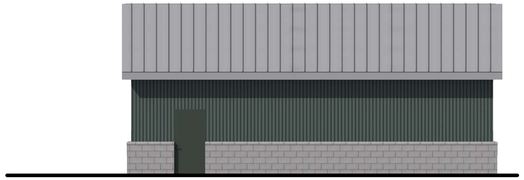


3 EAST ELEVATION

1/8" = 1'-0"

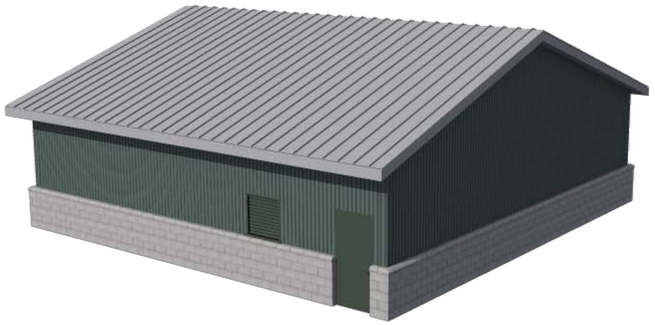
4 SOUTH ELEVATION

1/8" = 1'-0"



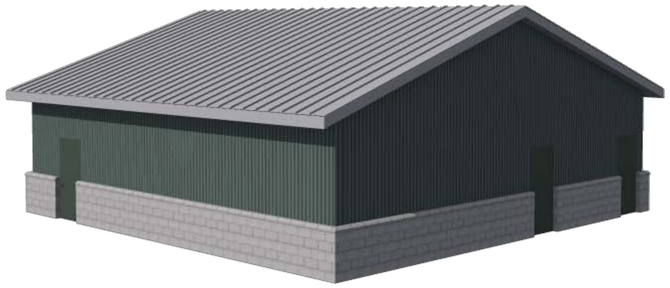
5 WEST ELEVATION

1/8" = 1'-0"



NORTH EAST PERSPECTIVE

SOUTH EAST PERSPECTIVE



SOUTH WEST PERSPECTIVE

PSE STANDARDS

0150.3200 TECHNIQUES FOR TEMPORARY EROSION AND SEDIMENT CONTROL

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REVISION DESCRIPTION:	WO NUMBER: ?
ISSUED FOR PERMITTING	

CONTROL HOUSE
FLOOR PLANS / ELEVATIONS
LAKESIDE SUBSTATION

		DATE (M/D/Y)
CAD	CLR	5 / 21 / 14
ENGINEER		/ /
REVIEWED		/ /
APPROVED		/ /

PUGET SOUND ENERGY

SUBSTATION ENGINEERING DEPARTMENT

DRAWING NO: D-18142
SHEET: 1 OF 1
REV NO: 0

SCALE: 1:8
CLASS: SITE
FILE NO: ?
CADD NO: $$DGN$$
CODE: ?

$USER$
$DATE$
$FILES

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Geotechnical Engineering Services

Lakeside Substation Improvements
13615 SE 26th Street
Bellevue, Washington

for
Puget Sound Energy

May 30, 2013

GeoEngineers

Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, Washington 98101
206.728.2674

Geotechnical Engineering Services

Lakeside Substation Improvements
13615 SE 26th Street
Bellevue, Washington

File No. 0186-922-00

May 30, 2013

Prepared for:

Puget Sound Energy
355 110th Avenue NE, EST-04W
Bellevue, Washington 98004

Attention: Rob Stewart, PE

Prepared by:

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TDB:JJM:csv

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INTRODUCTION AND SCOPE

This report summarizes the results of our geotechnical engineering services for the proposed improvements to the existing Puget Sound Energy (PSE) Lakeside substation. The site is located at 13615 SE 26th Street in Bellevue, Washington. The site is shown in relation to the surrounding area on the Vicinity Map, Figure 1, and the Site Plan, Figure 2.

We understand PSE is planning to rebuild the existing 115-kV substation, including removing existing equipment and foundations and removing the existing control building. The new improvements will include six 115-kV dead end bays on the north and six on the south, and a new control building. The improvements will be located within the existing substation footprint and no significant grading is planned, other than replacing the yard course. Due to space limitations, the new dead-end equipment will likely be supported on drilled shaft foundations, and the new lightly-loaded equipment will be supported on mat or spread footings. The control building will be supported on spread footings, with a slab on grade. We have reviewed preliminary drawings showing the locations of the planned improvements but have not reviewed the final equipment layout.

We understand the existing stormwater facilities inside the substation will be reconstructed, with stormwater collected in catch basins and routed to the southwest corner of the site, where the stormwater is currently discharged at the base of the slope. Infiltration facilities are not planned at the site at this time.

Our geotechnical engineering services were completed in general accordance with our proposal dated April 19, 2013. Our scope of work includes:

- Completing four borings at the site;
- Completing laboratory testing on selected soil samples from the borings;
- Providing geotechnical conclusions and recommendations for the proposed improvements; and
- Preparing this report.

FIELD EXPLORATION AND LABORATORY TESTING

Field Explorations

The subsurface conditions at the site were evaluated by completing four borings (GEI-1 through GEI-4) to depths of 21½ to 26½ feet below existing site grades. The approximate locations of the borings are shown on the Site Plan, Figure 2. A detailed description of the field exploration program is presented in Appendix A.

Laboratory Testing

Soil samples were obtained during the exploration program and taken to GeoEngineers' laboratory for further evaluation. Selected samples were tested for the determination of percent fines and

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grain size distribution (sieve analysis). A description of the laboratory testing and the test results are presented in Appendix A or on the exploration logs, as appropriate.

SITE CONDITIONS

Geology

We reviewed available geologic maps, including the "Geologic map of surficial deposits in the Seattle 30' by 60' quadrangle," (Yount et al., 1993) and the Washington State Department of Natural Resources (DNR) Geologic Information Portal (WA DNR, 2013). The soils mapped in the project vicinity are recessional outwash deposits. Recessional outwash generally consists of moderately sorted and stratified gravel and sand with minor amounts of silt and clay. These materials were deposited in streams emanating from the retreating glaciers and are generally loose to medium dense. The recessional outwash generally overlies glacial till which is mapped to the south and east of the site.

Surface Conditions

The site (King County parcel 1024059083) is bounded by SE 26th Street to the north, a school to the east, a PSE-owned property to the south (currently used for equipment and material storage), and commercial/industrial properties to the west. The site is accessed by a paved driveway on the north and an unpaved gravel road on the south that connects to the adjacent PSE site. There is a single-story maintenance building just north of the existing substation fence along the paved driveway, with a single story control building just south and inside of the substation fence. The existing 115-kV substation equipment includes dead-end structures, switches and breakers. The existing 115-kV overhead lines enter the substation from the north and south.

There is an Olympic Pipeline Company (OPLC) block valve at the north end of the site; the valve site is surrounded by a wood fence. The 16-inch product pipeline crosses the site from north to south as shown on the Site Plan, Figure 2. The pipeline is located outside the perimeter of the substation fence.

Drilling Inside Substation

The topography at the site generally slopes down from east to west, with a grade transition of approximately 30 feet across the site. There is a cut slope along the east side of the site (a portion of which is supported by a rockery as shown on the Site Plan) and a fill slope along the west side as show on the Site Plan, Figure 2. The basemap shown on the Site Plan presents existing conditions from previous improvements to the site in 1988. The existing substation portion of the site is relatively flat and surfaced with crushed yard rock.

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Subsurface Conditions

We explored subsurface conditions at the substation site by drilling four borings (GEI-1 through GEI-4) at the locations shown on the Site Plan, Figure 2. Appendix A presents details of the field exploration and laboratory testing programs, including logs of borings (see photo of drill rig to the right).

