Heavy Civil | Land Development | Municipal | Structural | Survey | Water Resources | Environmental

PACE Engineers
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Kirkland, WA 98033

Critical Areas Report and Restoration Plan

LARKIN RESIDENCE
WOODINVILLE, WASHINGTON

April 2024

CRITICAL AREAS REPORT & RESTORATION PLAN
LARKIN RESIDENCE

Project No.: 1984

PREPARED FOR

Matt Larkin
15535 148th Avenue NE
Woodinville, Washington 98072
Telephone: 206.734.8460

April 2024

PREPARED BY

PACE Engineers, Inc.
11255 Kirkland Way, Suite 300
Kirkland, Washington 98033
PACE Project No. 1984

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EXECUTIVE SUMMARY

PROJECT NAME: Larkin Residence

CLIENT: Matt Larkin

PROJECT LOCATION: 15535 148th Avenue Northeast, Woodinville, Washington 98072

PROJECT DESCRIPTION: Assessment of critical areas on the subject property to address requirements in King County Code Enforcement Case ENFR22-0371.

FIELD SURVEYS: August 24, September 1, and September 13, 2023.

CRITICAL AREAS DETERMINATION: Three wetlands (Wetlands A-C) and two streams (Streams 1 and 2) were identified and delineated on the project site. A potential steep slope hazard area is mapped by King County along the banks of Stream 1. Potential landslide hazard areas are also mapped by King County at the northwest and southwest corners of the Site.

CRITICAL AREAS IMPACTS: Impacts to critical areas and their buffers are summarized in **Table 1**.

TABLE 1 CRITICAL AREAS AND BUFFER IMPACTS

Direct Impacts	Area (SF)
Wetlands	13
Streams	26
Steep Slopes	2,484
TOTAL DIRECT IMPACTS	**2,523**
Buffer Impacts	**Area (SF)**
Wetlands	7,884
Streams	4,888
Steep Slopes	6,668
TOTAL BUFFER IMPACTS	**19,440**
TOTAL IMPACTS	**21,963**
BUFFER AVERAGING UNPLANTED	**2,614**

PROPOSED RESTORATION: Proposed restoration for critical area and buffer impacts is summarized in **Table 2**.

TABLE 2 PROPOSED RESTORATION

Wetland Mitigation and Restoration	**Area (SF)**
Wetland Restoration (1:1)	13
Wetland Enhancement/Rehabilitation (4:1)	3,342
Steep Slope Restoration (1:1)	1,265
Stream Restoration (1:1)	26
TOTAL DIRECT MITIGATION AND RESTORATION	**4,646**
Buffer Mitigation and Restoration, Buffer Averaging	**Area (SF)**
Critical Area Buffer Creation (1:1)	5,486
Wetland Buffer Enhancement/Restoration (1:1)	10,256
Steep Slope Buffer Enhancement/Restoration (1:1)	3,431
Stream Buffer Enhancement/Restoration (1:1)	668
TOTAL BUFFER MITIGATION AND RESTORATION	**21,122**
Other Restoration Activities	**Area (SF)**
Non-Compensatory Mitigation/Restoration	2,128
English Ivy Removal Area	217,738

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1.0 INTRODUCTION

This report is the result of an onsite critical areas delineation required by King County to address the requirements of a King County code enforcement action letter dated October 14, 2022. The report will support the required permits and address a code violation associated with the property located at 15535 148th Avenue Northeast in Woodinville, Washington, herein referred to as the Project Site or Site (**Figure 1**). This report will discuss the critical areas identified onsite, address critical areas and buffer impacts, and provide proposed restoration for the areas impacted. This report has been prepared to comply with the requirements of King County Title 21A Zoning §21A.24.110.

1.1 Statement of Accuracy

This critical area study and regulatory review were conducted by trained professionals at PACE Engineers, Inc., and adhered to the protocols, guidelines, and generally accepted industry standards available at the time the work was performed. The conclusions in this report are based on the results of analyses performed by PACE Engineers and represent our best professional judgment. To that extent and within the limitation of project scope and budget, we believe the information provided herein is accurate and true to the best of our knowledge. PACE Engineers does not warrant any assumptions or conclusions not expressly made in this report, nor based on information or analyses other than what is included herein.

1.2 Project Location

The Site consists of a single parcel located at 15535 148th Avenue Northeast in Woodinville, Washington. The King County tax parcel number is 1526059002 (**Figure 2**) and the parcel is approximately 15.39 acres in size. The Public Land Survey System location of the Site is Section 15, T26N, R5E, Willamette Meridian (W.M.).

1.3 Site Description/Existing Conditions

The Site is partially developed with a 5,660-square-foot single-family home with a basement garage, a 960-square-foot detached barn, access driveways, and parking area. Topography slopes downward from approximately northeast to southwest with a total change in gradient of approximately 120 feet across the parcel. See **Figure 2** for a Site topography map.

Vegetation onsite consists of forested, scrub-shrub, and emergent communities dominated by bigleaf maple (*Acer macrophyllum*), Western red cedar (*Thuja plicata*), red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), salmonberry (*Rubus spectabilis*), red osier dogwood (*Cornus sericea*), vine maple (*Acer circinatum*), Schouler's willow (*Salix scouleriana*), Himalayan blackberry (*Rubus armeniacus*), common horsetail (*Equisetum arvense*), yellow skunk cabbage (*Lysichiton americanus*), sword fern (*Polystichum munitum*), and reed canary grass (*Phalaris arundinacea*).

The Site is bordered to the north and south primarily by single-family homes and commercial properties, to the east by 148th Avenue NE, and to the west by 140th Place NE.

SEC. , TWP. , RGE. , W.M.

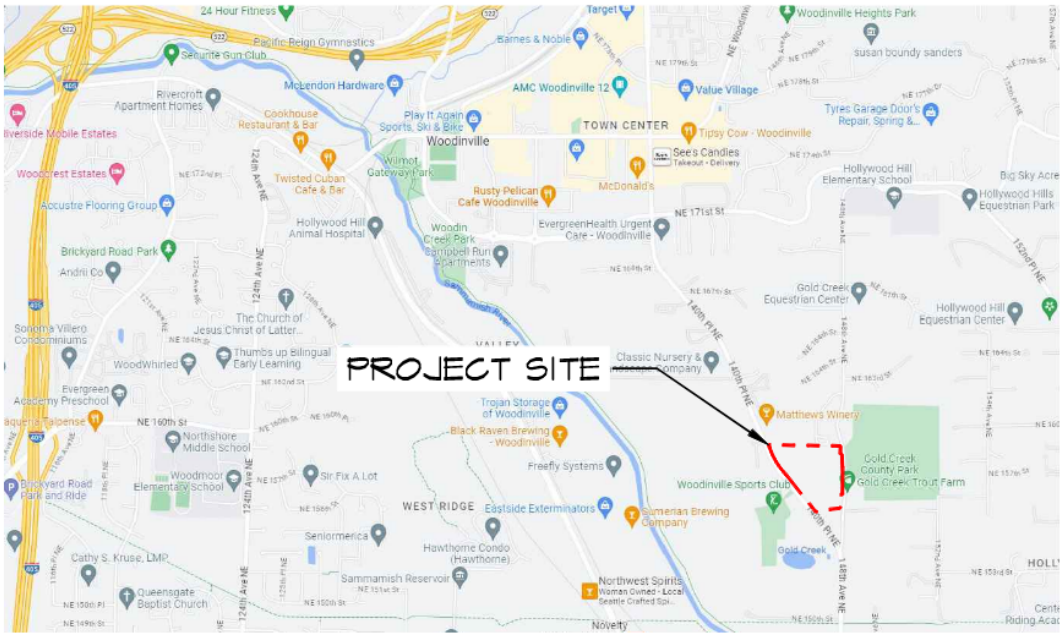

IMAGE SOURCE: GOOGLE MAPS, WWW.MAPS.GOOGLE.COM (ACCESSED 21 JULY 2023)

DRIVING DIRECTIONS:

1. FROM WOODINVILLE CITY HALL: TAKE 122RD AVE NE SOUTH
2. TURN LEFT ON NE 171ST ST
3. TURN RIGHT ON 140TH ST
4. TURN LEFT ONTO 148TH AVE NE
5. ARRIVE AT DESTINATION:

15535 148TH AVE NE
WOODINVILLE, WA 98072

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FIGURE #1

VICINITY MAP & DRIVING DIRECTIONS
LARKIN RESIDENCE
WOODINVILLE, WA

DESIGN	DRAWN	PROJECT
	ET/KF	1984
SCALE	NTS	
DATE	2-27-2024	1
REVISED		

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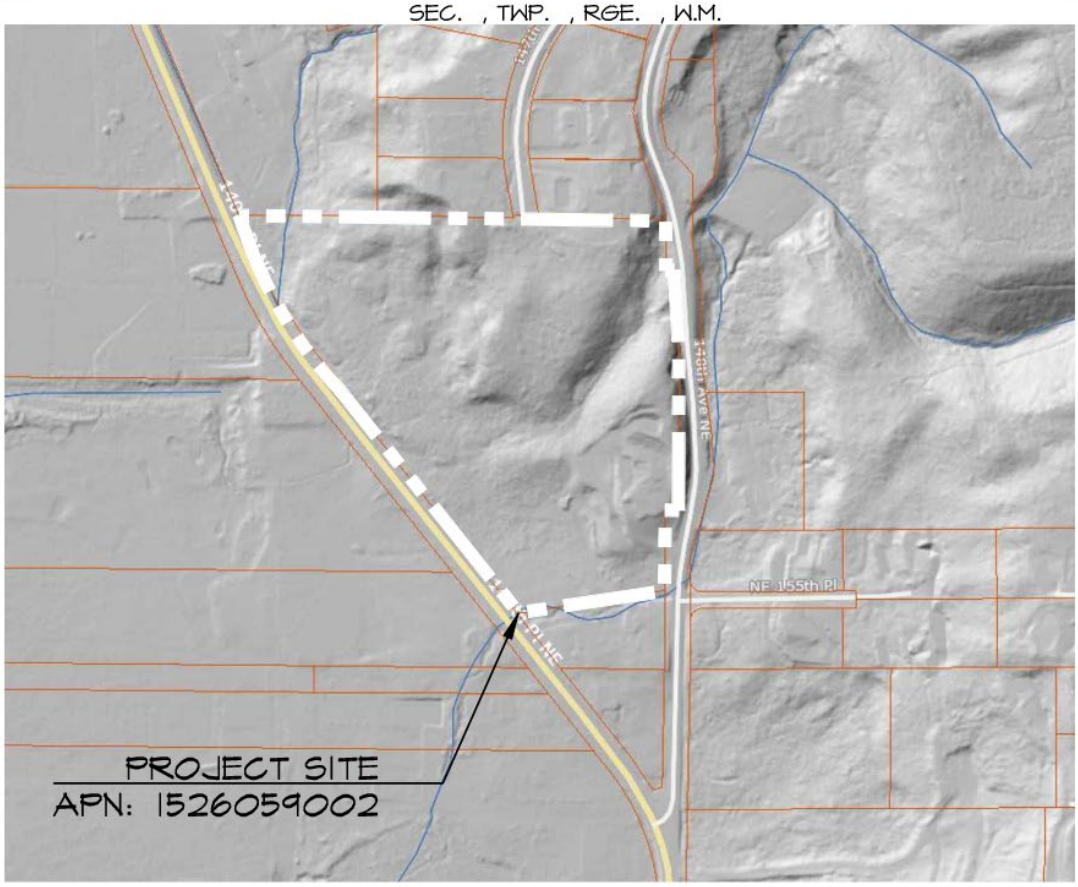

IMAGE SOURCE: KING COUNTY IMAP;
HTTP://WWW5.KINGCOUNTY.GOV/IMAP/VIEWER.HTM?MAPSET=KCPROPERTY
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FIGURE #2

KING COUNTY PARCEL MAP
LARKIN RESIDENCE
WOODINVILLE, WA

DESIGN	DRAWN	PROJECT
	ET/KF	1984

SCALE: NTS
DATE: 2-27-2024
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2.0 METHODOLOGY

PACE Engineers staff delineated 3 wetlands and flagged the Ordinary High Water Mark (OHWM) of two (2) streams on the Site. The study area was surveyed using the guidelines put forth in the Corps of Engineers Wetlands Delineation Manual for the Western Mountains, Valleys, and Coast Region (US Army Corps of Engineers 2010), as required by the Corps of Engineers and King County. The wetland was rated and classified using the Washington State Department of Ecology (Ecology) Wetland Rating System for Western Washington (Hruby and Yahnke 2023). The OHWM was determined using the Washington Department of Ecology's methodology (Anderson et al. 2016). Soils were identified using the 1990 Edited and Revised Edition of the Munsell Soil Color Charts (Munsell 2022). Wetlands were flagged with pink flagging and labeled using a consecutive alpha-numerical system. A total of 8 test plots were recorded, labeled TP-A1, TP-A2, *etc.* corresponding to the name of the wetland, and test plots were marked with orange flagging. Flagging locations were mapped in the field using an Arrow 100 and by phone GPS, and flag locations were subsequently surveyed by LDC Corp. Wetland Data and Rating Forms are provided in **Appendices A** and **B**.

The onsite wetland delineation was performed by Kirstie Englis, Ecologist at PACE Engineers. The resource database review was performed by Kai Farmer, Ecologist at PACE Engineers.

3.0 RESOURCE DATABASE REVIEW

Before conducting the onsite field investigation, a literature and website review was conducted to review and identify existing information on soils, wetlands, Site topography, wildlife presence, and other critical area and Site data within the study area. A list of the resources used are listed below:

- National Wetlands Inventory map of the project area, online version located at: http://www.fws.gov/wetlands/Data/mapper.html (US Fish and Wildlife Service 2023)
- Web Soil Survey (USDA) located at: http://www.or.nrcs.usda.gov/pnw_soil/wa_reports.html ("Web Soil Survey - Home" 2023)
- King County iMAP Environmentally Sensitive Areas located at: iMap (kingcounty.gov) (King County 2023)
- WDFW SalmonScape located at: WDFW SalmonScape (wa.gov) ("WDFW SalmonScape" 2023)
- WDFW Priority Habitats and Species Maps, online version located at: http://wdfw.wa.gov/mapping/phs/ (Washington State Department of Fish and Wildlife 2023)

3.1 Existing Site Documentation

The following information was gathered during initial background research and review of available information.

3.1.1 US Fish & Wildlife Service (USFWS) National Wetlands Inventory (NWI)

The USFWS National Wetlands Inventory maps one forested wetland on the Site classified as Palustrine Forested Seasonally Flooded (PFOC) (**Figure 3**). NWI also maps one stream channel crossing the northwest corner of the Site, and two stream channels mapped offsite along the eastern (Gold Creek) and southern (tributary) parcel boundaries, that do not extend onto the Project Site.

3.1.2 Natural Resources Conservation Service (NRCS) Web Soil Survey

The NRCS Soil Web Map indicates that the Site is on Everett very gravelly sandy loam, 8 to 15 percent slopes, Everett very gravelly sandy loam, 15 to 30 percent slopes, Indianola loamy sand, 0 to 5 percent slopes, and Indianola loamy sand, 5 to 15 percent slopes (**Figure 4**). Everett very gravelly sandy loam is a somewhat excessively drained soil. It forms in glacial drift plains over outwash terraces and escarpments, kames, moraines, and eskers. Indianola loamy sand is a somewhat excessively drained soil formed in sandy glacial drift. Indianola soils are found on hills, terraces, terrace escarpments, eskers, and kames of drift or outwash plains. The National Technical Committee on Hydric Soils lists both the Everett series and Indianola series on its list of hydric soils.

3.1.3 King County iMAP Environmentally Sensitive Areas

King County iMAP indicates one wetland in the western portion of the Site. Potential landslide hazard areas are indicated on the northwest corner and southern portion of the Site (**Figure 5**). A seismic hazard area is indicated near the western edge of the parcel. This map also indicates a "sensitive area notices on title."

3.1.4 Washington Department of Fish and Wildlife (WDFW) SalmonScape

SalmonScape maps Gold Creek on the east side of 148th Ave NE but does not map any priority species on or near the Project Site. Fall Chinook, coho, winter steelhead, sockeye, bull trout, and kokanee are mapped in the vicinity of the Site (**Figure 6**).

3.1.5 WDFW Priority Habitats and Species (PHS)

PHS indicates the presence of one freshwater forested/shrub wetland on the Project Site and Gold Creek to the east (**Figure 7**). Two additional freshwater forested/shrub wetlands are indicated in the vicinity of the Site: one to the northwest, and a second to the southwest of the Project Site.

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LEGEND

TYPE	DESCRIPTION
PFOC	PALUSTRINE FORESTED SEASONALLY FLOODED
PEM1Cd	PALUSTRINE EMERGENT PERSISTENT SEASONALLY FLOODED PARTIALLY DRAINED
PEM1Ad	PALUSTRINE EMRGENT PERSISTENT TEMPORARY FLOODED PARTIALLY DRAINED
PUBH	PALUSTRINE UNCONSOLIDATED BOTTOM PERMANENTLY FLOODED
PSSC	PALUSTRINE SCRUB-SHRUB SEASONALLY FLOODED
R2UBH	RIVERINE LOWER PERENNIAL UNCONSOLIDATED BOTTOM PERMANENTLY FLOODED
R3UBH	RIVERINE UPPER PERENNIAL UNCONSOLIDATED BOTTOM PERMANENTLY FLOODED
R4SBCx	RIVERINE INTERMITTENT STREAMBED SEASONALLY FLOODED EXCAVATED
R4SBC	RIVERINE INTERMITTENT STREAMBED SEASONALLY FLOODED
R5UBH	RIVERINE UNKNOWN PERENNIAL UNCONSOLIDATED BOTTOM PERMANENTLY FLOODED

SOURCE: U.S. FISH AND WILDLIFE SERVICE, (JAN 2015). NATIONAL WETLANDS INVENTORY WEBSITE, U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, WASHINGTON D.C. http://www.fws.gov/wetlands/data/wetland-codes.html

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FIGURE #3

NATIONAL WETLANDS INVENTORY
LARKIN RESIDENCE
WOODINVILLE, WA

DESIGN	DRAWN	PROJECT
	ET/KF	1984

SCALE: NTS
DATE: 2-27-2024
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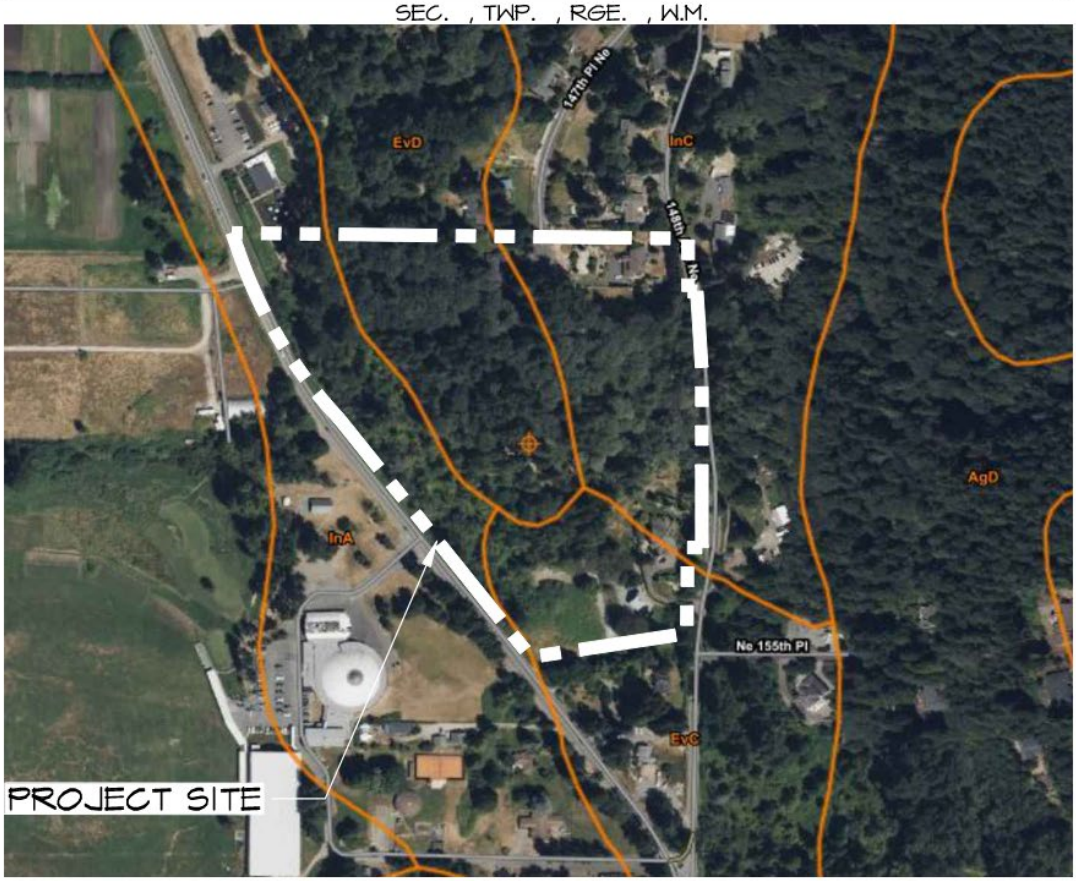

LEGEND

TYPE	DESCRIPTION, SLOPES
EvC	EVERETT VERY GRAVELLY SANDY LOAM, 8-15% SLOPES
EvD	EVERETT VERY GRAVELLY SANDY LOAM, 15-30% SLOPES
InA	INDIANOLA LOAMY SAND, 0-5% SLOPES
InC	INDIANOLA LOAMY SAND, 5-15% SLOPES

SOURCE: SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, WEB SOIL SURVEY. AVAILABLE ONLINE AT http://websoilsurvey.nrcs.usda.gov/. ACCESSED (7/21/2023).

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FIGURE #4

NRCS SOILS MAP
LARKIN RESIDENCE
WOODINVILLE, WA

DESIGN	DRAWN	PROJECT
	ET/KF	1984
SCALE	NTS	
DATE	2-27-2024	4
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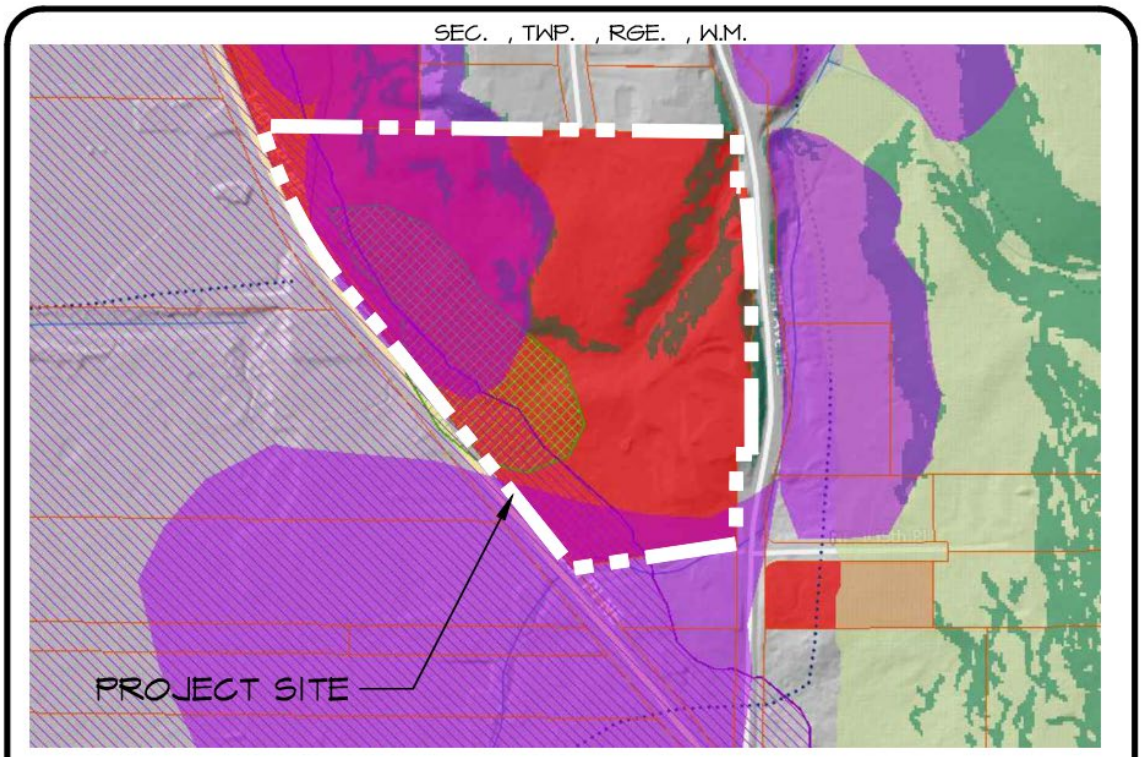

IMAGE SOURCE: KING COUNTY IMAP;
HTTP://WWW5.KINGCOUNTY.GOV/IMAP/VIEWER.HTM?MAPSET=KCPROPERTY
(ACCESSED 21 JULY 2023)

Environmentally Sensitive Areas

Potential landslide hazard areas (2016, see explanation---->)

Potential steep slope hazard areas (2016, see explanation---->)

Erosion hazard (1990 SAO)

Seismic hazard (1990 SAO)

Stream (1990 SAO)
- class 1
- class 2 perennial
- class 2 salmonid
- class 3
- unclassified

Wetland (1990 SAO)

Sensitive area notice on title

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FIGURE #5

KING COUNTY CRITICAL AREAS
LARKIN RESIDENCE
WOODINVILLE, WA

DESIGN	DRAWN	PROJECT
	ET/KF	1984

SCALE: NTS
DATE: 2-27-2024
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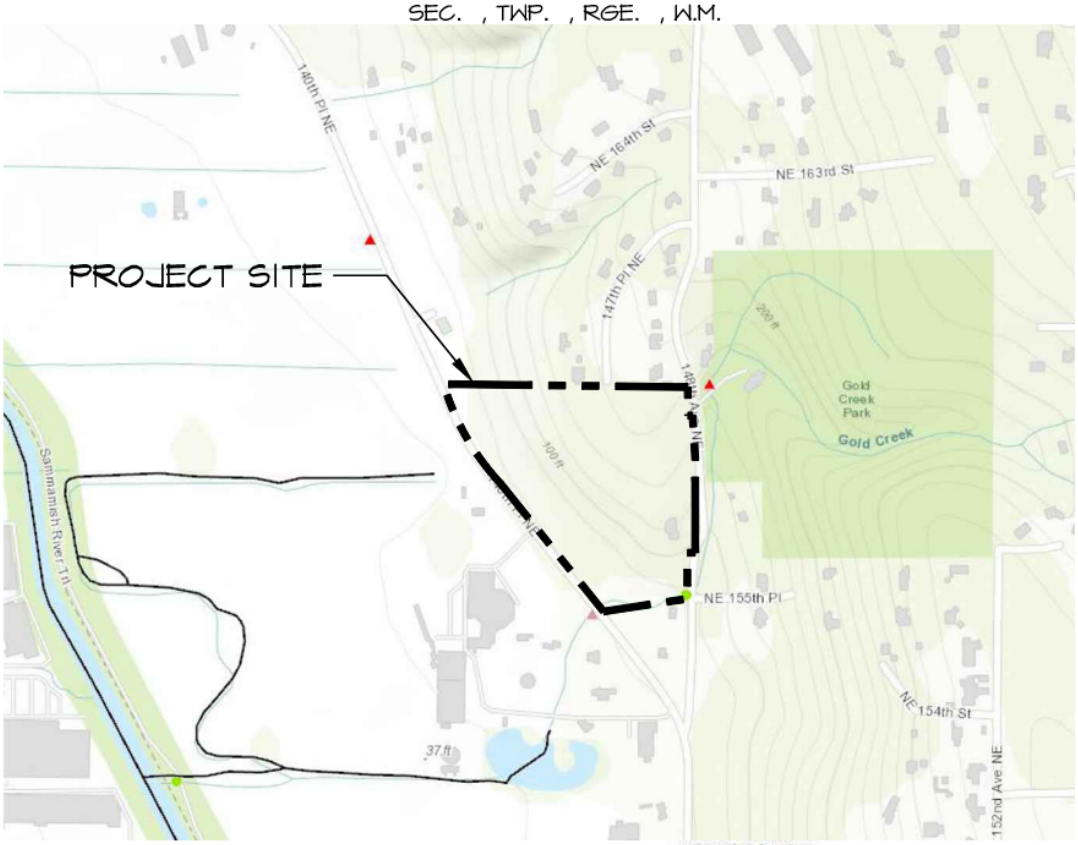

IMAGE SOURCE: KING COUNTY IMAP;
HTTP://WWW5.KINGCOUNTY.GOV/IMAP/VIEWER.HTM?
MAPSET=KCPROPERTY (ACCESSED 21 JULY 2023)

SPECIES PRESENT:
FALL CHINOOK, COHO, WINTER STEELHEAD,
SOCKEYE, BULL TROUT, AND KOKANEE

Fish Distribution

All SalmonScape Species

Fish Passage

Not a barrier

Total Fish Passage Blockage

Barrier, Unknown Percent Passable

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FIGURE #6

SALMONSCAPE
LARKIN RESIDENCE
WOODINVILLE, WA

DESIGN	DRAWN	PROJECT
	ET/KF	1984

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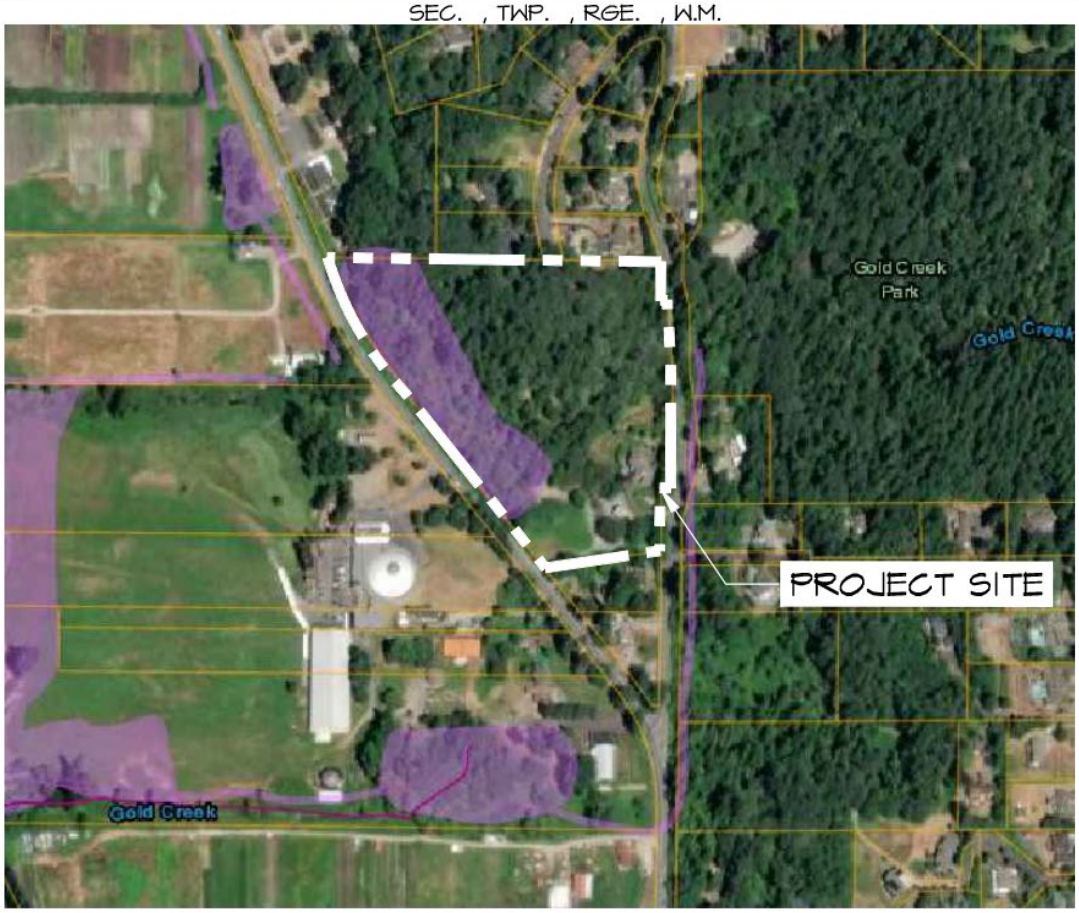

IMAGE SOURCE: PHS MAPPER; https://geodataservices.wdfw.wa.gov/hp/phs/ (ACCESSED 21 JULY 2023)

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FIGURE #7

PRIORITY HABITAT AND SPECIES MAP
LARKIN RESIDENCE
WOODINVILLE, WA

DESIGN	DRAWN	PROJECT
	ET/KF	1984

SCALE: NTS
DATE: 2-27-2024
REVISED:

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4.0 CRITERIA FOR CRITICAL AREAS IDENTIFICATION

For this assessment, the specific critical areas reviewed included potential wetlands, streams (natural waters), and fish and wildlife habitats which may be located within or immediately adjacent to the Project Site. This assessment did not include an evaluation of potential steep slopes or geotechnically hazardous critical areas.

