APPENDIX D

Ecosystem Resources Technical Report

Ecosystem Resources Technical Report

March 2021

SOUNDTRANSIT

Consultant Quality Control Form

Version	Title	Date	Originator/ Drafted by	Reviewed by	Approved by	Notes, as required
1	Ecosystem Resources Technical Report – Draft	5/15/2019	Rick Pratt	Gray Rand	Dwight Schock	Initial issue; draft for Sound Transit review
2	Ecosystem Resources Technical Report – Draft 2	08/21/20	Rick Pratt	Gray Rand; Mike Wert (QA)	Dwight Schock	Revisions based on Sound Transit comments
3	Ecosystem Resources Technical Report – Draft 3	11/15/20	Rick Pratt	Gray Rand; Mike Wert (QA)	Dwight Schock	Revisions based on Sound Transit comments
4	Ecosystem Resources Technical Report – Draft 4	12/13/20	Rick Pratt	Gray Rand; Mike Wert (QA)	Dwight Schock	Revisions based on Sound Transit comments
5	Ecosystem Resources Technical Report – Draft 5	01/29/21	Rick Pratt	Gray Rand; Mike Wert (QA)	Dwight Schock	Revisions based on Sound Transit comments
6	Ecosystem Resources Technical Report – Final	03/05/21	Rick Pratt	Gray Rand; Mike Wert (QA)	Dwight Schock	Revisions based on AHJ comments

Summary

In support of the State Environmental Policy Act (SEPA) Checklist for the State Route (SR) 522/NE 145th Bus Rapid Transit (BRT) Project, David Evans and Associates, Inc. conducted an investigation to document the presence of ecosystem resources along the project corridor. This report is intended to assess impacts to ecosystem resources, including plants and animals, threatened and endangered species, wetlands, streams and other associated habitats. This report includes a characterization of existing conditions for ecosystem resources, as well as an analysis of potential impacts and measures to avoid, minimize or compensate for adverse impacts.

The project extends along a 9-mile corridor from the future Interstate 5 (I-5) Sound Transit Link light rail Shoreline South/148th Station to University of Washington (UW) Bothell/Cascadia College and the SR 522/Interstate 405 (I-405) Transit Hub. The study area evaluated for this project includes the route corridor and ecosystem components within 300 feet of the corridor or project elements, including stations and park-and-ride garages. The study area extends from the western terminus of the project at NE 145th Street and 5th Avenue NE in Seattle east to the SR 522/I-405 Transit Hub at I-405 in Bothell. It includes three proposed park-and-ride garage locations at Lake Forest Park, Kenmore and Bothell.

A total of 15 wetlands were identified within the study area representing four wetland types: palustrine forested (PFO), palustrine unconsolidated bottom (PUB), palustrine scrub-shrub (PSS) and palustrine emergent (PEM) systems (FGDC 2013). In addition to these wetlands, portions of eight streams were delineated in the study area. Various high quality habitat areas are present in the project corridor, including forested areas on Jackson Park Golf Course in Seattle, riparian areas associated with McAleer and Lyon creeks in Lake Forest Park, the large Swamp Creek wetland complex in Kenmore (home to an established great blue heron colony), and wetlands and riparian areas along the Sammamish River and North Creek in Bothell.

The project proposes no direct permanent impacts to wetlands or streams. Within the study area, there would be unavoidable permanent impacts to the outer edges of wetland buffers totaling 2,488 square feet and to 7.091 square feet of stream buffers. No long-term impacts to high quality habitat areas are anticipated. A Draft Habitat Management Plan (see **Appendix E** (Great Blue Heron Draft Habitat Management Plan)), which will be finalized during the final design stage, was prepared to assess potential impacts to the great blue heron colony at the Kenmore Park-and-Ride lot. It is anticipated that permanent buffer impacts associated with wetlands and streams will be mitigated through the purchase of mitigation bank credits, which is a watershed approach towards implementing compensatory mitigation (Ecology 2020c).

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Acronyms and Abbreviations

BAT	business access and transit
BEB	Battery Electric Bus
BMP	best management practice
BRT	bus rapid transit
CAO	Critical Area Ordinance
CFR	Code of Federal Regulations
Corps	US Army Corps of Engineers
CWA	Clean Water Act
dBA	A-weighted decibels
dbh	diameter at breast height
DEA	David Evans and Associates, Inc.
DNR	Washington State Department of Natural Resources
Ecology	Washington State Department of Ecology
EFH	Essential Fish Habitat
EPA	US Environmental Protection Agency
ESA	Endangered Species Act
FC	fecal coliform
GIS	geographic information system
GPS	Global Positioning System
HGM	hydrogeomorphic
HMP	Habitat Management Plan
I-405	Interstate 405
I-5	Interstate 5
ILF	In-lieu fee
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NA	not applicable
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PCBs	polychlorinated biphenyls
PEM	Palustrine emergent

PFO	Palustrine forested
PGIS	pollution-generating impervious surfaces
PHS	Priority Habitats and Species
PSS	Palustrine scrub-shrub
PUB	Palustrine unconsolidated bottom
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SR	State Route
TSP	transit signal priority
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
UW	University of Washington
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

1 INTRODUCTION

At the request of Sound Transit, David Evans and Associates, Inc. (DEA) conducted an investigation to document the presence of ecosystem resources along the project corridor for the State Route (SR) 522/NE 145th Bus Rapid Transit (BRT) Project (project). This analysis addresses water, vegetation and wildlife resources near the proposed project, including wetlands, streams, fish and wildlife habitat, and threatened and endangered species.

The project is along a 9-mile corridor from the future Interstate 5 (I-5) Sound Transit Link light rail Shoreline South/148th Station to University of Washington (UW) Bothell/Cascadia College and the SR 522/Interstate 405 (I-405) Transit Hub. The project corridor extends from approximately 47.5776° N by -122.0259° W in Seattle, to approximately 47.5776° N by -122.0259° W at UW Bothell/Cascadia College, and to approximately 47.7594° N by -122.1850° W at the SR 522/I-405 Transit Hub at I-405. The study area evaluated for this project includes the route corridor shown in **Figure 1-1** (SR 522/NE 145th BRT Project) and any ecosystem components within 300 feet of the corridor or project elements, including stations and parking garages. The study area extends from the western terminus of the project at NE 145th Street and 5th Avenue NE east to the SR 522/I-405 Transit Hub at I-405. It includes three proposed park-and-ride garage locations at Lake Forest Park, Kenmore and Bothell.

Figure 1-1 SR 522/NE 145th BRT Project

1.1 Project description

The project is part of a new BRT system that would provide fast, frequent and reliable bus service along the SR 522/NE 145th project corridor, with interconnections to light rail and other bus service in the region. The project would provide BRT service (to be called "Stride") along about 9 miles of roadway between the Sound Transit Link light rail Shoreline South/148th Station[1] and the SR 522/I-405 Transit Hub. The transit hub is in the design phase and is being provided by the Washington Department of Transportation (WSDOT) I-405/SR 522 Vicinity to SR 527 Express Toll Lanes Improvement Project.

The project would include business access and transit (BAT) lanes, transit queue bypass lanes, signal upgrades and transit signal priority (TSP) for transit speed and reliability, three new park-and-ride garages (Lake Forest Park, Kenmore and Bothell) and 12 BRT stations[2] between the Sound Transit Link light rail Shoreline South/148th Station and the SR 522/I-405 Transit Hub.

The project would also include constructing or re-constructing sidewalks where BAT lanes and transit queue bypass lanes are constructed and at some intersections in the immediate vicinity of BRT stations. Some transit queue bypass lanes and BAT lanes result in roadway widening. Intersection and sidewalk construction includes upgrading curb ramps to current Americans with Disabilities Act standards.

Right-of-way acquisitions and easements would occur to allow for construction and operation of the BRT service and related access improvements. Stormwater management would be provided as needed to comply with pertinent law and codes. Utility connections would be provided as necessary.

Most BRT station platforms (e.g., the sidewalk that the bus shelter sits upon) would be double-length platforms (accommodating two 60-foot coaches) to accommodate shared use by Sound Transit with King County Metro (Metro) and Community Transit buses (the three transit agencies operating in the corridor). SR 522/NE 145th BRT service would be provided with 12 three-door articulated coaches with the Stride brand, including 10 Battery Electric Buses (BEBs) and 2 diesel hybrid buses. Service headways (the amount of time between bus arrivals at a stop) would be 10 minutes, which translates to 12 total BRT vehicles per hour along the project corridor. Sound Transit would prioritize use of the BEBs for this service as much as possible, and the BEBs (rather than the diesel hybrid buses) would be the bus type used for most of the service, all day. The span of service would be 19 hours on Monday through Saturday and 17 hours on Sunday. The estimated 2042 ridership forecast for the SR 522/NE 145th BRT system is approximately 8,900 riders per day.

Station shelters would have a consistent look and feel throughout the BRT system, but individual platform design would vary based on site conditions and transit integration assumptions at each location. Each station would include Stride-branded shelters, lighting, and most platforms would be elevated 9 inches to ease boarding and alighting. Platform types would be either flow-through (sidewalk passes through the platform) or pass-behind (sidewalk passes behind the platform). The project would also include intelligent transportation system elements:

[1] Environmental review of the Shoreline South/148th station occurred as part of the Sound Transit Lynnwood Link Extension Project State Environmental Policy Act Environmental Impact Statement.
[2] Each station proposed as part of this project includes an eastbound platform and a westbound platform.

off-board fare payment, electronic rider information with bus arrival times, Computer-Aided Dispatch/Automatic Vehicle Location, TSP, and enhanced safety and security at certain stations.

Figure 1-2 (SR 522/NE 145th BRT Project segments) shows the proposed project, including the route, station locations and park-and-ride garage locations. The SEPA Checklist document includes layouts for the three park-and-ride garages. This report reflects the project as described and as shown in the Conceptual Engineering Design Plans (see Appendix A of the SEPA Checklist).

The following is a summary of the proposed project's major elements, by segment:

- **Segment 1: Seattle/Shoreline** (NE 145th Street): westbound transit queue bypass lane on NE 145th Street between a point east of 8th Avenue NE and 5th Avenue NE, transit queue bypass lanes on NE 145th Street at 15th Avenue NE in each direction, two stations (15th Avenue NE and 30th Avenue NE), and an additional lane eastbound on NE 145th Street approaching SR 522 to provide a shared bus left-turn/general-purpose traffic through lane.

- **Segment 2: Lake Forest Park**: northbound/eastbound BAT lane from approximately NE 145th Street to south of Brookside Boulevard NE; reconstructed BAT lane southbound/westbound between Beach Drive and 38th Avenue NE; a new 300-stall park-and-ride garage located at the Lake Forest Park Town Center; three stations (NE 153rd Street, NE 165th Street and Lake Forest Park Town Center); retaining walls in certain locations; and minor roadway, roadside and intersection improvements in certain locations where other improvements would occur.

- **Segment 3: Kenmore**: three stations (61st Avenue NE, 68th Avenue NE and the Kenmore Park-and-Ride) and a new park-and-ride garage providing 300 additional stalls at the Kenmore Park-and-Ride, including vehicle access modification.

- **Segment 4: Bothell**: northbound/eastbound center bus-only lane to bus-only left-turn lane along SR 522 beginning approximately 700 feet south of Hall Road (just north of the Yakima Fruit Market & Nursery) to 98th Avenue NE; four stations (98th Avenue NE at NE 182nd Street, NE 185th Street at 104th Avenue NE, Beardslee Boulevard at UW Bothell/Cascadia College, and Beardslee Boulevard near NE 195th Street); a new park-and-ride garage at a site (southwest of where 98th Avenue NE would meet NE 185th Street) providing 300 net additional parking spaces; new traffic signal and intersection reconstruction on NE 185th Street at 104th Avenue NE and at Beardslee Boulevard; and sidewalks, planting strips and minor intersection improvements at certain locations where other improvements would occur.