The two borings along the east side of the site (GEI-2 at the northeast corner and GEI-3 at the southeast corner of the substation) encountered approximately 2 feet of fill (loose silty sand) overlying glacial till. The glacial till generally consisted of dense to very dense silty sand with gravel and extended to the depths explored (20½ feet).

The boring at the north side of the site, adjacent to the existing maintenance building (GEI-1), encountered approximately 2 feet of fill (loose silty sand) overlying recessional outwash overlying glacial till. The recessional outwash generally consisted of medium dense sand with variable silt and gravel content extending to a depth of approximately 17½ feet. Glacial till was encountered below the recessional outwash, and the till consisted of very dense silty sand with gravel and extended to the depth explored (25½ feet).

The boring at the southwest corner of the substation (GEI-4), encountered fill overlying recessional outwash. The fill generally consisted of loose silty sand with variable gravel and organic content and extended to a depth of approximately 20 feet. Recessional outwash was encountered below the fill, and the outwash consisted of medium dense silty sand and very stiff sandy silt and extended to the depth explored (26½ feet).

Observations of groundwater conditions were made during drilling and are noted on the exploration logs at depths of approximately 2 to 10 feet below the ground surface. These observations represent a short-term condition that may not be representative of the long-term groundwater conditions at the site. Groundwater conditions observed during drilling should be considered approximate. Groundwater level is anticipated to vary as a function of precipitation, season and other factors.

CONCLUSIONS AND RECOMMENDATIONS

Earthquake Engineering

2009 IBC Seismic Design Information

We recommend the 2009 International Building Code (IBC) parameters for Soil Profile Type, short period spectral response acceleration (S_S), 1-second period spectral response acceleration (S_1), and Seismic Coefficients F_A and F_V presented in the following table:

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2009 IBC PARAMETERS

2009 IBC Parameter	Recommended Value
Soil Profile Type	C
Short Period Spectral Response Acceleration, S_S (percent g)	139.8
1-Second Period Spectral Response Acceleration, S_1 (percent g)	47.4
Seismic Coefficient, F_A	1.00
Seismic Coefficient, F_V	1.32

Note:

The above spectral response accelerations are based on data from the United States Geologic Survey (USGS) National Seismic Hazard Mapping Project.

Seismic Hazards

Based on our evaluation the soils underlying the substation site have a low risk of liquefying under a design earthquake event, and also have a low risk of lateral spread and earthquake-induced slope movement. The site is mapped within the Seattle Fault Zone, which is thought to have a recurrence interval on the order of 1,000 years. Based on the long recurrence interval of the Seattle Fault Zone, it is our opinion there is a low risk of fault rupture at the site.

Shallow and Mat Foundations

General

We recommend some of the proposed structures (control house, breakers, switches and other electrical equipment) be supported on conventional spread footings or mat foundations bearing on either dense to very dense soils where present at foundation depth, or on a minimum of 2 feet of compacted structural fill in areas of loose to medium dense soils at foundation depth. Due to space limitations, we understand drilled shafts are preferred for support of the dead-end towers. Our recommendations for drilled shaft foundations are discussed in the Drilled Shafts section below.

We understand that the proposed electrical equipment will not include heavily-loaded equipment such as transformers. If heavily-loaded equipment is planned, we should review the equipment layout and revise our geotechnical recommendations, as necessary.

Allowable Bearing Pressure

The shallow spread footings, where required, may be designed using an allowable soil bearing pressure of 3,000 pounds per square foot (psf). Mat foundations may be designed for an allowable bearing pressure of 1,500 psf. The allowable soil bearing pressures apply to the total of dead and long-term live loads and may be increased by up to one-third for transient loads such as wind or seismic forces. A subgrade modulus of 180 pounds per cubic inch (pci) may be used for the design of mat foundations.

Embedment

In general, we recommend that the bottom of foundations be embedded at least 24 inches below the lowest adjacent grade for frost protection. The foundation embedment depth may be reduced

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to 18 inches for small, lightly loaded footings where frost action will not affect equipment performance, or an additional 6-inch-thick layer of gravel that is not susceptible to frost may be placed below the foundations to achieve an embedment of 24 inches. The gravel should meet the requirements of "yard course" surfacing material presented in the "Structural Fill" section of this report.

Settlement

Provided all loose soil is removed and the subgrade is prepared as recommended under the "Construction Considerations" section below, we estimate that the total settlement of shallow foundations will be on the order of ½ to 1 inch, with the higher end of that settlement range anticipated in the southwest corner of the substation that is underlain by looser soils. The settlements will occur rapidly, essentially as loads are applied. Differential settlements between comparably loaded foundations are expected to be less than ½ inch.

Lateral Resistance

Lateral foundation loads may be resisted by passive resistance on the sides of foundations and by friction on the base of the foundations. For foundations supported on native soils or on structural fill placed and compacted in accordance with our recommendations, the allowable frictional resistance may be computed using a coefficient of friction of 0.4 applied to vertical dead-load forces.

The allowable passive resistance may be computed using an equivalent fluid density of 250 pounds per cubic foot (pcf) (triangular distribution) if these elements are poured directly against compacted native soils or surrounded by compacted structural fill. The structural fill should extend out from the face of the foundation element for a distance at least equal to three times the height of the element and be compacted to at least 95 percent of the MDD.

The above coefficient of friction and passive equivalent fluid density values incorporate a factor of safety of about 1.5.

Construction Considerations

Following excavation for foundations, we recommend the condition of each footing excavation be observed by a qualified geotechnical engineer to evaluate if the work is completed in accordance with our recommendations and that the subsurface conditions are as anticipated. Areas of loose or soft soils present at the foundation subgrade elevation should be overexcavated to a maximum depth of 2 feet and replaced with compacted structural fill. In such instances, the zone of structural fill should extend laterally beyond the footing edges a horizontal distance at least equal to the thickness of the fill. A geotextile separator fabric may be used at the base of the overexcavation if loose/soft soils extend below the depth of the overexcavation, such as at the southwest quadrant of the substation.

Drilled Shafts

General

The proposed dead-end towers may be supported on drilled shafts. We recommend that the drilled shafts extend to a depth of at least 15 feet below the existing ground surface. Based on the

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preliminary electrical equipment layout we reviewed, we understand the dead-end towers will be located in a single row along the north and a single row along the south side of the substation. The soil conditions will be different in these two areas, and our recommendations below reflect the anticipated variability. We should review the final dead-end tower locations when available and provide modifications to these recommendations if appropriate.

Axial Capacity

The applied axial loads on the drilled shafts are generally very small in comparison to the applied overturning moments, resulting from the tension in the wires along with possible ice and wind loading. The axial capacity of the drilled shafts in compression will be developed primarily from friction and end bearing in the medium dense soils. Provided the drilled shafts are embedded at least 15 feet below the existing ground surface and into dense soils at the tip elevation (25 feet for the southwest quadrant of the substation), we anticipate that the allowable axial capacity for shafts at least 3 feet in diameter will be greater than 100 kips.

Lateral Capacity

The design of the drilled shafts will be governed by the lateral loads on the structures. The lateral capacity of the drilled shafts will develop from the stiffness of the drilled shaft and the lateral resistance of the soil surrounding the drilled shaft.

We anticipate that the shafts will be designed using the L-PILE™ program. For evaluation of the lateral load behavior of the drilled shafts, the parameters in the tables below can be used as input soil parameters for the L-PILE™ program. These soil parameters are based on our review of our explorations.