Wetlands are transitional areas between aquatic and upland habitats. In general terms, wetlands are lands where the extent and duration of saturation with water is the primary factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface (Cowardin *et al*. 1979). Wetlands are generally defined within land use regulations as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory 1987) and as revised in the Regional Supplement to the Corps Wetland Delineation Manual (US Army Corps of Engineers 2010). Wetlands exhibit three essential characteristics, all of which must be present for an area to meet the established criteria within the 1987 Manual. These essential characteristics are:

- **Hydrophytic Vegetation**: A predominance of plants that are typically adapted for life in saturated soils.
- **Hydric Soil**: A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper horizons.
- **Wetland Hydrology**: Permanent or periodic inundation, or soil saturation to the surface, at least seasonally.

5.0 FIELD OBSERVATIONS

The Site was evaluated, and onsite critical areas were delineated on August 24, September 1, and September 13, 2023.

5.1 Uplands

The upland areas within the study area are dominated by Western red cedar (*Thuja plicata*), big leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), cottonwood (*Populus balsamifera*), salmonberry (*Rubus spectabilis*), vine maple (*Acer circinatum*), Scouler's willow (*Salix scouleriana*), Himalayan blackberry (*Rubus armeniacus*), sword fern (*Polystichum munitum*), common horsetail (*Equisetum arvense*), and reed canary grass (*Phalaris arundinacea*). Upland areas were distinguishable due to the abrupt change in vegetation and the defining topography of the Site.

Soils within sample pits dug in upland areas (TP-A2, TP-A4, TP-B2, and TP-C2) generally consisted of sandy loam soils with gravel and rocks, and Munsell soils colors of 10YR 5/3 and 10YR 4/3. Soils within the upland areas were mostly dry with some slightly moist areas. There was no surface water, water seepage, or water in the soil test plots.

5.2 Wetlands

Three wetlands (Wetlands A, B, and C) and one stream channel (Stream 2) were delineated onsite, and one stream (Stream 1) was delineated offsite along the southern property line. Delineated areas are depicted in **Sheet W1.0 (Appendix E)**. The wetlands may be hydraulically connected to the stream channel tributary located along the northern property line, which is connected to Gold Creek located to the east of the Site, east of 148th Ave NE. The Site receives runoff from 148th Ave NE and 140th Place NE.

5.2.1 Wetland A

Wetland A is a slope wetland of approximately 167,190 square feet (3.84 acres) located in the western portion of the Site, confined by 140th Place NE to the west, and Site topography and development of the Site to the east. Vegetation within Wetland A meets the criteria for wetland vegetation and is dominated by red alder (*Alnus rubra*), Western red cedar (*Thuja plicata*), big leaf maple (*Acer macrophyllum*), salmon raspberry (*Rubus spectabilis*), Himalayan blackberry (*Rubus armeniacus*), vine maple (*Acer circinatum),* red osier dogwood *(Cornus sericea),* skunk cabbage (*Lysichiton americanus*), and common horsetail (*Equisetum arvense*). Also present in the wetland were western sword fern (*Polystichum munitum*) and California blackberry (*Rubus ursinus*).

Two soil pits were dug within the wetland; TP-A1 and TP-A3 and revealed clay loam and sandy clay soils. Soils within the wetland met the criteria for hydric soils with Munsell Soil colors of 10YR 2/1, 10YR 2/2, and 2.5YR 4/1 with redox features of 2.5YR 7/6. Soils were saturated to the surface at TP-A3.

Hydrology within the sample pits also met the wetland criteria with saturation and high water tables observed in both pits. No surface water was present. There had been no significant rain in the weeks before the Site visit. The wetland's source of hydrology is precipitation, stormwater runoff, and Stream 2.

Using the Cowardin classification method, Wetland A would be classified as a forested, scrub-shrub seasonally flooded, permanently saturated wetland.

Using the Washington State Department of Ecology (Ecology) Revised 2014 Wetland Rating System, and rating the wetland as a slope wetland, Wetland A would be a Category III wetland with a total score of 16 (water quality 7, hydrology 4, habitat 5). The wetland scores moderate to high values for water quality due to its potential to improve water quality, low to moderate hydrologic function for its potential to improve water quality and improve flooding. The habitat value in Wetland A is rated medium to low due to a lack of plant diversity and minimal wildlife corridors. Because the area met the wetland criteria, wetland data and rating forms were completed and are provided in **Appendices A** and **B**.

The habitat score for this wetland is 5. Per King County Municipal Code 21A.24.045, a Category III wetland with a habitat score of 5, in a moderate impact land use area requires a standard buffer of 80 feet. Photographs of the area delineated as Wetland A are provided in **Appendix C**.

5.2.2 Wetland B

Wetland B is a slope wetland of approximately 1,859 square feet (0.43 acres) located in the northeast corner of the Site, associated with Stream 2, constrained by the Site topography. Vegetation within Wetland B met the criteria for wetland vegetation and is dominated by Western red cedar (*Thuja plicata*), big leaf maple (*Acer macrophyllum*), vine maple, (*Acer circinatum*), and skunk cabbage (*Lysichiton americanus*). Also present in the wetland were Western sword fern (*Polystichum munitum*) and Western lady fern (*Athyrium filix-femina*).

One soil pit was dug within the wetland; TP-B1 and revealed sandy loam and sandy clay soils. Soils within the wetland met the criteria for hydric soils with Munsell Soil colors of 10YR 3/2 and 10YR 4/1 with redox features of 7.5YR 3/4. Soils were saturated at nine inches.

Hydrology within the sample pits also met the wetland criteria with saturation, geomorphic position, and saturation visible on aerial imagery. No surface water was present. There had been no significant rain in the weeks before the Site visit. The wetland's source of hydrology is precipitation, stormwater runoff, and Stream 2.

Using the Cowardin classification method, Wetland B would be classified as a forested, seasonally flooded wetland.

Using the Washington State Department of Ecology (Ecology) Revised 2014 Wetland Rating System, and rating the wetland as a slope wetland, Wetland B would be a Category III wetland with a total score of 16 (water quality 6, hydrology 5, habitat 5). The wetland scores low to high values for water quality due to its low potential to improve water quality, and low to moderate hydrologic function for its potential to improve water quality and improve flooding. The habitat value in Wetland A is rated mostly low due to a lack of plant diversity and minimal wildlife corridors. Because the area met the wetland criteria, wetland data and rating forms were completed and are provided in **Appendices A** and **B**.

The habitat score for this wetland is 5. Per King County Municipal Code 21A.24.045, a Category III wetland with a habitat score of 5, in a moderate impact land use area requires a standard buffer of 80 feet. Photographs of the area delineated as Wetland B are provided in **Appendix C**.

5.2.3 Wetland C

Wetland C is a slope wetland of approximately 3,363 square feet (0.77 acres) located in the southeast corner of the Site. Vegetation within Wetland C met the criteria for wetland vegetation and is dominated by black cottonwood (*Populus balsamifera*), Scouler's willow (*Salix scouleriana*), and reed canary grass (*Phalaris arundinacea*). Also present in the wetland were small percentages of red alder (*Alnus rubra*), Himalayan blackberry (*Rubus armeniacus*), and common horsetail (*Equisetum arvense*).

One soil pit was dug within the wetland; TP-C1 and revealed sandy loam soils. Soils within the wetland met the criteria for hydric soils with Munsell Soil colors of 10YR 2/1 and 10 YR 2/2. The soil was saturated to 9 inches.

Hydrology within the sample pits also met the wetland criteria with saturation and drift deposits, and secondary indicators of water-stained leaves and FAC-Neutral test. No surface water was present. There had been no significant rain in the weeks before the Site visit. The wetland's source of hydrology is precipitation, stormwater runoff, and Stream 1.

Using the Cowardin classification method, Wetland C would be classified as a scrub-shrub seasonally saturated and seasonally flooded wetland.

Using the Washington State Department of Ecology (Ecology) Revised 2014 Wetland Rating System, and rating the wetland as a slope wetland, Wetland C would be a Category IV wetland with a total score of 14 (water quality 6, hydrology 3, habitat 5). The wetland scores low to high values for its lack of potential to improve water quality but with high landscape potential, and low hydrologic function for its low potential to improve water quality and improve flooding. The habitat value in Wetland C is rated mostly low due to a lack of plant diversity and broken wildlife corridors. Because the area met the wetland criteria, wetland data and rating forms were completed and are provided in **Appendices A** and **B**.

The habitat score for this wetland is 5. Per King County Municipal Code 21A.24.045, a Category IV wetland with a habitat score of 5, in a moderate impact land use area requires a standard buffer of 40 feet. Photographs of the area delineated as Wetland C are provided in **Appendix C**.

5.3 Streams

5.3.1 Stream 1

Stream 1 is located offsite along the southern parcel boundary. The stream is identified by King County as Gold Creek, which originates on the east side of 148th Ave NE and is classified by King County as a Type N stream. Per King County Code 21A.24.358, the buffer for a Type N stream is 65 feet. Gold Creek crossed 148th Ave NE at about NE 155th Place and continues to the southwest under 140th Place NE.

5.3.2 Stream 2

Stream 2 begins at the northeastern corner of the Site and ends as it drains into Wetland A. Stream 2 is a Type N, non-fish bearing stream with a corresponding sixty-five-foot buffer. This stream receives water from surface runoff at the northeastern corner of the Site where the topography collects and funnels water downslope. It passes through Wetland B and begins to meander as it flows southwest, maintaining an approximate width of eight (8) feet when water levels are high. The stream begins to widen as it turns west within Wetland A, and eventually ends.

Only minor channelization was observed in Stream 2, primarily in the upstream portion where it becomes thinner after it passes through Wetland B. The bed of the stream is primarily silt with only a slight presence of stream rock observed. Banks are generally shallowly sloped.

6.0 REGULATORY

6.1 King County Regulations

Critical areas on the Project Site are subject to the regulations of King County Code 21A.24.045. This section contains regulations regarding standards and procedures for development associated with critical areas and defines permissible uses. The code is provided verbatim in *italic* text.

Critical area review – 21A.24.100

A. Before any clearing, grading or site preparation, the department shall perform a critical area review for any development proposal permit application or other request for permission to alter a site to determine whether there is:

1. a critical area on the development proposal site;

2. an active breeding site of a protected species on the development proposal site; or

3. a critical area or active breeding site of a protected species that has been mapped, identified within three hundred feet of the applicant's property or that is visible from the boundaries of the site.

B. As part of the critical area review, the department shall review the critical area reports and determine whether:

1. there has been an accurate identification of all critical areas;

2. an alteration will occur to a critical area or a critical area buffer;

3. the development proposal is consistent with this chapter;

4. the sequence in K.C.C. 21A.24.125 has been followed to avoid impacts to critical areas and critical area buffers; and

5. mitigation to compensate for adverse impacts to critical areas is required and whether the mitigation and monitoring plans and bonding measures proposed by the applicant are sufficient to protect the general public health, safety and welfare, consistent with the goals, purposes, objectives and requirements of this chapter.

C. If a development proposal does not involve any site disturbance, clearing, or grading and only requires a permit or approval under K.C.C. chapter 16.04 or 17.04, critical area review is not required, unless the development proposal is located within a:

1. flood hazard area;

2. critical aquifer recharge area; or

3. landslide hazard area, seismic hazard area, or coal mine hazard area and the proposed development will cause additional loads on the foundation, such as by expanding the habitable square footage of the structure or by adding or changing structural features that change the load bearing characteristics of the structure. (Ord. 15051 § 146, 2004: Ord. 14449 § 9, 2002: Ord. 10870 § 457, 1993).

Critical area report requirement – 21A.24.110

A. An applicant for a development proposal that requires critical area review under K.C.C. 21A.24.100 shall submit a critical area report at a level determined by the department to adequately evaluate the proposal and all probable impacts.

B. The applicant may combine a critical area report with any studies required by other laws and regulations.

C. If the development proposal will affect only a part of the development proposal site, the department may limit the scope of the required critical area report to include only that part of the site that is affected by the development proposal.

Mitigation and monitoring – 21A.24.130

A. If mitigation is required under this chapter to compensate for adverse impacts, unless otherwise provided, an applicant shall:

1. Mitigate adverse impacts to:

a. critical areas and their buffers; and

b. the development proposal as a result of the proposed alterations on or near the critical areas; and

2. Monitor the performance of any required mitigation.

B. The department shall not approve a development proposal until mitigation and monitoring plans are in place to mitigate for alterations to critical areas and buffers.

C. Whenever mitigation is required, an applicant shall submit a critical area report that includes:

1. an analysis of potential impacts;

2. a mitigation plan that meets the specific mitigation requirements in this chapter for each critical area impacted; and

3. a monitoring plan that includes:

a. a demonstration of compliance with this title;

b. a Contingency Plan in the event of a failure of mitigation or of unforeseen impacts if:

1. the department determines that failure of the mitigation would result in a significant impact on the critical area or buffer; or

2. the mitigation involves the creation of a wetland; and

c. a monitoring schedule that may extend throughout the impact of the activity or, for hazard areas, for as long as the hazard exists.

D. Mitigation shall not be implemented until after the department approves the mitigation and monitoring plan. The applicant shall notify the department when mitigation is installed and monitoring is commenced and shall provide King County with reasonable access to the mitigation for the purpose of inspections during any monitoring period.

E. If monitoring reveals a significant deviation from predicted impact or a failure of mitigation requirements, the applicant shall implement an approved Contingency Plan. The Contingency Plan constitutes new mitigation and is subject to all mitigation including a monitoring plan and financial guarantee requirements. (Ord. 15051 § 150, 2004: Ord. 10870 § 460, 1993).

Critical area markers and signs – 21A.24.160

A. Development proposals shall include permanent survey stakes delineating the boundary between adjoining property and critical area tracts, using iron or concrete markers as established by current survey standards.

B. The applicant shall identify the boundary between a critical area tract and contiguous land with permanent signs. The department may require signs and fences to delineate and protect critical areas and critical area buffers that are not in critical area tracts. (Ord. 15051 § 154, 2004: Ord. 10870 § 463, 1993).

Landslide hazard areas - development standards and alterations – 21A.24.280

The following development standards apply to development proposals and alterations on sites containing landslide hazard areas:

A. Unless allowed as an alteration exception under K.C.C. 21A.24.070, only the alterations identified in K.C.C. 21A.24.045 are allowed within a landslide hazard area with a slope of 40 percent or greater;

B. A buffer is required from all edges of the landslide hazard area. To eliminate or minimize the risk of property damage or injury resulting from landslides caused in whole or part by the development, the department shall determine the size of the buffer based upon a critical area report prepared by a geotechnical engineer or geologist. If a critical area report is not submitted to the department, the minimum buffer is fifty feet. If the landslide hazard area has a vertical rise of more than two-hundred feet, the department may increase the minimum building setback in K. C. C. 21A.24.200 to one-hundred feet;

C. Unless otherwise provided in K.C.C. 21A.24.045 or as a necessary part of an allowed alteration, removal of any vegetation from a landslide hazard area or buffer is prohibited;

D. All alterations shall minimize disturbance to the landslide hazard area, slope and vegetation unless necessary for slope stabilization; and

E. Alterations in a landslide hazard area located on a slope less than 40 percent are allowed if:

1. the proposed alteration will not decrease slope stability on contiguous properties; and

*2. the risk of property damage or injury resulting from landsliding [*sic*] is eliminated or minimized. (Ord. 15051 § 167, 2004: Ord. 12822 § 9, 1997: Ord. 10870 § 475, 1993).*

Critical areas monitoring - 21A.24.515

The department of natural resources and parks, in consultation with the department, shall conduct monitoring to evaluate the effect of this chapter on protecting the functions and values of critical areas. (Ord. 17420 § 105, 2012: Ord. 16267 § 61, 2008: Ord. 15051 § 230, 2004).

Sequence of mitigation measures - priority – 21A.25.080

A. Mitigation measures shall be applied in the following sequence of steps listed in order of priority, with subsection A.1. of this section being top priority:

B. Avoiding the impact altogether by not taking a certain action or parts of an action;

C. Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;

D. Rectifying the impact by repairing, rehabilitating or restoring the affected environment;

E. Reducing or eliminating the impact over time by preservation and maintenance operations;

F. Compensating for the impact by replacing, enhancing or providing substitute resources or environments; and

G. Monitoring the impact and the compensation projects and taking appropriate corrective measures.

H. In determining appropriate mitigation measures applicable to shoreline development, lower priority measures shall be applied only where higher priority measures are determined to be infeasible or inapplicable.

I. Mitigation shall be designed to:

1. Achieve no net loss of ecological functions for each new development;

2. Not require mitigation in excess of that necessary to assure that the development will result in no net loss of shoreline ecological functions; and

3. Not result in a significant adverse impact on other shoreline ecological functions.

J. When compensatory measures are appropriate under the mitigation priority sequence in subsection A. of this section, preferential consideration shall be given to measures that replace the impacted functions directly and in the immediate vicinity of the impact. The department may approve alternative compensatory mitigation within the watershed if the mitigation addresses limiting factors or identified critical needs for shoreline resource conservation based on watershed or comprehensive resource management plans applicable to the area of impact. The department may require appropriate safeguards, terms or conditions as necessary to ensure no net loss of shoreline ecological functions as conditions of approval for compensatory mitigation measures. (Ord. 16985 § 129, 2010).

Critical areas violations - corrective work plan and monitoring – 21A.50.037

A. Except as otherwise provided in subsection D. of this section, a person who violates this title shall submit a proposed corrective work plan to the department for approval. The department may modify the plan and shall approve it only if the department determines that the plan complies with the requirements for mitigation plans in K.C.C. 21A.24.130.

B. All corrective work shall be accomplished according to the approved corrective work plan, and corrective work shall not be undertaken until after approval of the plan by the department.

C. Corrective work shall be monitored in accordance with the approved corrective work plan. Monitoring may be required for up to five years. Monitoring under the corrective work plan shall comply with the monitoring requirements in K.C.C. 21A.24.130.

D. The director may exempt from this section emergency response activities or other actions required to be undertaken immediately or within a time too short to allow full compliance with this title or to avoid an imminent threat to public health or safety or to property. (Ord. 15051 § 229, 2004).

6.2 Applicable King County Code Analysis

6.2.1 Critical Area Review (21A.24.100)

A critical area review prior to clearing, grading, or site preparation is not applicable due to the presence of the existing structure on the Site. Therefore, any identification of critical areas is made post-construction.

6.2.2 Critical Area Report Requirement (21A.24.110)

Site construction was completed without critical area reporting; therefore, this report intends to evaluate current Site conditions and potential impacts, if any, of Site construction.

6.2.3 Mitigation and Monitoring (21A.24.130)

Mitigation sequencing does not pertain to this project due to the existing development. However, past construction impacts will be mitigated according to the applicable King County

Code to address the code enforcement requirements. The proposed mitigation can be found in Section 7 of this report.

6.2.4 Critical Area Markers and Signs (21A.24.160)

Critical area signage will be proposed for the mitigation area, as required by King County, to address the code enforcement action.

6.2.5 Critical Areas Monitoring (21A.24.515)

All mitigation areas will be monitored according to the King County Code and as required by the permits issued.

6.2.6 Sequence of Mitigation Measures (21A.25.080)

Because Site construction has already occurred, mitigation sequencing does not apply as avoiding and minimizing impacts is not possible. The proposed mitigation plan is intended to restore the affected area where possible and reduce the amount of impact incurred.

6.2.7 Critical Areas Violations (21A.50.037)

Construction was completed on the Site without relevant permitting. The mitigation proposed in this report is intended to address the corrective action as required by the County code.

7.0 IMPACTS TO CRITICAL AREAS & BUFFERS

7.1 Project Description

A violation letter was issued by King County on October 14, 2022. The violation letter explained that unauthorized grading and clearing over seven 7,000 square feet occurred in critical areas and critical area buffers on the property (**Sheet W2.0, Appendix E**). The violations listed in the letter included:

- the construction of a new driveway system to the SE of the barn with the addition of impervious materials;
- an area to the north of the residence that was approved for new buffer under an approved buffer averaging proposal to offset permanent loss of buffer from the construction of the barn had not been restored back to native vegetation; and,
- a large, wooded area of the NE of the barn appeared to have been graded and cleared of invasive vegetation to restore the old logging roadway system.

7.2 Assessment of Impacts

7.2.1 Permanent Impacts

The driveway leading up to the barn had historically been a road that had remained unused over time and eventually became overgrown. However, personal communication with Matt Caskey, King County Environmental Planner, determined that the re-clearing and installation of gravel onto this pre-existing roadway system did not meet the King County Code requirements for this to be legal non-conforming use.

The roadway system within the wooded area to the northwest of the property had historically been a network of logging roads. These roads became overgrown over time due to lack of use and maintenance. The applicant cleared these pre-existing roads to have access to those areas on his property. According to Matt Caskey, because these roads had not been maintained for over a 12 month period, the roads did not meet the King County Code requirements to be a legal non-conforming use. These logging roads were surveyed by LDC Corps from their centerline and a width was approximated, ranging from six (6) to eight (8) feet.

The lawn area to the northwest of the residence sits on top of and abuts a drain field. Therefore, maintenance of this area is required. Matt Caskey observed that it looked as if trees may have been removed in this area. However, the drain field area must remain clear to allow for maintenance of the drain field. The applicant proposes to maintain the lawn in the northwest area of the Site. However, critical area buffer impacts that occurred in the location of the drain field have been included in the proposed mitigation and restoration plan.

The area previously proposed for buffer averaging is currently maintained lawn. The applicant is proposing that this area remain outside of critical area buffers to utilize as a recreation area for his children. To offset the previous agreement that this area be vegetated, the applicant is proposing to reclaim an area to the north of the property and utilize it for buffer averaging. The area to the north is currently being used by the neighbor to the north as a maintained landscape area and lawn. It is proposed that this area be incorporated into the adjacent critical area buffer and that it be revegetated with native species.

Table 1 outlines the square footage for direct critical area and buffer impacts.

TABLE 1 CRITICAL AREAS AND BUFFER IMPACTS

Direct Impacts	Area (SF)
Wetlands	13
Streams	26
Steep Slopes	2,484
TOTAL DIRECT IMPACTS	**2,523**
Buffer Impacts	**Area (SF)**
Wetlands	7,884
Streams	4,888
Steep Slopes	6,668
TOTAL BUFFER IMPACTS	**19,440**
TOTAL IMPACTS	**21,963**
BUFFER AVERAGING UNPLANTED	**2,614**

8.0 PROPOSED RESTORATION

8.1 Agency Policies and Guidance

The proposed mitigation plan was designed per the policies and guidance provided in the following documents:

- King County Code, Chapter 21A.24 – Critical Areas

8.1.1 Mitigation Sequencing

King County Code requires that a sequence of actions be taken for proposals that will impact wetlands. This is referred to as mitigation sequencing. It is administered under the Washington State Environmental Policy Act administered by Ecology and adopted by King County under K.C.C. 21A.25, as well as under Section 404 of the Federal Clean Water Act, administered by the Corps. The mitigation sequencing requirements are:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations;
- Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
- Monitoring the impact and the compensation projects and taking appropriate corrective measures.

8.2 Proposed Restoration Plan

The Applicant will implement restoration to compensate for work done in the critical areas and critical area buffers by restoring a portion of the logging roads to native vegetation, applying buffer averaging to the northern portion of the Site, and rehabilitating wetland and wetland buffer areas that are degraded due to the presence of invasive and weedy species (**Sheet W2.1, Appendix E**). Conceptual restoration and mitigation plans are shown on **Sheets W3.0** through **W4.1 (Appendix E)**.

The applicant is proposing to maintain the use of the gravel driveway leading to the barn. Although it was not in the previous agreement for the barn's construction, the applicant does not have to move materials. This driveway was constructed to be able to move materials back and forth as needed, and this driveway is necessary to maintain access to the barn. Therefore, additional restoration and rehabilitation of critical areas and critical area buffers are proposed in this restoration plan.

Logging roads will be restored at a ratio of 1:1 for the impacted area, limited to the portion of restoration conducted. The remainder of the roads that will not be restored will be maintained as a trail system. The cleared logging roads were pre-existing roads that had become overgrown due to a lack of use over time. The applicant proposes to maintain a trail system to have access to those areas for horse riding. Trails are required to be approximately 4 feet in width for safety purposes. Restoration plantings on the road system will primarily consist of native ground cover that will be suitable for the dense shade from the canopy overstory.

In addition, the applicant proposes to reclaim the northern portion of the Site and utilize it for buffer averaging. The northern portion of the Site is currently being used by the neighbor to the north as a landscaped area and maintained lawn. This area will be used to offset buffer averaging from a previous agreement to buffer average north of the residence that was not planted with vegetation.

Finally, the applicant proposes to rehabilitate degraded wetland and wetland buffer. Degraded critical areas were found to be a mixture of dense Himalayan blackberry (*Rubus armeniacus*), common horsetail (*Equisetum arvense*), reed canarygrass (*Phalaris arundinacea*), and a mixture of low-growing grasses with a lack of woody vegetation.

This restoration plan considers species and structural diversity within the plant community and will provide supplemental habitat to wildlife.

8.3 Restoration Design Elements

Restoration will include the installation of native trees, shrubs, and ground cover that mimic the surrounding habitat conditions present on the Site. The restoration design elements are depicted on **Sheets W3.0** through **W4.1** (**Appendix E**).

8.3.1 Planting Plan

Rehabilitation plantings for the wetland include OBL, FACW, and FAC species primarily along the edge of Wetland A. The local conditions are a mixture of full sun to partial shade with saturated soil. Species were selected to thrive in local conditions.

Rehabilitation plantings for the wetland buffer range from OBL to FACU. The wetland buffer has varying topographical conditions, and thus the moisture availability for selected species will vary. Also, some areas of the wetland buffer are heavily shaded whereas others are exposed to full sun. Species were selected to thrive in local conditions, and it will be important to incorporate microclimatic conditions when planting occurs.

Restoration plantings for the logging roads include FACU plants. The logging roads were historically graded to be above wetter conditions and they were not observed holding water. Most of the logging roads are also underneath a dense shaded canopy, but a small segment is exposed to full sun. Species were selected to thrive in local conditions.

Soil amendments are not proposed as species were selected to thrive in local conditions.

Selected species will be a combination of plug stock and bare root plants, to offset costs associated with the mitigation, and to minimize the need for irrigation. **Table 2** outlines the proposed restoration square footage.

TABLE 2 PROPOSED RESTORATION

Wetland Mitigation and Restoration	Area (SF)
Wetland Restoration (1:1)	13
Wetland Enhancement/Rehabilitation (4:1)	3,342
Steep Slope Restoration (1:1)	1,265
Stream Restoration (1:1)	26
TOTAL DIRECT MITIGATION AND RESTORATION	**4,646**
Buffer Mitigation and Restoration, Buffer Averaging	**Area (SF)**
Critical Area Buffer Creation (1:1)	5,486
Wetland Buffer Enhancement/Restoration (1:1)	10,256
Steep Slope Buffer Enhancement/Restoration (1:1)	3,431
Stream Buffer Enhancement/Restoration (1:1)	668
TOTAL BUFFER MITIGATION AND RESTORATION	**21,122**
Other Restoration Activities	**Area (SF)**
Non-Compensatory Mitigation/Restoration	2,128
English Ivy Removal Area	217,738

8.3.2 Temporary Irrigation

Irrigation is not planned to be implemented at this time.

8.3.3 Mitigation Goals, Objectives, and Performance Standards

The primary goal of the mitigation is to restore the impacts of unpermitted clearing and grading within a County-designated critical area.

Mitigation actions shall be evaluated by a qualified biologist or ecologist, through the following objectives and performance standards. See Section 9.2 for a full description of the monitoring methods that will be used to evaluate the approved performance standards.

Objective A: Create structural and plant diversity in the restoration areas.

Performance Standard A: *At least 12 species of desirable native plants will be present during the duration of the monitoring period.*

Objective B: Limit the amount of invasive and exotic species within the restoration areas.

Performance Standard B: *After construction and for the entirety of the monitoring period, exotic and invasive plant species will be maintained at levels of 15 percent areal coverage or less throughout the mitigation area.*

8.3.4 Post-Construction Approval

PACE shall notify King County when the mitigation planting is completed for a final Site inspection and subsequent final approval. Once final approval is obtained in writing, the monitoring period will begin.

8.3.5 Post-Construction Assessment

Once construction is approved, a qualified wetland ecologist shall conduct a post-construction assessment. The purpose of this assessment will be to establish baseline conditions at Year 0 of the monitoring period. A Baseline Assessment report will be submitted to King County after planting is complete.

9.0 MONITORING PLAN

9.1 Monitoring Reports

Performance monitoring of the mitigation area will be conducted over three years for King County. Monitoring will be conducted according to the schedule presented in **Table 3** below and will be performed by a qualified biologist or ecologist. Each monitoring report will include a Project Overview, Requirements, Summary Data, Maps and Plans, and Conclusions. If the performance criteria are met, monitoring for King County will cease at the end of Year 3.

TABLE 3 PROJECTED SCHEDULE FOR PERFORMANCE MONITORING AND MAINTENANCE EVENTS

YEAR	DATE	MAINTENANCE REVIEW	PERFORMANCE MONITORING	REPORT DUE
BA[1]	Fall	X	X	X
1	Spring	X	X	
	Fall	X	X	X
2	Spring	X		
	Fall	X	X	X
3	Spring	X		
	Fall	X	X	X[2]

[1] BA = Baseline Assessment following construction completion
[2] Obtain final approval from King County (assuming performance criteria are met).

9.2 Monitoring Methods

The following monitoring methods will be used to evaluate the approved performance standards.

9.2.1 Methods for Monitoring Vegetation Survival

Vegetation monitoring methods will include counts, photo points, and visual inspection. Vegetation monitoring components shall include general appearance, health, mortality, percent survival, volunteer plant species, and invasive weed cover.

Permanent vegetation sampling plots, quadrats, or transects will be established at selected locations to adequately sample and represent all plant communities within the mitigation project areas. The number, exact size, and location of sampling plots, quadrats, or transects will be determined at the time of the baseline assessment.

Percent areal cover of woody vegetation will be evaluated using the point-intercept sampling methodology. Using this methodology, a tape will be extended between two permanent markers at each end of an established transect. Trees and shrubs intercepted by the tape will be identified, and the intercept distance recorded. Percent cover by species will then be calculated by adding the intercept distances and expressing them as a total proportion of the tape length.