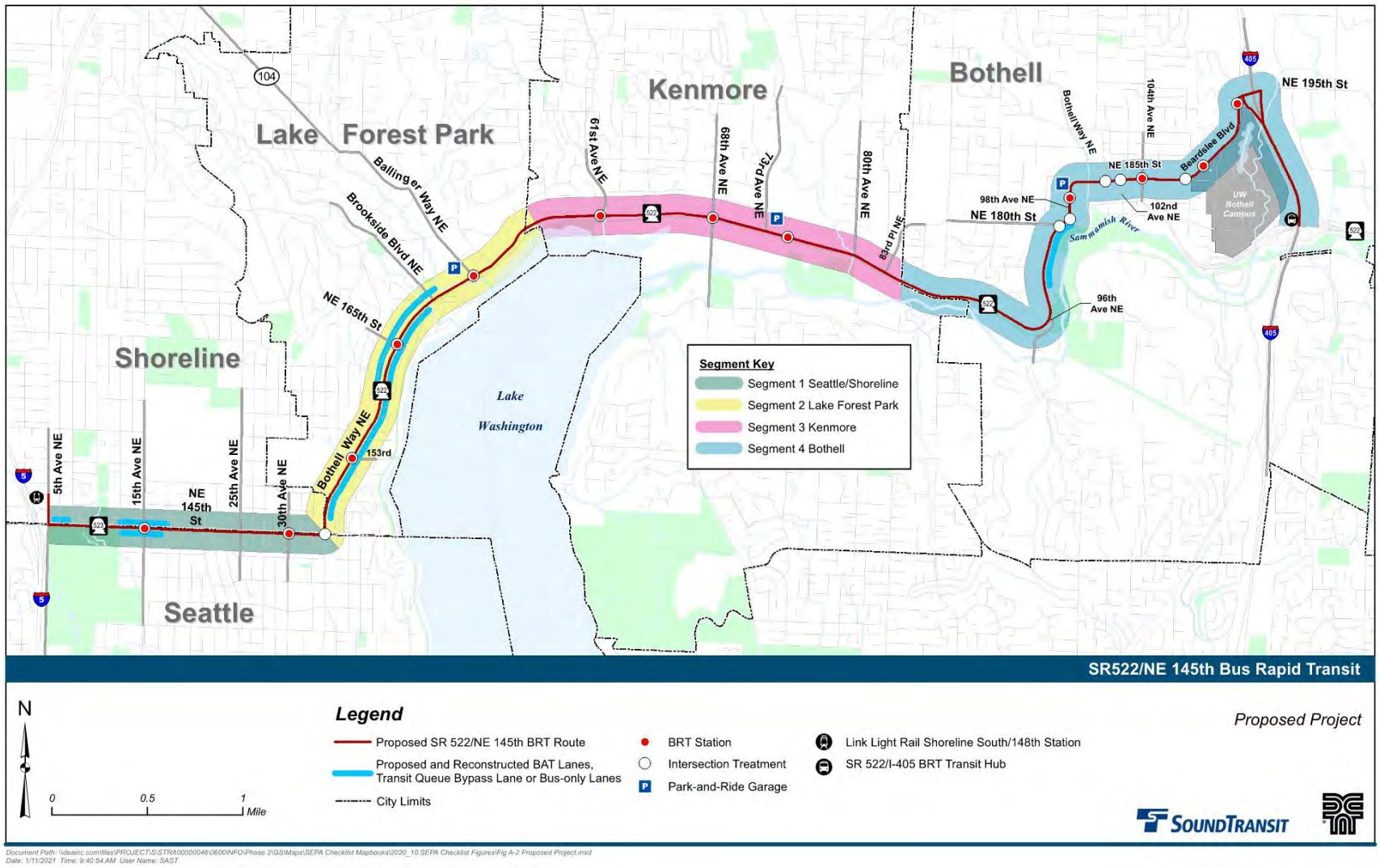

Figure 1-2 SR 522/NE 145th BRT Project segments

1.2 Report limitations

The wetland, stream and ditch boundaries described in this report are based on the professional opinions of DEA staff, and on the circumstances and site conditions at the time of this study. Local, state and federal jurisdictions make final determinations of jurisdictional boundaries. The study documented in this report did not include species-specific surveys for any plants or animals.

2 GUIDING REGULATIONS, PLANS AND POLICIES

Ecosystem resources that may be affected by the project are subject to the following regulations and municipal codes and other plans, policies, programs and guidance, as summarized in **Appendix A** (Summary of Regulations).

2.1 Federal

- Sections 404, 402 and 401 of the Clean Water Act (CWA)
- Section 7 of the Endangered Species Act (ESA)
- Magnuson-Stevens Fishery Conservation and Management Act (MSA)
- Marine Mammal Protection Act
- Bald and Golden Eagle Protection Act
- Migratory Bird Treaty Act
- Protection of Wetlands, Presidential Executive Order 11990
- Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (USACE 2008)
- US Army Corps of Engineers (Corps) Wetland Delineation Manual (Environmental Laboratory 1987)
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0 (USACE 2010)
- Fish and Wildlife Coordination Act (16 United States Code [USC] 661-667(e))
- Rivers and Harbors Act (33 USC 410)
- Coastal Zone Management Act (15 Code of Federal Regulations [CFR] 923-930)

2.2 State

- Hydraulic code (Washington Administrative Code [WAC] Chapter 220-110)
- Shoreline Management Act
- Protection of Wetlands, Governor's Executive Order EO 89-10
- Protection of Wetlands, Governor's Executive Order EO 90-04
- Water Pollution Control Act, 90.48 Revised Code of Washington (RCW)
- Wetland Mitigation in Washington State (Ecology et al. 2006)
- Washington State Department of Ecology (Ecology) SEPA Review
- Water Quality Standards (WAC 173-201A)
- Federal CWA implementation:
    - Section 401 Certification
    - Section 402 National Pollutant Discharge Elimination System (NPDES) Program

2.3 Local

The project corridor crosses five jurisdictions: City of Seattle, City of Shoreline, City of Lake Forest Park, City of Kenmore and City of Bothell. Each jurisdiction has Critical Area Ordinances (CAOs) that regulate activities affecting wetlands, streams, geologically hazardous areas, and fish and wildlife habitat conservation areas. Relevant sections of code from each jurisdiction governing wetland and stream classification, buffers and protected resources are addressed in individual sections below and in **Appendix A** (Summary of Regulations).

Other relevant miscellaneous regulatory plans and programs that affect design development include:

- Mitigation Reserves Program consisting of an in-lieu fee (ILF) structure for service areas throughout King County, including portions of Lake Washington and Sammamish River drainages (King County 2020a)
- Keller Farm Wetland Mitigation Bank, which has a mitigation bank service area that includes portions of Lake Washington and Lake Sammamish drainages (Ecology 2020b)
- Swamp Creek Fecal Coliform Bacteria Total Maximum Daily Load Water Quality Improvement Report and Implementation Plan (Ecology 2006)
- Thornton Creek Draft Watershed Action Plan (Thornton Creek Watershed Management Committee 2001)
- Greater Lake Ballinger/McAleer Creek Watershed Study, Strategic Action Plan (Otak and Golder 2009)

- North Creek Watershed Total Maximum Daily Load Evaluation for Fecal Coliform Bacteria (Norm 2001)
- North Creek Fecal Coliform Bacteria Total Maximum Daily Load, Detailed Implementation Plan (Svrjcek 2003)

3 STUDY OBJECTIVES AND METHODS

This section describes the objectives and methods used to study ecosystem resources, as well as impact assessment methods and assumptions.

3.1 Study objectives

The purpose of this study is to characterize ecosystem resources within the project study area and to evaluate potential impacts of all BRT activities in support of the project SEPA document. The study area generally consists of all areas within 300 feet of project elements, except as described for specific resources below. Specific objectives of this study include the following:

- Identify, map and describe the locations and existing character and conditions of wetlands and streams and their respective buffers in the study area
- Conduct a formal delineation of wetland boundaries for any wetlands potentially affected by the project
- Identify fisheries resources in the study area, including resident and anadromous species
- Conduct a reconnaissance-level physical habitat survey of waterbodies within the study area that could be affected by the project, including riparian and aquatic habitat conditions
- Identify and describe any barriers to fish passage within the study area
- Identify, map and describe existing conditions of vegetation communities and wildlife habitat resources in the study area
- Identify any federal- or state-listed endangered, threatened or candidate species of fish, wildlife or plants, or suitable habitat documented in the study area
- Determine the project's impacts on wetlands, streams, fish and wildlife habitat, vegetation and federal- or state-listed species
- Describe potential measures to avoid, minimize or compensate for anticipated adverse impacts

3.2 Methods

This section summarizes the methods used to identify, evaluate and assess impacts on ecosystem resources.

3.2.1 Review of background information

Biologists reviewed publicly available background information on ecosystems resources that could be affected by the construction and operation of the proposed project, including those within the project footprint and potential compensatory mitigation sites. Data sources considered include inventories of wetlands, streams, fish and wildlife, and plants based on local, state and federal regulations and resource data. The information reviewed included:

- Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2001)
- National Wetlands Inventory web mapper (USFWS 2020a)
- US Fish and Wildlife Service (USFWS), IPaC Web Tool (USFWS 2020b)
- National Oceanic and Atmospheric Administration, ESA species lists (NOAA 2016)
- Washington State Department of Fish and Wildlife (WDFW) SalmonScape online database (WDFW 2020a)
- WDFW Priority Habitats and Species (PHS) on the web (WDFW 2020b)
- Washington Natural Heritage Program, rare plant database (WDNR 2020a)
- Washington State Department of Natural Resources Forest Practices Water Type Map (WDNR 2020b)
- City of Seattle Critical Areas map and data (Seattle 2020)
- City of Shoreline Critical Areas map and data (Shoreline 2020)
- City of Lake Forest Park Critical Areas map and data (Lake Forest Park 2020)
- City of Kenmore Critical Areas map and data (Kenmore 2020)
- City of Bothell Critical Areas map and data (Bothell 2020a)
- King County iMap (King County 2020b)
- Google™ Earth Pro mapping
- A catalog of Washington streams and salmon utilization, Volume 1, Puget Sound (Williams et al. 1975)

3.2.2 Field delineation and survey methodology

After collection and review of existing information, biologists conducted a detailed field delineation and reconnaissance survey within the study area to identify and confirm ecosystem resources that could be affected. Formal delineations (flagged and subsequently mapped by professional land surveying) of wetlands, ordinary high water mark (OHWM), or other resources were conducted only where it was anticipated that resources could be directly affected by the project and where property access was available.

In 2019, DEA performed site visits on August 8, September 17 and 27, October 4, and November 8. In 2020, site visits were performed on April 7, July 29 and October 2. During the site visits, sensitive areas, site characteristics and habitat features within the study area were assessed.

Each wetland, stream or other water identified in the study area received a unique identifier that was tracked in a geographic information system (GIS) database. If a stream already had a formal name, it was used. Unnamed wetlands, streams or other waters were assigned names that started with the letter “W” for wetlands and “S” for streams. The next two to three letters of the assigned name were based on the jurisdictional location (i.e., Seattle = SE, Lake Forest Park = LFP, Bothell = BO), followed by the order in which they were encountered in the field (1, 2, 3, etc.). Other types of aquatic habitat types (e.g., lakes, ponds, bays and waterways) were identified by formal name, if available.

3.2.2.1 Wetland delineation

Wetlands were identified using the routine approach described in the Wetland Delineation Manual (Environmental Lab 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010). Wetland boundaries and data plot locations were marked with flagging, and their locations were collected, mapped and subsequently surveyed or recorded with Global Positioning System (GPS). All wetland boundaries, classifications and assigned buffer widths are subject to verification by the local jurisdictions and the state and federal regulatory agencies (e.g., Ecology and the Corps).