LATERAL PILE ANALYSIS INPUT PARAMETERS – EAST HALF OF SUBSTATION (GEI-2 AND GEI-3)

Soil Parameter	Layer 1	Layer 2
Depth (in)	0-24	24-240
Soil Type (p-y curve model)	Sand (Reese)	Sand (Reese)
Effective Unit Weight (lb/in^3)	0.0694	0.0405
Friction Angle (degrees)	34	40
p-y Modulus, k (lb/in^3)	90	200

LATERAL PILE ANALYSIS INPUT PARAMETERS – NW QUADRANT OF SUBSTATION (GEI-1)

Soil Parameter	Layer 1	Layer 2	Layer 3
Depth (in)	0-120	120-240	240-300
Soil Type (p-y curve model)	Sand (Reese)	Sand (Reese)	Sand (Reese)
Effective Unit Weight (lb/in^3)	0.0694	0.0347	0.0405
Friction Angle (degrees)	34	34	40
p-y Modulus, k (lb/in^3)	90	60	200

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LATERAL PILE ANALYSIS INPUT PARAMETERS – SW QUADRANT OF SUBSTATION (GEI-4)

Soil Parameter	Layer 1	Layer 2	Layer 3
Depth (in)	0-96	96-240	240-300
Soil Type (p-y curve model)	Sand (Reese)	Sand (Reese)	Sand (Reese)
Effective Unit Weight (lb/in^3)	0.0665	0.0318	0.0347
Friction Angle (degrees)	32	32	34
p-y Modulus, k (lb/in^3)	25	20	60

Drilled Shaft Settlement

We estimate that post-construction settlement of drilled shaft foundations, designed and installed as recommended, will be on the order of ½ inch or less. Maximum differential settlement should be less than about one-half the post-construction settlement. Most of this settlement will occur rapidly as loads are applied.

Construction Considerations

Temporary casing may be required to keep the drilled holes open while drilling through the zones of sandier soils, especially below the groundwater level and in the southwest portion of the site where loose soils were encountered (boring GEI-4). The contractor may attempt to drill the holes without casing but should have temporary casing available for use if sloughing and caving occurs. We recommend that the drilled shaft foundation excavations be observed by GeoEngineers.

Earthwork

We understand that only minor earthwork is planned as part of this project. Our recommendations for earthwork are presented below.

Clearing

Removal and demolition of existing site improvements and structures associated with the existing substation should include removal of foundation elements. Existing voids or new depressions created during demolition and site preparation should be cleaned of loose soil or debris and backfilled with compacted structural fill.

Subgrade Preparation

New foundation subgrade areas should be evaluated after site grading and foundation excavation is completed. Probing should be used to evaluate the subgrade; soft areas noted during probing should be overexcavated and replaced with compacted structural fill as described in the "Shallow and Mat Foundations" section.

Erosion and Sedimentation Control

Potential sources or causes of erosion and sedimentation depend upon construction methods, slope length and gradient, amount of soil exposed and/or disturbed, soil type, construction sequencing and weather. The project impact on erosion-prone areas and adjacent wetland/stream areas can be reduced by implementing an erosion and sedimentation control plan. The plan

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should be designed in accordance with applicable city standards. The plan should incorporate basic planning principles that include:

- Scheduling grading and construction to reduce soil exposure;
- Preparing drainage ways and outlets to handle concentrated or increased runoff;
- Confining sediment to the project site; and
- Inspecting and maintaining control measures frequently.

Temporary erosion protection should be used and maintained in areas with exposed or disturbed soils to help reduce the potential for erosion and reduce transport of sediment to adjacent areas and receiving waters. Temporary erosion protection should include the construction of a silt fence around the perimeter of the work area prior to the commencement of grading activities. Permanent erosion protection should be provided by re-establishing vegetation or surfacing with rock.

Until the permanent erosion protection is established and the site is stabilized, site monitoring should be performed by qualified personnel to evaluate the effectiveness of the erosion control measures and repair and/or modify them as appropriate. Provisions for modifications to the erosion control system based on monitoring observations should be included in the erosion and sedimentation control plan.

Structural Fill

MATERIALS

Materials used for support of structures or pavements or for utility trench backfill are classified as structural fill for the purpose of this report. Structural fill material quality varies depending upon its use as described below:

1. On-site soils may be used as structural fill to support substation equipment provided it can be appropriately moisture conditioned to achieve the required compaction. If on-site soils cannot be moisture-conditioned, imported gravel borrow for support of substation equipment should conform to PSE Base Course Aggregate Specification 1275.1310 as described in the following table:

US Standard Sieve Size	Percent Passing (by weight)
3 inch	100
¾ inch	70-90
⅜ inch	60-80
¼ inch	50-70
U.S. No. 40	< 30
U.S. No. 200	< 5

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2. Structural fill placed as "yard course crushed aggregate" surfacing material should be angular crushed rock conforming to PSE Specification 1275.1330 as described in the following table:

US Standard Sieve Size	Percent Passing (by weight)
1½ inches	100
1 inch	60 to 100
¾ or ⅝ inch	0 to 35
⅜ inch	0 to 5

ON-SITE SOILS

The on-site soils generally contain a significant amount of fines and are moisture sensitive. These soils generally meet the criteria for common borrow and are suitable for use as structural fill only if construction takes place during the drier summer months. Additional considerations for wet weather construction are presented below in the "Weather Considerations" section.

FILL PLACEMENT AND COMPACTION CRITERIA

Structural fill should be mechanically compacted to a firm, non-yielding condition. In general, structural fill should be placed in loose lifts not exceeding 8 to 10 inches in thickness. Each lift should be conditioned to the proper moisture content and compacted to the specified density before placing subsequent lifts. Structural fill should be compacted to the following criteria:

1. Structural fill placed below foundations or to establish yard subgrade should be compacted to at least 95 percent of the maximum dry density (MDD) estimated in accordance with ASTM D 1557.

We recommend that a representative from our firm be present during probing of the exposed subgrade soils in structure areas prior to the placement of structural fill and during the placement of structural fill. Our representative would evaluate the adequacy of the subgrade soils and identify areas needing further work, perform in-place moisture-density tests in the fill to evaluate if the work is being done in accordance with the compaction specifications, and advise on any modifications to procedures that may be appropriate for the prevailing conditions.

Weather Considerations

The on-site soils contain a sufficient percentage of fines (silt) to be moisture sensitive. If the moisture content of these soils is appreciably above the optimum moisture content, these soils become muddy and unstable. During wet weather, operation of equipment on these soils will be difficult, and it will be difficult to meet the required compaction criteria.

The wet weather season generally begins in early November and continues through March in Eastern Washington; however, periods of wet weather may occur during any month of the year. The optimum earthwork period for these types of soils is typically July through October. If wet weather earthwork is unavoidable, we recommend that:

- Structural fill placed during the wet season or during periods of wet weather consist of gravel borrow conforming to PSE Base Course Aggregate Specification 1275.1310.

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- The ground surface in and around the work area be sloped so that surface water is directed away from the work area. The ground surface should be graded such that areas of ponded water do not develop. Measures should be taken by the contractor to prevent surface water from collecting in excavations and trenches. Measures should be implemented to remove surface water from the work area.