The established vegetation sampling locations will be monitored and compared to the baseline data during each performance monitoring event to aid in determining the success of plant establishment. The percent survival of shrubs and trees will be evaluated in a 10-foot-wide strip along each established transect. The species and location of all shrubs and trees within this area will be recorded at the time of the baseline assessment and will be evaluated during each monitoring event to determine percent survival.

9.3 Photo Documentation

Locations will be established within the mitigation area from which panoramic photographs will be taken throughout the monitoring period. These photographs will document the general appearance and relative changes within the plant community. A review of the photos over time will provide a semi-quantitative representation of the success of the planting plan. Vegetation sampling transect/plot/quadrat and photo-point locations will be shown on a map and submitted with the baseline assessment report and yearly performance monitoring reports.

9.4 Wildlife

Birds, mammals, reptiles, amphibians, and invertebrates observed in the wetland and buffer areas (either by direct or indirect means) will be identified and recorded during scheduled monitoring events, and at any other times observations are made. Direct observations include actual sightings, while indirect observations include tracks, scat, nests, song, or other indicative signs. The kinds and locations of the habitat with the greatest use by each species will be noted, as will any breeding or nesting activities.

9.5 Water Quality and Site Stability

Water quality will be assessed qualitatively; unless it is evident there is a serious problem. In such an event, water quality samples will be taken and analyzed in a laboratory for suspected parameters. Qualitative assessments of water quality include:

- oil sheen or other surface films,
- abnormal color or odor of water,
- stressed or dead vegetation or aquatic fauna,
- turbidity, and

- absence of aquatic fauna.

Observations will be made of the general stability of slopes and soils in the mitigation areas during each monitoring event. Any erosion of soil or slumping slopes will be recorded, and corrective measures taken.

10.0 MAINTENANCE AND CONTINGENCY

10.1 Maintenance and Contingency Measures

Regular maintenance reviews will be performed according to the schedule presented in **Table 1** to address any conditions that could jeopardize the success of the mitigation project. Following maintenance reviews by the biologist or ecologist, required maintenance on the Site will be implemented within 10 business days of submission of a maintenance memo to the maintenance contractor and permittee.

Established performance standards for the project will be compared to the yearly monitoring results to judge the success of the mitigation. If, during the monitoring period, there appears to be a significant problem with achieving the performance standards, the applicant shall work with the County to develop a Contingency Plan to get the project back into compliance with the performance standards. Contingency plans can include, but are not limited to, the following actions*:* additional plant installation, erosion control, modifications to hydrology, and plant substitutions of type, size, quantity, or location. If required, a Contingency Plan shall be submitted to the County by December 31st of any year when deficiencies are discovered.

The following list includes examples of maintenance (M) and contingency (C) actions that may be implemented during the monitoring period. This list is not intended to be exhaustive, and other actions may be implemented as deemed necessary.

- During year one, replace all dead woody plant material (M).
- Replace dead plants with the same species or a substitute species that meets the goals and objectives of the mitigation plan, subject to PACE and County approval (C).
- Re-plant area after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.) (C).
- Remove/control weedy or exotic invasive plants (e.g., Scot's broom, reed canarygrass, Himalayan blackberry, purple loosestrife, Japanese knotweed, etc.) by manual or chemical means approved by the County (C & M).
- Remove trash and other debris from the mitigation areas twice a year (M).
- Selectively prune woody plants at the direction of PACE to meet the mitigation plan's goal and objectives (e.g., thinning and removal of dead or diseased portions of trees/shrubs) (M).
- Repair or replace damaged structures including signs and or fences (M).

11.0 PERFORMANCE SECURITY

According to K.C.C. 27.10.570, a performance security device shall be secured by the applicant to ensure that all mitigation work is completed according to the approved plans. The financial guarantee shall be in a form and amount approved by the County. The applicant shall provide the financial guarantee upon approval of the final mitigation plan.

12.0 SUMMARY/CONCLUSION

A critical areas assessment was conducted for the Larkin residence on August 24, September 1, and September 13, 2023. The Site consists of a single parcel located at 15535 148th Avenue Northeast in Woodinville, Washington. The Public Land Survey System location of the project is Section 15, T26N, R5E, W.M. The King County tax parcel number is 1526059002.

Three wetlands were identified on the Site. Wetland A is a Category III wetland with a total score of 16 (water quality 7, hydrology 4, and habitat 5). Wetland B is a Category III wetland with a total score of 16 (water quality 6, hydrology 5, and habitat 5). Wetland C is a Category IV wetland with a total score of 14 (water quality 6, hydrology 3, and habitat 5). Wetlands A and B have a standard buffer of 80 feet. Wetland C has a standard buffer of 40 feet.

Two streams were identified on and within the vicinity of the Site. Stream 1 is a Type N stream located offsite along the southern parcel boundary. Stream 2 is a Type N stream flowing onsite beginning at the northeastern corner of the Site, meandering southwest through the Site and Wetland B before eventually terminating into Wetland A. Both streams have a standard buffer of 65 feet.

The existing development consists of a 5,660-square foot single-family home with a basement garage, a 960 sf detached barn, access driveways, and a parking area. Most of the Site is undeveloped, with the existing development located near the southeastern corner of the property. A violation was issued by King County due to unpermitted clearing and grading in excess of 7,000 square feet within critical areas and critical area buffers throughout the Site. Violations include:

- The construction of a new driveway system to the SE of the barn with the addition of impervious materials;
- An area to the north of the residence that was approved for new buffer under an approved buffer averaging proposal to offset the permanent loss of buffer from the construction of the barn had not been restored back to native vegetation; and,
- A large, wooded area of the NE of the barn appeared to have been graded and cleared for a new roadway system and expansion of lawn area of the residence.

Mitigation will involve 4,646 square feet of direct wetland mitigation and restoration and 21,122 square feet of buffer mitigation and restoration. Other restoration activities will include 2,128 square feet of non-compensatory mitigation/restoration, along with English Ivy removal and maintenance throughout the northern portion of the Site. Plantings will consist of native woody vegetation appropriate for the wetland, riparian, and upland habitats. A minimum of three years of performance monitoring will be provided over the mitigation area.

13.0 REFERENCES

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Larkin Residence
Woodinville, WA

Appendix A
Wetland Delineation Data Forms

PACE

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, & Coast

Project/Site: 1984 Larkin | City/County: King County | Sampling Date: 09/01/2023
Applicant/Owner: Matt Larkin | State: WA | Sampling Point: TP A1
Investigator(s): KF, PC | Section, Township, Range: Section 15, T26N, R5E
Landform (hillslope, terrace, etc): terrace | Local relief (concave, convex, none): concave | Slope (%): 10
Subregion (LRR): A | Lat: 47.74165329 | Long: -122.14417492 | Datum: NAD83
Soil Map Unit Name: Indianola Loamy Sand | NWI classification: Palustrine forested
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer macrophyllum* / Bigleaf maple, Big-leaf maple	15	Yes	FACU
2. *Thuja plicata* / Western red cedar, Western red cedar, Canoe	15	Yes	FAC
3. *Alnus rubra* / Red alder	10	Yes	FAC
4.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rubus spectabilis* / Salmon berry, Salmonberry	50	Yes	FAC
2. *Acer circinatum* / Vine maple	10	No	FAC
3. *Acer circinatum* / Vine maple	10	No	FAC
4.			
5.			
	70	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Equisetum arvense* / Common horsetail	100	Yes	FAC
2. *Lysichiton americanus* / Yellow skunk cabbage, Yellow skunk	60	Yes	OBL
3. *Rubus ursinus* / California blackberry	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	165	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Rubus ursinus* / California blackberry	5	Yes	FACU
2.			
	5	= Total Cover	

% Bare Ground in Herb Statum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 7 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	0	x 2 =	0
FAC species	195	x 3 =	585
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	280 (A)		745 (B)

Prevalence Index = B/A = 2.66

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: TP A1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100					Clay Loam	0-10 muck, 1.5" ribbon, greasy
10-12	10YR 2/1	100					Clay Loam	Woody material inside - muck
12-15	2.5Y 4/1	80	2.5Y 7/6	20	C	M	Clay	Clay layer below the Sandy layer

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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)
- X 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)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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 X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ 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 (minimum of two required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 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 (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes X	No ___	Depth (inches):	12	
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	9	

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Water filling up the hole as we were working

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, & Coast

Project/Site: 1984 Larkin | City/County: King County | Sampling Date: 09/01/2023
Applicant/Owner: Matt Larkin | State: WA | Sampling Point: TP A2
Investigator(s): KF, PC | Section, Township, Range: Section 15, T26N, R5E
Landform (hillslope, terrace, etc): Hillslope | Local relief (concave, convex, none): concave | Slope (%): 50
Subregion (LRR): A | Lat: 47.74174184 | Long: -122.14405412 | Datum: NAD83
Soil Map Unit Name: Indianola Loamy Sand | NWI classification: PFO, PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata* / Western red cedar, Western red cedar, Canoe	65	Yes	FAC
2. *Acer macrophyllum* / Bigleaf maple, Big-leaf maple	25	Yes	FACU
3. *Alnus rubra* / Red alder	15	No	FAC
4.			
	105	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rubus spectabilis* / Salmon berry, Salmonberry	20	Yes	FAC
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Equisetum arvense* / Common horsetail	50	Yes	FAC
2. *Polystichum munitum* / Western sword fern	50	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Statum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	150	x 3 =	450
FACU species	75	x 4 =	300
UPL species	0	x 5 =	0
Column Totals:	225 (A)		750 (B)

Prevalence Index = B/A = 3.33

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: TP A2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 5/3	100					Sandy Loam	Hit refusal due to roots below

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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 X

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 (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ 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 (minimum of two required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 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 (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

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

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, & Coast

Project/Site: 1984 Larkin | City/County: King County | Sampling Date: 09/01/2023
Applicant/Owner: Matt Larkin | State: WA | Sampling Point: TP A3
Investigator(s): KF, PC | Section, Township, Range: Section 15, T26N, R5E
Landform (hillslope, terrace, etc): Hillslope | Local relief (concave, convex, none): concave | Slope (%): 2
Subregion (LRR): A | Lat: 47.74251654 | Long: -122.14553591 | Datum: NAD83
Soil Map Unit Name: Indianola Loamy Sand | NWI classification: Palustrine forested
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer macrophyllum* / Bigleaf maple, Big-leaf maple	20	Yes	FACU
2. *Alnus rubra* / Red alder	20	Yes	FAC
3. *Thuja plicata* / Western red cedar, Western red cedar, Canoe	10	No	FAC
4. *Acer circinatum* / Vine maple	10	No	FAC
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rubus armeniacus* / Himalayan blackberry	50	Yes	FAC
2. *Cornus sericea ssp. sericea* / Red osier dogwood	25	Yes	FACW
3. *Rubus spectabilis* / Salmon berry, Salmonberry	10	No	FAC
4. *Acer circinatum* / Vine maple	5	No	FAC
5.			
	90	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Lysichiton americanus* / Yellow skunk cabbage, Yellow skunk	40	Yes	OBL
2. *Equisetum arvense* / Common horsetail	15	Yes	FAC
3. *Polystichum munitum* / Western sword fern	10	No	FACU
4. *Blechnum spicant* / Deer fern	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Statum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	25	x 2 =	50
FAC species	125	x 3 =	375
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	220 (A)		585 (B)

Prevalence Index = B/A = 2.66

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: TP A3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 2/1	100				M	Muck	Muck, some wood embedded at 11 inches,
13-16	10YR 2/2	100					Sandy Clay	Grayish, lot of wood below, more greasy th
16-18								Woody material/organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: 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]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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 X No ___

Remarks:

The soil does not meet any of the formal definitions for a hydric soil likely due to the proximity to disturbed areas near a roadside ditch.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ 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 (minimum of two required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 2

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, & Coast

Project/Site: 1984 Larkin | City/County: King County | Sampling Date: 09/01/2023
Applicant/Owner: Matt Larkin | State: WA | Sampling Point: TP A4
Investigator(s): KF, PC | Section, Township, Range: Section 15, T26N, R5E
Landform (hillslope, terrace, etc): Hillslope | Local relief (concave, convex, none): concave | Slope (%): 2
Subregion (LRR): A | Lat: 47.74247416 | Long: -122.14542686 | Datum: NAD83
Soil Map Unit Name: Indianola Loamy Sand | NWI classification: Palustrine forested
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata* / Western red cedar, Western red cedar, Canoe	25	Yes	FAC
2. *Acer macrophyllum* / Bigleaf maple, Big-leaf maple	25	Yes	FACU
3. *Alnus rubra* / Red alder	20	Yes	FAC
4.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rubus armeniacus* / Himalayan blackberry	80	Yes	FAC
2. *Cornus sericea ssp. sericea* / Red osier dogwood	10	No	NI
3. *Rubus spectabilis* / Salmon berry, Salmonberry	10	No	FAC
4. *Acer circinatum* / Vine maple	5	No	FAC
5.			
	105	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Equisetum arvense* / Common horsetail	99	Yes	FAC
2. *Blechnum spicant* / Deer fern	1	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Statum ____

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: 80.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	240	x 3 =	720
FACU species	25	x 4 =	100
UPL species	10	x 5 =	50
Column Totals:	275 (A)		870 (B)

Prevalence Index = B/A = 3.16

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: TP A4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/1	100					Sandy Loam	Uniform and consistent

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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 X

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 (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ 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 (minimum of two required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 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 (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

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

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

Looks like standard forested soil, organic matter with porous soil

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, & Coast

Project/Site: 1984 Larkin | City/County: King County | Sampling Date: 09/13/2023
Applicant/Owner: Matt Larkin | State: WA | Sampling Point: TP B1
Investigator(s): KE, KF | Section, Township, Range: Section 15, T26N, R5E
Landform (hillslope, terrace, etc): Hillslope | Local relief (concave, convex, none): concave | Slope (%):
Subregion (LRR): A | Lat: 47.74249308 | Long: -122.14235922 | Datum: NAD83
Soil Map Unit Name: Indianola Loamy Sand | NWI classification: Palustrine forested
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:
Drier than normal conditions

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1. *Acer macrophyllum* / Bigleaf maple, Big-leaf maple	45	Yes	FACU
2. *Thuja plicata* / Western red cedar, Western red cedar, Canoe	30	Yes	FAC
3. *Pseudotsuga menziesii* / Douglas fir	15	No	FACU
4.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Polystichum munitum* / Western sword fern	50	Yes	FACU
2. *Acer circinatum* / Vine maple	25	Yes	FAC
3. *Acer circinatum* / Vine maple	10	No	FAC
4. *Oemleria cerasiformis* / Oso berry	5	No	FACU
5. *Rubus spectabilis* / Salmon berry, Salmonberry	5	No	FAC
	95	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Lysichiton americanus* / Yellow skunk cabbage, Yellow skunk	25	Yes	OBL
2. *Athyrium cyclosorum* / Western lady fern	15	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Hedera helix* / English ivy	2	Yes	FACU
2. *Rubus ursinus* / California blackberry	1	Yes	FACU
	3	= Total Cover	

% Bare Ground in Herb Statum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	0	x 2 =	0
FAC species	85	x 3 =	255
FACU species	118	x 4 =	472
UPL species	0	x 5 =	0
Column Totals:	228 (A)		752 (B)

Prevalence Index = B/A = 3.3

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: TP B1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1								organics
1-10	10YR 3/2						Sandy Loam	woody material/small roots
10-17	10YR 4/1	95	7.5YR 3/4	5		PL	Sandy Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: 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)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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 X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ 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 (minimum of two required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 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 (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 18

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 14

Wetland Hydrology Present? Yes X No ___

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

Remarks:

close to stream

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys, & Coast

Project/Site: 1984 Larkin | City/County: King County | Sampling Date: 09/13/2023
Applicant/Owner: Matt Larkin | State: WA | Sampling Point: TP B2
Investigator(s): KE, KF | Section, Township, Range: Section 15, T26N, R5E
Landform (hillslope, terrace, etc): Hillslope | Local relief (concave, convex, none): concave | Slope (%):
Subregion (LRR): A | Lat: 47.74252128 | Long: -122.14239238 | Datum: NAD83
Soil Map Unit Name: Indianola Loamy Sand | NWI classification: Palustrine Forested
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Drier than normal conditions

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer macrophyllum* / Bigleaf maple, Big-leaf maple	50	Yes	FACU
2. *Thuja plicata* / Western red cedar, Western red cedar, Canoe	40	Yes	FAC
3. *Pseudotsuga menziesii* / Douglas fir	5	No	FACU
4.			
	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Acer circinatum* / Vine maple	20	Yes	FAC
2. *Acer circinatum* / Vine maple	5	No	FAC
3. *Vaccinium parvifolium* / Red bilberry, Red huckleberry	5	No	FACU
4. *Oemleria cerasiformis* / Oso berry	5	No	FACU
5. *Rubus spectabilis* / Salmon berry, Salmonberry	2	No	FAC
	37	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Polystichum munitum* / Western sword fern	75	Yes	FACU
2. *Athyrium cyclosorum* / Western lady fern	1	No	FAC
3.	25		
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	101	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. *Hedera helix* / English ivy	1	Yes	FACU
2. *Rubus ursinus* / California blackberry	1	Yes	FACU
	2	= Total Cover	

% Bare Ground in Herb Statum ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	68	x 3 =	204
FACU species	142	x 4 =	568
UPL species	25	x 5 =	125
Column Totals:	235 (A)		897 (B)

Prevalence Index = B/A = 3.82

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: TP B2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9								organics/roots
9-15	10YR 3/4	100					Sandy Loam	very dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: 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]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ 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 X

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 (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ 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 (minimum of two required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 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 (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): 18

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

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): 14

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

Stream within vicinity

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Larkin Residence
Woodinville, WA

Appendix B
Wetland Delineation Rating Forms

PACE

Wetland name or number: Click or tap here to enter text.

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 9/1/2023

Rated by K.Englis Trained by Ecology? ☒ Yes ☐ No Date of training 10/2022

HGM Class used for rating Slope Wetland has multiple HGM classes? ☐ Y ☒ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*. Source of base aerial photo/map _____

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

1. Category of wetland based on FUNCTIONS

- ☐ **Category I** – Total score = 23 - 27
- ☐ **Category II** – Total score = 20 - 22
- ☒ **Category III** – Total score = 16 - 19
- ☐ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
			Circle the appropriate ratings	
Site Potential	M	M	M	
Landscape Potential	M	L	L	
Value	H	L	M	TOTAL
Score Based on Ratings	7	4	5	16

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC		CATEGORY
Estuarine	☐	I II
Wetland of High Conservation Value	☐	I
Bog	☐	I
Mature Forest	☐	I
Old Growth Forest	☐	I
Coastal Lagoon	☐	I II
Interdunal	☐	I II III IV
None of the above		☒

Wetland name or number: Click or tap here to enter text.

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	2
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	6
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	7

Wetland name or number: Click or tap here to enter text.

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

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

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

☒ NO – go to 2 ☐ **YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

☐ **NO – Saltwater Tidal Fringe (Estuarine)** ☐ **YES – Freshwater Tidal Fringe**

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

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☒ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

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

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

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size; ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ NO – go to 4 ☐ **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

☒ The wetland is on a slope (*slope can be very gradual*),
☒ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
☒ The water leaves the wetland **without being impounded**.

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

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

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

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
☐ The overbank flooding occurs at least once every 2 years.

☐ NO – go to 6 ☐ **YES** – The wetland class is **Riverine**

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

Wetland name or number: Click or tap here to enter text.

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

☐ NO – go to 7 ☐ **YES** – The wetland class is **Depressional**

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

☐ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number: Click or tap here to enter text.

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* 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	0
Total for D 1 Add the points in the boxes above	6

Rating of Site Potential If score is: ☐ **12-16 = H** ☒ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	1
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source: Click or tap here to enter text. Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: ☒ **3 or 4 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	0
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 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 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland 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 wetland is in the Flats class points = 5	0
Total for D 4 Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

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

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	0
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	0
Total for D 5 Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* points = 0 There are no problems with flooding downstream of the wetland. points = 0	0
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

R 1.0. Does the site have the potential to improve water quality?	
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 > ½ area of wetland — points = 4 Depressions present but cover < ½ area of wetland — points = 2 No depressions present — points = 0	0
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes) Trees or shrubs > $^2/_3$ area of the wetland — points = 8 Trees or shrubs > $^1/_3$ area of the wetland — points = 6 Herbaceous plants (> 6 in high) > $^2/_3$ area of the wetland — points = 6 Herbaceous plants (> 6 in high) > $^1/_3$ area of the wetland — points = 3 Trees, shrubs, and ungrazed herbaceous < $^1/_3$ area of the wetland — points = 0	0
Total for R 1 — Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	0
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area? Yes = 1 No = 0	0
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	0
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4 Other sources Click or tap here to enter text. Yes = 1 No = 0	0
Total for R 2 — Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3-6 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	0
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	0
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (*answer YES if there is a TMDL for the drainage in which the unit is found*) Yes = 2 No = 0	0
Total for R 3 — Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?

R 4.1. 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: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is 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	1
R 4.2. Characteristics of plants 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. These are 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 Plants do not meet above criteria points = 0	0
Total for R 4 Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

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

R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	0
Total for R 5	Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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

R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site*. The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	0
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for R 6 Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number: Click or tap here to enter text.

LAKE FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

L 1.0. Does the site have the potential to improve water quality?	
L 1.1. Average width of plants along the lakeshore *(use polygons of Cowardin classes)*: Plants are more than 33 ft (10 m) wide — points = 6 Plants are more than 16 ft (5 m) wide and <33 ft — points = 3 Plants are more than 6 ft (2 m) wide and <16 ft — points = 1 Plants are less than 6 ft wide — points = 0	0
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.* Cover of herbaceous plants is >90% of the vegetated area — points = 6 Cover of herbaceous plants is >$^{2}/_{3}$ of the vegetated area — points = 4 Cover of herbaceous plants is >$^{1}/_{3}$ of the vegetated area — points = 3 Other plants that are not aquatic bed > $^{2}/_{3}$ unit — points = 3 Other plants that are not aquatic bed in > $^{1}/_{3}$ vegetated area — points = 1 Aquatic bed plants and open water cover > $^{2}/_{3}$ of the unit — points = 0	0
Total for L 1 — Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **8-12 = H** ☐ **4-7 = M** ☐ **0-3 = L** *Record the rating on the first page*

L 2.0. Does the landscape have the potential to support the water quality function of the site?	
L 2.1. Is the lake used by power boats? Yes = 1 No = 0	0
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants? Yes = 1 No = 0	0
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil? Yes = 1 No = 0	0
Total for L 2 — Add the points in the boxes above	

Rating of Landscape Potential: If score is: ☐ **2 or 3 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

L 3.0. Is the water quality improvement provided by the site valuable to society?	
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources? Yes = 1 No = 0	0
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)? Yes = 1 No = 0	0
L 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the lake or basin in which the unit is found.* Yes = 2 No = 0	0
Total for L 3 — Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

LAKE FRINGE WETLANDS

Hydrologic Functions - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?	
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include Aquatic bed): *Choose the highest scoring description that matches conditions in the wetland.* > ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 6 > ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide — points = 4 > ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 4 Plants are at least 6 ft (2 m) wide (any type except Aquatic bed) — points = 2 Plants are less than 6 ft (2 m) wide (any type except Aquatic bed) — points = 0	0

Rating of Site Potential: If score is: ☐ **6 = M** ☐ **0-5 = L** *Record the rating on the first page*

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1 No = 0	0
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1 No = 0	0
Total for L 5	Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **2 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

L 6.0. Are the hydrologic functions provided by the site valuable to society?	
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score. There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit — points = 2 There are nature trails or other paths and recreational activities within 25 ft of OHWM — points = 1 Other resources that could be impacted by erosion — points = 1 There are no resources that can be impacted by erosion along the shores of the unit — points = 0	0

Rating of Value: If score is: ☐ **2 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number: Click or tap here to enter text.

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 1 Slope is greater than 5% points = 0	3
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area points = 6 Dense, uncut, herbaceous plants > ½ of area points = 3 Dense, woody, plants > ½ of area points = 2 Dense, uncut, herbaceous plants > ¼ of area points = 1 Does not meet any of the criteria above for plants points = 0	3
Total for S 1 Add the points in the boxes above	6

Rating of Site Potential If score is: ☐ **12 = H** ☒ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	1
Total for S 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ☒ **1-2 = M** ☐ **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	1
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the basin in which unit is found.* Yes = 2 No = 0	0
Total for S 3 Add the points in the boxes above	2

Rating of Value If score is: ☒ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland points = 1 All other conditions points = 0	1

Rating of Site Potential If score is: ☒ **1 = M** ☐ **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	0

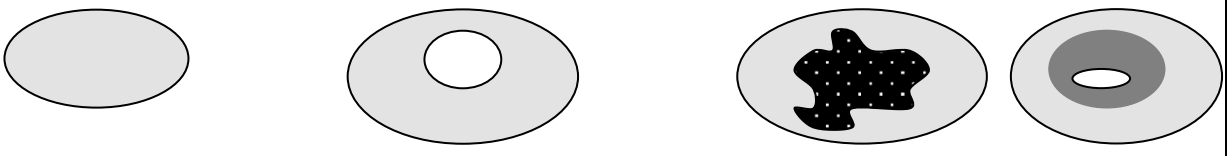
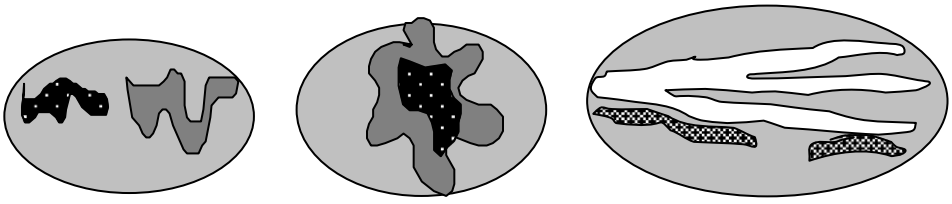
Rating of Landscape Potential If score is: ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	0
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for S 6 Add the points in the boxes above	0

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number: Click or tap here to enter text.

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: points = 4 ☐ Emergent — 3 structures: points = 2 ☒ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 ☒ Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ☒ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	2
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac 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 type present: points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☒ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — **2 points** ☐ **Freshwater tidal wetland** — **2 points**	2
H 1.3. Richness of plant species 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 and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	3

Wetland name or number: Click or tap here to enter text.

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☐ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☒ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ☐ At least ¼ ac of thin-stemmed persistent plants 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 every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	9

Rating of Site Potential If score is: ☐ **15-18 = H** ☒ **7-14 = M** ☐ **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat3**+** [(% moderate and low intensity land uses)/2]_____ **=** % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 14 **+** [(% moderate and low intensity land uses)/2] 13.5 **=** 27% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-1

Rating of Landscape Potential If score is: ☐ **4-6 = H** ☐ **1-3 = M** ☒ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	1

Rating of Value If score is: ☐ **2 = H** ☒ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

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

☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multilayered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

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

☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

☐ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

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

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

☒ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number: Click or tap here to enter text.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to **SC 1.1** ☒ No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	No
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	No
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes – Go to **SC 2.2** ☐ No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☒ No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes – **Contact WNHP/WDNR and go to SC 2.4** ☐ No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☐ No = **Not a WHCV**	No
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to **SC 3.3** ☐ No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to **SC 3.3** ☒ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☒ No = **Is not a bog**	No

Wetland name or number: Click or tap here to enter text.

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** ☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. ☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). ☐ Yes = **Category I** ☒ No = **Not a forested wetland for this section**	No
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks ☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* ☐ Yes – Go to **SC 5.1** ☒ No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. ☐ The wetland is larger than $^1/_{10}$ ac (4350 ft^2) ☐ Yes = **Category I** ☐ No = **Category II**	No
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: ☐ Long Beach Peninsula: Lands west of SR 103 ☐ Grayland-Westport: Lands west of SR 105 ☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109 ☐ Yes – Go to **SC 6.1** ☒ No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐ Yes = **Category I** ☐ No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? ☐ Yes = **Category II** ☐ No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? ☐ Yes = **Category III** ☐ No = **Category IV**	No
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	N/A

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Wetland name or number: Click or tap here to enter text.

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B Date of site visit: 9/13/2023

Rated by K.Englis Trained by Ecology? ☒ Yes ☐ No Date of training 10/2022

HGM Class used for rating Slope Wetland has multiple HGM classes? ☐ Y ☒ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*. Source of base aerial photo/map _____

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

1. Category of wetland based on FUNCTIONS

- ☐ **Category I** – Total score = 23 - 27
- ☐ **Category II** – Total score = 20 - 22
- ☒ **Category III** – Total score = 16 - 19
- ☐ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	L	M	L	
Landscape Potential	M	M	H	
Value	H	L	L	TOTAL
Score Based on Ratings	6	5	5	16

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC		CATEGORY
Estuarine	☐	I II
Wetland of High Conservation Value	☐	I
Bog	☐	I
Mature Forest	☐	I
Old Growth Forest	☐	I
Coastal Lagoon	☐	I II
Interdunal	☐	I II III IV
None of the above		☒

Wetland name or number: Click or tap here to enter text.

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	2
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	6
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	7

Wetland name or number: Click or tap here to enter text.

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

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

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

☒ NO – go to 2 ☐ **YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

☐ **NO – Saltwater Tidal Fringe (Estuarine)** ☐ **YES – Freshwater Tidal Fringe**

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

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☒ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

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

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

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size; ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ NO – go to 4 ☐ **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

☒ The wetland is on a slope (*slope can be very gradual*),
☒ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
☒ The water leaves the wetland **without being impounded**.

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

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

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

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
☐ The overbank flooding occurs at least once every 2 years.

☐ NO – go to 6 ☐ **YES** – The wetland class is **Riverine**

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

Wetland name or number: Click or tap here to enter text.

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

☐ NO – go to 7 ☐ **YES** – The wetland class is **Depressional**

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

☐ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number: Click or tap here to enter text.

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	0
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* 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	0
Total for D 1 Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☒ **0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source: Click or tap here to enter text. Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3 or 4 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	0
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 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 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland 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 wetland is in the Flats class points = 5	0
Total for D 4 Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

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

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	0
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	0
Total for D 5 Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* points = 0 There are no problems with flooding downstream of the wetland. points = 0	0
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

R 1.0. Does the site have the potential to improve water quality?	
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 > ½ area of wetland — points = 4 Depressions present but cover < ½ area of wetland — points = 2 No depressions present — points = 0	0
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes) Trees or shrubs > $^2/_3$ area of the wetland — points = 8 Trees or shrubs > $^1/_3$ area of the wetland — points = 6 Herbaceous plants (> 6 in high) > $^2/_3$ area of the wetland — points = 6 Herbaceous plants (> 6 in high) > $^1/_3$ area of the wetland — points = 3 Trees, shrubs, and ungrazed herbaceous < $^1/_3$ area of the wetland — points = 0	0
Total for R 1 — Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	0
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area? Yes = 1 No = 0	0
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	0
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4 Other sources Click or tap here to enter text. Yes = 1 No = 0	0
Total for R 2 — Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3-6 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	0
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	0
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (*answer YES if there is a TMDL for the drainage in which the unit is found*) Yes = 2 No = 0	0
Total for R 3 — Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?

R 4.1. 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: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is 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	1
R 4.2. Characteristics of plants 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. These are 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 Plants do not meet above criteria points = 0	0
Total for R 4 Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

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

R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	0
Total for R 5	Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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

R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site*. The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	0
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for R 6 Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number: Click or tap here to enter text.