Wetlands were classified using the USFWS wetland classification system (FGDC 2013). Wetlands are classified using the hydrogeomorphic (HGM) system (Brinson 1993). Plant species were identified according to the revised National Wetland Plant List (Lichvar et al. 2016) as well as Cooke (1997), Pojar and MacKinnon (1994), and Hitchcock and Cronquist (1973). Vegetation was considered hydrophytic (adapted to wetland conditions) when over 50 percent of the dominant plant species had an indicator status of facultative (FAC), facultative wetland (FACW) or obligate (OBL) wetland. Vegetation was also considered hydrophytic when facultative upland (FACU) species were directly observed in saturated soil conditions during the growing season that could not be attributed to non-routine flooding or wetter-than-normal conditions. In accordance with the methodology, site investigators documented soils at all data plots and examined them for the following indicators of hydric conditions: thick organic layers, gleying, depleted matrix and/or redoximorphic features. Site investigators evaluated site hydrology through observation of surface water, soil saturation, groundwater level, and evidence of drainage patterns or sediment deposits.

A qualitative functional assessment was also conducted for the wetlands based on the Ecology wetland rating system (Hruby 2014). Under the revised Ecology wetland rating system (Hruby 2014), the water quality, hydrology and habitat functions are broken into low, moderate and high categories based on a point breakdown. The combined points in these three functional categories fit into four wetland categories (I, II, II and IV). Ecology recognizes the four categories of wetlands based on sensitivity to disturbance, rarity, the functions they provide and difficulty to replace; Category I offers the highest function and Category IV offers the lowest.

Biologists assigned preliminary buffer widths to the identified wetlands in the study area based on the wetland rating system and the local jurisdictional code. **Table 3-1** (Summary of wetland buffer widths by jurisdiction) presents a summary of buffer width requirements for each of the local jurisdictions.

Table 3-1 Summary of wetland buffer widths by jurisdiction

Wetland Category	City of Shoreline Buffer Width (feet)[1]	City of Seattle Buffer Width (feet)[2]	City of Lake Forest Park Buffer Width (feet)[3]	City of Kenmore Buffer Width (feet)[4]	City of Bothell Buffer Width (feet)[5]
I	75–225	100–200	75–225	75–225	75–225
II	75–225	100–200	75–225	75–225	75–225
III	60–225	60–200	60–225	60–225	60–225
IV	40	0–50	40	40	40

[1] Shoreline Municipal Code 20.80.330 Wetlands – Required buffer areas.
[2] Seattle Municipal Code 25.09.160 - Development standards for wetlands and wetland buffers.
[3] Lake Forest Park Municipal Code 16.16.320 Wetlands – Development standards.
[4] Kenmore Municipal Code 18.55.300 Designation and rating of wetlands.
[5] Bothell Municipal Code 14.04.530 (note: Bothell CAO being updated in March 2021).

3.2.2.2 Stream delineation

A field reconnaissance survey was conducted to identify, map and describe the streams within the study area. Per the Sound Transit Stream Habitat Assessment Guidelines (Sound Transit 2016), aquatic habitat surveys were conducted 300 feet downstream and 100 feet upstream of each stream crossing, and within a 200-foot corridor along the entire alignment of any stream paralleling the project limits, where approved property access was available. Streams were classified according to the Washington state stream classification system and by the corresponding jurisdiction's code requirements for stream type and classification, in instances where municipal code definitions differed from state definitions. In areas where access was available, the OHWM of each stream was flagged and mapped. The riparian zone, generally within 50 feet of the stream, also was evaluated.

Stream type was assigned based on classifications in WAC 222-16-030. The stream classification system identifies waterbodies as either fish bearing or non-fish bearing, and as experiencing either perennial or seasonal flow. Stream types are generally described as:

- Type S Water: all waters, within their bankfull width, as inventoried as "shorelines of the state" under chapter 90.58 RCW and the rules promulgated pursuant to chapter 90.58 RCW, including periodically inundated areas of their associated wetlands.
- Type F Water: segments of natural waters other than Type S Waters, which are within bankfull widths of defined channels and periodically inundated area of the associated wetlands, or within lakes, ponds or impoundments having a surface area of 0.5 acre or greater at seasonal low water and which in any case contain fish habitat or are described by one of four categories outlined in WAC 222-16-030.
- Type Np Water: all segments of natural waters within the bankfull width of defined channels that are perennial non-fish habitat streams.
- Type Ns Water: all segments of natural waters within the bankfull width of the defined channel that are not Type S, F, or Np Waters; these are seasonal non-fish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall.

The OHWM of streams was delineated based on the Corps and Ecology definitions. The Corps guidance (USACE 2014) defines the OHWM as "*that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas*." Ecology's guidance (Anderson et al. 2016 and Olson and Stockdale 2010) defines the OHWM for state waters as "*that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland…."* Typical characteristics used to identify the OHWM (USACE 2005) include the following physical characteristics when making an OHWM determination, to the extent that they can be identified, and are deemed reasonably reliable:

- Natural line impressed on the bank
- Shelving changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris wracking
- Vegetation matted down, bent or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

Biologists collected information about the condition of in-stream and riparian habitats and identified the OHWM of stream reaches that occurred within the study area. Where identified in the field, potential barriers to fish passage were documented and described. Aquatic habitat surveys were conducted on portions of the following streams:

- Littles Creek
- Hamlin Creek
- Bsche'tla Creek
- McAleer Creek

- Lyon Creek
- Cat Whisker Creek
- Swamp Creek
- One unnamed tributary to the Sammamish River (Stream SBO-1)

3.2.2.3 Vegetation and wildlife resources

Biologists reviewed existing background information (discussed above) to determine potential presence of native vegetation communities, wildlife and wildlife habitat in the study area. Potential presence of wildlife in the study area was assumed if suitable habitat was present. No formal wildlife or vegetation surveys were conducted for this study, but field investigations documented the condition of existing native habitats and open spaces and recorded anecdotal observations of wildlife species. Habitats were noted as belonging to one of the following categories: developed, forested, golf course, open space, open water and riparian. Field surveys were conducted to delineate streams and wetlands in the study area. An overview map of delineated wetlands and streams is shown in **Figure 4-1** (Wetland and stream overview map, and individual streams and wetlands are depicted in **Figure 4-2** (Wetland and stream delineation map – Littles Creek). Information noted during surveys included general type of vegetation cover, the prevalence of nonnative species including noxious weeds and evidence of wildlife use (e.g., tracks, scat, etc.). High quality habitat areas along the project corridor were identified on aerial photographs and verified in the field, and the habitats are mapped in **Figure 4-3** (Fish and wildlife habitat).

3.2.3 Impact assessment methods

This section summarizes the methods used to assess impacts to ecosystem resources. Overall, the assessment addresses direct effects (effects occurring at the same time and place), indirect effects (effects occurring at a later time or different area) and cumulative effects (direct and indirect impacts combined with incremental impacts of past, present and reasonably foreseeable future actions of all federal and nonfederal entities) occurring as a result of project construction and operation.

The assessment is based on the intensity, duration, extent and context of anticipated impacts. The overall level of impact, which may be beneficial or adverse, can vary from no effect to a major effect. The report also discusses construction impacts. The discussion of construction impacts focuses solely on the temporary, short-term effects of such activities. In contrast, permanent direct effects are assumed to be of a long-term duration.

Impacts to wetlands and streams and their buffers were assessed by overlaying the conceptual engineering design footprint over the documented boundaries of aquatic resources in the study area. Associated impacts to the long-term function of the wetland and/or stream were then assessed using best professional judgement. Impacts to vegetation and wildlife resources were assessed primarily qualitatively by considering factors such as rarity of habitat, presence of wildlife movement corridors, presence of sensitive species and degree of fragmentation. The analysis of vegetation also includes assessment of tree removal.

4 AFFECTED ENVIRONMENT

4.1 Waters: wetlands

The project corridor is located in a highly urbanized area, much of which extends along the northern and northeastern end of Lake Washington. Most wetlands along the corridor are disturbed remnants of historic natural systems or are closely associated with streams. In some cases, wetlands mapped in the study area are the result of previous compensatory mitigation efforts. Sound Transit identified a total of 15 wetlands within the study area, as described below by local jurisdiction. Wetlands delineated include Palustrine forested (PFO), Palustrine unconsolidated bottom (PUB), Palustrine scrub-shrub (PSS) and Palustrine emergent (PEM) systems (FGDC 2013). An overview map of delineated wetlands and streams is shown in **Figure 4-1** (Wetland and stream overview map). **Figure 4-2** (Wetland and stream delineation map), which consists of 11 sheets, provides detailed maps of delineated wetlands and streams. Wetland data forms and Ecology rating forms are included in **Appendix B** (Wetland Data Forms and Rating Forms). **Appendix C** (Wetland and Stream Summary Sheets) includes summary sheets indicating the classification, vegetation, hydrology and functions of each wetland. **Table 4-1** (Wetland resources summary) summarizes the characteristics of individual wetlands in the study area.