Temporary Slopes

The soils encountered at the site are classified as Type C soil, in accordance with the provisions of Title 296 WAC (Washington Administrative Code), Part N, "Excavation, Trenching and Shoring." We recommend that temporary slopes in excess of 4 feet in height excavated in the on-site soils be inclined no steeper than 1½H:1V (horizontal to vertical). Flatter slopes may be necessary if localized sloughing occurs. For open cuts at the site we recommend that:

- No traffic, construction equipment, stockpiles or building supplies be allowed at the top of the cut slopes within a horizontal distance of at least 5 feet from the top of the cut.
- Exposed soil along the slope be protected from surface erosion using waterproof tarps or plastic sheeting.
- Construction activities be scheduled so that the length of time the temporary cut is left open is kept as short as possible.
- Erosion control measures be implemented as appropriate such that runoff from the site is reduced to the extent practical.
- Surface water is diverted away from the excavation.
- The general condition of the slopes be observed periodically by a geotechnical engineer to confirm adequate stability.

Since the contractor has control of the construction operations, the contractor should be made responsible for the stability of cut slopes, as well as the safety of the excavations. All shoring and temporary slopes must conform to applicable local, state and federal safety regulations.

LIMITATIONS

We have prepared this report for the exclusive use of Puget Sound Energy and their authorized agents for the proposed Lakeside Substation Improvements in Bellevue, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

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.

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Please refer to Appendix B, Report Limitations and Guidelines for Use, for additional information pertaining to use of this report.

REFERENCES

U.S. Geological Survey Seismic Design Maps, accessed via: http://geohazards.usgs.gov/designmaps/us/application.php on May 15, 2013.

Washington State Department of Natural Resources Geologic Information Portal accessed via: http://www.dnr.wa.gov/ResearchScience/Topics/GeosciencesData/Pages/geology_portal.aspx on May 28, 2013.

Yount, J.C., Minard, J.P., and Dembroff, G.R., 1993, "Geologic map of surficial deposits in the Seattle 30' by 60' quadrangle, Washington," U.S. Geological Survey, Open-File Report OF-93-233, scale 1:100,000.

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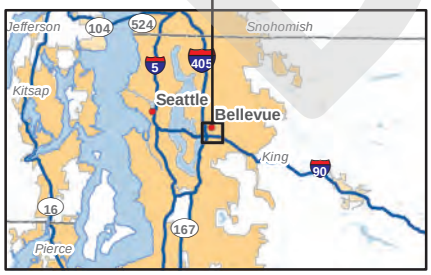

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Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps, Street Maps 2005

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Vicinity Map

Lakeside Substation Improvements
13615 SE 26th Street
Bellevue, Washington

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Figure 1

Office: Seattle Path: \\sea\projects\0\0186922\GIS\018692200_F1_VicinityMap.mxd Map Revised: 5/14/2013 EL

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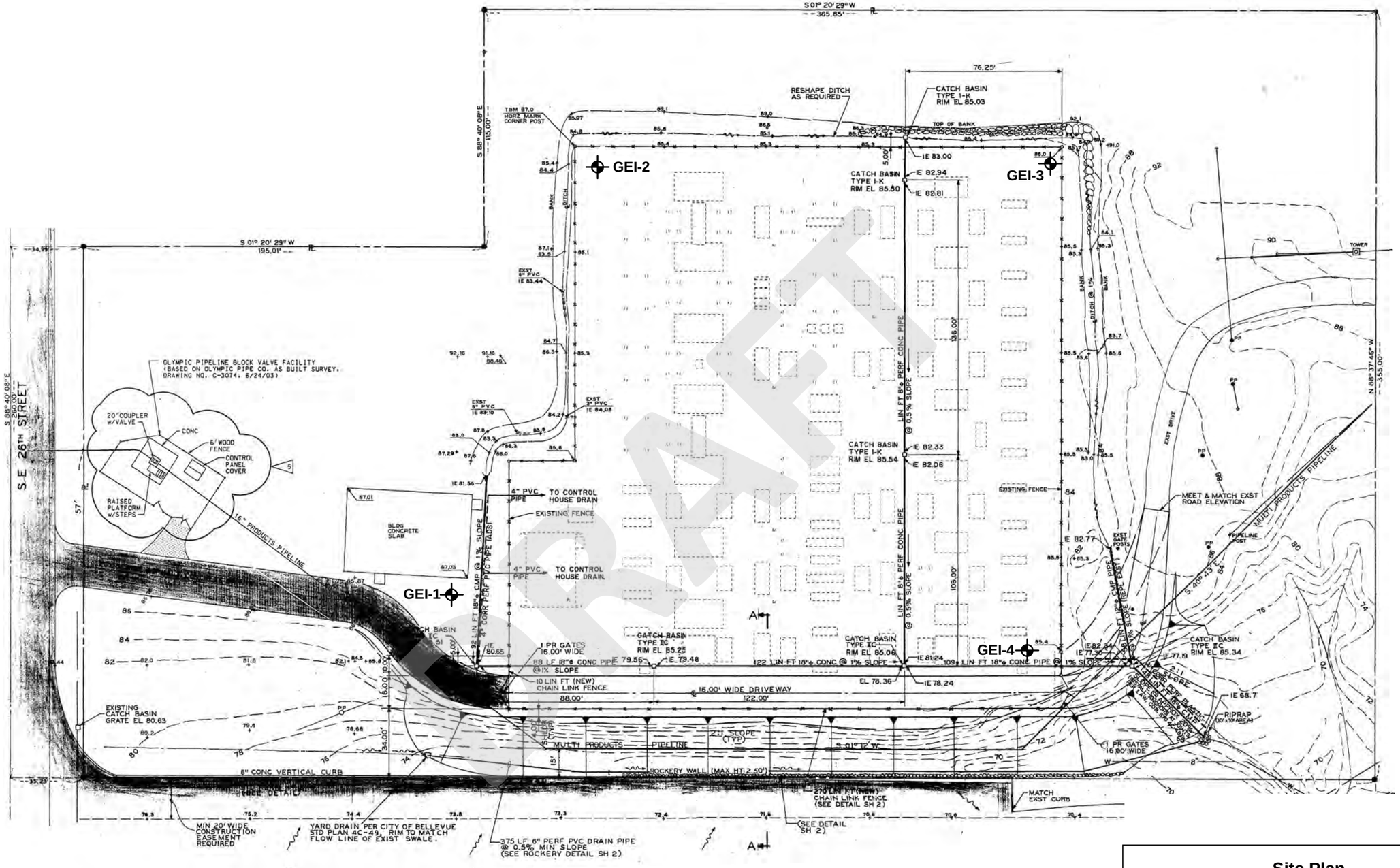

Notes

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

Reference: "Grading, Fencing and Drainage Plan Modifications (1988) Lakeside Substation - Drawing No. D-7772 sheet 1 by Puget Sound Engineering dated 11-20-03.

Legend

GEI-1 — Boring by GeoEngineers (May 10, 2013)

N E S W

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FEET

Site Plan

Lakeside Substation Improvements
13615 SE 26th Street
Bellevue, Washington

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Figure 2

P:\0\0186922\CAD\0186922-00 SITE PLAN.DWG\TAB:LANDSCAPE MODIFIED BY TMICHAUD ON MAY 29, 2013 - 15:50

APPENDIX A
Field Explorations and Laboratory Testing

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APPENDIX A
FIELD EXPLORATIONS AND LABORATORY TESTING

Field Explorations

Subsurface conditions were explored at the site by completing four borings (GEI-1 through GEI-4). The borings were completed by Geologic Drill Exploration, Inc. of Ninemile Falls, Washington, on May 10, 2013. The locations of the explorations were estimated in the field by measuring distances from site features through taping and pacing. The approximate exploration locations are shown on the Site Plan, Figure 2.

Borings

The borings were drilled using a track-mounted hollow-stem auger drill rig. The borings were continuously observed by a geotechnical engineer from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each boring.