LAKE FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

L 1.0. Does the site have the potential to improve water quality?	
L 1.1. Average width of plants along the lakeshore *(use polygons of Cowardin classes)*: Plants are more than 33 ft (10 m) wide — points = 6 Plants are more than 16 ft (5 m) wide and <33 ft — points = 3 Plants are more than 6 ft (2 m) wide and <16 ft — points = 1 Plants are less than 6 ft wide — points = 0	0
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.* Cover of herbaceous plants is >90% of the vegetated area — points = 6 Cover of herbaceous plants is >$^{2}/_{3}$ of the vegetated area — points = 4 Cover of herbaceous plants is >$^{1}/_{3}$ of the vegetated area — points = 3 Other plants that are not aquatic bed > $^{2}/_{3}$ unit — points = 3 Other plants that are not aquatic bed in > $^{1}/_{3}$ vegetated area — points = 1 Aquatic bed plants and open water cover > $^{2}/_{3}$ of the unit — points = 0	0
Total for L 1 — Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **8-12 = H** ☐ **4-7 = M** ☐ **0-3 = L** *Record the rating on the first page*

L 2.0. Does the landscape have the potential to support the water quality function of the site?	
L 2.1. Is the lake used by power boats? Yes = 1 No = 0	0
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants? Yes = 1 No = 0	0
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil? Yes = 1 No = 0	0
Total for L 2 — Add the points in the boxes above	

Rating of Landscape Potential: If score is: ☐ **2 or 3 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

L 3.0. Is the water quality improvement provided by the site valuable to society?	
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources? Yes = 1 No = 0	0
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)? Yes = 1 No = 0	0
L 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the lake or basin in which the unit is found.* Yes = 2 No = 0	0
Total for L 3 — Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

LAKE FRINGE WETLANDS

Hydrologic Functions - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?	
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include Aquatic bed): *Choose the highest scoring description that matches conditions in the wetland.* > ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 6 > ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide — points = 4 > ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 4 Plants are at least 6 ft (2 m) wide (any type except Aquatic bed) — points = 2 Plants are less than 6 ft (2 m) wide (any type except Aquatic bed) — points = 0	0

Rating of Site Potential: If score is: ☐ **6 = M** ☐ **0-5 = L** *Record the rating on the first page*

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1 No = 0	0
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1 No = 0	0
Total for L 5	Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **2 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

L 6.0. Are the hydrologic functions provided by the site valuable to society?	
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score. There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit — points = 2 There are nature trails or other paths and recreational activities within 25 ft of OHWM — points = 1 Other resources that could be impacted by erosion — points = 1 There are no resources that can be impacted by erosion along the shores of the unit — points = 0	0

Rating of Value: If score is: ☐ **2 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number: Click or tap here to enter text.

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 1 Slope is greater than 5% points = 0	1
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area points = 6 Dense, uncut, herbaceous plants > ½ of area points = 3 Dense, woody, plants > ½ of area points = 2 Dense, uncut, herbaceous plants > ¼ of area points = 1 Does not meet any of the criteria above for plants points = 0	2
Total for S 1 Add the points in the boxes above	3

Rating of Site Potential If score is: ☐ **12 = H** ☐ **6-11 = M** ☒ **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	0
Total for S 2 Add the points in the boxes above	1

Rating of Landscape Potential If score is: ☒ **1-2 = M** ☐ **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	1
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the basin in which unit is found.* Yes = 2 No = 0	0
Total for S 3 Add the points in the boxes above	2

Rating of Value If score is: ☒ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland points = 1 All other conditions points = 0	1

Rating of Site Potential If score is: ☒ **1 = M** ☐ **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	1

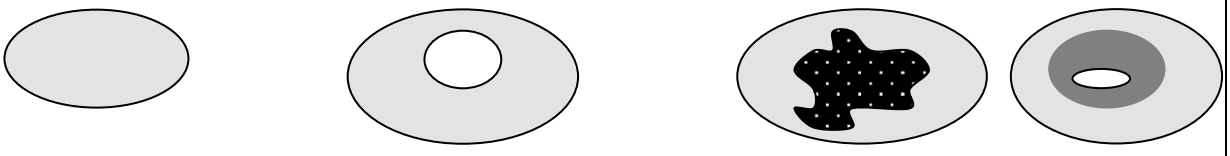
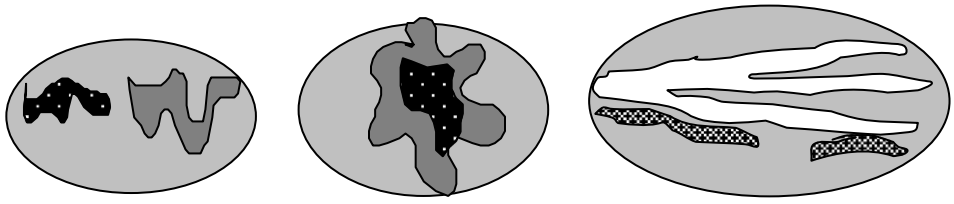
Rating of Landscape Potential If score is: ☒ **1 = M** ☐ **0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	0
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for S 6 Add the points in the boxes above	0

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number: Click or tap here to enter text.

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: points = 4 ☐ Emergent — 3 structures: points = 2 ☐ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 ☒ Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	1
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac 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 type present: points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☒ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — **2 points** ☐ **Freshwater tidal wetland** — **2 points**	1
H 1.3. Richness of plant species 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 and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

Wetland name or number: Click or tap here to enter text.

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☐ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☐ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ☐ At least ¼ ac of thin-stemmed persistent plants 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 every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	4

Rating of Site Potential If score is: ☐ **15-18 = H** ☐ **7-14 = M** ☒ **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 **+** [(% moderate and low intensity land uses)/2] 23 **=** 23% If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	2
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 14.7 **+** [(% moderate and low intensity land uses)/2] 23 **=** 37.7% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	2
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	4

Rating of Landscape Potential If score is: ☒ **4-6 = H** ☐ **1-3 = M** ☐ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If score is: ☐ **2 = H** ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

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

☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multilayered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

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

☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

☐ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

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

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

☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number: Click or tap here to enter text.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to **SC 1.1** ☐ No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	No
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	No
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes – Go to **SC 2.2** ☐ No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☐ No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes – **Contact WNHP/WDNR and go to SC 2.4** ☐ No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☐ No = **Not a WHCV**	No
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to **SC 3.3** ☐ No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to **SC 3.3** ☐ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No = **Is not a bog**	No

Wetland name or number: Click or tap here to enter text.

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** ☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. ☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). ☐ Yes = **Category I** ☐ No = **Not a forested wetland for this section**	No
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks ☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* ☐ Yes – Go to **SC 5.1** ☐ No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. ☐ The wetland is larger than $^1/_{10}$ ac (4350 ft^2) ☐ Yes = **Category I** ☐ No = **Category II**	No
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: ☐ Long Beach Peninsula: Lands west of SR 103 ☐ Grayland-Westport: Lands west of SR 105 ☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109 ☐ Yes – Go to **SC 6.1** ☐ No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐ Yes = **Category I** ☐ No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? ☐ Yes = **Category II** ☐ No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? ☐ Yes = **Category III** ☐ No = **Category IV**	No
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	N/A

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Wetland name or number: Click or tap here to enter text.

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland C Date of site visit: 8/24/2023

Rated by K.Englis Trained by Ecology? ☒ Yes ☐ No Date of training 10/2022

HGM Class used for rating Slope Wetland has multiple HGM classes? ☐ Y ☒ N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*. Source of base aerial photo/map _____

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

1. Category of wetland based on FUNCTIONS

☐ **Category I** – Total score = 23 - 27
☐ **Category II** – Total score = 20 - 22
☐ **Category III** – Total score = 16 - 19
☒ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
			Circle the appropriate ratings	
Site Potential	M	L	L	
Landscape Potential	L	L	H	
Value	H	L	L	**TOTAL**
Score Based on Ratings	6	3	5	14

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC		CATEGORY
Estuarine	☐	**I II**
Wetland of High Conservation Value	☐	**I**
Bog	☐	**I**
Mature Forest	☐	**I**
Old Growth Forest	☐	**I**
Coastal Lagoon	☐	**I II**
Interdunal	☐	**I II III IV**
None of the above		☒

Wetland name or number: Click or tap here to enter text.

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	2
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	6
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number: Click or tap here to enter text.

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

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

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

☒ NO – go to 2 ☐ **YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

☐ **NO – Saltwater Tidal Fringe (Estuarine)** ☐ **YES – Freshwater Tidal Fringe**

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

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☒ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

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

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

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size; ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ NO – go to 4 ☐ **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

☒ The wetland is on a slope (*slope can be very gradual*),
☒ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
☒ The water leaves the wetland **without being impounded**.

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

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

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

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
☐ The overbank flooding occurs at least once every 2 years.

☐ NO – go to 6 ☐ **YES** – The wetland class is **Riverine**

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

Wetland name or number: Click or tap here to enter text.

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

☐ NO – go to 7 ☐ **YES** – The wetland class is **Depressional**

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

☐ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number: Click or tap here to enter text.

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	0
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* 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	0
Total for D 1 Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☒ **0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source: Click or tap here to enter text. Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3 or 4 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	0
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 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 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland 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 wetland is in the Flats class points = 5	0
Total for D 4 Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

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

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	0
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	0
Total for D 5 Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* points = 0 There are no problems with flooding downstream of the wetland. points = 0	0
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

R 1.0. Does the site have the potential to improve water quality?	
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 > ½ area of wetland — points = 4 Depressions present but cover < ½ area of wetland — points = 2 No depressions present — points = 0	0
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes) Trees or shrubs > $^2/_3$ area of the wetland — points = 8 Trees or shrubs > $^1/_3$ area of the wetland — points = 6 Herbaceous plants (> 6 in high) > $^2/_3$ area of the wetland — points = 6 Herbaceous plants (> 6 in high) > $^1/_3$ area of the wetland — points = 3 Trees, shrubs, and ungrazed herbaceous < $^1/_3$ area of the wetland — points = 0	0
Total for R 1 — Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	0
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area? Yes = 1 No = 0	0
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	0
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4 Other sources Click or tap here to enter text. Yes = 1 No = 0	0
Total for R 2 — Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3-6 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	0
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	0
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (*answer YES if there is a TMDL for the drainage in which the unit is found*) Yes = 2 No = 0	0
Total for R 3 — Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion

R 4.0. Does the site have the potential to reduce flooding and erosion?

R 4.1. 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: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is 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	1
R 4.2. Characteristics of plants 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. These are 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 Plants do not meet above criteria points = 0	0
Total for R 4 Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **12-16 = H** ☐ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

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

R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	0
Total for R 5	Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **3 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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

R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site*. The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	0
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for R 6 Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number: Click or tap here to enter text.

LAKE FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

L 1.0. Does the site have the potential to improve water quality?	
L 1.1. Average width of plants along the lakeshore *(use polygons of Cowardin classes)*: Plants are more than 33 ft (10 m) wide — points = 6 Plants are more than 16 ft (5 m) wide and <33 ft — points = 3 Plants are more than 6 ft (2 m) wide and <16 ft — points = 1 Plants are less than 6 ft wide — points = 0	0
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.* Cover of herbaceous plants is >90% of the vegetated area — points = 6 Cover of herbaceous plants is >$^{2}/_{3}$ of the vegetated area — points = 4 Cover of herbaceous plants is >$^{1}/_{3}$ of the vegetated area — points = 3 Other plants that are not aquatic bed > $^{2}/_{3}$ unit — points = 3 Other plants that are not aquatic bed in > $^{1}/_{3}$ vegetated area — points = 1 Aquatic bed plants and open water cover > $^{2}/_{3}$ of the unit — points = 0	0
Total for L 1 — Add the points in the boxes above	

Rating of Site Potential If score is: ☐ **8-12 = H** ☐ **4-7 = M** ☐ **0-3 = L** *Record the rating on the first page*

L 2.0. Does the landscape have the potential to support the water quality function of the site?	
L 2.1. Is the lake used by power boats? Yes = 1 No = 0	0
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants? Yes = 1 No = 0	0
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil? Yes = 1 No = 0	0
Total for L 2 — Add the points in the boxes above	

Rating of Landscape Potential: If score is: ☐ **2 or 3 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

L 3.0. Is the water quality improvement provided by the site valuable to society?	
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources? Yes = 1 No = 0	0
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)? Yes = 1 No = 0	0
L 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the lake or basin in which the unit is found.* Yes = 2 No = 0	0
Total for L 3 — Add the points in the boxes above	

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

LAKE FRINGE WETLANDS

Hydrologic Functions - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?	
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include Aquatic bed): *Choose the highest scoring description that matches conditions in the wetland.* > ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 6 > ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide — points = 4 > ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide — points = 4 Plants are at least 6 ft (2 m) wide (any type except Aquatic bed) — points = 2 Plants are less than 6 ft (2 m) wide (any type except Aquatic bed) — points = 0	0

Rating of Site Potential: If score is: ☐ **6 = M** ☐ **0-5 = L** *Record the rating on the first page*

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1 No = 0	0
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1 No = 0	0
Total for L 5	Add the points in the boxes above	

Rating of Landscape Potential If score is: ☐ **2 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

L 6.0. Are the hydrologic functions provided by the site valuable to society?	
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score. There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit — points = 2 There are nature trails or other paths and recreational activities within 25 ft of OHWM — points = 1 Other resources that could be impacted by erosion — points = 1 There are no resources that can be impacted by erosion along the shores of the unit — points = 0	0

Rating of Value: If score is: ☐ **2 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number: Click or tap here to enter text.

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: *(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 1 Slope is greater than 5% points = 0	3
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area points = 6 Dense, uncut, herbaceous plants > ½ of area points = 3 Dense, woody, plants > ½ of area points = 2 Dense, uncut, herbaceous plants > ¼ of area points = 1 Does not meet any of the criteria above for plants points = 0	6
Total for S 1 Add the points in the boxes above	9

Rating of Site Potential If score is: ☐ **12 = H** ☒ **6-11 = M** ☐ **0-5 = L** *Record the rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____ Yes = 1 No = 0	0
Total for S 2 Add the points in the boxes above	0

Rating of Landscape Potential If score is: ☐ **1-2 = M** ☒ **0 = L** *Record the rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list*. Yes = 1 No = 0	1
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the basin in which unit is found.* Yes = 2 No = 0	0
Total for S 3 Add the points in the boxes above	2

Rating of Value If score is: ☒ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland points = 1 All other conditions points = 0	0

Rating of Site Potential If score is: ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	0

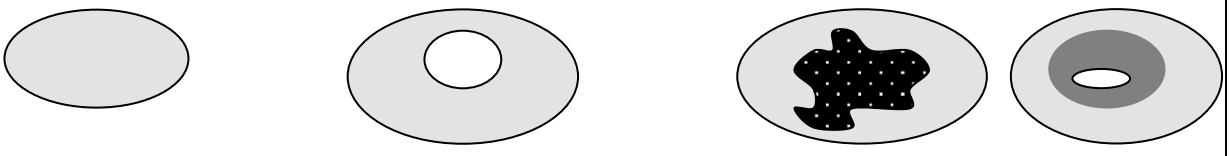
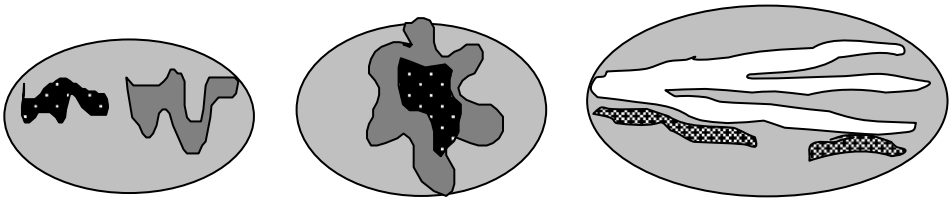
Rating of Landscape Potential If score is: ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems: The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	0
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for S 6 Add the points in the boxes above	0

Rating of Value If score is: ☐ **2-4 = H** ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number: Click or tap here to enter text.

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: points = 4 ☐ Emergent — 3 structures: points = 2 ☒ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 ☐ Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac 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 type present: points = 0 ☒ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — **2 points** ☐ **Freshwater tidal wetland** — **2 points**	2
H 1.3. Richness of plant species 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 and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

Wetland name or number: Click or tap here to enter text.

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☐ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☐ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ☐ At least ¼ ac of thin-stemmed persistent plants 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 every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	3

Rating of Site Potential If score is: ☐ **15-18 = H** ☐ **7-14 = M** ☒ **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 **+** [(% moderate and low intensity land uses)/2] 23 **=** 23% If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	2
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 14.7 **+** [(% moderate and low intensity land uses)/2] 23 **=** 37.7% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	2
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	4

Rating of Landscape Potential If score is: ☒ **4-6 = H** ☐ **1-3 = M** ☐ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If score is: ☐ **2 = H** ☐ **1 = M** ☒ **0 = L** *Record the rating on the first page*

Wetland name or number: Click or tap here to enter text.

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

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

☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multilayered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

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

☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

☐ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

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

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

☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number: Click or tap here to enter text.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to **SC 1.1** ☐ No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	No
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	No
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes – Go to **SC 2.2** ☐ No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☐ No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes – **Contact WNHP/WDNR and go to SC 2.4** ☐ No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☐ No = **Not a WHCV**	No
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to **SC 3.3** ☐ No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to **SC 3.3** ☐ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No = **Is not a bog**	No

Wetland name or number: Click or tap here to enter text.

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** ☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. ☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). ☐ Yes = **Category I** ☐ No = **Not a forested wetland for this section**	No
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks ☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* ☐ Yes – Go to **SC 5.1** ☐ No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. ☐ The wetland is larger than $^1/_{10}$ ac (4350 ft^2) ☐ Yes = **Category I** ☐ No = **Category II**	No
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: ☐ Long Beach Peninsula: Lands west of SR 103 ☐ Grayland-Westport: Lands west of SR 105 ☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109 ☐ Yes – Go to **SC 6.1** ☐ No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐ Yes = **Category I** ☐ No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? ☐ Yes = **Category II** ☐ No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? ☐ Yes = **Category III** ☐ No = **Category IV**	No
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	N/A

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SECT. 15, TWNSP. 26N, RNG. 5E, WPM.

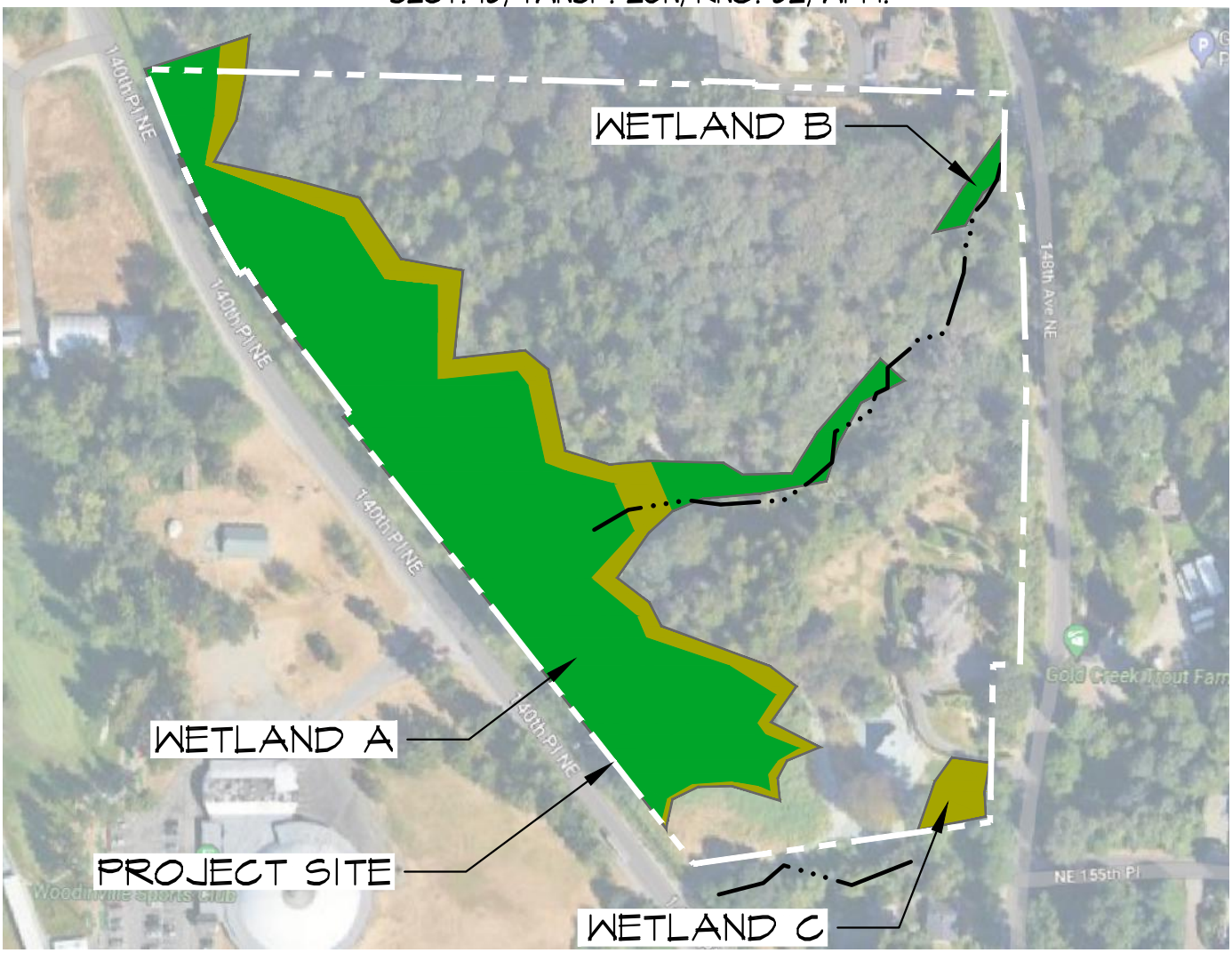

IMAGE SOURCE: AERIAL IMAGERY DERIVED FROM GOOGLE SATELLITE. FIGURES GENERATED BY PACE ENGINEERS, 2024)

LEGEND

- SCRUB SHRUB
- FORESTED

NORTH

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FIGURE #1

COWARDIN CLASSES
LARKIN PROPERTY
KING COUNTY, WA

DESIGN	DRAWN	PROJECT
	KF	1984

SCALE: NTS
DATE: 2-27-2024
REVISED:

1

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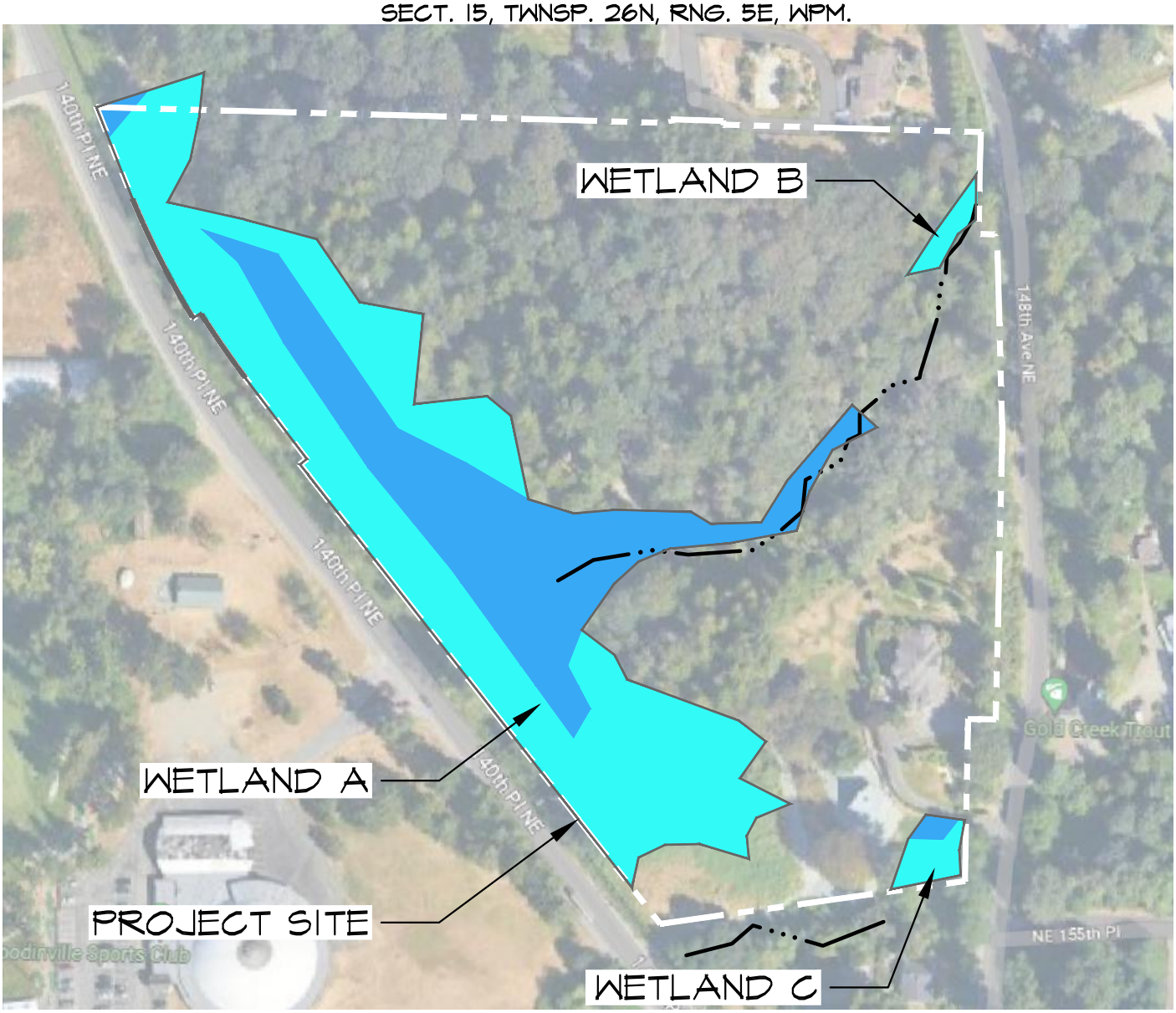

IMAGE SOURCE: AERIAL IMAGERY DERIVED FROM GOOGLE SATELLITE. FIGURES GENERATED BY PACE ENGINEERS, 2024)

LEGEND

- SEASONALLY FLOODED
- SATURATED
- STREAM

NORTH
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FIGURE #2

HYDROPERIODS
LARKIN PROPERTY
KING COUNTY, WA

DESIGN	DRAWN	PROJECT
	KF	1984

SCALE: NTS
DATE: 2-27-2024
REVISED:

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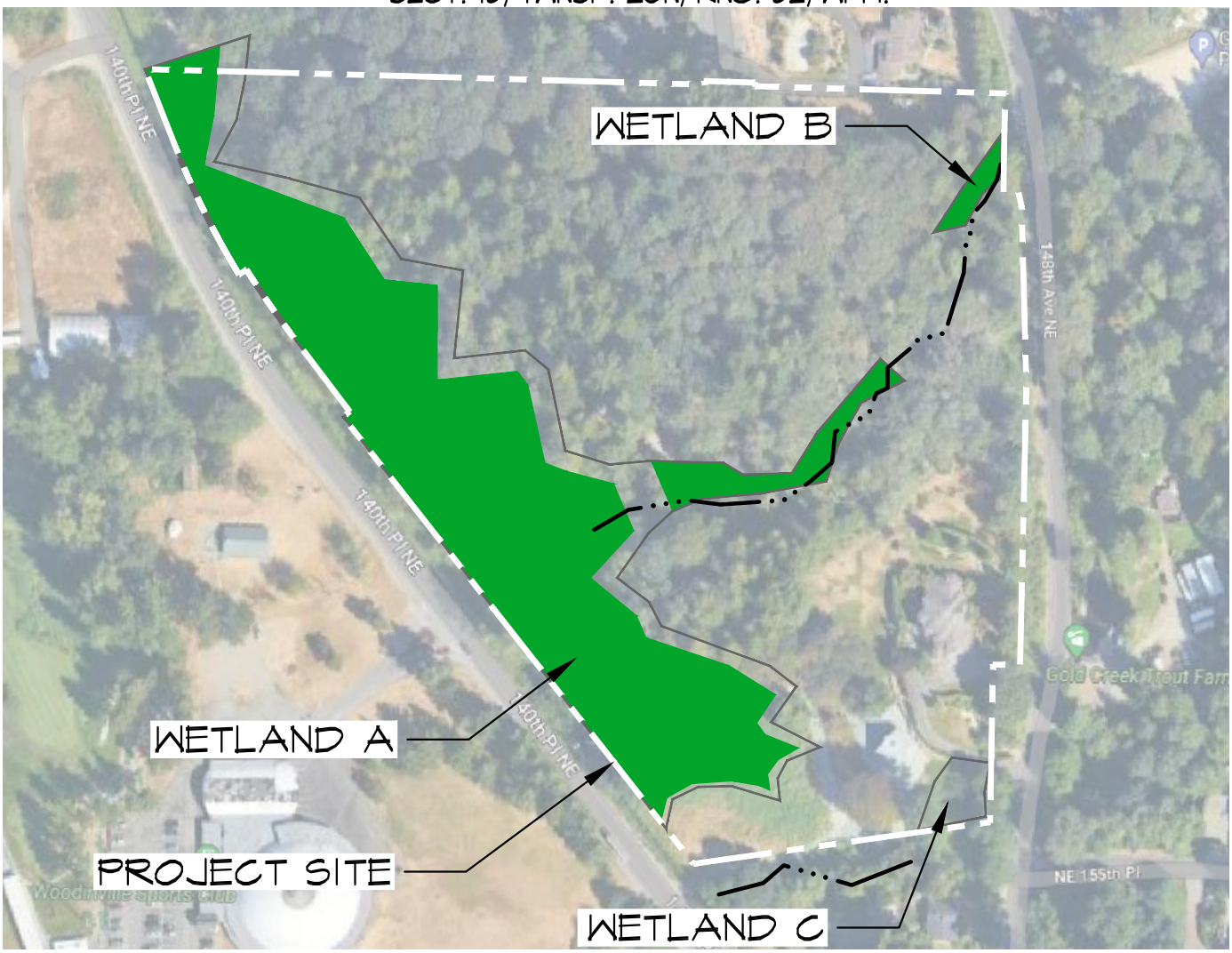

IMAGE SOURCE: AERIAL IMAGERY DERIVED FROM GOOGLE SATELLITE. FIGURES GENERATED BY PACE ENGINEERS, 2024)

LEGEND

DENSE UNCUT RIGID COVER

NORTH

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FIGURE #3

DENSE UNCUT RIGID COVER
LARKIN PROPERTY
KING COUNTY, WA

DESIGN	DRAWN	PROJECT
	KF	1984

SCALE: NTS
DATE: 2-27-2024
REVISED:

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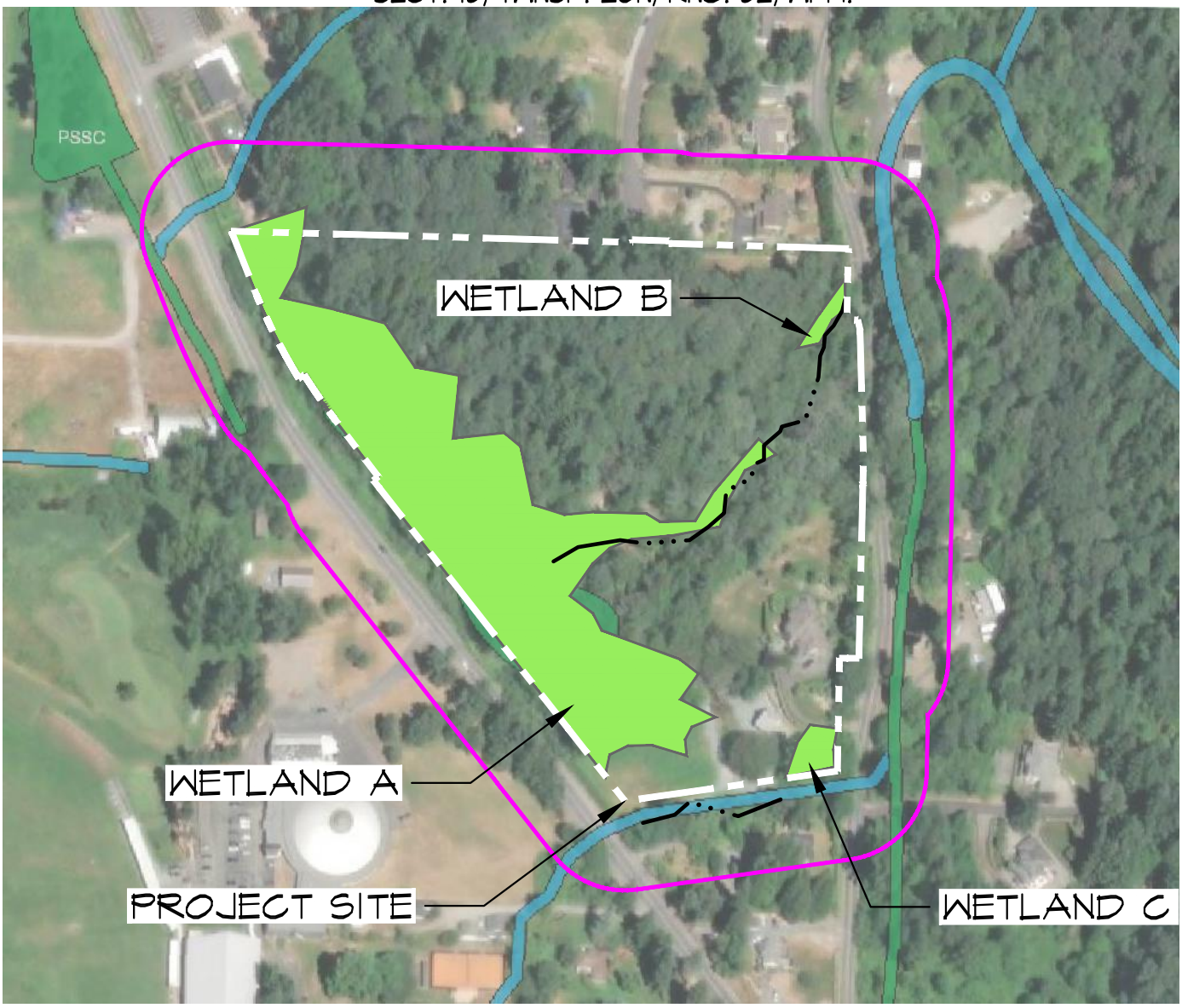

IMAGE SOURCE: AERIAL IMAGERY DERIVED FROM GOOGLE SATELLITE. FIGURES GENERATED BY PACE ENGINEERS, 2024)

LEGEND

- DELINEATED WETLAND
- RIVERINE HABITAT (NWI)
- FRESHWATER FORESTED/ SHRUB WETLAND (NWI)
- STREAM
- 150' BOUNDARY

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FIGURE #4

150-FT BOUNDARY
LARKIN PROPERTY
KING COUNTY, WA

DESIGN	DRAWN	PROJECT
	KF	1984

SCALE: NTS
DATE: 2-27-2024
REVISED:

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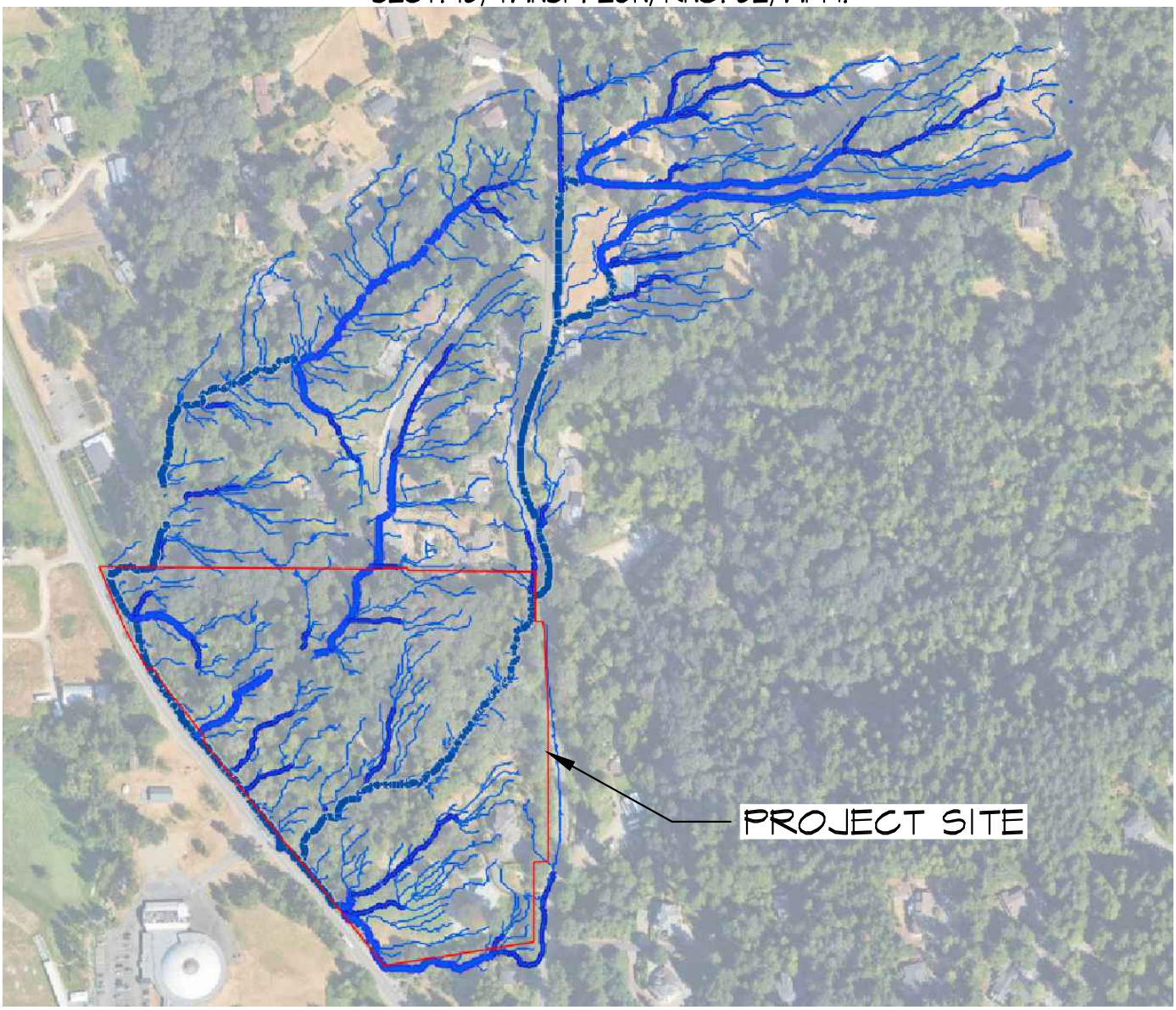

IMAGE SOURCE: AERIAL IMAGERY DERIVED FROM GOOGLE SATELLITE. FIGURES GENERATED BY PACE ENGINEERS, 2024)

LEGEND

LINES: STREAM ORDER

1	5
2	6
3	7
4	8

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FIGURE #5

MAP OF CONTRIBUTING BASINS
LARKIN PROPERTY
KING COUNTY, WA

DESIGN	DRAWN	PROJECT
	KF	1984

SCALE: NTS
DATE: 2-27-2024
REVISED:

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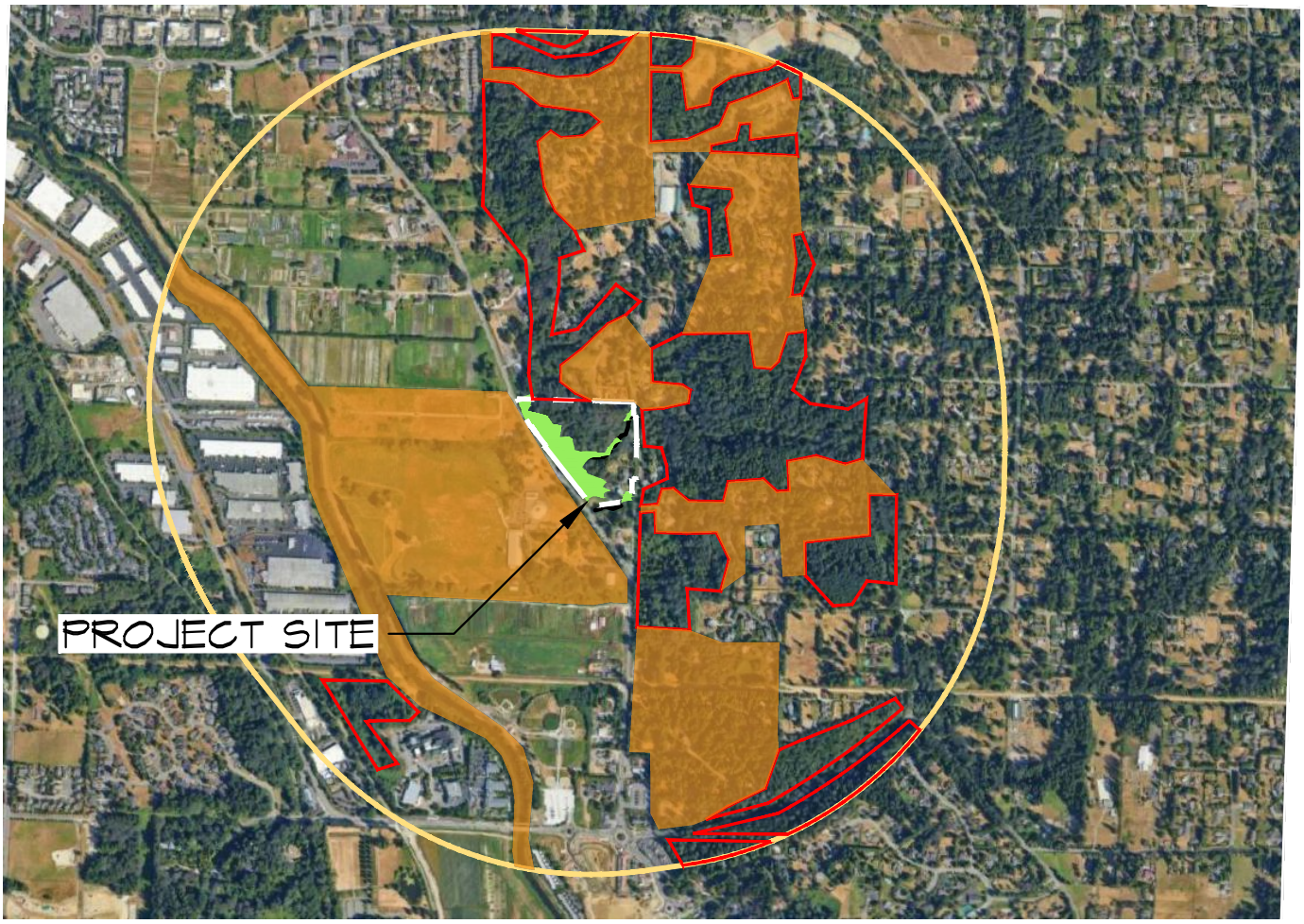

IMAGE SOURCE: AERIAL IMAGERY DERIVED FROM GOOGLE SATELLITE. FIGURES GENERATED BY PACE ENGINEERS, 2024)

LEGEND

- RELATIVELY UNDISTURBED HABITAT
- MODERATE/LOW INTENSITY LAND USE
- 1 KM RADIUS

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FIGURE #6

1 KM POLYGON
LARKIN PROPERTY
KING COUNTY, WA

DESIGN	DRAWN	PROJECT
	KF	1984

SCALE NTS

DATE 2-27-2024

REVISED

6

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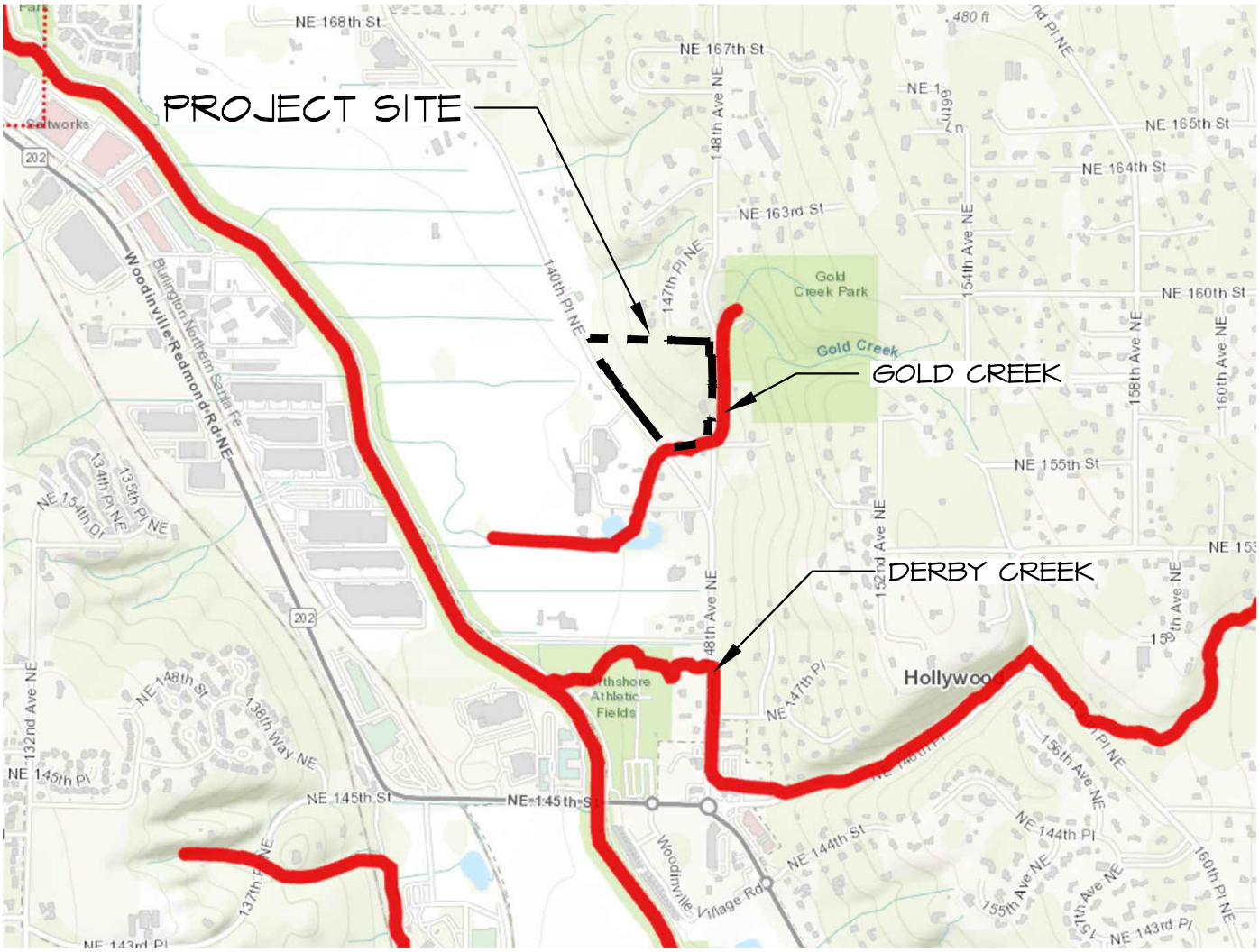

IMAGE SOURCE: WATER QUALITY ATLAS MAP; WASHINGTON STATE DEPARTMENT OF ECOLOGY; https://apps.ecology.wa.gov/waterqualityatlas/wqa/map?CustomMap=y&BBox=-14338616,5395963,-12562831,6503994&RT=0&Layers=27&Filters=y,n,n,n,n,n&FI.4=n,n,n,n,n,y (ACCESSED 9-21-2023)

LEGEND

Water

Category 5 - 303d

NORTH

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FIGURE #7

303(d) MAP
LARKIN PROPERTY
KING COUNTY, WA

DESIGN	DRAWN	PROJECT
	KF	1984

SCALE: NTS
DATE: 2-27-2024
REVISED:

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SECT. 15, TWNSP. 26N, RNG. 5E, WPM.

Water Quality Listing Policy

Listing ID: 70127

Main Listing Information

- Listing ID: 70127
- Waterbody Name: GOLD CREEK
- Medium: Other
- Parameter: Benthic Macroinvertebrates Bioassessments
- WQI Project: None
- Designated Use: Aquatic Life - General
- Current Category: 5

View Category History

Assessment Unit

- Assessment Unit ID: 17110012005142_001_001
- Size: 1.012 Kilometers
- Associated Components(s): Reach: 17110012005142 0% - 100%, Type: Rivers/Streams
- County: King
- WRIA: Cedar-Sammamish

Basis Table

Assessment Year

2018

Sampling Year	Excursion Count	Sample Count	Criterion/Threshold	Aggregate	Calculated Value	Fine Sediment Biotic Index Score	FSB Threshold	Hilsenhoff Biotic Index Score	HBI Threshold
2014	1	1	65 (Puget Lowland)	Average BIBI score	61.5	65	89	4.75	>5.5

Basis Statement

HISTORICAL INFORMATION

Location ID [08SAM2865] was sampled by King County - the Benthic Index of Biotic Integrity (B-IBI) score was 32 in 2006, 34 in 2007, 26 in 2008, 20 in 2009, 20 in 2010

Remarks

Assessment Cycle 2018 - A historical Category 5 determination was carried forward from a previous assessment or administrative decision. See Historical Basis Statement for previous assessment information.

The listing has been placed in Category 5 because the two most recent data points indicate that biological integrity is degraded or because two or more B-IBI/RIVPACS data points in the most recent five data points indicate biological degradation and the scores do not qualify for Category 1 or Category 2. A B-IBI score = 27 and a RIVPACS score less than 0.73 indicates degraded biological integrity.

Data Sources

Study Id	Location Id	Source Database
Ambient Monitoring	08SAM2865	EIM

Map Link

Map Link

Back To Results

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FIGURE #8

WRIA 8 TMDLs - GOLD CREEK
LARKIN PROPERTY
KING COUNTY, WA

DESIGN	DRAWN	PROJECT
	KF	1984

SCALE: NTS
DATE: 2-27-2024
REVISED:

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Appendix C
Site Photographs

Ivy throughout northern portion of Site

Old logging roads

Old logging roads

Barn road to be included in restoration

Gold Creek (Stream 1) and its buffer

Gold Creek (Stream 1) and its buffer

Gold Creek (Stream 1) flowing under Highway 202

Southern edge of Wetland A

Himalayan blackberry along edge of Wetland A

Himalayan blackberry along edge of Wetland A

Wetland C

Stream 2 and Wetland B

Stream 2 flowing into Wetland A

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Larkin Residence
Woodinville, WA

Appendix D

Rapid Stream Reach Survey Forms

PACE

Rapid Stream Reach Survey

Name: _Kai Farmer___ Date:__2024-02-28_____ **Time**:__8:45AM _____

Stream Name: Stream 2_____ **Reach Name/#:** _____

Section:__15_____ **Township**:__26N____ **Range**:___5E____ **Reach Length**: not measured

Reach Begins:_____ **Ends**:_____(in UTMs, Lats/Longs or river km)

Reach Landmarks: _____

Weather Conditions: ☐Clear ☐Cloudy ☐Rain ☒Other

Air Temperature: _____(C or F) **Recent Weather Trends**: _____

Fish:

Type/Species (If known)	# Adults	# Juveniles	# Dead	# Redds or Nests	Description and Comments

*No fish presence per Washington Department of Fish and Wildlife. See attached letter

Wildlife:

Birds

Type, Species or Track/Sign	# or Comments

Herps (Reptiles and Amphibians)

Type, Species or Track/Sign	# or Comments

Mammals

Type, Species or Track/Sign	# or Comments

Vegetation:

Type	Abundant	Moderate	Sparse	% of Reach Covered	Species Present
Conifers					
Deciduous Trees					
Shrubs					
Herbaceous					
Grasses					

			0-15	15-30	30+
Width of Riparian Zone: (Meters)	Looking Downstream:	Left Bank	☒	☐	☐
		Right Bank	☒	☐	☐

Overhead Canopy: (at least 1m above water) ☐0-25% ☒25-50% ☐50-75% ☐75-100%

Cross Section Shape:

Valley Channel

☐ ☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Channel Characteristics:

Gradient: Low☐ Moderate☐ Steep☐ _____%

Sinuosity: Straight☐ Meandering☒ Braided☐

Channel Length: _____m *divided by* Valley Length_____m *equals* Sinuosity_____

Major Stream Type: AA+☐ A☐ B☐ C☐ D☐ D☐ DA☐ E☐ F☐ G☐

Stream Banks:

Vegetation Cover: ☐Abundant ☐Moderate ☐Sparse _____%

Bank Stability: ☐Erosion in some areas ☐Erosion in many area ☐Intact
☐Collapsed in some areas ☐Collapsed in many areas

Artificial Protection: ☐None ☐<25% ☐25-50% ☐>50%

Describe and evaluate: _____

Bank Steepness: (What percent of the total length is represented by each?)

<45°_____% >45°_____% 90°__0____% undercut >90°__0____%

Reach Habitat:
or length of pool_____divided by # or length of riffle_____=pool: riffle ratio_____

Large woody debris:	☐Abundant	☐Moderate	☐Sparse	☒None
Small organic debris:	☐Abundant	☐Moderate	☒Sparse	☐None
Overhanging debris:	☐Abundant	☒Moderate	☒Sparse	☐None
Overhanging bank:	☒Abundant	☐Moderate	☐Sparse	☐None

Overhanging vegetation:	☐Abundant	☐Moderate	☒Sparse	☐None
Aquatic Vegetation:	☐Abundant	☐Moderate	☐Sparse	☒None
Boulders:	☐Abundant	☐Moderate	☐Sparse	☒None

Human Alterations:

Dredging☐	Garbage/Litter☐	Culverts☐
Channelization☐	Toxic Substances☐	Pipes☐
Diversions☐	Sewage☐	Detention Ponds☐
Dams☐	Bridges☐	Storm Drains☐
Weirs☐	Roads☒	Other_____☐
Dikes☐	Other_____☐	Other_____☐

Land Uses:

(Enter "1" if present "2" if you think the land use is impacting the stream)

Residential _____	Forestry _____	Grazing ____
Commercial ____	Mining _____	Crops _____
Industrial ____	Recreation ____	Irrigation ____

Comments on stream reach:

Larkin Residence
Woodinville, WA

Appendix E

Existing Conditions and Proposed Mitigation Plan Sheets

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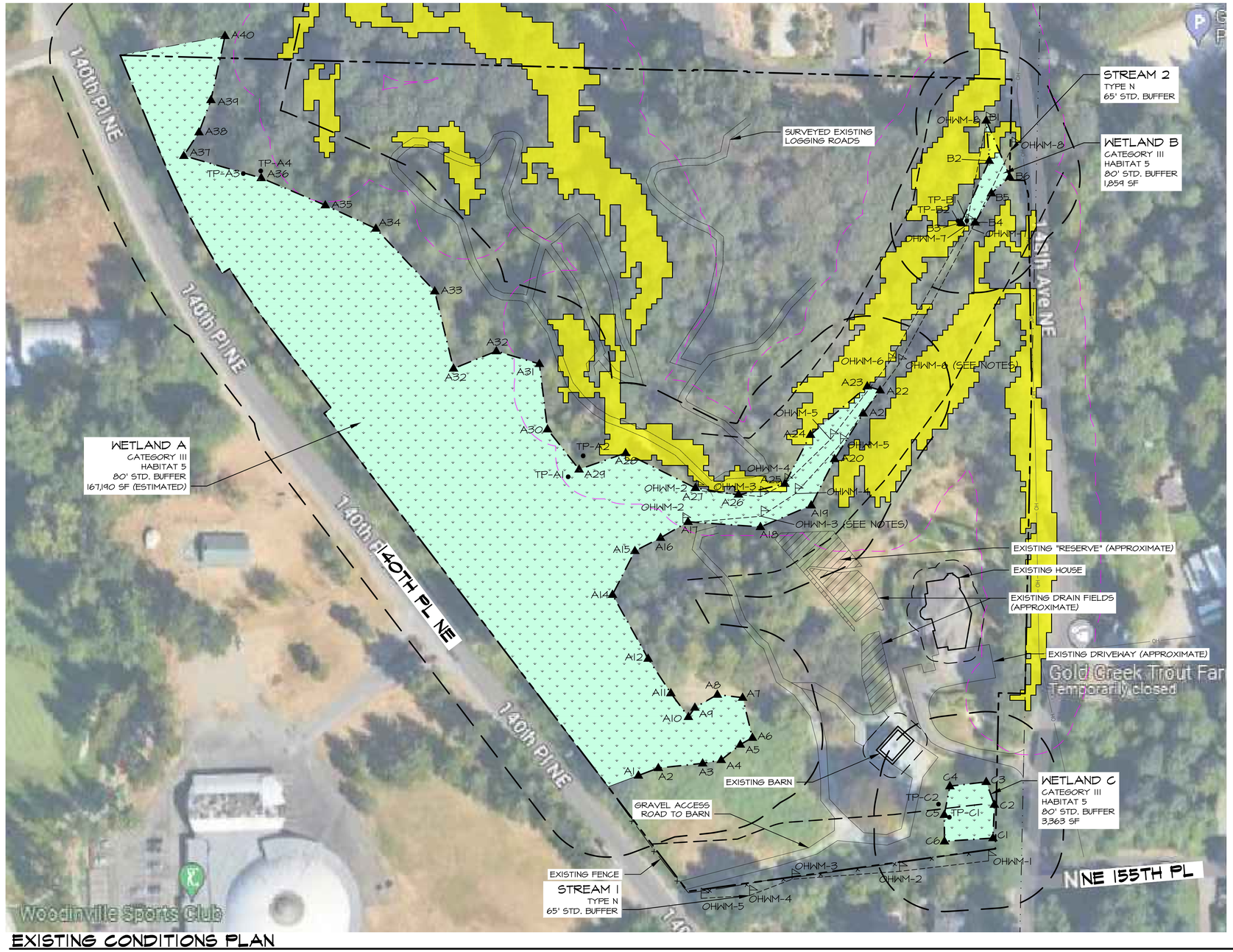


EXISTING CONDITIONS PLAN

GRAPHIC SCALE (IN FEET)
0 30 60 120
1"=60'

NORTH

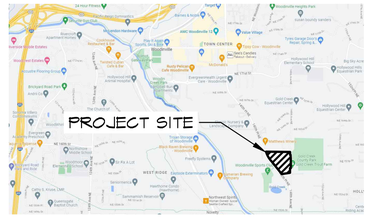
PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND (SURVEYED)
- POTENTIAL LANDSLIDE AND STEEP SLOPE AREAS (KING COUNTY IMAP (2016)
- ▲A-# WETLAND FLAG LOCATION
- •TP-# SOIL TEST PIT LOCATION
- STD. WETLAND BUFFER
- STREAM ORDINARY HIGH WATER MARK (OHWM)
- OHWM-# STREAM OHWM FLAG LOCATION
- STD. STREAM BUFFER
- STEEP SLOPE BUFFER (50')
- —x—x— EXISTING FENCE

NOTES:
1. WETLAND BOUNDARIES AND STREAM OHWM'S WERE DELINEATED BY PACE. FLAG LOCATIONS WERE SURVEYED BY LDC CORP.
2. THE WESTERN PORTION OF WETLAND A WAS NOT DELINEATED OR SURVEYED AND IS ONLY APPROXIMATE.
3. ONLY THE NORTHERN BANK OF STREAM 1 WAS DELINEATED.
4. OHWM FLAGS OHWM-3 AND OHWM-6 ON THE LEFT BANK OF STREAM 2 WERE NOT PICKED UP BY SURVEY. THE FLAG LOCATIONS ARE APPROXIMATED.
5. WETLAND FLAG A13 WAS NOT PICKED UP BY SURVEY. THIS FLAG LOCATION IS APPROXIMATED.
6. STEEP SLOPES WERE MAPPED USING KING COUNTY IMAP GIS, POTENTIAL LANDSLIDE AND STEEP SLOPE HAZARD AREAS (2016).
7. THE PROPERTY BOUNDARY, LOGGING AND ACCESS ROADS, AND BUILDING LOCATIONS WERE SURVEYED BY LDC CORP.
8. THE EXISTING DRAINFIELDS AND RESERVE LOCATIONS WERE TRACED USING A PREVIOUS SITE PLAN DATED 12 SEPTEMBER 2017. LOCATIONS AND SIZE ARE BASED ON SCALING AND ALIGNING THE DRAWINGS, AND ARE ONLY APPROXIMATIONS.
9. THE EXISTING DRIVEWAY AND THE GRAVEL ACCESS ROAD TO THE BARN WERE TRACED USING GOOGLE MAPS IMAGERY. THESE ARE ONLY APPROXIMATIONS.

VICINITY MAP

NTS



SOURCE: GOOGLE MAPS; WWW.MAPS.GOOGLE.COM (ACCESSED 7/21/2023)

NORTH

CONTACTS

APPLICANT/OWNER
NAME: MATT LARKIN
ADDRESS: 15535 148TH AVE NE WOODINVILLE, WA 98072
PHONE: (206) 734-8460
EMAIL: MATT.LARKIN@ROMAC.COM

SURVEYOR
NAME: LDC CORP
ADDRESS: 20210 142ND AVE NE WOODINVILLE, WA 98072
PHONE: (425) 892-9589
CONTACT: SEBASTIAN GARCIA
EMAIL: SGARCIA@LDCCORP.COM

ENVIRONMENTAL CONSULTANT
NAME: PACE ENGINEERS
ADDRESS: 11255 KIRKLAND WAY, SUITE 300 KIRKLAND, WA 98033
PHONE: (425) 827-2014
CONTACT: DAVE TEESDALE SENIOR ECOLOGIST
E-MAIL: DAVIDT@PACEENGRS.COM

SHEET INDEX

NOT FOR CONSTRUCTION

THESE PLANS HAVE BEEN SUBMITTED TO THE APPROPRIATE AGENCIES FOR REVIEW AND APPROVAL. UNTIL APPROVED, THESE PLANS ARE:

SUBJECT TO REVISION

811 Know what's below. Call before you dig.

NOTES

1. SURVEY PROVIDED BY LDC CORP 20210 142ND AVE NE, WOODINVILLE, WA 98072, (425) 892-9589.
2. SOURCE DRAWING WAS MODIFIED BY PACE ENGINEERS FOR VISUAL ENHANCEMENT.
3. THIS PLAN IS AN ATTACHMENT TO THE CRITICAL AREAS REPORT PREPARED BY PACE ENGINEERS IN APRIL, 2024.