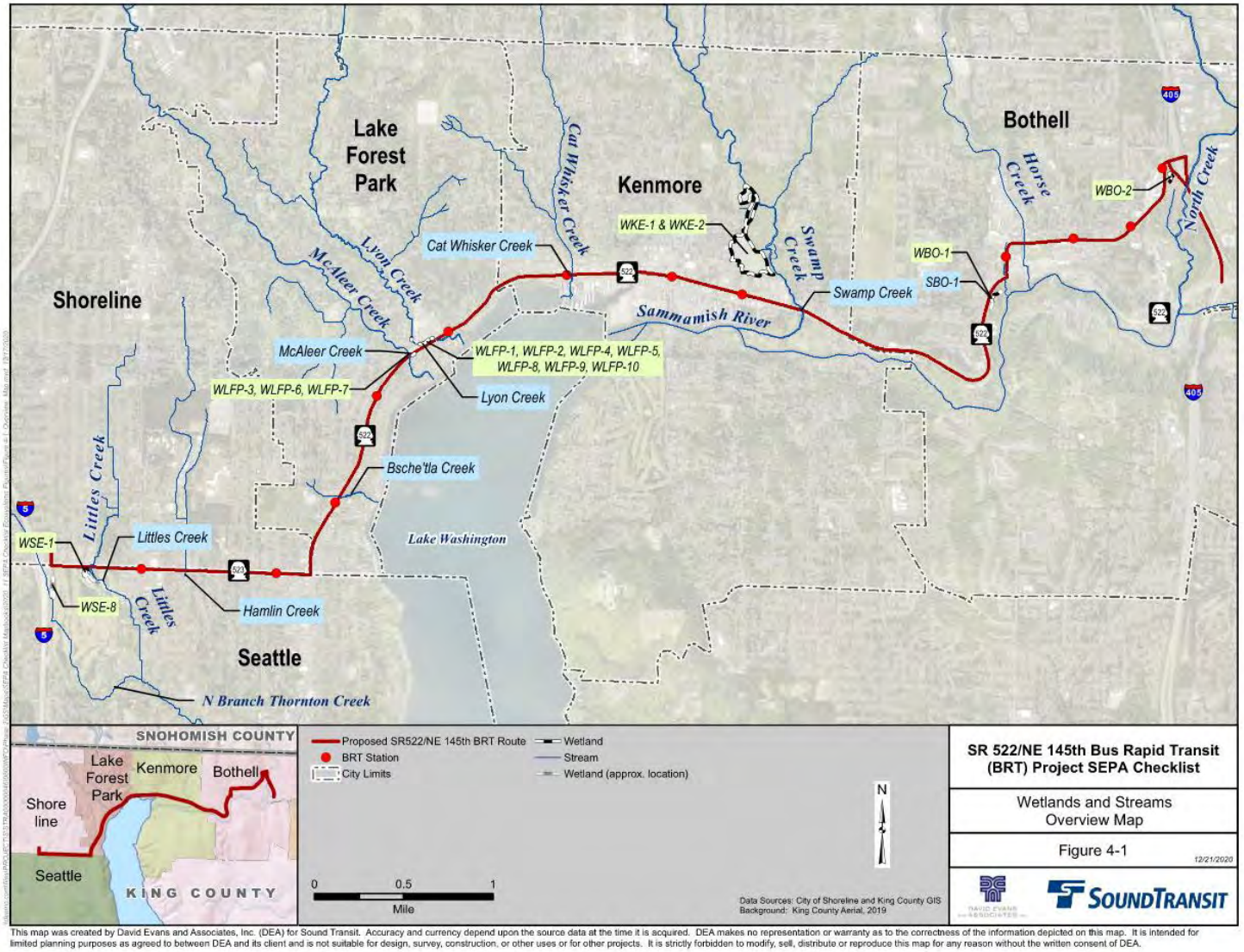

Figure 4-1 Wetland and stream overview map

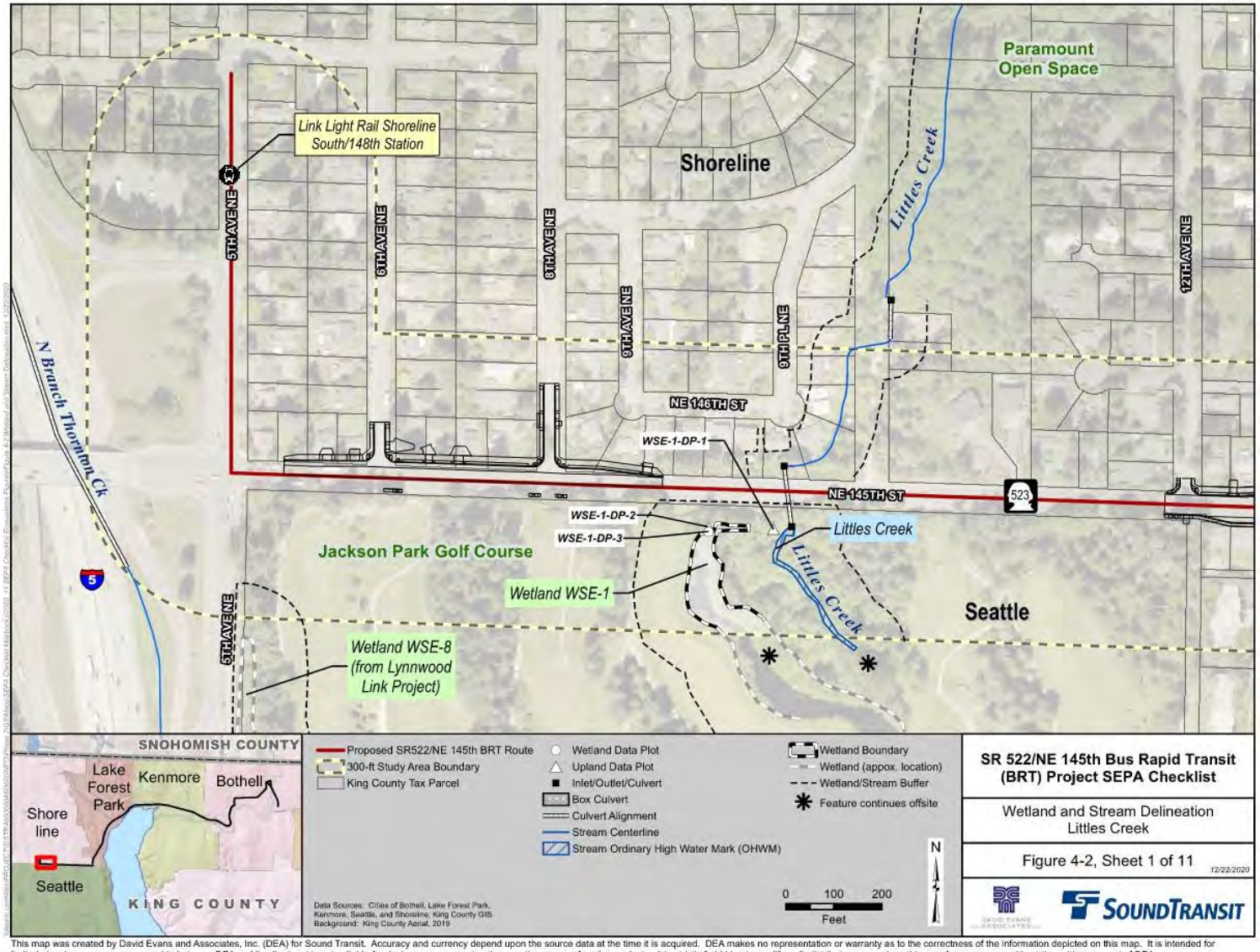

Figure 4-2, sheet 1 of 11 Wetland and stream delineation map – Littles Creek

Figure 4-2, sheet 2 of 11 Wetland and stream delineation map – Hamlin Creek

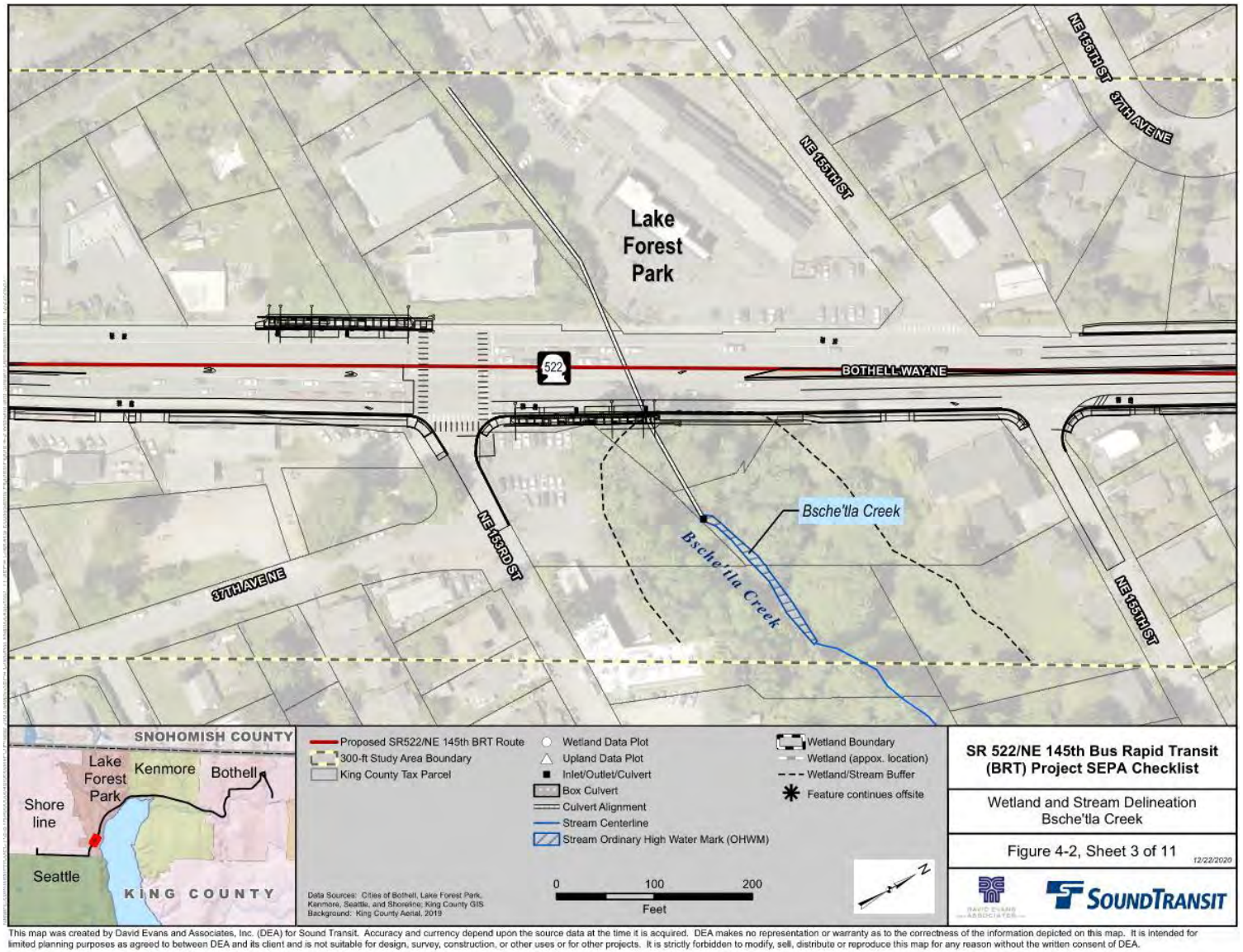

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Figure 4-2, sheet 3 of 11 Wetland and stream delineation map – Bsche'tla Creek

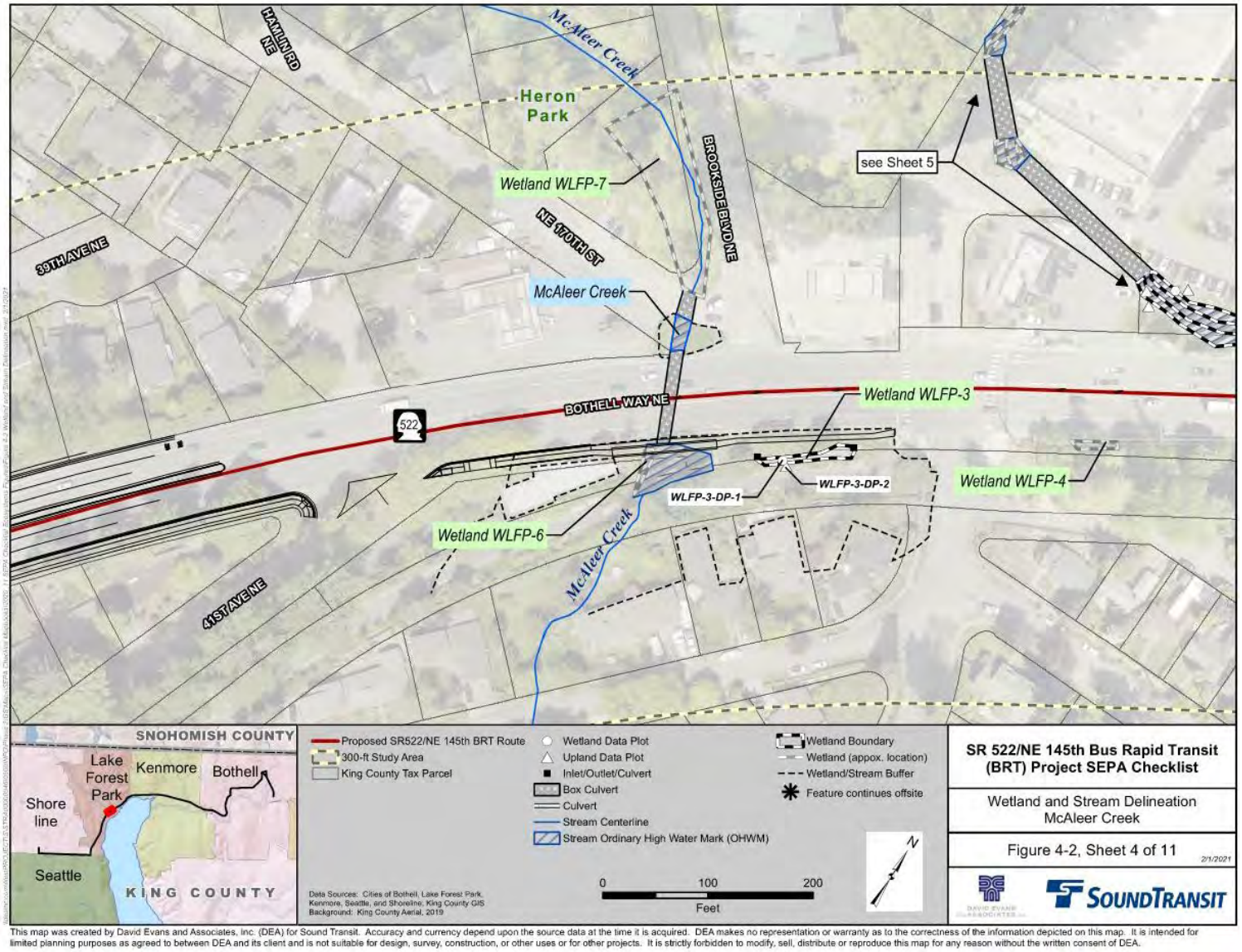

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Figure 4-2, sheet 4 of 11 Wetland and stream delineation map – McAleer Creek