Soils encountered in the borings were visually classified in general accordance with the classification system described in Figure A-1. A key to the exploration log symbols is also presented in Figure A-1. The logs of the borings are presented in Figures A-2 through A-5. The logs reflect our interpretation of the field conditions and the results of laboratory testing and evaluation of samples. They also indicate the depths at which the soil types or their characteristics change, although the change might actually be gradual.

The borings were backfilled in accordance with Department of Ecology standards. The top 6 inches of yard rock was replaced over the completed boring to match existing yard rock.

Groundwater Conditions

Observations of groundwater conditions were made during drilling and are noted on the exploration logs; these observations represent a short-term condition that may not be representative of the long-term groundwater conditions at the site. Groundwater conditions observed during drilling should be considered approximate.

Laboratory Testing

Soil samples obtained from the field explorations were transported to our laboratory and examined to confirm or modify field classifications, as well as to evaluate index properties of the soil samples. Representative samples were selected for laboratory testing consisting of the determination of the percent fines (material passing the U.S. No. 200 sieve) and grain size distribution (sieve analysis). The tests were performed in general accordance with test methods of the American Society for Testing and Materials (ASTM) or other applicable procedures.

Percent Passing U.S. No. 200 Sieve

Selected samples were "washed" through the U.S. No. 200 mesh sieve to determine the relative percentages of coarse and fine-grained particles in the soil. The percent passing value represents the percentage by weight of the sample finer than the U.S. No. 200 sieve. These tests were

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conducted to verify field descriptions and to determine the fines content for analysis purposes. The tests were conducted in general accordance with ASTM D 1140, and the results are shown on the exploration logs at the respective sample depths.

Sieve Analyses

Sieve analyses were performed on selected samples in general accordance with ASTM D 422 to determine the sample grain size distribution. The wet sieve analysis method was used to determine the percentage of soil greater than the U.S. No. 200 mesh sieve. The results of the sieve analyses were plotted, were classified in general accordance with the Unified Soil Classification System (USCS), and are presented in Figure A-6.

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% RETAINED ON NO. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata or geologic units

Approximate location of soil strata change within a geologic soil unit

Material Description Contact

Distinct contact between soil strata or geologic units

Approximate location of soil strata change within a geologic soil unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

Laboratory / Field Tests

%F	Percent fines
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PP	Pocket penetrometer
PPM	Parts per million
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen
NT	Not Tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

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KEY TO EXPLORATION LOGS

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FIGURE A-1

Drilled	Start 5/10/2013	End 5/10/2013	Total Depth (ft) 25.5	Logged By CEW / Checked By TDB	Driller Geologic Drill	Drilling Method Hollow-stem Auger
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data	Rope & Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	Track Mounted Drill Rig
Easting (X) / Northing (Y)			System Datum		Groundwater: Date Measured	Depth to Water (ft) / Elevation (ft)
Notes:						

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
	0								CR	1 inch crushed rock surfacing			Hand-dug to 2 feet
									SM	Brown silty fine to medium sand with gravel (loose, moist) (fill)			
									SM	Brown silty fine to medium sand with gravel and occasional organics (roots) (medium dense, moist) (recessional outwash)			
	5		16	20		1							
	10		12	19		2 %F			SP-SM	Brown fine to coarse sand with silt and gravel (medium dense, wet)	10		%F = 6 Groundwater encountered
	15		18	27		3 SA			SM	Brown silty fine to medium sand with gravel (medium dense, wet)	11		SA (%F = 21)
									SM	Gray silty fine to medium sand (very dense, wet) (glacial till)			
	20		18	57		4							
	25		6	50/6"		5 SA					14		SA (%F = 30)

Note: Please see Figure A-1 for explanation of symbols

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Log of Boring GEI-1

GeoEngineers

Project: PSE - Lakeside Substation
Project Location: Bellevue, Washington
Project Number: 0186-922-00

Figure A-2
Sheet 1 of 1

Seattle: Date:5/30/13 Path:\\SEA\PROJECTS\0\0186922\GINT\0186922.00.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_GEOTECH_STANDARD

Drilled	Start 5/10/2013	End 5/10/2013	Total Depth (ft) 20.25	Logged By CEW / Checked By TDB	Driller Geologic Drill	Drilling Method Hollow-stem Auger
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data	Rope & Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	Track Mounted Drill Rig
Easting (X) / Northing (Y)			System Datum		Groundwater: Date Measured	Depth to Water (ft) / Elevation (ft)
Notes:						

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
	0								CR	1 inch crushed rock surfacing			Hand-dug to 2 feet
									SM	Brown silty fine to medium sand with gravel (loose, moist) (fill)			
									SM	Gray silty fine to medium sand with gravel (very dense, moist to wet) (glacial till)			
	5		18	71		2							
	10		5	50/6"		3							Groundwater encountered
	15		5	50/5"		4							
	20		3	50/4"		5 %F			SP-SM	Brown fine to medium sand with silt (very dense, wet)	10		%F = 6

Note: Please see Figure A-1 for explanation of symbols

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Log of Boring GEI-2

GeoEngineers

Project: PSE - Lakeside Substation
Project Location: Bellevue, Washington
Project Number: 0186-922-00

Figure A-3
Sheet 1 of 1

Seattle: Date:5/30/13 Path:\\SEA\PROJECTS\0\0186922\GINT\0186922.00.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_GEOTECH_STANDARD

Drilled	Start 5/10/2013	End 5/10/2013	Total Depth (ft) 20.25	Logged By CEW / Checked By TDB	Driller Geologic Drill	Drilling Method Hollow-stem Auger
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data	Rope & Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	Track Mounted Drill Rig
Easting (X) / Northing (Y)			System Datum		Groundwater: Date Measured / Depth to Water (ft) / Elevation (ft)	
Notes:						

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
	0								CR	1 inch crushed rock surfacing			Hand-dug to 2 feet
									SM	Brown silty fine to medium sand with gravel (loose, moist) (fill)			
									SM	Gray silty fine to medium sand with gravel (dense, moist to wet) (glacial till)			Groundwater encountered
	5		16	48		1							
	10		11	50/5"		2 SA			SM	Gray silty fine to medium sand with occasional gravel (very dense, wet)	8		SA (%F = 25)
	15		12	50/6"		3			SM	Gray silty fine to medium sand with gravel (very dense, wet)			
	20		4	50/4"		4 %F			SM	Gray silty fine to coarse sand with gravel (very dense, wet)	13		%F = 30

Note: Please see Figure A-1 for explanation of symbols

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Log of Boring GEI-3

GeoEngineers

Project: PSE - Lakeside Substation
Project Location: Bellevue, Washington
Project Number: 0186-922-00

Figure A-4
Sheet 1 of 1

Seattle: Date:5/30/13 Path:\\SEA\PROJECTS\0\0186922\GINT\0186922.00.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_GEOTECH_STANDARD

Drilled	Start 5/10/2013	End 5/10/2013	Total Depth (ft) 26.5	Logged By CEW / Checked By TDB	Driller Geologic Drill	Drilling Method Hollow-stem Auger
Surface Elevation (ft) / Vertical Datum	Undetermined		Hammer Data	Rope & Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	Track Mounted Drill Rig
Easting (X) / Northing (Y)			System Datum		Groundwater: Date Measured	Depth to Water (ft) / Elevation (ft)
Notes:						

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
	0								CR	1 inch crushed rock surfacing			Hand-dug to 2 feet
									SM	Orange/brown silty fine to coarse sand with gravel (loose, moist) (fill)			
	5		16	8		1 %F					9		%F = 11
													Groundwater encountered
	10		18	6		2			SM	Dark brown/gray silty fine to medium sand with organics (roots) and occasional gravel (loose, wet) (fill)			
	15		18	7		3 SA					20		SA (%F = 29)
	20		18	28		4			SM	Greenish gray silty fine to coarse sand with gray silt lenses (medium dense, wet) (recessional outwash)			
	25		18	16		5			ML	Gray sandy silt with occasional gravel (very stiff, wet)			