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Phone: 425.827.2014
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CRITICAL AREAS MITIGATION & RESTORATION PLAN
EXISTING CONDITIONS PLAN
LARKIN PROPERTY
KING COUNTY, WA

Revisions	Date	By

Date 4-22-2024
Scale AS NOTED
Designed
Drawn KF
Checked DT
Approved DT

Project #1984

Sheet # W1.0

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Plotted: April 22, 2024

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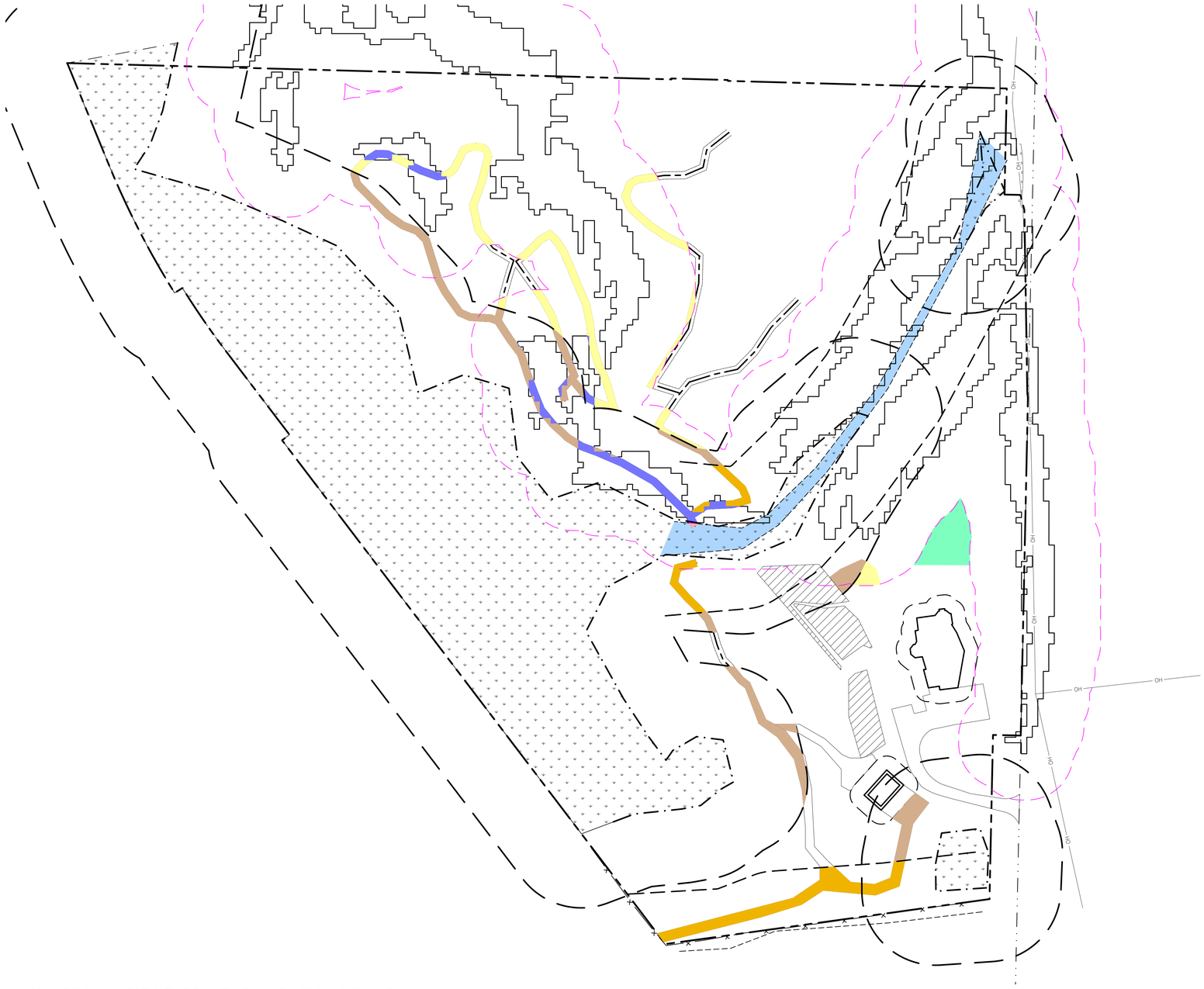
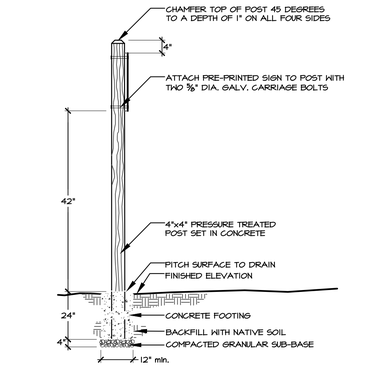
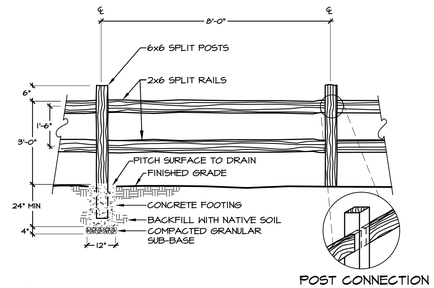




1 CRITICAL AREA SIGN
N.T.S.



SPLIT-RAIL FENCE DETAIL
N.T.S.

IMPACTS & RESTORATION OVERVIEW PLAN

GRAPHIC SCALE (IN FEET)
0 30 60 120
1"=60'

NORTH

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND
- POTENTIAL LANDSLIDE AND STEEP SLOPE AREAS (KING COUNTY IMAP (2016)
- WETLAND BUFFER
- STREAM ORDINARY HIGH WATER MARK (OHWM)
- STREAM BUFFER
- STEEP SLOPE BUFFER (50')
- POST-CONSTRUCTION BUFFER / 2-RAIL FENCE
- 15' BUILDING SETBACK LINE

IMPACTS LEGEND

DIRECT IMPACTS

WETLAND IMPACTS CAT. III (WETLAND CREATION 2:1, WETLAND ENHANCEMENT/REHABILITATION 4:1)	13 SF
STREAM IMPACTS TYPE N (1:1)	26 SF
STEEP SLOPE IMPACTS (1:1)	2,484 SF
TOTAL DIRECT IMPACTS:	2,523 SF

BUFFER IMPACTS

WETLAND BUFFER IMPACTS (1:1)	7,884 SF
STREAM BUFFER IMPACTS (1:1)	4,888 SF
STEEP SLOPE BUFFER IMPACTS (1:1)	6,668 SF
TOTAL BUFFER IMPACTS:	19,440 SF
BUFFER AVERAGING FROM PREVIOUS PERMIT	2,614 SF

NOT FOR CONSTRUCTION

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CRITICAL AREAS MITIGATION & RESTORATION PLAN
IMPACTS OVERVIEW PLAN
LARKIN PROPERTY
KING COUNTY, WA

Revisions	Date	By

Date 4-22-2024
Scale AS NOTED
Designed
Drawn KF
Checked DT
Approved DT

Project #1984

Sheet # W2.0

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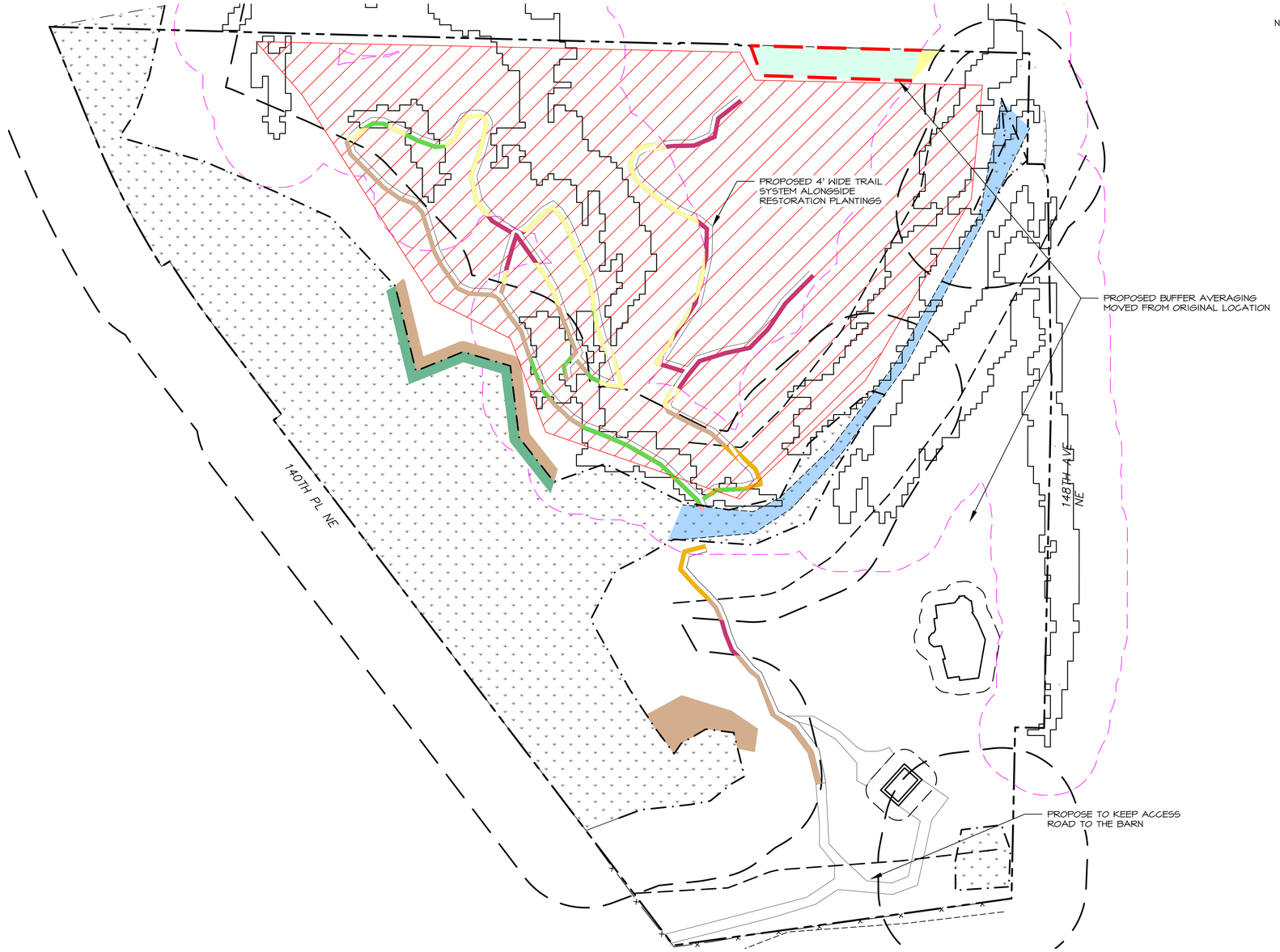
SECT. 15, TWNSP. 26N, RNG. 5E, WPM.



NOTES:
1. ENGLISH IVY IS LOCATED THROUGHOUT THE NORTHERN PORTION OF THE SITE, BUT IT DOES NOT ENCOMPASS THE ENTIRE AREA. ENGLISH IVY WILL BE REMOVED/MAINTAINED WHERE IT IS FOUND IN THE DESIGNATED AREA.

GRADING PLAN

GRAPHIC SCALE (IN FEET)
0 X X X
X"=X'

NORTH

PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND
- POTENTIAL LANDSLIDE AND STEEP SLOPE AREAS (KING COUNTY IMAP (2016)
- WETLAND BUFFER
- STREAM ORDINARY HIGH WATER MARK (OHWM)
- STREAM BUFFER
- STEEP SLOPE BUFFER (50')
- 15' BUILDING SETBACK LINE

MITIGATION & RESTORATION LEGEND

WETLAND MITIGATION & RESTORATION

WETLAND RESTORATION (1:1)	13 SF
WETLAND ENHANCEMENT/REHABILITATION (4:1)	3,342 SF
STEEP SLOPE RESTORATION (1:1)	1,265 SF
STREAM RESTORATION (1:1)	26 SF
TOTAL DIRECT MITIGATION & RESTORATION:	4,646 SF

BUFFER MITIGATION & RESTORATION, BUFFER AVERAGING

CRITICAL AREA BUFFER CREATION (1:1)	5,486 SF
WETLAND BUFFER ENHANCEMENT/RESTORATION (1:1)	10,256 SF
STEEP SLOPE BUFFER ENHANCEMENT/RESTORATION (1:1)	3,431 SF
STREAM BUFFER ENHANCEMENT/RESTORATION (1:1)	668 SF
TOTAL BUFFER MITIGATION AND RESTORATION:	21,122 SF
NON-COMPENSATORY MITIGATION/RESTORATION	2,128 SF
ENGLISH IVY (HEDERA HELIX) REMOVAL AREA	217,738 SF

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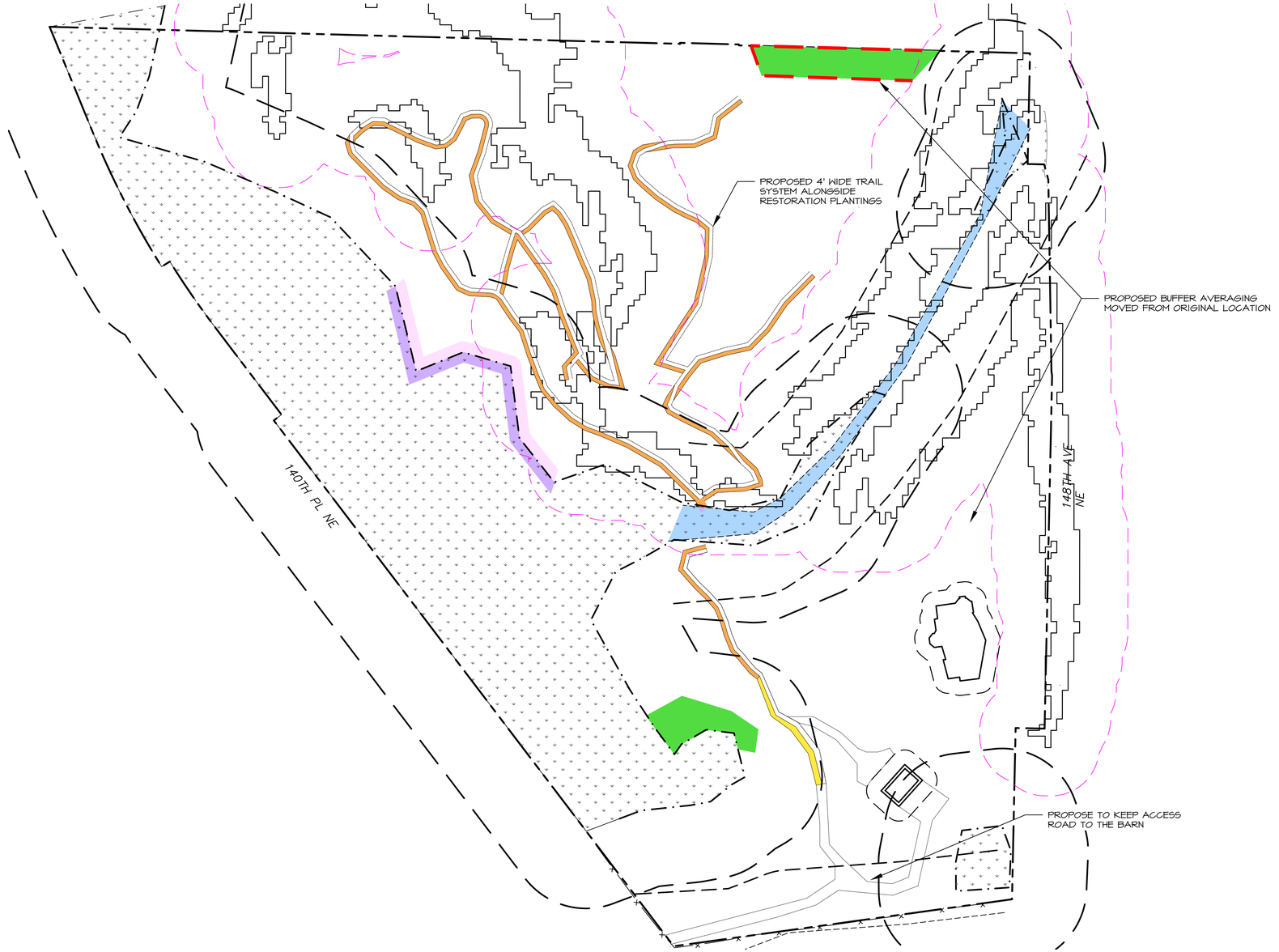

GRADING PLAN

GRAPHIC SCALE (IN FEET)

0 X X X

X"=X'

NORTH

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- PROPERTY LINE
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- STREAM ORDINARY HIGH WATER MARK (OHWM)
- STREAM BUFFER
- STEEP SLOPE BUFFER (50')
- 15' BUILDING SETBACK LINE

CANDIDATE PLANT LIST

ZONE 1: WETLAND 3,342 SF

SCIENTIFIC NAME	COMMON NAME	WL STATUS
SALIX LASIANDRA	PACIFIC WILLOW	FACW
MORELLA CALIFORNICA	PACIFIC WAX MYRTLE	FACW
PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	FACW
CORNUS ALBA	RED OSIER DOGWOOD	FACW
LONICERA INVOLUCRATA	BLACK TWINBERRY	FAC
SPIREA DOUGLASII	WESTERN SPIREA	FACW
CAREX OBNUPTA	SLOUGH SEDGE	OBL
LYSICHITON AMERICANUS	SKUNK CABBAGE	OBL

ZONE 2: MOIST WETLAND BUFFER 3,529 SF

SCIENTIFIC NAME	COMMON NAME	WL STATUS
PICEA SITCHENSIS	SITKA SPRUCE	FAC
THUJA PLICATA	WESTERN REDCEDAR	FAC
CORNUS ALBA	RED OSIER DOGWOOD	FACW
CRATAEGUS DOUGLASII	BLACK HAWTHORN	FAC
LONICERA INVOLUCRATA	BLACK TWINBERRY	FAC
ROSA NUTKANA	NOOTKA ROSE	FAC
RUBUS SPECTABILIS	SALMONBERRY	FAC
SALIX SCOULERIANA	SCOULER WILLOW	FAC
CAREX OBNUPTA	SLOUGH SEDGE	OBL
LYSICHITON AMERICANUS	SKUNK CABBAGE	OBL

ZONE 3: UPLAND WETLAND BUFFER 9,102 SF

SCIENTIFIC NAME	COMMON NAME	WL STATUS
ACER MACROPHYLLUM	BIG-LEAF MAPLE	FACU
PSEUDOTSUGA MENZIESII	DOUGLAS-FIR	FACU
AMELANCHIER ALNIFOLIA	SERVICEBERRY	FACU
HOLODISCUS DISCOLOR	OCEANSPRAY	FACU
OEMLERIA CERASIFORMIS	INDIAN PLUM	FACU
SAMBUCUS RACEMOSA	RED ELDERBERRY	FACU
MAHONIA AQUIFOLIUM	OREGON-GRAPE	FACU
ROSA GYMNOCARPA	BALDHIP ROSE	FACU
RUBUS PARVIFLORUS	THIMBLEBERRY	FACU
SYMPHORICARPOS ALBUS	COMMON SNOWBERRY	FACU

ZONE 4: SUN TOLERANT GROUNDCOVER 680 SF

SCIENTIFIC NAME	COMMON NAME	WL STATUS
ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	FACU
FRAGARIA VESCA	WOODLAND STRAWBERRY	FACU

ZONE 5: SHADE TOLERANT GROUNDCOVER 9,670 SF

SCIENTIFIC NAME	COMMON NAME	WL STATUS
GAULTHERIA SHALLON	SALAL	FACU
POLYSTICHUM MUNITUM	SWORD FERN	FACU

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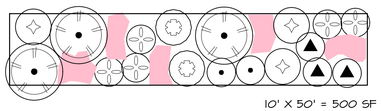
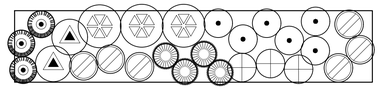


10' X 50' = 500 SF
3,324 / 500 = 6.6

ZONE 1 PLANTING TYPICAL

GRAPHIC SCALE (IN FEET)
0 5 10 20
1"=10'

NORTH

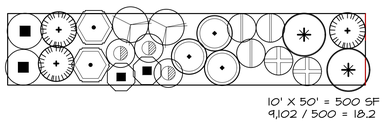


50' X 10' = 500 SF
3,324 / 500 = 7.1

ZONE 2 PLANTING TYPICAL

GRAPHIC SCALE (IN FEET)
0 5 10 20
1"=10'

NORTH



10' X 50' = 500 SF
9,102 / 500 = 18.2

ZONE 3 PLANTING TYPICAL

GRAPHIC SCALE (IN FEET)
0 5 10 20
1"=10'

NORTH

ZONE 1: WETLAND (3,324 SF)

TREES

SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY	SPACING	SIZE (MIN.)	NOTES
SALIX LASIANDRA	PACIFIC WILLOW	FACW	20	3/SYMBOL	4' CUTTING	FULL & BUSHY

SHRUBS

SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY	SPACING	SIZE (MIN.)	NOTES
MORELLA CALIFORNICA	PACIFIC WAX MYRTLE	FACW	13	AS SHOWN	BARE ROOT, 12" HT.	FULL & BUSHY
PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	FACW	20	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
CORNUS ALBA	RED OSIER DOGWOOD	FACW	13	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
LONICERA INVOLUCRATA	BLACK TWIN-BERRY	FAC	20	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
SPIREA DOUGLASII	WESTERN SPIREA	FACW	33	AS SHOWN	BARE ROOT, 12" HT.	FULL & BUSHY
CAREX OBNUPTA	SLOUGH SEDGE	OBL	80	18" O.C.	4" HT. CLUMP DIV.	
LYSICHITON AMERICANUS	SKUNK CABBAGE	OBL	40	24" O.C.	1 GAL. OR BARE ROOT RHIZOME	

ZONE 2: MOIST WETLAND BUFFER (3,529 SF)

TREES

SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY	SPACING	SIZE (MIN)	NOTES
PICEA SITCHENSIS	SITKA SPRUCE	FAC	28	AS SHOWN	PLUGS	FULL & BUSHY
THUJA PLICATA	WESTERN REDCEDAR	FAC	21	AS SHOWN	PLUGS	FULL & BUSHY

SHRUBS

SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY	SPACING	SIZE (MIN)	NOTES
CORNUS ALBA	RED-OSIER DOGWOOD	FACW	43	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
CRATAEGUS DOUGLASII	BLACK HAWTHORN	FAC	14	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
ROSA NUTKANA	NOOTKA ROSE	FAC	21	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
RUBUS SPECTABILIS	SALMONBERRY	FAC	43	AS SHOWN	BARE ROOT, 12" HT.	FULL & BUSHY
SALIX SCOULERIANA	SCOULER WILLOW	FAC	21	3/SYMBOL	4' CUTTING	½" DIA. MIN., BARK INTACT

ZONE 3: UPLAND WETLAND BUFFER (9,102 SF)

TREES

SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY	SPACING	SIZE (MIN.)	NOTES
ACER MACROPHYLLUM	BIG-LEAF MAPLE	FACU	55	AS SHOWN	BARE ROOT, 12" HT.	SINGLE TRUNK, WELL BRANCHED
PSEUDOTSUGA MENZIESII	DOUGLAS-FIR	FACU	55	AS SHOWN	PLUGS	SINGLE TRUNK, WELL BRANCHED

SHRUBS

SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY	SPACING	SIZE (MIN.)	NOTES
AMELANCHIER ALNIFOLIA	SERVICEBERRY	FACU	36	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
HOLODISCUS DISCOLOR	OCEANSPRAY	FACU	36	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
OEMLERIA CERASIFORMIS	INDIAN PLUM	FACU	36	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
SAMBUCUS RACEMOSA	RED ELDERBERRY	FACU	36	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
MAHONIA AQUIFOLIUM	OREGON-GRAPE	FACU	36	AS SHOWN	BARE ROOT, 12" HT.	FULL & BUSHY
ROSA GYMNOCARPA	BALDHIP ROSE	FACU	36	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)
RUBUS PARVIFLORUS	THIMBLEBERRY	FACU	55	AS SHOWN	BARE ROOT, 12" HT.	FULL & BUSHY
SYMPHORICARPOS ALBUS	COMMON SNOWBERRY	FACU	55	AS SHOWN	BARE ROOT, 12" HT.	MULTI-CANE (3 MIN.)

ZONE 4: SUN TOLERANT GROUNDCOVER (680 SF)

GROUND COVER

SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY	SPACING	SIZE (MIN)	NOTES
ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	FACU	150	12" O.C.	4" POT	FULL & BUSHY
FRAGARIA VESCA	WOODLAND STRAWBERRY	FACU	150	12" O.C.	4" POT	FULL & BUSHY

4' X 20' = 80 SF
680 / 80 = 8.5

ZONE 4 PLANTING TYPICAL

GRAPHIC SCALE (IN FEET)
0 5 10 20
1"=10'

NORTH

ZONE 5: SHADE TOLERANT GROUNDCOVER (9,670 SF)

GROUND COVER

SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY	SPACING	SIZE (MIN)	NOTES
GAULTHERIA SHALLON	SALAL	FACU	500	AS SHOWN	4" POT	FULL & BUSHY
POLYSTICHUM MUNITUM	SWORD FERN	FACU	500	AS SHOWN	4" POT	FULL & BUSHY

4' X 20' = 80 SF
9,670 / 80 = 120.9

ZONE 5 PLANTING TYPICAL

GRAPHIC SCALE (IN FEET)
0 5 10 20
1"=10'

NORTH

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NOTES FOR CLEARING AND GRUBBING

PART 1: GENERAL

1.1 SEQUENCING

A. GENERAL CONSTRUCTION:
1. CONTRACTOR SHALL GIVE THE PROJECT ENVIRONMENTAL CONSULTANT A MINIMUM OF TEN (10) DAYS NOTICE PRIOR TO BEGINNING CONSTRUCTION.
2. NO CONSTRUCTION WORK SHALL COMMENCE UNTIL THERE IS A MEETING BETWEEN THE CLIENT, THE PROJECT ENVIRONMENTAL CONSULTANT, GENERAL, CLEARING, AND/OR EARTHWORK CONTRACTORS, AND THE LANDSCAPE CONTRACTOR. THE APPROVED PLANS AND SPECIFICATIONS SHALL BE REVIEWED TO ENSURE THAT ALL PARTIES INVOLVED UNDERSTAND THE INTENT AND THE SPECIFIC DETAILS RELATED TO THE CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONSTRAINTS.
3. LOCATIONS OF EXISTING UTILITIES HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO: (1) INDEPENDENTLY VERIFY THE ACCURACY OF UTILITY LOCATIONS AND (2) DISCOVER AND AVOID ANY UTILITIES WITHIN THE MITIGATION PLAN AREA(S) THAT ARE NOT SHOWN, BUT WHICH MAY BE AFFECTED BY IMPLEMENTATION OF THE PLAN. SUCH AREA(S) ARE TO BE CLEARLY MARKED IN THE FIELD. THE PROJECT ENVIRONMENTAL CONSULTANT SHALL REVIEW ANY CONFLICTS WITH THE APPROVED MITIGATION PLAN PRIOR TO START OF CONSTRUCTION.
4. A COPY OF THE APPROVED PLANS MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS, AND SHALL REMAIN ON SITE UNTIL PROJECT COMPLETION.
5. CONSTRUCTION MUST BE PERFORMED IN ACCORDANCE WITH ALL AGENCY STANDARDS, RULES, CODES, PERMIT CONDITIONS, AND/OR OTHER APPLICABLE ORDINANCES AND POLICIES.
6. THE PROJECT OWNER/APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER RELATED OR REQUIRED PERMITS PRIOR TO THE START OF CONSTRUCTION.
7. A QUALIFIED ECOLOGIST SHALL BE ON SITE, AS NECESSARY, TO MONITOR MITIGATION CONSTRUCTION AND APPROVE MINOR REVISIONS TO THE PLAN.
8. DURING CONSTRUCTION, THE CONTRACTOR MUST USE MATERIALS AND CONSTRUCTION METHODS THAT PREVENT TOXIC SUBSTANCES AND OTHER POLLUTANTS FROM ENTERING MITIGATION AREAS OR OTHER NATURAL WATERS OF THE STATE.
9. PREVENTATIVE MEASURES SHALL BE USED TO PROTECT EXISTING STORM DRAINAGE SYSTEMS, EXISTING UTILITIES, AND ROADS.
10. THE CONTRACTOR SHALL PROVIDE SEDIMENT AND EROSION CONTROLS AROUND THE PROJECT AREA PRIOR TO SOIL DISTURBANCE FROM CONSTRUCTION ACTIVITY.

B. MITIGATION CONSTRUCTION: THE FOLLOWING PROVIDES THE GENERAL SEQUENCE OF ACTIVITIES ANTICIPATED TO BE NECESSARY TO COMPLETE THIS MITIGATION PROJECT. SOME OF THESE ACTIVITIES MAY BE CONDUCTED CONCURRENTLY AS THE PROJECT PROGRESSES.
1. CONDUCT A SITE MEETING BETWEEN THE CONTRACTOR, THE PROJECT ENVIRONMENTAL CONSULTANT, AND THE OWNER'S REPRESENTATIVE TO REVIEW THE PROJECT PLANS.
2. SURVEY CLEARING LIMITS.
3. INSTALL SILT FENCE AND ANY OTHER EROSION AND SEDIMENTATION CONTROL BMPS NECESSARY FOR WORK IN THE MITIGATION AREAS.
4. CLEAR AND GRUB NON-NATIVE/INVASIVE VEGETATION FROM BUFFER
5. AMEND SOIL AND PLACE LARGE WOODY MATERIAL.
6. CONSTRUCT PEDESTRIAN SOFT-SURFACE TRAIL WITHIN BUFFER.
7. COMPLETE SITE CLEANUP AND INSTALL PLANT MATERIAL AS INDICATED ON THE BUFFER MITIGATION PLANTING PLAN.
8. INSTALL SPLIT-RAIL FENCE AND CRITICAL AREA SIGNS IF REQUIRED.

1.2 PROJECT CONDITIONS

A. PROTECTION AND MAINTENANCE OF OFF-SITE AREAS: CONTRACTOR SHALL ENSURE THAT CONSTRUCTION RELATED ACTIVITIES DO NOT DAMAGE OFF-SITE FEATURES OR ADJACENT VEGETATION. THE PROJECT ENVIRONMENTAL CONSULTANT SHALL BE NOTIFIED IMMEDIATELY IF ACCIDENTAL DAMAGE OCCURS. CONTRACTOR SHALL ENSURE THAT ADJACENT ROADS ARE MAINTAINED AND KEPT CLEAR OF SOIL AND/OR OTHER DEBRIS AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL COMPLY WITH THE GOVERNING JURISDICTION'S CODES REGARDING STREET MAINTENANCE/CLEANING DURING CONSTRUCTION.

B. PLAN CHANGES AND MODIFICATIONS: ANY CHANGES OR MODIFICATIONS TO THE MITIGATION PLANS OR SPECIFICATIONS MUST RECEIVE PRIOR APPROVAL FROM THE OWNER'S REPRESENTATIVE, THE PROJECT ENVIRONMENTAL CONSULTANT, AND APPLICABLE AGENCIES.

1.3 WARRANTY

A. WARRANTY TERMS AND CONDITIONS: A CONTRACTOR-PROVIDED WARRANTY SHALL EXTEND FOR A PERIOD OF ONE YEAR FROM THE DATE OF PHYSICAL COMPLETION. PHYSICAL COMPLETION FOR THE WORK OF THIS SECTION IS THE DATE WHEN ALL CLEARING/GRUBBING, HABITAT FEATURE PLACEMENT, PLANTING, IRRIGATION, AND RELATED PHASES OF SUCH WORK HAVE BEEN COMPLETED AND ARE ACCEPTED BY THE OWNER'S REPRESENTATIVE, THE PROJECT ENVIRONMENTAL CONSULTANT, AND APPLICABLE AGENCIES.

PART 2: PRODUCTS AND MATERIALS

2.1 SOFT-SURFACE PATH

TRAIL SURFACING SHALL BE CLEAN WOODCHIPS OR REMAIN AS THE NATIVE SOIL FOUND ON THE SITE.

2.2 TOPSOIL

A. TOPSOIL: TOPSOIL THAT HAS BEEN STOCKPILED ON-SITE FOR REUSE IN PROJECT AREA(S) OR IMPORTED FROM OFF-SITE SOURCES SHALL BE FERTILE, FRIABLE, SANDY LOAM SURFACE SOIL, FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, ROOTS, STUMPS, STONES LARGER THAN 1 INCH IN ANY DIMENSION, LITTER, OR ANY OTHER EXTRANEOUS OR TOXIC MATTER HARMFUL TO PLANT GROWTH.

B. ORGANIC CONTENT: IMPORTED TOPSOIL SHALL CONSIST OF ORGANIC MATERIALS AMENDED AS NECESSARY TO PRODUCE A BULK ORGANIC CONTENT OF AT LEAST 10 PERCENT AND NOT GREATER THAN 20 PERCENT, AS DETERMINED BY AASHTO-T-194.