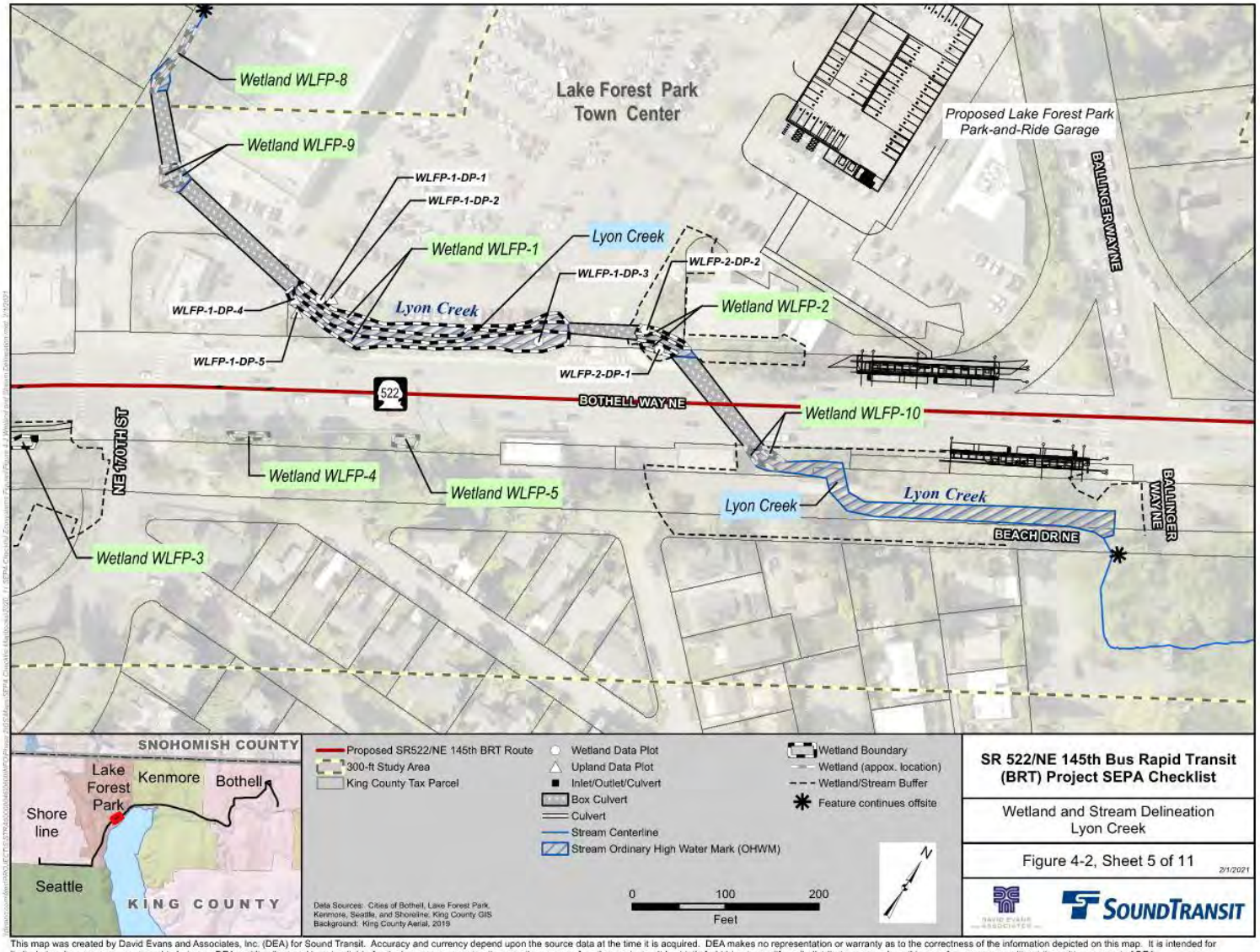

Figure 4-2, sheet 5 of 11 Wetland and stream delineation map – Lyon Creek

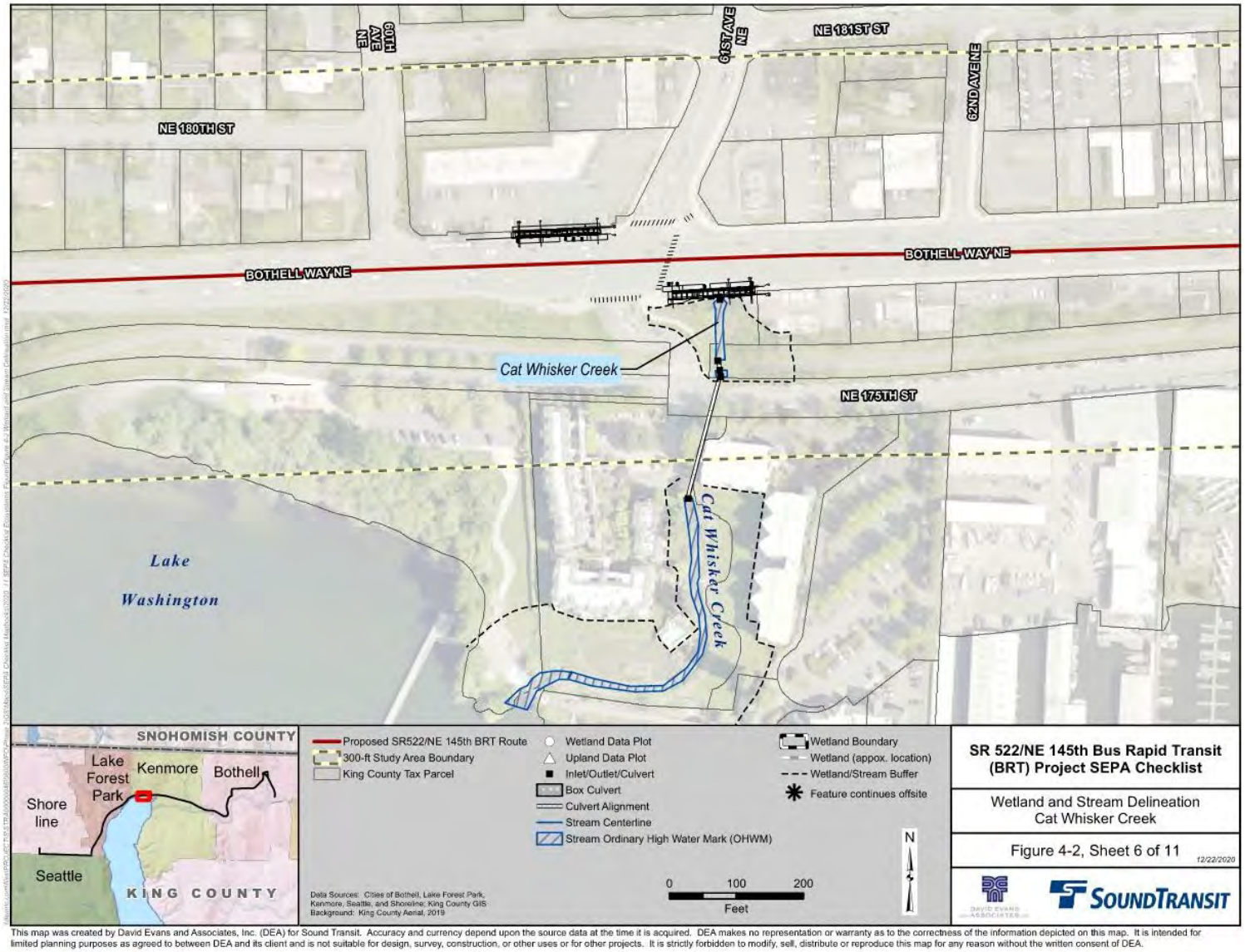

Figure 4-2, sheet 6 of 11 Wetland and stream delineation map – Cat Whisker Creek

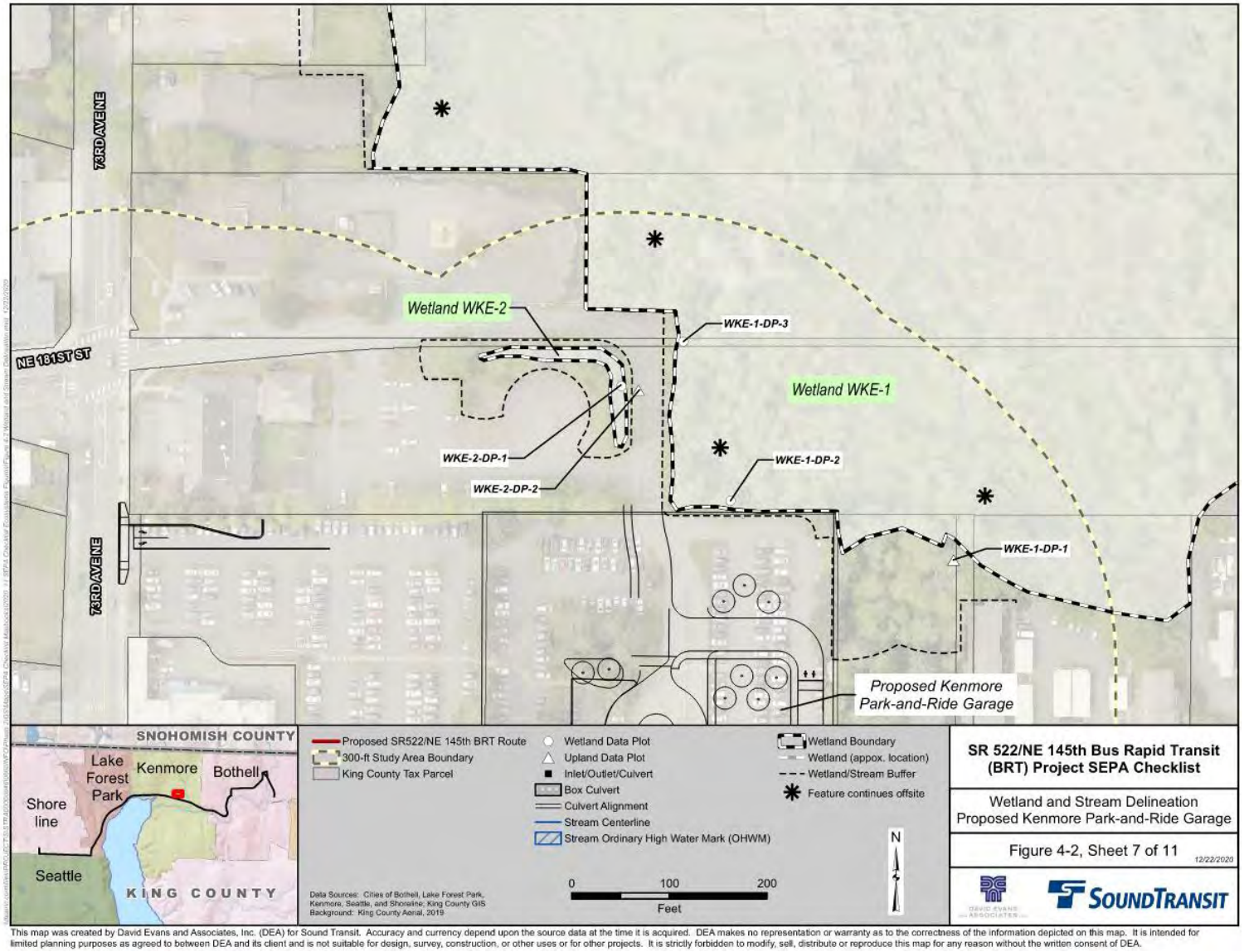

Figure 4-2, sheet 7 of 11 Wetland and stream delineation map – proposed Kenmore Park-and-Ride garage