Note: Please see Figure A-1 for explanation of symbols

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Log of Boring GEI-4

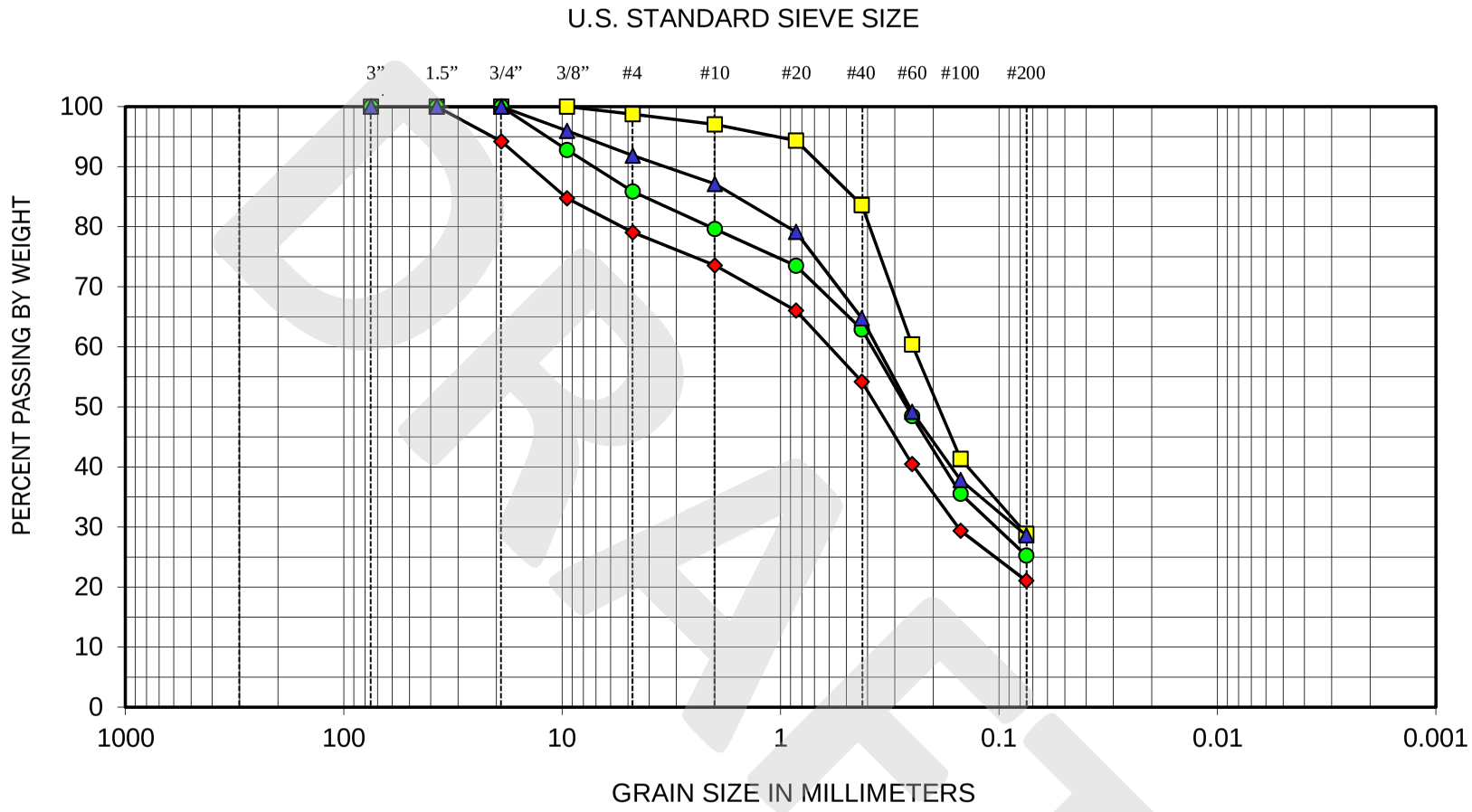
GeoEngineers

Project: PSE - Lakeside Substation
Project Location: Bellevue, Washington
Project Number: 0186-922-00

Figure A-5
Sheet 1 of 1

Seattle: Date:5/30/13 Path:\\SEA\PROJECTS\0\0186922\GINT\018692200.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_GEOTECH_STANDARD

0186-922-00 SAS: SAS 05-22-2013



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	EXPLORATION NUMBER	DEPTH (ft)	SOIL CLASSIFICATION
◆	GEI-1	15	Silty fine to medium sand with gravel (SM)
■	GEI-1	25	Silty fine to medium sand (SM)
●	GEI-3	10	Silty fine to medium sand with occasional gravel (SM)
▲	GEI-4	15	Silty fine to medium sand with occasional gravel (SM)

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SIEVE ANALYSIS RESULTS

FIGURE A-6

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APPENDIX B
Report Limitations and Guidelines for Use

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APPENDIX B
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of Puget Sound Energy and their authorized agents. This report may be made available to prospective contractors for their bidding or estimating purposes, but our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with which there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report Is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the proposed improvements to the Lakeside Substation located at 13615 SE 26th Street in Bellevue, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most Geotechnical and Geologic Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team

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after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental

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findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

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PUGET SOUND ENERGY

Lakeside Substation Rebuild
Project Narrative

I. Project Background

Puget Sound Energy (PSE) is proposing to rebuild the existing Lakeside Substation. The substation was constructed in the 1960s and the equipment is reaching the end of its useful life and prone to failure. The substation serves as a 115 kV switching station for 11 existing transmission lines.

II. Site Context

The substation is located on a 4.83 acre site in the Light Industrial (LI) zoning district. The surrounding property to the east, west and south is also zoned LI and the site is bordered to the north by SE 26th Street. The site contains substation equipment serving 11 transmission lines within an existing fenced area. A 12th bay is currently not connected to a transmission line but will be rebuilt with the substation reconfiguration for future capacity needs. A manmade drainage ditch is located outside the northeast and southeast portions of the fence. There are two buildings on the site; a control house and a maintenance building. There is also a petroleum pipeline and associated above ground equipment in an enclosure in the northern portion of the site that is not owned or maintained by PSE.

The site is relatively flat, with isolated areas of slope north and east of the substation fence. There are two small isolated wetlands north of the substation fence and highly disturbed wetland and stream areas south of the substation within the transmission corridor. The substation is set back from SE 26th Street approximately 120 feet and is screened by a combination of slope and vegetation.

III. Project Description

PSE is proposing to rebuild the existing Lakeside Substation to replace aging equipment and provide more reliability among the 11 transmission lines connected to the substation. The existing substation equipment inside the fence will be removed, including all steel structures and foundations. The substation equipment will be reconfigured for more efficient functioning of the transmission system. No additional transmission lines will be added. A new storm drainage system will be constructed within the fenced area and a stormwater pond will be installed south of the substation fence. In order to ensure proper functioning of the drainage system, maintenance work is proposed within the ditch outside the substation fence. The

existing control house and maintenance building will be demolished and a new 1,560 square foot control house will be constructed. The substation fence will be replaced with a new 7' chain link fence and extended to align with the new control house.

During substation construction, the transmission lines will need to remain in service and will be disconnected from the substation. This will involve long-lining over the substation and will require replacement or guying of 11 existing transmission poles (including 2 H-frames) to support the excess wire weight and span length. Two additional poles that are at the end of their service life are located in a transmission corridor easement west of the site. One will be replaced in its current location and the other abandoned and relocated. Three temporary poles will be installed and removed at the completion of the substation construction.