2.3 MULCH

A. BARK OR WOODCHIP MULCH SHALL BE DERIVED FROM DOUGLAS FIR, PINE, OR HEMLOCK SPECIES. THE MULCH SHALL NOT CONTAIN RESIN, TANNIN, OR OTHER COMPOUNDS IN QUANTITIES THAT WOULD BE DETRIMENTAL TO ANIMAL, PLANT LIFE OR WATER QUALITY. SAWDUST SHALL NOT BE USED AS MULCH.

B. MULCH SHALL BE MEDIUM-COARSE GROUND WITH AN APPROXIMATELY 3-INCH MINUS PARTICLE SIZE. FINE PARTICLES SHALL BE MINIMIZED SO THAT NOT MORE THAN 30%, BY LOOSE VOLUME, WILL PASS THROUGH A US NO. 4 SIEVE.

PART 3: EXECUTION

A. SURVEY/STAKE/FLAG LIMITS OF CLEARING:
1. PRIOR TO ANY CONSTRUCTION, A LICENSED SURVEYOR SHALL SURVEY, STAKE, AND FLAG CLEARING LIMITS. CLEARING LIMITS ARE DEPICTED ON THE MITIGATION PLANS. THE PROJECT ENVIRONMENTAL CONSULTANT SHALL REVIEW AND APPROVE FLAGGING OF CLEARING LIMITS PRIOR TO ANY VEGETATION REMOVAL. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ACTUAL LOCATIONS OF VEGETATION TO BE SAVED AND REQUEST THAT THE PROJECT ENVIRONMENTAL CONSULTANT MODIFY THE MITIGATION PLAN AS NECESSARY TO AVOID ALL SIGNIFICANT NATIVE VEGETATION.

B. FLAG AND PROTECT EXISTING VEGETATION TO REMAIN:
1. CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDING DISTURBANCE TO EXISTING VEGETATION LOCATED OUTSIDE THE CLEARING LIMITS. NO REMOVAL OF ANY VEGETATION SHALL OCCUR WITHOUT PRIOR APPROVAL BY THE PROJECT ENVIRONMENTAL CONSULTANT.
2. THE PROJECT ENVIRONMENTAL CONSULTANT SHALL FLAG EXISTING VEGETATION TO REMAIN LOCATED WITHIN THE MITIGATION AREA. FLAGGED VEGETATION SHALL NOT BE DISTURBED, UNLESS APPROVED IN WRITING BY THE PROJECT ENVIRONMENTAL CONSULTANT.
3. CONTRACTOR SHALL EXERCISE CARE TO PREVENT INJURY TO THE TRUNK, ROOTS, AND BRANCHES OF TREES AND SHRUBS TO REMAIN. ANY WOODY PLANT TO REMAIN THAT IS DAMAGED DURING CONSTRUCTION SHALL BE TREATED IMMEDIATELY AFTER DAMAGE OCCURS, AND THE PROJECT ENVIRONMENTAL CONSULTANT SHALL BE NOTIFIED OF INCIDENT. DAMAGE TREATMENT SHALL INCLUDE EVENLY CUTTING BROKEN BRANCHES, BROKEN ROOTS, AND DAMAGED TREE BARK. INJURED PLANTS SHALL BE THOROUGHLY WATERED AND ADDITIONAL MEASURES SHALL BE TAKEN, AS APPROPRIATE, TO AID IN PLANT SURVIVAL.

C. PLACE EROSION CONTROL MEASURES:
1. CONTRACTOR INSTALL SILT FENCING OR OTHER EROSION CONTROL MEASURES PRIOR TO ANY MITIGATION CONSTRUCTION ACTIVITY. THE PROJECT ENVIRONMENTAL CONSULTANT SHALL VERIFY AND APPROVE LOCATIONS OF EROSION CONTROL MEASURES WITHIN MITIGATION AREAS PRIOR TO COMMENCING MITIGATION CONSTRUCTION. EROSION CONTROL MEASURES FOR MITIGATION WORK SHALL BE COORDINATED WITH EROSION CONTROL FOR CIVIL SITE WORK AS NECESSARY.
2. CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES FOR THE DURATION OF THE PROJECT. THESE MEASURES SHALL REMAIN IN PLACE UNTIL AUTHORIZATION IS GIVEN BY THE PROJECT ENVIRONMENTAL CONSULTANT FOR REMOVAL OR LOCATION ADJUSTMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ALL EROSION CONTROL MEASURES WITHIN AND/OR ADJACENT TO SENSITIVE AREAS WHEN AUTHORIZED BY THE PROJECT ENVIRONMENTAL CONSULTANT.
3. AS CONSTRUCTION PROGRESSES AND SEASONAL CONDITIONS DICTATE, EROSION CONTROL FACILITIES SHALL BE MAINTAINED AND/OR ALTERED AS REQUIRED BY THE PROJECT ENVIRONMENTAL CONSULTANT TO ENSURE CONTINUED EROSION/SEDIMENTATION CONTROL.
4. WHERE POSSIBLE, NATURAL GROUND COVER VEGETATION SHALL BE MAINTAINED FOR EROSION CONTROL.

D. INVASIVE/NON-NATIVE VEGETATION REMOVAL FROM MITIGATION AREAS:
1. CONTRACTOR SHALL GRUB OUT ALL NON-NATIVE AND INVASIVE VEGETATION WITHIN BUFFER MITIGATION AREAS AS SHOWN ON THE MITIGATION PLANS, WITH THE EXCEPTION OF FLAGGED EXISTING VEGETATION TO REMAIN. IN AREAS OF EXISTING VEGETATION, CONTRACTOR SHALL REMOVE INVASIVE SPECIES INCLUDING, BUT ARE NOT LIMITED TO: SCOTCH BROOM, ENGLISH IVY, HIMALAYAN AND EVERGREEN BLACKBERRY, PURPLE LOOSESTRIFE, HEDGE BINDWEED (MORNING GLORY), JAPANESE KNOTWEED, CANADA THISTLE, BULL THISTLE, AND CREEPING NIGHTSHADE. INVASIVE/NON-NATIVE VEGETATION SHALL BE REMOVED BY HAND WITH MINIMAL DISTURBANCE TO THE EXISTING NATIVE VEGETATION TO REMAIN. ALL ROOTS SHALL BE REMOVED TO THE MAXIMUM EXTENT PRACTICABLE.
2. REED CANARYGRASS CONTROL: REED CANARYGRASS SHALL BE MOWED CLOSE AND TREATED WITH AN HERBICIDE APPROVED FOR USE IN AQUATIC AREAS (E.G., RODEO, OR EQUAL). HERBICIDE TREATMENT SHALL BE APPLIED THREE (3) TIMES PRIOR TO PLANTING.
3. ALL GRUBBED VEGETATION SHALL BE EXPORTED FROM THE SITE AND DISPOSED OF IN AN APPROVED MANNER FOLLOWING ALL APPLICABLE LOCAL/STATE/FEDERAL REGULATIONS.
4. THE PROJECT ENVIRONMENTAL CONSULTANT SHALL DESIGNATE ANY ADDITIONAL PLANT SPECIES TO BE REMOVED DURING MITIGATION CONSTRUCTION.

E. TOPSOIL
1. IN ALL CLEARED AND GRUBBED BUFFER MITIGATION AREAS, EXISTING SOIL SHALL BE AMENDED (OR TOPSOIL IMPORTED) TO PROVIDE A 9-INCH MINIMUM DEPTH OF TOPSOIL. NOTE: PRIOR TO PLACING TOPSOIL, SUBGRADE SHALL BE DECOMPACTED OR SCARIFIED TO A MINIMUM DEPTH OF 12" IN AREAS WHERE EXISTING PAVING AND/OR BUILDINGS WERE REMOVED.

F. INSTALL TRAIL AND FOOTBRIDGES:
6. TRAIL SHALL BE COMPRISED EITHER OF CLEAN WOODCHIPS OR REMAIN AS NATIVE SOIL CURRENTLY PRESENT WHERE THE TRAILS WILL BE.

G. MULCH CLEARED/GRUBBED BUFFER AREAS: THE PROJECT ENVIRONMENTAL CONSULTANT SHALL BE PROVIDED A MULCH SAMPLE PRIOR TO IT BEING DELIVERED TO THE SITE.
1. CONTRACTOR SHALL SPREAD MULCH OVER ALL GRADED BUFFER AREAS TO ACHIEVE A UNIFORM DEPTH OF 3 INCHES. NOTE: 3-INCH DEPTH IS THE MINIMUM AFTER SETTLING. IF MULCH IS INSTALLED BY BLOWER TRUCK IT SHALL BE INSTALLED AT A 4-INCH DEPTH TO PROVIDE A MINIMUM 3-INCH DEPTH AFTER SETTLING.

H. INSPECTIONS: PRIOR TO PLANT INSTALLATION, THE PROJECT ENVIRONMENTAL CONSULTANT SHALL APPROVE ALL CLEARING/GRUBBING WORK. IF ITEMS ARE TO BE CORRECTED, A PUNCH LIST SHALL BE PREPARED BY THE PROJECT ENVIRONMENTAL CONSULTANT AND SUBMITTED TO THE CONTRACTOR FOR COMPLETION. AFTER PUNCH LIST ITEMS HAVE BEEN COMPLETED, THE PROJECT ENVIRONMENTAL CONSULTANT SHALL REVIEW THE PROJECT FOR FINAL ACCEPTANCE OF PUNCH LIST ITEMS, AND PLANTING MAY THEN PROCEED.

I. SOIL STABILIZATION: IF THERE IS A DELAY IN CONSTRUCTION FOR ANY REASON, CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF EROSION CONTROL MEASURES, DRAINAGE, AND TEMPORARY IRRIGATION DURING CONSTRUCTION DELAY PERIOD, UNLESS OTHERWISE STATED IN WRITING.

GENERAL GRADING NOTES

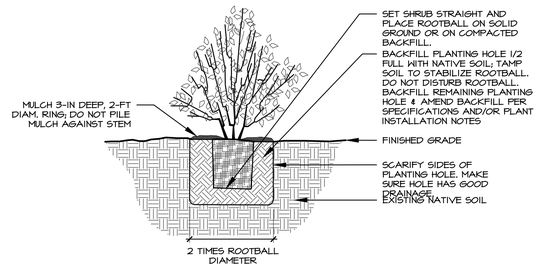
1. SILT FENCING AS SHOWN ON PLANS AND ANY OTHER NECESSARY EROSION CONTROL BMPS SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY WORK IN THE MITIGATION AREAS.
2. PROJECT BIOLOGIST AND/OR ECOLOGIST SHALL FLAG EXISTING VEGETATION TO REMAIN PRIOR TO ANY CLEARING, GRUBBING, OR GRADING WORK IN MITIGATION AREAS. ORANGE CONSTRUCTION FENCING SHALL BE INSTALLED AROUND FLAGGED VEGETATION TO REMAIN PRIOR TO WORK IN MITIGATION AREAS.
3. SEE MITIGATION GRADING SPECIFICATIONS ON SHEET W4.2 FOR DETAILED INFORMATION ON THE IMPLEMENTATION OF THIS PLAN.

MITIGATION CONSTRUCTION SEQUENCE

THE FOLLOWING PROVIDES THE GENERAL SEQUENCE OF ACTIVITIES ANTICIPATED TO BE NECESSARY TO COMPLETE THIS MITIGATION PROJECT. SOME OF THESE ACTIVITIES MAY BE CONDUCTED CONCURRENTLY AS THE PROJECT PROGRESSES.
1. CONDUCT A SITE MEETING BETWEEN THE CONTRACTOR, PROJECT BIOLOGIST AND/OR ECOLOGIST, AND THE OWNER'S REPRESENTATIVE TO REVIEW THE PROJECT PLANS, WORK AREAS, STAGING/STOCKPILE AREAS, MATERIAL DISPOSAL AREAS, AND EXISTING VEGETATION TO BE RETAINED.
2. SURVEY CLEARING/GRADING LIMITS.
3. A PROJECT BIOLOGIST OR ECOLOGIST SHALL REVIEW CLEARING LIMITS AND SHALL FLAG TREES AND OTHER EXISTING VEGETATION TO REMAIN WITHIN THE WORK AREA. A PROJECT BIOLOGIST AND/OR ECOLOGIST SHALL ALSO FLAG ANY WOODY MATERIAL TO BE SAVED AND STOCKPILED FOR LATER USE AS HABITAT FEATURES (STUMPS, SNAGS, DOWN LOGS, & BOULDERS)
4. INSTALL SILT FENCE OR ANY OTHER EROSION AND SEDIMENTATION CONTROL BMPS NECESSARY FOR WORK IN THE PROJECT AREAS.
5. INSTALL TREE PROTECTION FENCING AROUND EXISTING TREES AND VEGETATION TO REMAIN WHERE NEEDED.
6. CLEAR AND GRUB GRADING AREAS.
7. GRUB OUT ALL INVASIVE SPECIES FROM RESTORATION AND ENHANCEMENT AREAS SHOWN ON PLANS.
8. SURVEY EARTHWORK AREAS AND SET GRADE STAKES AS REQUIRED.
9. COMPLETE EXCAVATION OF MITIGATION AREAS TO SUBGRADE PER GRADING PLAN.
10. PLACE TOPSOIL WHERE GRUBBING OF EXISTING SOIL OCCURRED.
11. MULCH ALL CLEARED/GRADED BUFFER AREAS.
12. COMPLETE SITE CLEANUP AND INSTALL PLANT MATERIAL AS INDICATED ON THE MITIGATION PLAN.
13. INSTALL CRITICAL AREA FENCE & SIGNS IF REQUIRED.

GENERAL PLANT INSTALLATION NOTES

1. PLANT TREES AND/OR SHRUBS 1" HIGHER THAN DEPTH GROWN AT NURSERY.
2. FOR CONTAINER TREES AND/OR SHRUBS, SCORE FOUR SIDES OF ROOTBALL PRIOR TO PLANTING. BUTTERFLY ROOTBALL IF ROOT CIRCLING IS EVIDENT.
3. STAKE DECIDUOUS AND EVERGREEN TREES 4 FEET AND OVER IN HEIGHT WITH ONE (1) STAKE PER TREE. STAKE TREES IMMEDIATELY AFTER PLANTING. PLACE STAKE AT THE OUTER EDGE OF THE ROOTS OR ROOTBALL, IN LINE WITH THE PREVAILING WIND. STAKES SHALL BE LOOSELY ATTACHED USING CHAIN-LOCK TREE TIES TO ALLOW FOR SOME TRUNK MOVEMENT. STAKES TO BE VERTICAL, PARALLEL, EVEN-TOPPED, UNSCARRED AND DRIVEN INTO UNDISTURBED SUBGRADE. REMOVE AFTER ONE YEAR.
4. WATER PLANTS IMMEDIATELY UPON PLANTING, THEN PROVIDE MANUAL WATERING OR A TEMPORARY IRRIGATION SYSTEM TO PREVENT PLANT MORTALITY AND ENSURE PROPER PLANT ESTABLISHMENT. PLANTS SHALL RECEIVE A MINIMUM OF APPROXIMATELY ONE INCH OF WATER EVERY WEEK DURING THE DRY SEASON (GENERALLY JUNE 15TH - OCTOBER 15TH, OR EARLIER OR LATER IF CONDITIONS WARRANT) FOR THE FIRST SEASON AFTER PLANTING. IRRIGATION AMOUNTS MAY NEED TO BE INCREASED DURING PROLONGED PERIODS OF HOT, DRY WEATHER.
5. IN THE BUFFER AREAS ONLY, FERTILIZE ALL TREES AND SHRUBS WITH A SLOW-RELEASE GENERAL PURPOSE GRANULAR FERTILIZER OR SLOW-RELEASE TABLETS AT MANUFACTURER'S SPECIFIED RATE. NO FERTILIZER SHALL BE APPLIED WITHIN WETLAND AREAS.
6. IN THE BUFFER AREAS ONLY. A SOIL MOISTURE RETENTION AGENT, SUCH AS "SOILMOIST" OR EQUAL, SHALL BE INCORPORATED INTO THE BACKFILL OF EACH PLANTING PIT, PER MANUFACTURER'S INSTRUCTIONS. NO MOISTURE RETENTION AGENT SHALL BE APPLIED WITHIN WETLAND AREAS.



1 CONTAINER SHRUB PLANTING DETAIL
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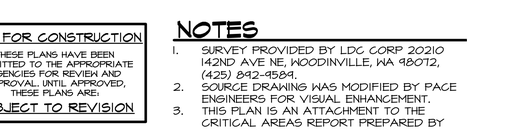

2 GROUNDCOVER INSTALLATION DETAIL
NTS

NOT FOR CONSTRUCTION

THESE PLANS HAVE BEEN SUBMITTED TO THE APPROPRIATE AGENCIES FOR REVIEW AND APPROVAL. UNTIL APPROVED, THESE PLANS ARE:

SUBJECT TO REVISION

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NOTES
1. SURVEY PROVIDED BY LDC CORP 20210 142ND AVE NE, WOODINVILLE, WA 98072, (425) 892-4584.
2. SOURCE DRAWING WAS MODIFIED BY PACE ENGINEERS FOR VISUAL ENHANCEMENT.
3. THIS PLAN IS AN ATTACHMENT TO THE CRITICAL AREAS REPORT PREPARED BY PACE ENGINEERS IN APRIL, 2024.

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CRITICAL AREAS MITIGATION & RESTORATION PLAN
CLEARING AND GRUBBING SPECIFICATIONS; PLANTING DETAILS
LARKIN PROPERTY
KING COUNTY, WA

Revisions	Date	By

Date 4-22-2024
Scale AS NOTED
Designed
Drawn KF
Checked DT
Approved DT

Project #1984

Sheet # W4.0

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Plotted April 22, 2024

PLANTING SPECIFICATIONS

PART 1: GENERAL

1.1 SEQUENCING

A. GENERAL CONSTRUCTION

1. CONTRACTOR SHALL GIVE THE PROJECT BIOLOGIST OR ECOLOGIST A MINIMUM OF TEN (10) DAYS NOTICE PRIOR TO COMMENCING CONSTRUCTION.
2. NO CONSTRUCTION WORK SHALL COMMENCE UNTIL THERE IS A MEETING BETWEEN THE CLIENT, THE PROJECT BIOLOGIST OR ECOLOGIST, THE GENERAL, CLEARING, AND/OR EARTHWORK CONTRACTORS, AND THE LANDSCAPE CONTRACTOR. THE APPROVED PLANS AND SPECIFICATIONS SHALL BE REVIEWED TO ENSURE THAT ALL PARTIES INVOLVED UNDERSTAND THE INTENT AND THE SPECIFIC DETAILS RELATED TO THE CONSTRUCTION DOCUMENTS, SPECIFICATIONS, AND SITE CONSTRAINTS.
3. LOCATIONS OF EXISTING UTILITIES HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO: (1) INDEPENDENTLY VERIFY THE ACCURACY OF UTILITY LOCATIONS, AND (2) DISCOVER AND AVOID ANY UTILITIES WITHIN THE MITIGATION AREA(S) THAT ARE NOT SHOWN, BUT WHICH MAY BE AFFECTED BY IMPLEMENTATION OF THE PLAN. SUCH AREA(S) ARE TO BE CLEARLY MARKED IN THE FIELD. THE PROJECT BIOLOGIST OR ECOLOGIST SHALL RESOLVE ANY CONFLICTS WITH THE APPROVED GRADING PLAN PRIOR TO START OF CONSTRUCTION.
4. A COPY OF THE APPROVED PLANS MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS, AND SHALL REMAIN ON SITE UNTIL PROJECT COMPLETION.
5. CONSTRUCTION MUST BE PERFORMED IN ACCORDANCE WITH ALL AGENCY STANDARDS, RULES, CODES, PERMIT CONDITIONS, AND/OR OTHER APPLICABLE ORDINANCES AND POLICIES.
6. THE PROJECT OWNER/APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER RELATED OR REQUIRED PERMITS PRIOR TO THE START OF CONSTRUCTION.
7. A QUALIFIED WETLAND CONSULTANT SHALL BE ON SITE, AS NECESSARY, TO MONITOR CONSTRUCTION AND APPROVE MINOR REVISIONS TO THE PLAN.
8. DURING CONSTRUCTION, THE CONTRACTOR MUST USE MATERIALS AND CONSTRUCTION METHODS THAT PREVENT TOXIC SUBSTANCES AND OTHER POLLUTANTS FROM ENTERING MITIGATION AREAS OR OTHER NATURAL WATERS OF THE STATE.
9. PREVENTATIVE MEASURES SHALL BE USED TO PROTECT EXISTING STORM DRAINAGE SYSTEMS, EXISTING UTILITIES, AND ROADS.
10. PROVIDE SEDIMENT AND EROSION CONTROLS AROUND THE PROJECT AREA PRIOR TO SOIL DISTURBANCE FROM CONSTRUCTION ACTIVITY.

B. MITIGATION CONSTRUCTION: THE FOLLOWING PROVIDES THE GENERAL SEQUENCE OF ACTIVITIES ANTICIPATED TO BE NECESSARY TO COMPLETE THE PLANTING PORTION OF THE MITIGATION PROJECT. SOME OF THESE ACTIVITIES MAY BE CONDUCTED CONCURRENTLY AS THE PROJECT PROGRESSES.

1. CONDUCT A SITE MEETING BETWEEN THE CONTRACTOR, THE PROJECT BIOLOGIST OR ECOLOGIST, AND THE OWNER'S REPRESENTATIVE TO REVIEW THE PROJECT PLANS, STAGING/STOCKPILE AREAS, AND MATERIAL DISPOSAL AREAS.
2. PLANT TREES AND SHRUBS AS INDICATED ON MITIGATION PLANS.
3. PLANT WETLAND EMERGENTS AND STAKES (CUTTINGS).
4. MULCH PLANTS INSTALLED IN NON-GRADED BUFFER AREAS.
5. IF IRRIGATION IS USED, INSTALL TEMPORARY IRRIGATION SYSTEM AND PROGRAM FOR 0.5 INCHES OF WATER EVERY 3 DAYS.
6. INSTALL FENCING AND CRITICAL AREA PROTECTION SIGNS IF REQUIRED.

1.2 SUBMITTALS

A. PRODUCT DATA: FURNISH THE FOLLOWING WITH EACH PLANT MATERIAL DELIVERY:

1. INVOICES INDICATING SIZES AND VARIETY OF PLANT MATERIAL.
2. CERTIFICATES OF INSPECTION REQUIRED BY STATE AND FEDERAL AGENCIES.

B. QUALITY CONTROL SUBMITTALS:

1. PRIOR TO DELIVERY OF MATERIALS, CERTIFICATES OF COMPLIANCE ATTESTING THAT MATERIALS MEET THE SPECIFIED REQUIREMENTS SHALL BE FURNISHED FOR THE FOLLOWING: PLANTS, TOPSOIL, FERTILIZER, AND ORGANIC MULCH. CERTIFIED COPIES OF THE MATERIAL CERTIFICATES SHALL INCLUDE THE FOLLOWING:
   a. PLANT MATERIALS: BOTANICAL NAME, COMMON NAME, SIZE, QUANTITY BY SPECIES, AND LOCATION WHERE GROWN.
   b. IMPORTED TOPSOIL: PARTICLE SIZE, PH, ORGANIC MATTER CONTENT, TEXTURAL CLASS, SOLUBLE SALTS, CHEMICAL AND MECHANICAL ANALYSES.
   c. FERTILIZER: CHEMICAL ANALYSIS AND PERCENT COMPOSITION.
   d. IMPORTED MULCH: COMPOSITION AND SOURCE.

1.3 REFERENCES

A. SIZE AND GRADING STANDARDS: SHALL CONFORM TO THE CURRENT EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.

1.4 QUALITY ASSURANCE

A. WORKER'S QUALIFICATIONS: THE PERSONS PERFORMING THE PLANTING AND THEIR SUPERVISOR(S) SHALL BE PERSONALLY EXPERIENCED WITH PLANTING AND CARING FOR PLANT MATERIAL, AND SHALL HAVE BEEN REGULARLY EMPLOYED BY A COMPANY ENGAGED IN PLANTING AND CARING FOR PLANT MATERIAL FOR A MINIMUM OF 2 YEARS.

B. PLANT MATERIAL: ALL PLANT MATERIALS SHALL BE LOCALLY GROWN OR REGIONALLY ACCLIMATIZED TO THE PACIFIC NORTHWEST.

1.5 DELIVERY, INSPECTION, STORAGE AND HANDLING

A. DELIVERY: A DELIVERY SCHEDULE SHALL BE PROVIDED AT LEAST 10 CALENDAR DAYS PRIOR TO THE FIRST DAY OF DELIVERY. PLANT MATERIALS SHALL BE DELIVERED TO THE JOB SITE NOT MORE THAN 7 WORKING DAYS PRIOR TO THEIR RESPECTIVE PLANTING DATES.

B. PROTECTION DURING DELIVERY: PLANT MATERIAL SHALL BE PROTECTED DURING DELIVERY TO PREVENT DESICCATION AND DAMAGE TO THE BRANCHES, TRUNK, ROOT SYSTEM, OR EARTH BALL. BRANCHES SHALL BE PROTECTED BY TYING-IN. EXPOSED BRANCHES SHALL BE COVERED DURING TRANSPORT.

C. FERTILIZER: FERTILIZER SHALL BE DELIVERED IN MANUFACTURER'S STANDARD SIZED BAGS SHOWING WEIGHT, ANALYSIS, AND MANUFACTURER'S NAME. STORE UNDER A WATERPROOF COVER OR IN A DRY PLACE AS DESIGNATED BY THE OWNER'S REPRESENTATIVE.

D. INSPECTION: ALL PLANT MATERIALS SHALL BE INSPECTED UPON ARRIVAL AT THE JOB SITE BY THE OWNER'S REPRESENTATIVE FOR CONFORMITY TO TYPE AND QUANTITY WITH REGARD TO THEIR RESPECTIVE SPECIFICATIONS.

E. MULCH: A MULCH SAMPLE SHALL BE INSPECTED BY THE PROJECT BIOLOGIST OR ECOLOGIST PRIOR TO THE MULCH BEING DELIVERED TO THE SITE.

F. STORAGE:

1. PLANT MATERIAL NOT INSTALLED ON THE DAY OF ARRIVAL AT THE SITE SHALL BE STORED AND PROTECTED IN DESIGNATED AREAS. PLANTS STORED ON THE PROJECT SITE SHALL BE PROTECTED FROM EXTREME WEATHER CONDITIONS BY INSULATING THE ROOTS, ROOT BALLS OR CONTAINERS WITH SAWDUST, SOIL, COMPOST, BARK OR WOODCHIPS. PLANT MATERIAL SHALL BE PROTECTED FROM DIRECT EXPOSURE TO WIND AND SUN. BARE-ROOT PLANT MATERIAL SHALL BE HEELED-IN. CUTTINGS AND EMERGENT PLANTS MUST BE PROTECTED FROM DRYING AT ALL TIMES AND SHALL BE HEELED-IN WITH MOIST SOIL OR OTHER INSULATING MATERIAL. ALL PLANT MATERIAL STORED ON-SITE SHALL BE WATERED DAILY UNTIL INSTALLED.
2. STORAGE OF OTHER MATERIALS SHALL BE IN DESIGNATED AREAS.

1.6 SCHEDULING

A. PLANTING SEASON: INSTALL WOODY PLANTS BETWEEN OCTOBER 1 AND FEBRUARY 15 WHENEVER THE TEMPERATURE IS ABOVE 32 DEGREES F AND THE SOIL IS IN A WORKABLE CONDITION, UNLESS OTHERWISE APPROVED IN WRITING. CUTTINGS SHALL ONLY BE USED IF PLANTING OCCURS BETWEEN DECEMBER 1ST AND APRIL 1ST.

B. PLANT INSTALLATION: EXCEPT FOR CONTAINER-GROWN PLANT MATERIAL, THE MAXIMUM TIME BETWEEN THE DIGGING AND INSTALLATION OF PLANT MATERIAL SHALL BE 21 DAYS. THE MAXIMUM TIME BETWEEN PLANT INSTALLATION AND MULCH PLACEMENT SHALL BE 72 HOURS.

1.7 WARRANTY

A. WARRANTY PERIOD: THE CONTRACTOR-PROVIDED WARRANTY SHALL EXTEND FOR A PERIOD OF ONE YEAR FROM THE DATE OF PHYSICAL COMPLETION. PHYSICAL COMPLETION FOR THE WORK OF THIS SECTION IS THE DATE WHEN ALL GRADING, PLANTING, IRRIGATION, AND RELATED WORK HAS BEEN COMPLETED AND IS ACCEPTED BY THE OWNER'S REPRESENTATIVE, THE PROJECT BIOLOGIST OR ECOLOGIST, AND APPLICABLE AGENCIES.

B. WARRANTY TERMS: CONTRACTOR'S WARRANTY SHALL INCLUDE REPLACEMENT OF PLANTS DUE TO MORTALITY (SAME SIZE AND SPECIES SHOWN ON THE DRAWINGS). PLANTS REPLACED UNDER THIS WARRANTY SHALL BE WARRANTED FOR AN ADDITIONAL YEAR AFTER REPLACEMENT.

C. EXCEPTIONS: LOSS DUE TO EXCESSIVELY SEVERE CLIMATOLOGICAL CONDITIONS (SUBSTANTIATED BY 10-YEAR RECORDED WEATHER CHARTS), OR CASES OF NEGLECT BY OWNER, OR CASES OF ABUSE/DAMAGE BY OTHERS.

PART 2: PRODUCTS AND MATERIALS

2.1 PLANTS

A. GENERAL: ALL PLANT MATERIAL WILL CONFORM TO THE VARIETIES SPECIFIED OR SHOWN IN THE PLANT LIST(S) INDICATED ON THE MITIGATION PLANS AND BE TRUE TO BOTANICAL NAME AS LISTED IN: HITCHCOCK, C.L., AND A. CRONQUIST. 1973. FLORA OF THE PACIFIC NORTHWEST. UNIVERSITY OF WASHINGTON PRESS.