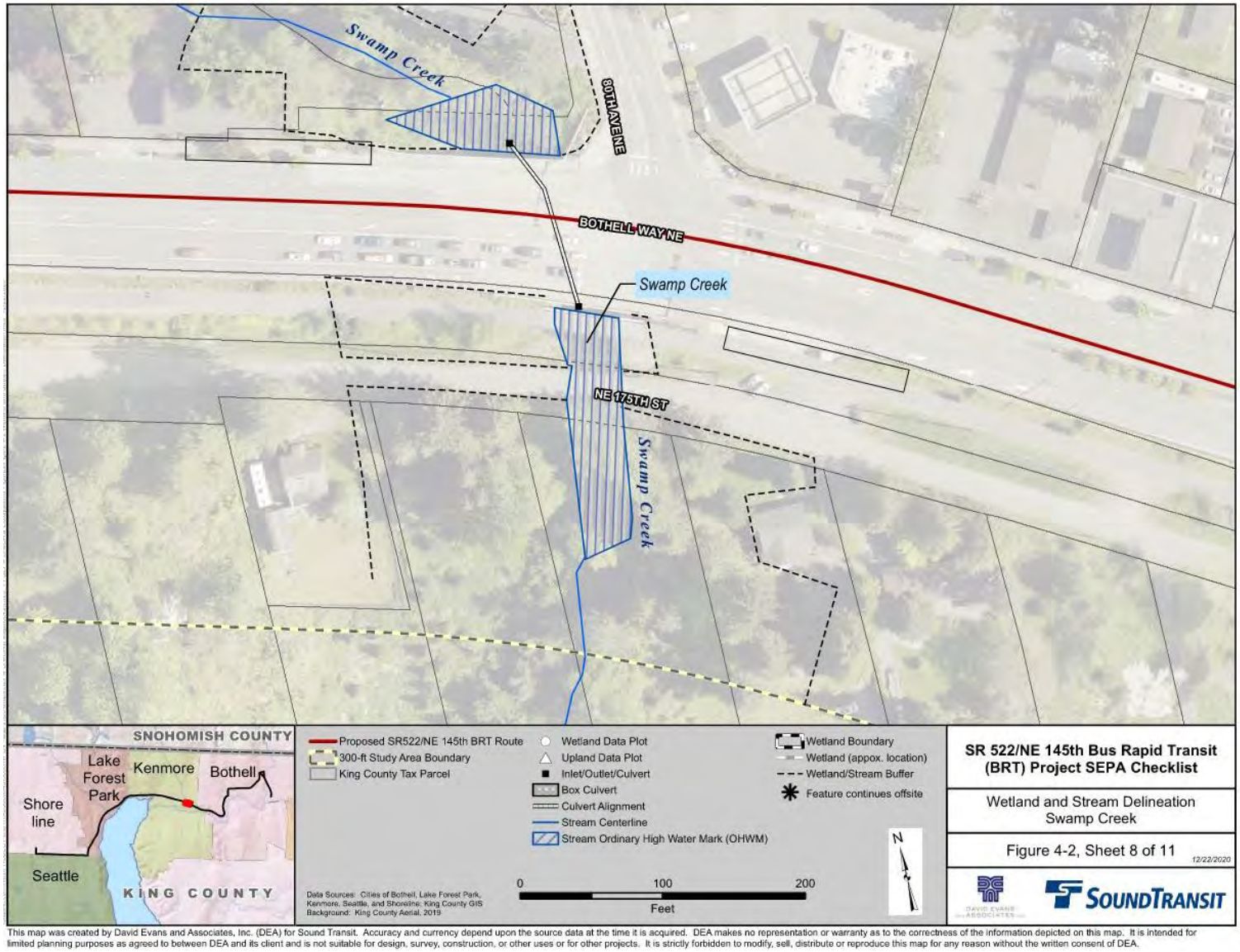

Figure 4-2, sheet 8 of 11 Wetland and stream delineation map – Swamp Creek

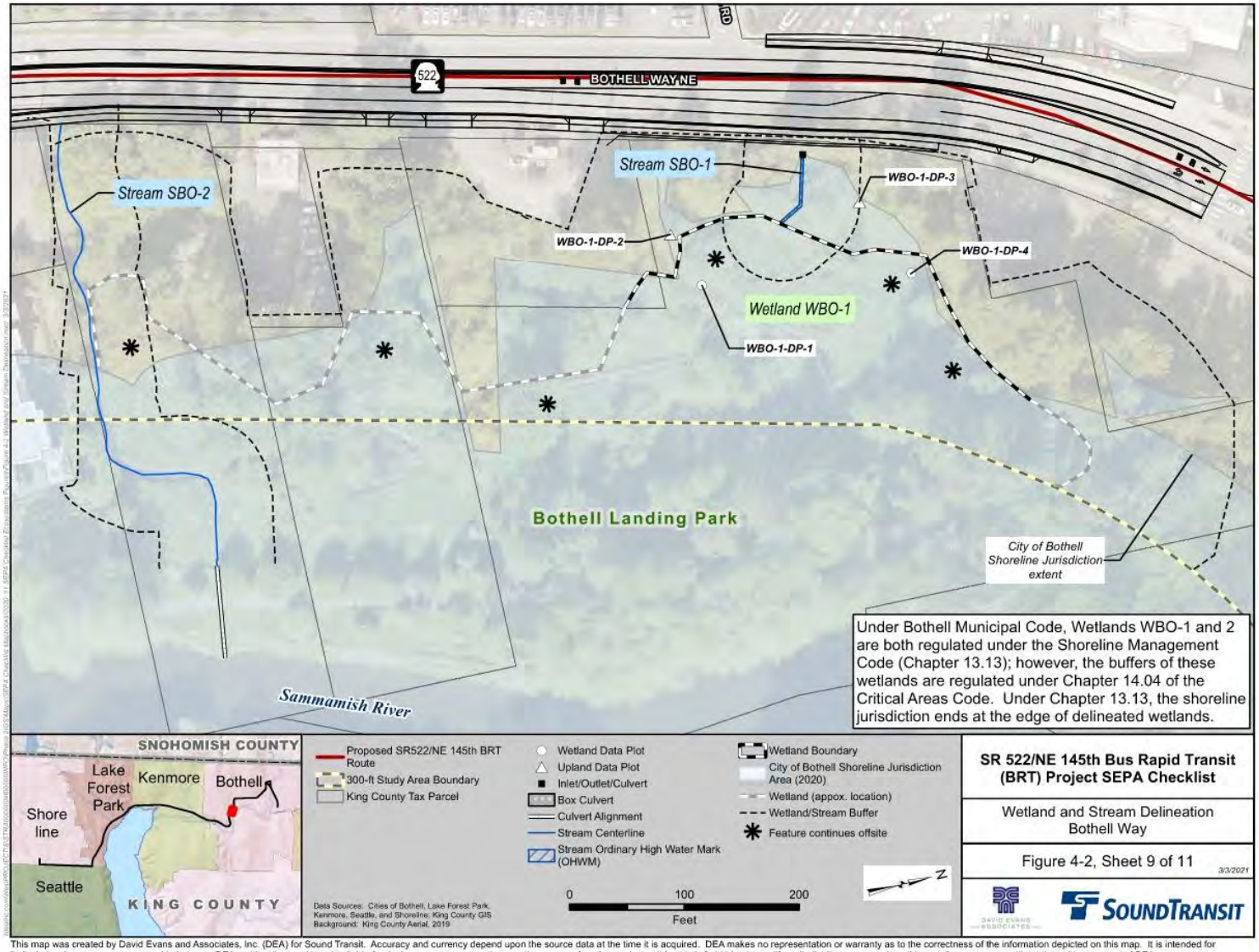

Figure 4-2, sheet 9 of 11 Wetland and stream delineation map – Bothell Way

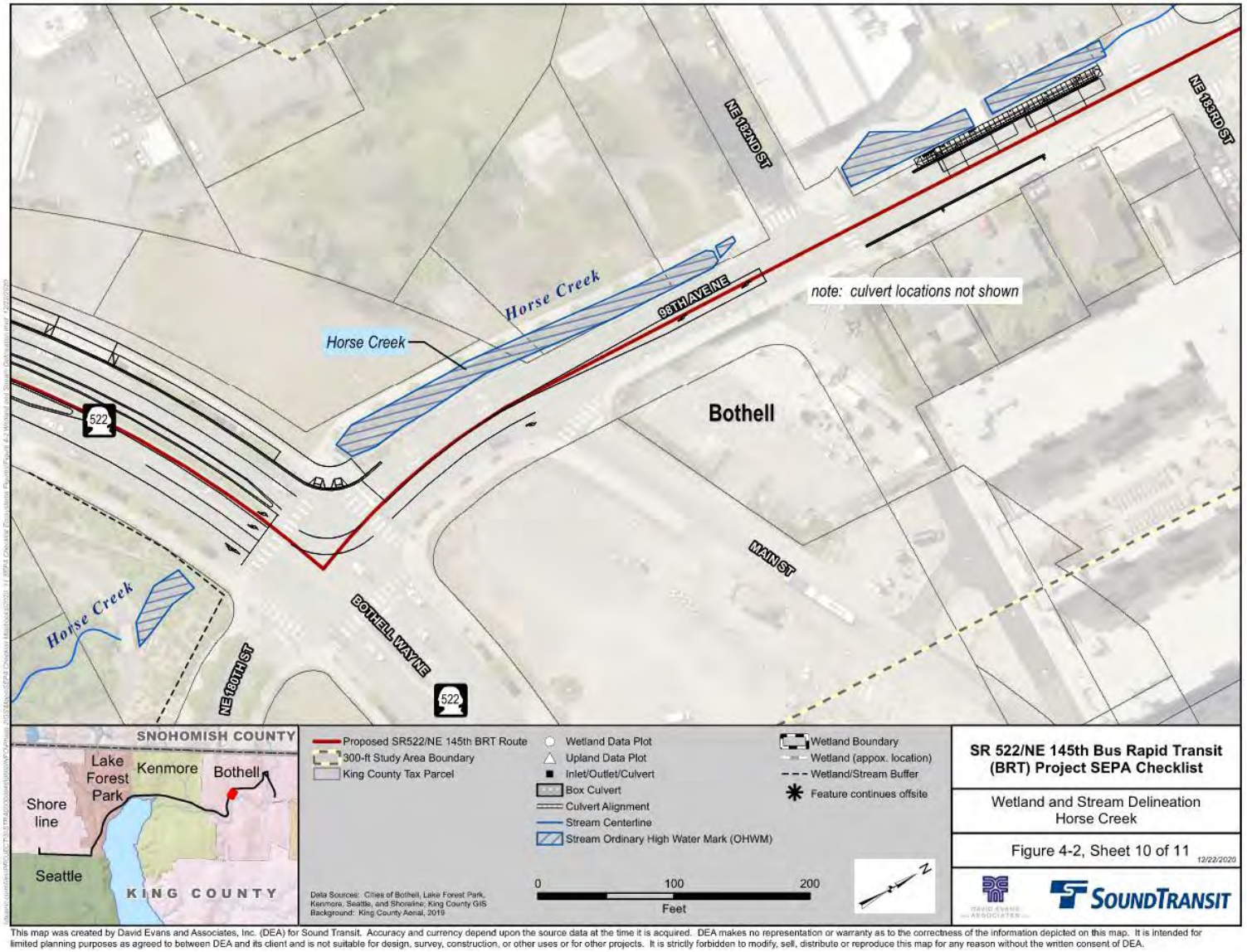

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Figure 4-2, sheet 10 of 11Wetland and stream delineation map – Horse Creek

Figure 4-2, sheet 11 of 11 Wetland and stream delineation map – East Bothell

Table 4-1 Wetland resources summary

Jurisdiction	Wetland Name	Wetland Size (acres)	Hydrogeomorphic Classification	Cowardin Classification (NWI)[1]	Mapped NRCS Hydric Soil	Fish and Wildlife Usage (WDFW PHS)	Ecology Classification[2]	Local Standard Buffer (feet)[3]
Shoreline	No delineated wetlands							
Seattle	WSE-1	Approx. 1.5	Depressional	PFO, PUB	None	Coyote; small mammals; waterfowl	II	110
Lake Forest Park	WLFP-1	0.1	Riverine	PSS/PEM	None	Small mammals; resident and anadromous fish	III	105
Lake Forest Park	WLFP-2	0.02	Riverine	PSS/PEM	None	Small mammals; resident and anadromous fish	III	105
Lake Forest Park	WLFP-3	0.01	Depressional	PEM	None	Small mammals; fish	III	105
Lake Forest Park	WLFP-4 and 5	Each ~ 0.01	Depressional	PSS	None	Small mammals	III	105
Lake Forest Park	WLFP-6	<0.01	Riverine	PEM	None	Small mammals; resident and anadromous fish	III	105
Lake Forest Park	WLFP-7	0.25	Riverine	PFO	None	Small mammals; waterfowl; resident and anadromous fish	III	105
Lake Forest Park	WLFP-8	0.2	Riverine	PEM	None	Small mammals; resident and anadromous fish	III	105
Lake Forest Park	WLFP-9 and 10	Each <0.01	Riverine	PEM	None	Small mammals; resident and anadromous fish	III	105
Kenmore	WKE-1	Approx. 75	Riverine	PFO/PSS/PEM	None	Small mammals; fish; great blue herons	I	110
Kenmore	WKE-2	0.04	Depressional	PFO/PEM	None	Small mammals; birds	III	60