IV. Code Compliance

A. LUC 20.30B.175 Modification or addition to an approved project or decision.

C. Land Use Exemption for Conditional Use Permit

The Director may determine that an addition or modification to a previously approved project or decision is exempt from further review under the administrative amendment process or as a new application, provided the following criteria are met:

1. The proposal does not result in any significant adverse impact beyond the site; and

   Response: The proposal does not result in any significant adverse impact beyond the site. The project involves rebuilding an existing 115 kV switching station within its existing footprint that has been on the site for approximately 45 years. An existing maintenance building that can be partially viewed from SE 26th Street will be removed and replaced with a smaller, more architecturally integrated substation control house. The site is located within the Light Industrial (LI) zoning district and the use is compatible with surrounding uses.

2. The proposal is within the general scope of the purpose and intent of the original approval; and

   Response: The proposal is to rebuild an existing substation within its original footprint, meeting the purpose and intent of the original approval. Transmission pole replacement is required to facilitate construction and replace aging infrastructure.

3. The proposal complies with all applicable Land Use Code requirements; and

   Response: The proposal complies with all applicable Land Use Code requirements. The site is located within the Light Industrial (LI) zoning district. The substation use requires administrative conditional use approval in this zone and this project qualifies for a Land Use Exemption.

4. The proposal does not add square footage that is more than 20 percent of existing gross square footage; and

   Response: The proposal does not add square footage that is more than 20 percent of the existing gross square footage. The existing control house and maintenance buildings will be removed and a new control house will be constructed. This will result in a decrease of building square footage, as approximately 3,340 square feet will be removed and 1,560 square feet newly constructed (a 47 percent decrease).

5. If an addition or expansion has been approved within the preceding 24-month period, the combined additions will not add square footage that exceeds 20 percent of existing gross square footage.

   Response: No additions or expansions have been approved within the preceding 24-month period.

B. LUC 20.30P.140 Critical Areas Land Use Permit Decision Criteria

The Director may approve or approve with modifications an application for a Critical Areas Land Use Permit if:

A. The proposal obtains all other permits required by the Land Use Code; and

   Response: The project requires Land Use Exemption approval and a SEPA threshold determination. These are being requested as part of the project application. Required construction permits, including clearing and grading and building permits will be obtained after land use approvals are received.

B. The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on critical area and critical area buffer; and

   Response: The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on critical area and critical area buffer. The substation will be reconstructed within its existing footprint and does not include expansion into critical areas or buffers. Construction access for pole replacement will primarily be from existing access paths. Temporary critical area impacts, predominantly within buffer areas, will occur as a result of construction and will be restored upon completion of construction. A stormwater pond will be constructed south of the substation in place of an existing drainage ditch within buffer area. Mitigation is proposed to offset permanent impacts.

C. The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable; and

Response: The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent possible. Compliance with these standards is documented in the Critical Area Report prepared by The Watershed Company for this project (September 2014).

D. The proposal will be served by adequate public facilities including streets, fire protection, and utilities; and

Response: The proposal will be served by adequate public facilities including streets, fire protection, and utilities. The site is an existing electrical substation that will be rebuilt in place. The site is served off of SE 26th Street and will use the existing access.

E. The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan; and

Response: The proposal includes mitigation consistent with the requirements of LUC 20.25H.210. See Critical Areas Report prepared by The Watershed Company (September 2014).

F. The proposal complies with other applicable requirements of this code.

Response: The proposal complies with all applicable requirements of the code.

C. LUC 20.20.255E. Electrical Utility Facility Decision Criteria

In addition to the requirements set forth in Part 20.30B LUC, Part 20.30E LUC, Part 20.25B LUC (if applicable), and other applicable provisions of this section, all proposals to locate or expand electrical facilities shall comply with the following:

1. The proposal is consistent with Puget Sound Energy's System Plan;

Response: The proposal is consistent with Puget Sound Energy's System Plan. The current substation configuration is a main-aux bus meaning there are no redundant breakers in the substation. This poses a reliability risk to customers should one or more lines experience an outage. Some breaker failure contingencies could result in loss of the entire substation; therefore breakers are being added to prevent faults to multiple lines at once.

2. The design, use, and operation of the electrical utility facility complies with applicable guidelines, rules, regulations or statutes adopted by state law, or any agency or jurisdiction with authority;

Response: The design, use, and operation of the substation complies with applicable PSE design standards and applicable rules and regulations. The revised substation configuration meets NERC reliability standards by reducing exposure to bus faults and breaker failure outages.

3. The applicant shall demonstrate that an operational need exists that requires the location or expansion at the proposed site;

   Response: The existing substation is being reconfigured for reliability purposes and not expanded.

4. The applicant shall demonstrate that the proposed electrical utility facility improves reliability to the customers served and reliability of the system as a whole, as certified by the applicant's licensed engineer;

   Response: The reconfigured electrical utility facility improves reliability for the 114,000 customers in the Bellevue, Issaquah, Kirkland and Newcastle areas by rebuilding the switching station by way of replacing aging equipment in a more effective and reliable layout.

5. For proposals located on sensitive sites as referenced in Figure UT.5a of the Utility Element of the Comprehensive Plan, the applicant shall demonstrate:

   a. Compliance with the alternative siting analysis requirements of subsection D of this subsection;
   b. Where feasible, the preferred site alternative identified in subsection D.2.d of this section is located within the land use district requiring additional service and residential land use districts are avoided when the proposed new or expanded electrical utility facility serves a nonresidential land use district;

      Response: The Lakeside Substation is not located on a sensitive site as referenced in Figure UT.5a of the Utility Element of the Comprehensive Plan.

6. The proposal shall provide mitigation sufficient to eliminate or minimize long-term impacts to properties located near an electrical utility facility.

   Response: The proposal involves reconfiguring the existing switching station within the existing footprint. An existing approximately 2,420 square foot maintenance building on the north side of the substation will be demolished and replaced with a 1,560 square foot control house. Pole replacement will occur in order to support the construction of the substation and maintain long-term reliability of the transmission system by replacing aging infrastructure. Existing poles will be replaced like-kind at the same height. Two glu-lams are proposed to replace an existing steel pole that is double-circuited south of the substation. This will result in greater electrical reliability. Should one line need emergency repairs or maintenance, the other line can stay in service. No long-term impacts to offsite properties are anticipated as a result of this project.

D. LUC 20.20.255F. Electrical Utility Facility Design Standards

In addition to the requirements set forth in Part 20.30B LUC, Part 20.30E LUC, Part 20.25B LUC (if applicable), and other applicable provisions of this section, all proposals to locate or expand an electrical utility facility shall comply with the following:

1. Site Landscaping. Electrical utility facilities shall be sight-screened as specified in LUC 20.20.520.F.2 or as required for the applicable land use district. Alternatively, the provisions

of LUC 20.20.520.J may be used, provided this subsection does not apply to transmission lines as defined in LUC 20.50.018.

Response: The substation is existing and will be reconstructed within the existing footprint. No changes to the existing perimeter landscaping are proposed.

2. Fencing. Electrical utility facilities shall be screened by a site-obscuring fence not less than eight feet in height, provided this subsection does not apply to transmission lines as defined in LUC 20.50.018. This requirement may be modified by the City if the site is not considered sensitive as referenced in Figure UT.5a of the Utility Element of the Comprehensive Plan, is adequately screened by topography and/or existing or added vegetation, or if the facility is fully enclosed within a structure. To the maximum extent possible, all electrical utility facility components, excluding transmission lines, shall be screened by either a site-obscuring fence or alternative screening.