B. SHRUBS AND TREES:

1. THE PROJECT BIOLOGIST OR ECOLOGIST SHALL EXAMINE PLANT MATERIAL PRIOR TO PLANTING. ANY MATERIAL NOT MEETING THE REQUIRED SPECIFICATIONS SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND REPLACED WITH LIKE MATERIAL THAT MEETS THE REQUIRED STANDARDS. PLANT MATERIAL SHALL MEET THE REQUIREMENTS OF STATE AND FEDERAL LAWS WITH RESPECT TO PLANT DISEASE AND INFESTATIONS. INSPECTION CERTIFICATES, REQUIRED BY LAW, SHALL ACCOMPANY EACH AND EVERY SHIPMENT AND SHALL BE SUBMITTED TO THE PROJECT BIOLOGIST OR ECOLOGIST UPON CONTRACTOR'S RECEIPT OF PLANT MATERIAL.
2. PLANT MATERIALS SHALL BE LOCALLY GROWN (WESTERN WASHINGTON, WESTERN OREGON, OR WESTERN BC), HEALTHY, BUSHY, IN VIGOROUS GROWING CONDITION, AND GUARANTEED TO BE TRUE TO SIZE, NAME, AND VARIETY. IF REPLACEMENT OF PLANT MATERIAL IS NECESSARY DUE TO CONSTRUCTION DAMAGE OR PLANT FAILURE WITHIN ONE YEAR OF INSTALLATION, THE SIZES, SPECIES, AND QUANTITIES SHALL BE EQUAL TO SPECIFIED PLANTS, AS INDICATED ON THE PLANS.
3. PLANTS SHALL BE NURSERY GROWN, WELL-ROOTED, OF NORMAL GROWTH AND CHARACTER, AND FREE FROM DISEASE OR INFESTATION. THE PROJECT BIOLOGIST OR ECOLOGIST RESERVES THE RIGHT TO REQUIRE REPLACEMENT OR SUBSTITUTION OF ANY PLANTS DEEMED UNSUITABLE.
4. TREES SHALL HAVE UNIFORM BRANCHING, SINGLE STRAIGHT TRUNKS (UNLESS SPECIFIED AS MULTI-STEM, MULTI-CANE, OR MULTI-TRUNK), AND AN INTACT AND UNDAMAGED CENTRAL LEADER. CONTAINER STOCK SHALL HAVE BEEN GROWN IN A CONTAINER FOR AT LEAST ONE FULL GROWING SEASON AND SHALL HAVE A WELL DEVELOPED ROOT SYSTEM. PLANT MATERIAL THAT IS ROOT-BOUND OR HAS DAMAGED ROOT ZONES OR BROKEN ROOT BALLS WILL NOT BE ACCEPTED.
5. CONIFEROUS TREES SHALL BE NURSERY GROWN, FULL AND BUSHY, WITH UNIFORM BRANCHING AND A NATURAL, NON-SHEARED FORM. ORIGINAL CENTRAL LEADER MUST BE HEALTHY AND UNDAMAGED. MAXIMUM GAP BETWEEN BRANCHING SHALL NOT EXCEED 9 INCHES, AND LENGTH OF TOP LEADER SHALL NOT EXCEED 12 INCHES.
6. SHRUBS SHALL HAVE A MINIMUM OF THREE STEMS AND SHALL BE A MINIMUM HEIGHT OF 12 INCHES.
7. TREES AND SHRUBS SHALL HAVE DEVELOPED ROOT AND BRANCH SYSTEMS. DO NOT PRUNE BRANCHES BEFORE DELIVERY.
8. NATIVE PLANT CUTTINGS SHALL BE GROWN AND COLLECTED IN THE MARITIME PACIFIC NORTHWEST. CUTTINGS SHALL BE OF ONE TO TWO-YEAR-OLD WOOD, ½ INCH DIAMETER MINIMUM. CUTTINGS SHALL BE A MINIMUM OF 4 FEET IN LENGTH WITH 4 LATERAL BUDS EXPOSED ABOVE GROUND AFTER PLANTING. THE TOP OF EACH CUTTING SHALL BE A MINIMUM OF 1 INCH ABOVE A LEAF BUD, THE BOTTOM CUT 2 INCHES BELOW A BUD. THE BASAL ENDS OF THE CUTTINGS SHALL BE CUT AT A 45 DEGREE ANGLE AND MARKED CLEARLY SO THAT THE ROOTING END IS PLANTED IN THE SOIL. CUTTINGS MUST BE KEPT COVERED AND MOIST DURING STORAGE AND TRANSPORT, AND NO CUTTINGS SHALL BE STORED MORE THAN THREE DAYS FROM DATE OF CUTTING. CUTTINGS SHALL ONLY BE USED IF PLANTING OCCURS BETWEEN DECEMBER 1ST AND APRIL 1ST. FOR PLANTING BETWEEN APRIL 1ST AND DECEMBER 1ST, CONTAINER PLANTS SHALL BE USED.
9. PLANTS SHALL BE FREE OF SPLITS AND CHECKS, BARK ABRASIONS, AND DISFIGURING KNOTS.
10. FOR DECIDUOUS PLANTS, BUDS SHALL BE INTACT AND REASONABLY CLOSED AT TIME OF PLANTING, IF DORMANT.
11. BALLED AND BURLAPPED PLANTS SHALL HOLD A NATURAL BALL. MANUFACTURED ROOT BALLS ARE UNACCEPTABLE.
12. PLANTS SHALL CONFORM TO SIZES INDICATED ON THE PLANT SCHEDULE. PLANTS MAY BE LARGER THAN THE MINIMUM SIZES SPECIFIED.

C. WETLAND EMERGENT PLANTS:

1. SPECIES OF EMERGENT PLANTS SHALL BE PROVIDED AS DESCRIBED ON THE MITIGATION PLANS.
2. HERBACEOUS PLANTS SPECIFIED AS CLUMP DIVISIONS SHALL BE WELL-ROOTED PORTIONS OF MATURE PLANTS WITH A MINIMUM HEIGHT OF 6 INCHES OF VIGOROUS, VEGETATIVE GROWTH ABOVE THE GROUND SURFACE. OTHER HERBACEOUS PLANTS, OTHER THAN CLUMP DIVISIONS, SHALL BE DORMANT PROPAGULES SUCH AS RHIZOMES, TUBERS, CORMS, AND BULBS. PROPAGULE SHOOTS SHALL EXHIBIT TURGOR AND BE LIGHT IN COLOR, AND PROPAGULE BODIES SHALL BE RIGID TO THE TOUCH. IF THE BODIES OF THE PROPAGULES ARE SOFT AND MUSHY AND THE SHOOTS LACK TURGOR AND ARE DARK IN COLOR, THE PLANT MATERIALS SHALL BE REJECTED.
3. RHIZOMES, TUBERS, CORMS, AND BULBS SHALL HAVE A MINIMUM DIAMETER OF 1½ INCHES.

D. NOXIOUS SPECIES: ALL PLANT STOCK AND OTHER RE-VEGETATION MATERIALS SHALL BE FREE FROM THE SEED OR OTHER PLANT COMPONENTS OF ANY NOXIOUS OR INVASIVE SPECIES, AS IDENTIFIED BY THE KING COUNTY NOXIOUS WEED CONTROL BOARD.

E. SUBSTITUTIONS: SUBSTITUTIONS WILL NOT BE PERMITTED WITHOUT A WRITTEN REQUEST AND APPROVAL FROM THE OWNER'S REPRESENTATIVE, THE PROJECT BIOLOGIST OR ECOLOGIST, AND APPLICABLE AGENCIES.

2.2 PLANTING SOIL

A. TOPSOIL: IF SUITABLE STOCKPILED NATIVE TOPSOIL IS NOT AVAILABLE FOR MITIGATION PLANTINGS, TOPSOIL SHALL BE OBTAINED FROM OUTSIDE SOURCES. STOCKPILED OR IMPORTED TOPSOIL SHALL BE FERTILE, FRIABLE, SANDY LOAM SURFACE SOIL, FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, ROOTS, STUMPS, STONES LARGER THAN 1 INCH IN ANY DIMENSION, LITTER, OR ANY OTHER EXTRANEOUS OR TOXIC MATTER HARMFUL TO PLANT GROWTH.

B. ORGANIC CONTENT: IMPORTED TOPSOIL SHALL CONSIST OF ORGANIC MATERIALS AMENDED AS NECESSARY TO PRODUCE A BULK ORGANIC CONTENT OF AT LEAST 10 PERCENT AND NOT GREATER THAN 20 PERCENT, AS DETERMINED BY AASHTO-T-194.

C. COMPOST: COMPOST SHALL MEET THE DEFINITION FOR COMPOSTED MATERIALS AS DEFINED BY THE WASHINGTON STATE DEPARTMENT OF ECOLOGY.

D. SOIL AMENDMENTS (BUFFER AREAS ONLY):

D.A. FERTILIZER: WOODY PLANTINGS SHALL BE FERTILIZED WITH A SLOW-RELEASE GENERAL GRANULAR FERTILIZER (16-16-16), WITH APPLICATION RATES AS SPECIFIED BY MANUFACTURER. FERTILIZER SHALL BE APPLIED AFTER PLANTING PIT IS BACKFILLED, AND PRIOR TO APPLICATION OF MULCH. FERTILIZER SHALL NOT BE APPLIED BETWEEN NOVEMBER AND MARCH. NO FERTILIZER SHALL BE APPLIED WITHIN WETLAND AREAS.

D.B. SOIL MOISTURE RETENTION AGENT: A SOIL MOISTURE RETENTION AGENT, SUCH AS "SOILMOIST" OR EQUAL, SHALL BE INCORPORATED INTO THE BACKFILL OF EACH PLANTING PIT, PER MANUFACTURER'S INSTRUCTIONS. NO MOISTURE RETENTION AGENT SHALL BE APPLIED WITHIN WETLAND AREAS.

D.C. MYCORRHIZAL PROPAGULES: A BLEND OF 6 OR MORE ECTOMYCORRHIZAL AND ENDOMYCORRHIZAL SPECIES, SUCH AS "SOIL MOIST TRANSPLANT," "ROOTS ORGANICS OREGONISM XL," OR AN APPROVED EQUAL.

2.3 MULCH

A. BARK OR WOODCHIP MULCH SHALL BE DERIVED FROM DOUGLAS FIR, PINE, OR HEMLOCK SPECIES. THE MULCH SHALL NOT CONTAIN RESIN, TANNIN, OR OTHER COMPOUNDS IN QUANTITIES THAT WOULD BE DETRIMENTAL TO ANIMAL, PLANT LIFE, OR WATER QUALITY. SAWDUST SHALL NOT BE USED AS MULCH.

B. MULCH SHALL BE MEDIUM-COARSE GROUND WITH AN APPROXIMATELY 3-INCH MINUS PARTICLE SIZE. FINE PARTICLES SHALL BE MINIMIZED SO THAT NOT MORE THAN 30%, BY LOOSE VOLUME, WILL PASS THROUGH A US NO. 4 SIEVE.

2.4 MISCELLANEOUS MATERIALS

A. STAKES, DEADMEN AND GUY STAKES: SOUND, DURABLE, WESTERN RED CEDAR, OR OTHER APPROVED WOOD, FREE OF INSECT OR FUNGUS INFESTATION.

B. CHAIN-LOCK TREE TIES: ½-INCH WIDE, PLASTIC.

PART 3: EXECUTION

3.1 SOIL PREPARATION

A. PLANTING AREA CONDITIONS: CONTRACTOR SHALL VERIFY THAT PLANT INSTALLATION CONDITIONS ARE SUITABLE WITHIN THE PROJECT AREA(S). ANY UNSATISFACTORY CONDITIONS SHALL BE CORRECTED PRIOR TO START OF WORK. WHEN CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED, SUCH AS RUBBLE FILL, POOR DRAINAGE, COMPACTED SOILS, SIGNIFICANT EXISTING OR INVASIVE VEGETATION, OR OTHER OBSTRUCTIONS, CONTRACTOR SHALL NOTIFY THE PROJECT BIOLOGIST OR ECOLOGIST PRIOR TO PLANTING. THE BEGINNING OF WORK BY THE CONTRACTOR CONSTITUTES ACCEPTANCE OF CONDITIONS AS SATISFACTORY.

B. PLANTING IN UNDISTURBED, NON-GRADED AREAS: PLANTS INSTALLED IN UNDISTURBED AREAS SHALL BE INTEGRATED WITH EXISTING NATIVE VEGETATION AND PLANTED IN A RANDOM, NATURALISTIC PATTERN. PRIOR TO INSTALLATION OF PLANTINGS, ALL CONSTRUCTION DEBRIS, TRASH, AND NON-NATIVE INVASIVE PLANT MATERIAL SHALL BE REMOVED FROM THE PROJECT AREA. IN NON-GRADED AREAS, TREES AND SHRUBS SHALL BE PIT PLANTED AS SHOWN IN TYPICAL PLANTING DETAILS. PLANTING PITS SHALL BE BACKFILLED WITH A 50/50 MIXTURE OF IMPORTED, WEED-FREE TOPSOIL AND THE SOIL FROM THE PLANTING PIT.

C. PLANTING IN GRADED AREAS: IN GRADED PLANTING AREAS PLANTS SHALL BE INSTALLED IN NEWLY PLACED TOPSOIL.

D. SOIL DECOMPACTION/SCARIFICATION: SOILS IN GRADED/DISTURBED AREAS THAT ARE COMPACTED AND UNSUITABLE FOR PROPER PLANT GROWTH SHALL BE DECOMPACTED AND/OR SCARIFIED TO A MINIMUM DEPTH OF 6-IN PRIOR TO TOPSOIL INSTALLATION.

3.2 PLANTING

A. PLANT LAYOUT: PROPOSED LOCATIONS OF TREES AND SHRUBS SHALL BE STAKED AND IDENTIFIED WITH AN APPROVED CODING SYSTEM OR BY PLACEMENT OF THE ACTUAL PLANT MATERIAL. FOR LARGE GROUPINGS OF A SINGLE SPECIES OF SHRUB, LANDSCAPE CONTRACTOR MAY STAKE THE PLANTING BOUNDARIES.

B. OBTAIN LAYOUT APPROVAL FROM THE PROJECT BIOLOGIST OR ECOLOGIST PRIOR TO EXCAVATION OF PLANTING PITS.

C. PLANTING PIT DIMENSIONS:

1. PIT DEPTH: NOT TO EXCEED THE ROOT BALL OR CONTAINER DEPTH.
2. PIT WIDTH: MEASURED AT THE GROUND SURFACE, 2 TIMES THE WIDTH OF THE ROOT BALL OR CONTAINER, AS INDICATED IN TYPICAL PLANTING DETAILS.
   a. BARE-ROOT PLANTS: DIAMETER EQUAL TO THE WIDTH OF THE ROOT SPREAD.

D. SETTING PLANTS:

1. BALLED PLANTS: SET PLANTS IN POSITION AND BACKFILL 1/2 DEPTH OF BALL. COMPLETELY REMOVE CAGE AND TWINE FROM PLANT AND PULL BURLAP DOWN AS FAR AS POSSIBLE. COMPLETE BACKFILL AND SETTLE WITH WATER. ROOT COLLAR SHALL REMAIN 1 INCH ABOVE ADJACENT GRADE.
2. BARE-ROOT PLANTS: PRUNE BRUISED OR BROKEN ROOTS. SET PLANT IN POSITION AND PLACE WETLAND PLANTING SOIL AROUND ROOTS. USE CARE TO AVOID BRUISING OR BREAKING ROOTS WHEN FIRMING SOIL. SETTLE WITH WATER.
3. SHRUB/TREE PLANTING: SHRUB AND TREE STOCK SHALL BE PLANTED IN HAND-DUG HOLES ACCORDING TO PLANTING DETAILS SHOWN ON THE MITIGATION PLANS. SHRUB AND TREE ROOT BALLS SHALL BE SET SO THAT ROOT COLLARS ARE 1 INCH ABOVE ADJACENT GRADE. ALL BACKFILL SHALL BE GENTLY TAMPED IN PLACE.
4. A MYCORRHIZAL BLEND SHALL BE INCORPORATED INTO THE BACKFILL OR SPRINKLED ONTO ROOTS PRIOR TO TRANSPLANTING FOR ALL TREES, SHRUBS, AND GROUNDCOVER PLANTS, PER MANUFACTURER'S INSTRUCTIONS. THE MYCORRHIZAL BLEND SHALL BE APPLIED BASED ON THE APPLICATION RATE RECOMMENDED BY THE MANUFACTURER'S INSTRUCTIONS.
5. SURFACE FINISH: FORM A SAUCER AS INDICATED ON TYPICAL PLANTING DETAILS, OR AS DIRECTED. GRADE SOIL TO FORM A BASIN ON THE LOWER SIDE OF SLOPE PLANTINGS TO CATCH AND RETAIN WATER.
6. IN FORESTED AREAS, CONTRACTOR SHALL LOOSELY TIE A 2 FOOT PIECE OF BIODEGRADABLE FLAGGING TO THE TOP PORTION OF ALL PLANTED VEGETATION, BUT NOT ON A CENTRAL LEADER, TO FACILITATE POST-CONSTRUCTION PERFORMANCE AND MAINTENANCE REVIEW BY THE PROJECT BIOLOGIST OR ECOLOGIST AND REGULATORY AGENCIES.
7. ACTUAL PLANT SYMBOL QUANTITIES SHOWN ON THE PLANS SHALL PREVAIL OVER QUANTITIES SHOWN ON THE PLANT SCHEDULE IN THE EVENT OF A DISCREPANCY.

E. MULCHING:

1. GRADED BUFFER AREAS: ARE MULCHED PRIOR TO PLANT INSTALLATION AS DIRECTED IN THE GRADING SPECIFICATIONS.
2. NON-GRADED BUFFER AREAS: PROVIDE A 36-INCH DIAMETER, 3-INCH DEEP MULCH RING AROUND THE BASE OF EACH TREE, AND A 24-INCH DIAMETER, 3-INCH DEEP MULCH RING AROUND THE BASE OF EACH SHRUB.
3. WATER PLANTS THOROUGHLY AFTER MULCHING.

F. PRUNING: PRUNE IMMEDIATELY AFTER PLANTING ONLY AS DIRECTED BY THE PROJECT BIOLOGIST OR ECOLOGIST.

G. TREE STAKES AND TIES: STAKE DECIDUOUS AND EVERGREEN TREES 4 FEET OR OVER IN HEIGHT WITH ONE (1) STAKE PER TREE. STAKE TREES IMMEDIATELY AFTER PLANTING. PLACE STAKE AT THE OUTER EDGE OF THE ROOTS OR BALL, IN LINE WITH THE PREVAILING WIND, AND AT A 10 DEGREE ANGLE FROM THE TREE TRUNK. LOOSELY ATTACH STAKE TO TREE USING CHAIN-LOCK TIES; TREE SHOULD BE ABLE TO SWAY.

H. INSTALLING TEMPORARY IRRIGATION

1. GENERAL REQUIREMENTS: IF IRRIGATION IS REQUIRED: CONTRACTOR SHALL PROVIDE AN ABOVE-GROUND TEMPORARY IRRIGATION SYSTEM CAPABLE OF FULL HEAD-TO-HEAD COVERAGE OF ALL PLANTED PROJECT AREAS. THE TEMPORARY IRRIGATION SYSTEM SHALL EITHER UTILIZE CONTROLLER AND POINT OF CONNECTION (POC) FROM THE SITE IRRIGATION SYSTEM OR SHALL INCLUDE A SEPARATE POC AND CONTROLLER WITH A BACKFLOW PREVENTION DEVICE PER WATER JURISDICTION INSPECTION AND APPROVAL. THE SYSTEM SHALL BE ZONED TO PROVIDE OPTIMAL PRESSURE AND UNIFORMITY OF COVERAGE, AS WELL AS SEPARATION BETWEEN AREAS OF FULL SUN AND SHADE AND FOR SLOPES IN EXCESS OF 5 PERCENT. THE SYSTEM SHALL BE OPERATIONAL FOR A MINIMUM OF THE FIRST TWO GROWING SEASONS AFTER PLANTING (THE FIRST TWO YEARS OF THE PERFORMANCE MONITORING PERIOD), OR LONGER IF REQUIRED TO ENSURE PROPER PLANT ESTABLISHMENT. THE SYSTEM SHALL BE REMOVED UPON FINAL APPROVAL OF THE MITIGATION PROJECT AT THE END OF THE PERFORMANCE MONITORING PERIOD.
2. SYSTEM DESIGN AND MATERIALS: ELECTRONIC VALVES SHALL BE THE SAME MANUFACTURER AS THOSE USED FOR THE SITE IRRIGATION SYSTEM, OR SHALL BE RAIN BIRD PEB SERIES OR EQUAL IF SYSTEM IS NOT CONTIGUOUS WITH THE SITE SYSTEM. VALVES SHALL BE SIZED TO ACCOMMODATE PRESSURE AND ZONE CONSUMPTION REQUIREMENTS OF THE SYSTEM AND SHALL BE INSTALLED BELOW GRADE IN CARSON (OR EQUAL) VALVE BOXES. WIRING SHALL BE INSULATED MULTI-STRAND, TAPED TO THE MAIN AT 6-INCH INTERVALS WITH DUCT TAPE WRAPS. ON-GRADE MAIN AND LATERAL LINES SHALL BE CLASS 200 PVC BELL PIPE WITH SOLVENT WELDED FITTINGS, SECURED IN-PLACE WITH WIRE STAPLES WHERE NECESSARY ON SLOPED AREAS. LINES SHALL BE PLACED 12 INCHES BELOW GRADE IN 4 INCH PCV SLEEVES WHERE VEHICULAR OR MAINTENANCE ACCESS IS NEEDED ACROSS LINES TO THE PROJECT AREA(S). MAXIMUM MAIN LINE SIZE SHALL BE 1½ INCHES AND MAY BE LOOPED BACK TO THE POC TO REDUCE PRESSURE LOSS. LATERAL LINES SHALL BE SIZED IN DECREASING DOWNSTREAM ORDER PER RAIN BIRD DESIGN STANDARDS; THE MINIMUM LATERAL SIZE SHALL BE ¾ INCH. HEADS SHALL BE ROTOR OR IMPACT TYPE INSTALLED 4 FEET ABOVE FINISHED GRADE ON 2-INCH DIAMETER WOOD TREE STAKES. STAKES SHALL BE SECURE IN THE GROUND, EMBEDDED TO A MINIMUM DEPTH OF 24 INCHES. HEADS AND ¾ INCH PVC RISERS SHALL BE SECURED TO STAKES WITH CONSTRICTING HOSE CLAMPS; NO FUNNY PIPE SHALL BE USED. HEADS AND NOZZLES SHALL PROVIDE MATCHED PRECIPITATION RATES FOR EACH ZONE.
3. PROGRAMMING: IRRIGATION SYSTEM SHALL BE PROGRAMMED TO PROVIDE APPROXIMATELY 1/2 INCH OF WATER EVERY THREE DAYS DURING THE DRY SEASON (APPROXIMATELY JUNE 15TH TO OCTOBER 15TH). IRRIGATION AMOUNTS IN ZONES LOCATED IN THE SHADE OR ON STEEP SLOPES MAY BE REDUCED IF APPROVED BY THE PROJECT BIOLOGIST OR ECOLOGIST OR THE PROJECT ECOLOGIST/BIOLOGIST.
4. WATER AND POWER SUPPLY FOR SYSTEM: THE OWNER SHALL PROVIDE WATER AND ELECTRICITY FOR THE SYSTEM.
5. AS-BUILT DRAWING: A CHART DESCRIBING THE LOCATION OF ALL INSTALLED OR OPEN ZONES AND CORRESPONDING CONTROLLER NUMBERS SHALL BE PROVIDED BY THE CONTRACTOR AND PLACED INSIDE THE CONTROLLER AND GIVEN TO THE OWNER'S REPRESENTATIVE.
6. WARRANTY: THE IRRIGATION SYSTEM SHALL INCLUDE A ONE-YEAR WARRANTY AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FROM THE DATE OF FINAL PROJECT ACCEPTANCE. THE WARRANTY SHALL INCLUDE SYSTEM ACTIVATION AND WINTERIZATION FOR THE FIRST YEAR AND IMMEDIATE REPAIR OF THE SYSTEM IF IT IS OBSERVED TO BE MALFUNCTIONING.

J. CRITICAL AREAS FENCE AND SIGNS: INSTALL CRITICAL AREAS FENCE AND CRITICAL AREAS SIGNS WHERE SHOWN ON PLANS, IF REQUIRED.

K. RESTORE EXISTING NATURAL OR LANDSCAPED AREAS:

1. EXISTING NATURAL OR LANDSCAPED AREAS THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, UNLESS IMPROVEMENTS OR MODIFICATIONS ARE SPECIFIED FOR THOSE AREAS.
2. CONTRACTOR SHALL EXERCISE CARE TO PREVENT INJURY TO THE TRUNK, ROOTS, OR BRANCHES OF ANY TREES OR SHRUBS THAT ARE TO REMAIN. ANY LIVING, WOODY PLANT THAT IS DAMAGED DURING CONSTRUCTION SHALL BE TREATED WITHIN 24 HOURS OF OCCURRENCE, AND THE PROJECT BIOLOGIST OR ECOLOGIST SHALL BE NOTIFIED IMMEDIATELY OF THE INCIDENT. DAMAGE TREATMENT SHALL INCLUDE EVENLY CUTTING BROKEN BRANCHES, BROKEN ROOTS, AND DAMAGED TREE BARK. INJURED PLANTS SHALL BE THOROUGHLY WATERED AND ADDITIONAL MEASURES SHALL BE TAKEN, AS APPROPRIATE, TO AID IN PLANT SURVIVAL.

L. FINAL INSPECTION AND APPROVAL: THE CONTRACTOR SHALL NOTIFY THE PROJECT BIOLOGIST OR ECOLOGIST IN WRITING AT LEAST TEN DAYS PRIOR TO THE REQUESTED DATE OF A PROJECT COMPLETION INSPECTION. IF ITEMS ARE TO BE CORRECTED, A PUNCH LIST SHALL BE PREPARED BY THE PROJECT BIOLOGIST OR ECOLOGIST AND SUBMITTED TO THE CONTRACTOR FOR COMPLETION. AFTER PUNCH LIST ITEMS HAVE BEEN COMPLETED, THE PROJECT BIOLOGIST OR ECOLOGIST SHALL REVIEW THE PROJECT AGAIN FOR FINAL ACCEPTANCE OF PLAN IMPLEMENTATION. IF PUNCH LIST ITEMS REQUIRE PLANT REPLACEMENT, AND THE INSPECTION OCCURS OUTSIDE OF A SUITABLE PLANTING SEASON, PLANTS SHALL BE REPLACED DURING THE NEXT PLANTING SEASON.

M. AS-BUILT PLAN: CONTRACTOR IS RESPONSIBLE FOR VERIFYING PLANT LOCATIONS AND QUANTITIES ON THE PLANT SCHEDULE WITH THOSE REPRESENTED AS SYMBOLS ON THE MITIGATION PLANS. CONTRACTOR SHALL KEEP A COMPLETE SET OF PRINTS AT THE JOB SITE DURING CONSTRUCTION FOR THE PURPOSE OF RECORDING IN-THE-FIELD CHANGES OR MODIFICATIONS TO THE APPROVED PLANS. THIS INFORMATION SHALL BE UPDATED ON A DAILY BASIS AS NECESSARY.

PART 4: ONE YEAR CONTRACTOR WARRANTY

NOTE: THESE MAINTENANCE SPECIFICATIONS APPLY TO THE ONE-YEAR CONTRACTOR WARRANTY PERIOD ONLY. IF THIS MITIGATION PROJECT REQUIRES LONG-TERM PERFORMANCE MONITORING, AS DETERMINED BY THE GOVERNING JURISDICTION, THE MAINTENANCE SPECIFICATIONS AND GUIDELINES ASSOCIATED WITH THE PERFORMANCE MONITORING STANDARDS ARE INCLUDED IN THE MITIGATION REPORT ASSOCIATED WITH THIS PLAN SET, AND MAY ALSO BE INCLUDED ON A SEPARATE PLAN SHEET IF REQUIRED.

A. REVIEW OF MAINTENANCE REQUIREMENTS: CONTRACTOR SHALL REVIEW LANDSCAPE MAINTENANCE RECOMMENDATIONS WITH A QUALIFIED WETLAND BIOLOGIST FROM THE PROJECT BIOLOGIST OR ECOLOGIST WHO IS FAMILIAR WITH THE STATED GOALS AND OBJECTIVES OF THE PROJECT PLAN.

B. MAINTENANCE ACTIVITIES: CONTRACTOR SHALL MAINTAIN TREES AND SHRUBS FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE IN ORDER TO MAINTAIN HEALTHY GROWTH AND HABITAT DIVERSITY. MAINTENANCE ACTIVITIES SHALL INCLUDE, BUT ARE NOT LIMITED TO: (A) REPLACING PLANTS DUE TO MORTALITY, (B) TIGHTENING AND REPAIRING TREE STAKES, (C) RESETTING PLANTS TO PROPER GRADES AND UPRIGHT POSITIONS, AND (D) CORRECTING DRAINAGE PROBLEMS AS REQUIRED.

C. IRRIGATION:

1. SYSTEM MAINTENANCE AND REPAIR: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACTIVATING, WINTERIZING, MAINTAINING, AND CONTINUALLY VERIFYING THE ADEQUATE OPERATION OF THE TEMPORARY IRRIGATION SYSTEM FOR THE FIRST GROWING SEASON FOLLOWING INSTALLATION. SYSTEM FUNCTION (INCLUDING ELECTRONIC VALVE AND CONTROLLER FUNCTION) SHALL BE INSPECTED FOR OPERATION AND FULL COVERAGE OF ALL PLANTED AREAS DURING EACH MAINTENANCE VISIT. THE SYSTEM SHALL BE REPAIRED IMMEDIATELY IF FOUND TO BE DAMAGED OR MALFUNCTIONING. SYSTEM SHALL BE PROGRAMMED AND MAINTAINED TO PROVIDE APPROXIMATELY ½ INCH OF WATER EVERY THREE DAYS.

D. STAKE AND TIE REMOVAL: CONTRACTOR SHALL REMOVE TREE STAKES AND TIES ONE YEAR AFTER INSTALLATION, UNLESS RECEIVING WRITTEN PERMISSION FROM THE PROJECT BIOLOGIST OR ECOLOGIST TO DELAY REMOVAL OF STAKES AND TIES

E. EROSION AND DRAINAGE: CONTRACTOR SHALL CORRECT EROSION AND DRAINAGE PROBLEMS AS REQUIRED.

F. IRRIGATION SYSTEM REMOVAL: CONTRACTOR SHALL REMOVE IRRIGATION SYSTEM APPROXIMATELY 2 YEARS AFTER PLANTING, OR AS APPROVED BY THE PROJECT BIOLOGIST OR ECOLOGIST.

G. FINAL MAINTENANCE INSPECTION AND APPROVAL: UPON COMPLETION OF THE ONE-YEAR MAINTENANCE PERIOD, AN INSPECTION BY THE PROJECT BIOLOGIST OR ECOLOGIST SHALL BE CONDUCTED TO CONFIRM THAT THE PROJECT AREA WAS PROPERLY MAINTAINED. IF ITEMS ARE TO BE CORRECTED, A PUNCH LIST SHALL BE PREPARED AND SUBMITTED TO THE CONTRACTOR FOR CORRECTION. UPON CORRECTION OF THE PUNCH LIST ITEMS, THE PROJECT SHALL BE REVIEWED BY THE PROJECT BIOLOGIST OR ECOLOGIST FOR FINAL CLOSEOUT OF PLAN IMPLEMENTATION.

H. ADD THE FOLLOWING NOTE IF NO IRRIGATION WILL BE INSTALLED:
WATERING: THE CONTRACTOR SHALL PROVIDE MANUAL WATERING OF THE MITIGATION PLANTINGS BETWEEN JUNE 15TH AND OCTOBER 15TH. SUPPLEMENTAL WATERING MAY ALSO BE REQUIRED IF HOT, DRY WEATHER OCCURS EITHER BEFORE OR AFTER THESE DATES. DURING THE FIRST YEAR AFTER INSTALLATION, PLANTINGS SHALL BE WATERED A MINIMUM OF ONE INCH PER WEEK. WATERING FREQUENCY MAY BE INCREASED AS NECESSARY DURING PROLONGED PERIODS OF HOT, DRY WEATHER TO PREVENT PLANT MORTALITY.

NOT FOR CONSTRUCTION

THESE PLANS HAVE BEEN SUBMITTED TO THE APPROPRIATE AGENCIES FOR REVIEW AND APPROVAL. UNTIL APPROVED, THESE PLANS ARE:

SUBJECT TO REVISION

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NOTES

1. SURVEY PROVIDED BY LDC CORP 20210 142ND AVE NE, WOODINVILLE, WA 98072, (425) 892-9589.
2. SOURCE DRAWING WAS MODIFIED BY PACE ENGINEERS FOR VISUAL ENHANCEMENT.
3. THIS PLAN IS AN ATTACHMENT TO THE CRITICAL AREAS REPORT PREPARED BY PACE ENGINEERS IN APRIL, 2024.

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CRITICAL AREAS MITIGATION & RESTORATION PLAN
PLANTING SPECIFICATIONS
LARKIN PROPERTY
KING COUNTY, WA

Revisions	Date	By

Date 4-22-2024
Scale AS NOTED
Designed
Drawn KF
Checked DT
Approved DT

Project # 1984

Sheet # W4.1

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Plotted April 22, 2024