Jurisdiction	Wetland Name	Wetland Size (acres)	Hydrogeomorphic Classification	Cowardin Classification (NWI)[1]	Mapped NRCS Hydric Soil	Fish and Wildlife Usage (WDFW PHS)	Ecology Classification[2]	Local Standard Buffer (feet)[3]
Bothell	WBO-1	Approx. 4.0	Depressional	PFO/PSS/PEM	Puget silty clay loam	Fish	II	125
Bothell	WBO-2	Approx. 58	Riverine	PUB/PEM/PSS/ PFO	Seattle muck	Small mammals; birds; resident and anadromous fish	I	125

[1] PEM = Palustrine emergent; PSS = Palustrine scrub-shrub; PFO = Palustrine forested; PUB = Palustrine unconsolidated bottom.
[2] Wetland Rating System for Western Washington (Hruby 2014).
[3] Local codes: Seattle Municipal Code 25.09.160; Lake Forest Park Municipal Code 16.16.320; Kenmore Municipal Code 18.55.300; Bothell Municipal Code 13.13.020 (both wetlands under shoreline jurisdiction) and 14.04.530 (CAO buffers).

4.1.1 City of Shoreline wetlands

No wetlands were delineated along the study area within the City of Shoreline. Although a potential wetland complex was identified in the study area, access to the property was not granted. The wetland complex, a palustrine forested system associated with Littles Creek, is located within the Paramount Open Space north of NE 145th Street, among single-family houses. The extent of the wetland adjacent to the NE 145th Street roadway prism was not determined due to lack of property access.

4.1.2 City of Seattle wetlands

One wetland feature was delineated within the City of Seattle. Wetland WSE-1 is a Category II depressional PFO/PUB system adjacent to Littles Creek where the creek flows south through Jackson Park Golf Course. The wetland is approximately 1.5 acres in size. Based on aerial photos, the open water component of the wetland appears to be a pond created for the golf course sometime between 1990 and 1998. Other portions of the wetland are dominated by red alder (*Alnus rubra*), salmonberry (*Rubus spectabilis*) and water parsley (*Oenanthe sarmentosa*). The observed hydric soil indicator was sandy redox (S5); observed hydrology indicators include saturation, water marks and sediment deposits. Wetland WSE-1 provides moderate hydrologic, moderately high water quality and moderate habitat function. The wetland is surrounded by golf greens, fairways and undeveloped green space. The wetland drains to Littles Creek, a tributary of the North Branch of Thornton Creek.

The location of Wetland WSE-1 is shown on **Figure 4-2** (Wetland and stream delineation map). **Table 4-1** (Wetland resources summary) summarizes the characteristics and features of Wetland WSE-1. The wetland summary sheet is included in **Appendix C** (Wetland and Stream Summary Sheets). Based on reconnaissance-level investigations, no additional wetlands were identified in the study area within the City of Seattle. However, a wetland delineated for the Lynwood Link Extension project, Wetland WSE-8, occurs just outside of the study area on the Jackson Park Golf Course. Wetland WSE-8 is a 0.66-acre depressional wetland located on the west side of Jackson Park Golf Course. It is rated as a Category III wetland with a 60-foot regulatory buffer. The wetland is dominated by palustrine forest and scrub-shrub habitats. Although not within the project study area, Wetland WSE-8 is depicted on **Figure 4-1** (Wetland and stream overview map) and **Figure 4-2** (Wetland and stream delineation map).

4.1.3 City of Lake Forest Park wetlands

Three wetland features were identified and delineated in the study area within the City of Lake Forest Park. These include two riparian wetlands associated with Lyon Creek (WLFP-1 and WLFP-2) and one ditch wetland near McAleer Creek (WLFP-3). Seven other additional reconnaissance-level wetlands were identified in the vicinity of the Town Center (WLFP-4 through WLFP-10). These reconnaissance wetlands would not be affected by project activity, so they were not delineated in the field, but instead were mapped with GPS.

4.1.3.1 Wetlands WLFP-1 and WLFP-2

These two Category III riverine wetlands confined within retaining walls are part of a creek restoration project along the Lake Forest Park Town Center. Comprised of a mix of PSS and PEM systems, Wetland WLFP-1 is approximately 0.1 acre in size; Wetland WLFP-2 is approximately 0.02 acre in

size. Each wetland is a riparian fringe system that extends from within the channel up to the retaining wall boundary. They are both dominated by willows (*Salix ssp.*), red osier dogwood (*Cornus sericea*), broadleaf cattail (*Typha latifolia*), soft-stem bulrush (*Schoenoplectus tabernaemontani*) and creeping buttercup (*Ranunculus repens*). Hydric soil indicators include depleted below dark surface (A11) and redox dark surface (F6); observed hydrology indicators include saturation and drift deposits. Wetlands WLFP-1 and WLFP-2 provide moderate hydrologic and water quality function and relatively low habitat value, because the vegetation community is still not well developed. They are surrounded by impervious surfaces at Lake Forest Park Town Center and SR 522, and have little to no functional buffer. The wetlands drain to Lake Washington via Lyon Creek. The locations of Wetlands WLFP-1 and WLFP-2 are shown on **Figure 4-2** (Wetland and stream delineation map). **Table 4-1** (Wetland resources summary) summarizes the characteristics and features of these wetlands.

4.1.3.2 Wetland WLFP-3

Wetland WLFP-3 is a Category III depressional PEM wetland that is confined to a ditch along the Burke-Gilman Trail, just east of McAleer Creek, between SR 522 and the trail. Wetland WLFP-3 is approximately 0.01 acre in size. The plant community in Wetland WLFP-3 is dominated by water parsley and creeping buttercup. The hydric soil indicator observed was depleted below dark surface (A11); observed hydrology indicators include algal mat or crust, sparse vegetated concave surface, water stained leaves, drainage pattern and geomorphic position. Wetland WLFP-3 provides moderate water quality function, and low hydrologic and habitat function. This wetland starts as an inundated pool at its east end (an inlet pipe could not be located) and drains to an outlet pipe at its west end. While the other end of the outlet pipe could not be located, it is assumed to drain to McAleer Creek, about 40 feet away.The location of WLFP-3 is shown on **Figure 4-2** (Wetland and stream delineation map). **Table 4-1** (Wetland resources summary) summarizes the characteristics and features of Wetland WLFP-3.

4.1.3.3 Wetlands WLFP-4 and WLFP-5

Wetlands WLFP-4 and WLFP-5 are Category III depressional PSS wetlands that form in a ditch along the Burke-Gilman Trail just north and east of Beach Drive NE, between SR 522 and the trail. These two wetlands are each less than 0.01 acre in size and receive surface water runoff from adjacent areas. They are dominated by a mix of planted native shrub and tree species, including soft-stem bulrush, bitter dock (*Rumex obtusifolius*), western touch-me-not (*Impatiens noli-tangere*), western red cedar (*Thuja plicata*) and Scouler's willow (*Salix scouleriana*). Hydric soil and hydrology indicators were not collected, because these wetlands were not formally delineated. Both Wetland WLFP-4 and Wetland WLFP-5 provide moderate water quality function, and low hydrologic and habitat function. Wetland WLFP-4 likely connects to Wetland WLFP-3 through a buried culvert. Wetland WLFP-5 may be isolated, because no outlet was observed. The locations of Wetlands WLFP-4 and WLFP-5 are shown on **Figure 4-2** (Wetland and stream delineation map) and described in **Table 4-1** (Wetland resources summary). These wetlands will not be subject to any construction impacts, and their buffers do not extend into areas subject to long-term project impacts.

4.1.3.4 Wetlands WLFP-6 and WLFP-7

Wetlands WLFP-6 and WLFP-7 are Category III PEM and PFO riverine wetlands, respectively, associated with McAleer Creek. Wetland WLFP-6 is a small (less than 0.01 acre) wetland located on the right bank of McAleer Creek downstream of SR 522. It is situated entirely below the OHWM of the stream. The wetland's vegetation is dominated by reed canarygrass (*Phalaris arundinacea*) and bittersweet nightshade (*Solanum dulcamara*). Hydrology is entirely supported by overflow from McAleer Creek. Wetland WLFP-7 is a larger (0.25 acre) wetland located in Heron Park, north of SR

522. It receives runoff from adjacent areas, but its hydrology is primarily supported by overbank flow from McAleer Creek. Vegetation in the wetland is dominated by black cottonwood (*Populus balsamifera*), red alder, dogwood (*Cornus stolonifera*) and salmonberry. Hydric soil and hydrology indicators were not collected, because these wetlands were not formally delineated. Both Wetland WLFP-6 and Wetland WLFP-7 provide moderate water quality function, and low hydrologic and habitat function. Wetlands WLFP-6 and WLFP-7 are shown on **Figure 4-2** (Wetland and stream delineation map) and described in **Table 4-1** (Wetland resources summary).

4.1.3.5 Wetlands WLFP-8, WLFP-9 and WLFP-10

These three wetlands are all Category III PEM riverine wetlands adjacent to Lyon Creek, upstream and downstream of SR 522. They are similar to Wetlands WLFP-1 and WLFP-2. Wetland WLFP-8 is an emergent fringe wetland adjacent to McAleer Creek upstream of the Lake Forest Park Town Center outside of the project study area. Wetland WLFP-8 is approximately 0.2 acre, and is connected to a narrow riparian corridor (approximate 0.2 acre) that continues to the northwest of the town center. Wetland WLFP-9 is an isolated wetland in a small (less than 0.01 acre) daylighted section of Lyon Creek that is approximately 30 feet long in the west side of the town center parking lot. Wetland WLFP-10 is an isolated fringe wetland (less than 0.01 acre) at the downstream end of the Lyon Creek culvert under SR 522, between the road and the Burke-Gilman Trail. All of these wetlands are located below the OHWM of the stream. Their buffers are very limited by adjacent development, and their vegetation is dominated by reed canarygrass, small-fruited bulrush (*Scirpus microcarpus*), water parsley, hardstem bulrush (*Schoenoplectus acutus*), Himalayan blackberry (*Rubus armeniacus*), cattail, soft rush (*Juncus effuses*) and willow. Hydric soil and hydrology indicators were not collected, because these wetlands were not formally delineated. Wetlands WLFP-8, WLFP-9 and WLFP-10 provide moderate water quality function, and low hydrologic and habitat function. Wetlands WLFP-8, WLFP-9 and WFLP-10 are shown on **Figure 4-2** (Wetland and stream delineation map) and described in **Table 4-1** (Wetland resources summary).

4.1.4 City of Kenmore wetlands

Two wetlands were identified and delineated in Kenmore within the study area. These include a large wetland complex associated with Swamp Creek (Wetland WKE-1) and a small adjacent wetland on the opposite side of the north access road to the Kenmore Park-and-Ride lot (Wetland WKE-2). Both of these wetlands drain to Lake Washington through Swamp Creek.