   Response: The site is not considered sensitive as referenced in Figure UT.5a of the Utility Element of the Comprehensive Plan. The existing chain link fence will be replaced like-kind and existing landscape vegetation will remain.

3. Required Setback. The proposal (including required fencing) shall conform to the setback requirement for structures in the land use district; and

   Response: The site is located within the Light Industrial (LI) zoning district. The proposal complies with the required setbacks for this land use district:

	Required	Existing	Proposed
Front:	15 feet	122 feet	122 feet
Rear:	8 feet	155 feet	155 feet
Side:	8 feet	33 feet/63 feet	33 feet/63 feet

4. Height Limitations. For all electrical utility facility components, including transmission lines, the City may approve a request to exceed the height limit for the underlying land use district if the applicant demonstrates that:
   a. The requested increase is the minimum necessary for the effective functioning of the electrical utility facility; and

      Response: The replacement transmission poles will be 40 – 75 feet in height, matching the height of the existing poles. The height of transmission poles is a function of both design requirements (including span length) and National Electric Safety Code (NESC) safety standards. NESC standards address the width of the transmission corridor, setback/electrical clearance requirements, and vegetation management.

      Each transmission line consists of three conductors. NESC provides minimum clearance requirements for conductors from the ground based on temperature and

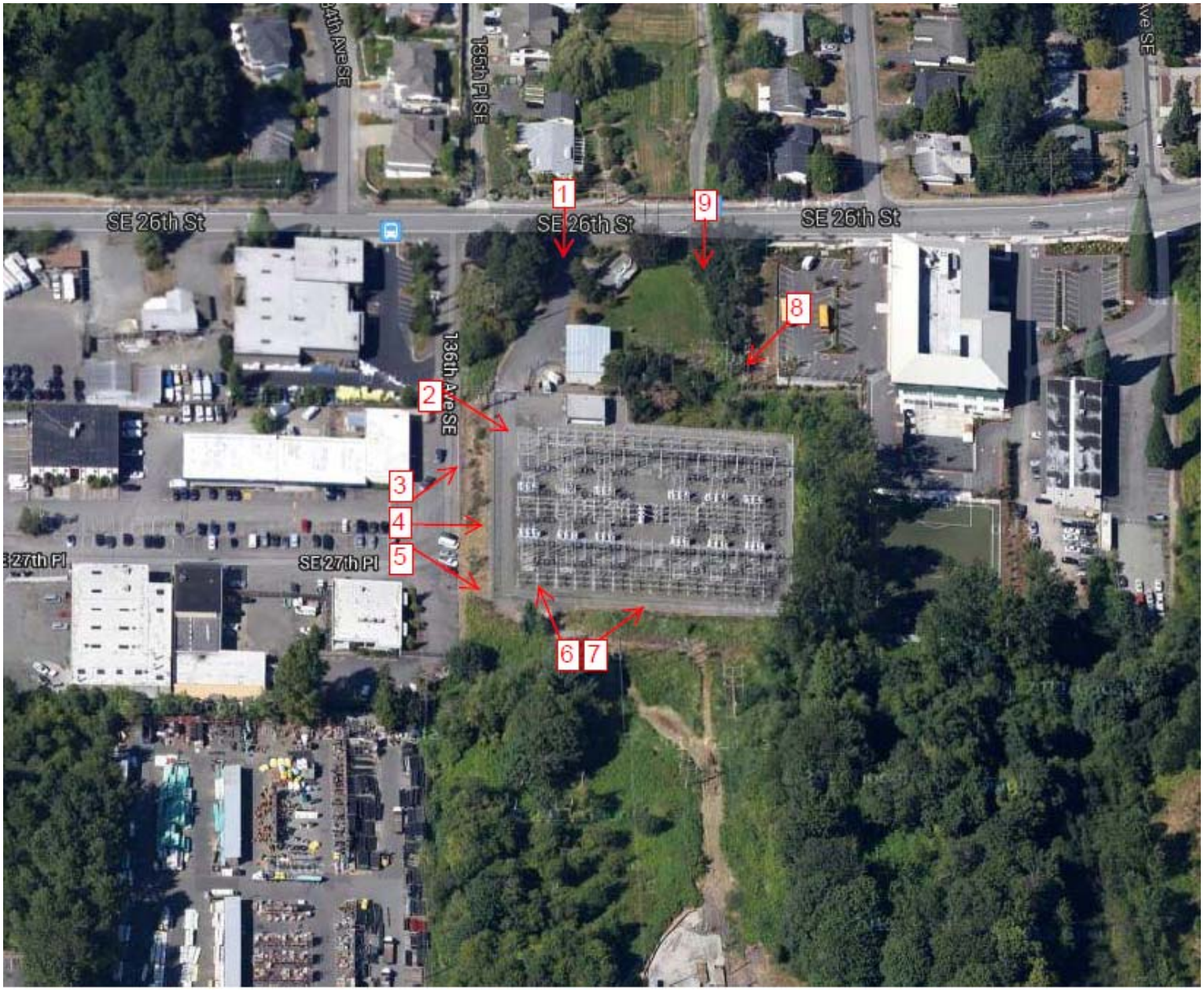
loading to allow of sag. These standards also state a required distance of separation between the conductors, adding height to the pole based on the total number of conductors required. A minimum of 40 -75 feet in height is required to meet safety and design standards and ensure effective functioning of the transmission line.

Within the substation fence, one 35-foot steel dead end tower will located within the transition overlay district and exceeds the 30-foot height requirement by 5-feet. The height of this tower is the minimum necessary to meet safety clearance over the energized substation equipment to allow connections to the transmission poles outside the substation.

b. Impacts associated with the electrical utility facility have been mitigated to the greatest extent technically feasible.

Response: The electrical utility facility is existing infrastructure that has been in place for approximately 45 years. PSE is proposing to rebuild the existing facility to replace aging infrastructure and increase transmission line reliability. The rebuild of the substation will result in impacts to critical areas, which will be mitigated in compliance with the critical areas overlay district standards.

Lakeside 115 kV Substation



PUGET SOUND ENERGY

Picture No.	Picture	Description
1		Looking south into the substation from SE 26th Street.
2		Looking southeast into the substation from adjacent driveway.
3		Looking northeast into the substation from adjacent site.

4		Looking east into the substation from adjacent site.
5		Looking southeast from adjacent site.
6		Looking northwest from south of substation fence.

7		Looking northeast from south of substation fence.
8		Looking southwest into the substation.
9		Looking south into the substation from SE 26th Street.

EXISTING
LAKESIDE SUBSTATION ELEVATION VIEW
FROM SE 26th ST
(LOOKING SOUTH)

PROPOSED
LAKESIDE SUBSTATION ELEVATION VIEW
FROM SE 26th ST
(LOOKING SOUTH)

WO NUMBER: SAP #			STATION SITE SIMULATION FACING SOUTH ELEVATIONS LAKESIDE SUBSTATION
REVISION DESCRIPTION:			
		DATE	PUGET SOUND ENERGY — SUBSTATION ENGINEERING DEPARTMENT — DRAWING NO D-18144 — REV NO 0
CADD	M TAYLOR	2014-05-12	SHEET: 01 OF 01
ENGINEER	R STEWART	/ /	FILE NO: Drwr
REVIEWED	R.STEWART	05/15/14	SCALE: 1" = 10' — CLASS: Class
APPROVED		05/16/14	CADD NO: D-18144_01.dgn — CODE: LAK

9/11/2014 10:57:16 AM USER: mtaylor

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