4.1.4.1 Wetland WKE-1

This large Category I riverine Mixed PFO, PSS and PEM wetland complex associated with Swamp Creek, a Shoreline of the State, abuts the Kenmore Park-and-Ride lot. Due to the wetland's contiguous flow to Swamp Creek, Wetland WKE-1 is also considered a Shoreline of the State. Within the study area, the wetland is located adjacent to impervious surfaces and urban development. Wetland WKE-1 continues north to NE 192nd Street and is approximately 75 acres in size. Adjacent to the park-and-ride facility, the wetland is dominated by willow, black cottonwood, reed canarygrass, red osier dogwood, hardhack (*Spirea douglasii*) and red alder. The observed hydric soil indicator was loamy mucky mineral (F1); observed hydrology indicators include surface water and saturation. Generally, this regionally important wetland complex has high hydrologic, water quality and habitat functions. It also provides habitat for a nearby great blue heron rookery (see Section 5 for more information on the heron rookery). The location of Wetland WKE-1 is shown on **Figure 4-2** (Wetland and stream delineation map). **Table 4-1** (Wetland resources summary) summarizes the characteristics and features of Wetland WKE-1.

4.1.4.2 Wetland WKE-2

This small Category III depressional PFO/PEM wetland is located between the north access road to the Kenmore Park-and-Ride lot and the adjacent private property (Columbia Crest Montessori School). This approximately 0.04-acre wetland is surrounded by impervious surfaces and has overhanging trees that are rooted outside the wetland. While the wetland itself is dominated by emergent and scrub-shrub vegetation, there is a stand of large cottonwood trees in the buffer that provides important wildlife habitat. Dominant vegetation within the wetland includes red alder, red osier dogwood, salmonberry, common ladyfern (*Athyrium filix-femina*) and slough sedge (*Carex obnupta*). The observed hydric soil indicator was loamy mucky material (F1); observed hydrology indicators include saturation and drainage pattern. The proximity of the wetland to nearby development allows it to provide a moderate level of hydrologic and water quality function. Its isolation reduces its overall habitat value. The inlet to the wetland consists of a pipe that extends from a bioswale adjacent to the parking lot for the Montessori school. The outlet consists of a small culvert that connects directly to Wetland WKE-1.The location of Wetland WKE-2 is shown on **Figure 4-2** (Wetland and stream delineation map). **Table 4-1** (Wetland resources summary) summarizes the characteristics and features of Wetland WKE-2.

4.1.5 City of Bothell wetlands

Two wetlands were identified and delineated in Bothell within the study area. These include a depressional wetland in the Park at Bothell Landing along the Sammamish River (Wetland WBO-1) and a large riverine wetland complex associated with North Creek (Wetland WBO-2). No additional wetlands were identified in Bothell during the reconnaissance-level surveys.

4.1.5.1 Wetland WBO-1

Dominated by a combination of PFO, PSS and PEM vegetation, Wetland WBO-1 is a Category II depressional wetland located on an elevated bench approximately 140 feet north of the Sammamish River. It starts in Bothell Landing Park and extends south to the Riverfront Landing Condominiums. Due to the wetland's contiguous flow to the Sammamish River, Wetland WBO-1 is also considered a Shoreline of the State. Within the study area, the wetland is adjacent to impervious surfaces and urban development to the north, and parkland and the Sammamish River to the south. Wetland WBO-1 is approximately 4.0 acres in size. Dominant vegetation within the portion of the wetland that was delineated includes reed canarygrass, red alder, Sitka willow (*Salix sitchensis*), Scouler's willow, salmonberry and giant horsetail (*Equisetum telmateia*). The observed hydric soil indicator was loamy mucky mineral (F1); observed hydrology indicators include surface water, saturation, oxidized rhizospheres along living roots, drainage pattern and geomorphic position. Wetland WBO-1 provides moderate water quality, high hydrologic and moderate habitat functions. This wetland drains to the Sammamish River. The location of Wetland WBO-1 is shown on **Figure 4-2** (Wetland and stream delineation map)**. Table 4-1** (Wetland resources summary) summarizes the characteristics and features of Wetland WBO-1.

4.1.5.2 Wetland WBO-2

This large Category I riverine PFO, PSS and PEM wetland complex associated with North Creek, a Shoreline of the State, has been mapped by the USFWS National Wetlands Inventory (NWI) between the UW Bothell/Cascadia College campus and I-405. Due to the wetland's contiguous flow to North Creek, Wetland WBO-2 is also considered a Shoreline of the State. Only the portion of this wetland adjacent to project improvements along Beardslee Boulevard was delineated within the study area.

The study area is adjacent to the north end of this wetland, where it is located between I-405 and Beardslee Boulevard. Wetland WBO-2 is approximately 58 acres in size. Dominant vegetation includes black cottonwood, red alder, salmonberry, twinberry honeysuckle (*Lonicera involucrata*), jewelweed *(Impatiens capensis)* and slough sedge. The observed hydric soil indicator was loamy mucky material; observed hydrology indicators include saturation, water-stained leaves and geomorphic position. Wetland WBO-2 provides high water quality, high hydrologic and moderate habitat functions. The wetland drains to Lake Washington via North Creek and the Sammamish River. Wetland WBO-2 was part of a large mitigation/restoration project conducted at the time of the construction of the UW Bothell/Cascadia College campus. The location of Wetland WBO-2 is shown on **Figure 4-2** (Wetland and stream delineation map). **Table 4-1** (Wetland resources summary) summarizes the characteristics and features of Wetland WBO-2.

4.2 Waters: streams

4.2.1 Watershed

The entire project study area is located within Water Resource Inventory Area (WRIA) 8 – Lake Washington/Cedar River/Sammamish River. Most of the project in Shoreline and Seattle falls within the Thornton Creek watershed, a direct tributary to Lake Washington that is heavily urbanized. Most of the project study area in Lake Forest Park falls within the watersheds for Bsche'tla, Lyon and McAleer creeks, all direct tributaries to Lake Washington. Major streams in Kenmore include Cat Whisker Creek and Swamp Creek, which drain to the Sammamish River (aka Sammamish Slough). Major streams in Bothell include Horse Creek and North Creek. A large percentage of these watersheds is dominated by urban and residential land uses. Stream-specific details such as local stream classification, WAC 222-16-030 water type, Washington State Department of Natural Resources (DNR) stream classification, documented salmonid presence, local standard buffer width, and presence on Ecology's 303(d) list are captured in **Table 4-2** (Stream resources summary). Stream summary sheets are also provided in **Appendix C** (Wetland and Stream Summary Sheets).

4.2.2 Streams in the study area

This section summarizes results of a field survey that identified, mapped and described streams within the study area. The extent of the field survey was on publicly owned property and accessible private properties. **Figure 4-1** (Wetland and stream overview map) shows an overall map of delineated streams and reconnaissance features. This stream assessment section provides a description of each individual stream, organized by local jurisdiction. A total of 14 streams are included in this assessment, but only eight of those streams, which include those streams that had the potential to be affected by project construction, were delineated in the field. Barriers to aquatic organism movement were documented and described where observed in the study area. Detailed locations of each stream are shown in **Figure 4-2** (Wetland and stream delineation map). **Table 4-2** (Stream resources summary) summarizes details about each stream described below. Summary sheets for each potentially affected stream are provided in **Appendix C** (Wetland and Stream Summary Sheets). **Appendix D** (Summary of Stream Physical Data) and **Table 4-3** (Summary of physical characteristics of delineated stream reaches in the study area[1]) summarize the physical data collected at all streams delineated in the study area.

4.2.2.1 City of Shoreline streams

Littles Creek and Hamlin Creek are located within the project study area in Shoreline; however, neither of these streams was field delineated. Littles Creek, which crosses NE 145th Street, passes through private property within Shoreline (on the north side of NE 145th Street), and access was not granted. Hamlin Creek is an intermittent ditched stream that daylights just south of NE 145th Street on the west side of 20th Avenue NE. Neither of these streams is classified as a Shoreline of the State. **Figure 4-2** (Wetland and stream delineation map) shows the location of each of these features.

Littles Creek

Littles Creek is located within the Thornton Creek watershed, which is a direct tributary to Lake Washington. It drains an area of approximately 600 acres. Littles Creek originates as a piped system that concentrates stormwater flows from the neighborhoods north of NE 145th Street. It daylights in a stream channel in the Paramount Open Space, then flows south under NE 145th Street (SR 523) and onto Jackson Park Golf Course. See the “City of Seattle streams” section below for summary data about Littles Creek south of NE 145th Street. Adjacent and north of the project corridor, the stream flows through a neighborhood in the backyards of single-family residences. Access to these private properties was not granted; therefore, the stream was not delineated in this area. The riparian corridor is dominated by parkland and maintained lawn. Where the stream flows through the Paramount Open Space, the riparian buffer is dominated by native deciduous and coniferous trees and shrubs, along with sparse invasive species. In this publicly accessible open space, the stream channel was approximately 6 feet wide with a water depth of less than 1 foot at the time of the site visit. From the Paramount Open Space, Littles Creek flows south for approximately 500 feet before reaching NE 145th Street. The stream flows through the backyards of several homes before reaching NE 145th Street, where the riparian zone has been modified with landscaping activities. The upstream condition of the NE 145th Street culvert was not verified in the field due to lack of property access. The City of Shoreline (Shoreline Municipal Code 20.80.480) classifies Littles Creek as a Type F-nonanadromous stream, associating it with a standard 75-foot buffer width.

Table 4-2 Stream resources summary

Jurisdiction	Stream Name	Local Stream Classification[1]	WAC 222-16-030 Water Type[2]	DNR Stream Classification[3]	Documented Salmonid Presence[4]	Local Standard Buffer (feet)[1]	Ecology 303(d) List[5]
Shoreline/Seattle	Littles Creek	F-nonanadromous	F	NA	No	75/100	No
Shoreline/Seattle	Hamlin Creek	Ns/NA	Ns	NA	No	45 for daylighted segments,10 for piped segments/0	No
Seattle	Little Brook Creek	Ns	Ns	NA	No	100	No
Lake Forest Park	Lyon Creek	F	F	F	Yes	115	Bacteria, Dissolved Oxygen, Temperature, Bioassessment
Lake Forest Park	McAleer Creek	F	F	F	Yes	115	Bacteria, Dissolved Oxygen, Temperature, Bioassessment
Lake Forest Park	Bsche'tla Creek	NA	F	N	No	115	No
Kenmore	Lake Washington	S	S	S	Yes	50/150	Invasive Exotic Species, Total Phosphorous, PCBs
Kenmore	Sammamish River	S	S	S	Yes	100/150	Temperature, Dissolved Oxygen, FC Bacteria, pH Standards
Kenmore	Swamp Creek	S	S	S	Yes	150	Temperature,

Jurisdiction	Stream Name	Local Stream Classification[1]	WAC 222-16-030 Water Type[2]	DNR Stream Classification[3]	Documented Salmonid Presence[4]	Local Standard Buffer (feet)[1]	Ecology 303(d) List[5]
							Dissolved Oxygen
Kenmore	Cat Whisker Creek	F	F	F	Yes	100	Bioassessment
Bothell	North Creek	S	S	S	Yes	100–150	Dissolved Oxygen, Bioassessment, Temperature
Bothell	Horse Creek	Np	F	F	Yes	0[6]	No
Bothell	SBO-1	NA	Ns	NA	No	50	No
Bothell	SBO-2	NA	Ns	NA	No	50	No

[1] Shoreline Municipal Code 20.80.270(5); Seattle Municipal Code 25.09.200; Lake Forest Park Municipal Code 16.16.355; Kenmore Municipal Code 18.55.400; Bothell Municipal Code 13.13.060 (streams under shoreline jurisdiction) and 14.04.930 (CAO streams and buffers); Kenmore Municipal Code 16.65.020.
[2] S = Shoreline of the state; F = Fish-bearing; NA = not applicable; Np = perennial non-fish bearing; Ns = Seasonal non-fish bearing.
[3] DNR Forest Practices Application Mapping Tool.
[4] WDFW SalmonScape (2020a); WDFW PHS (2020b); WSDOT Fish Passage Inventory Map (2020); WDFW Fish Passage Application (2020c).
[5] Source: Ecology 303(d) List (Ecology 2020a). FC = fecal coliform; PCBs = polychlorinated biphenyls.
[6] The daylighted reach of Horse Creek in downtown Bothell has no regulated buffer per Bothell Municipal Code 12.64.302(C).

Table 4-3 Summary of physical characteristics of delineated stream reaches in the study area[1]

Jurisdiction	Stream Name	Average Bankfull Width (feet)	Dominant Substrate	Riparian Cover	WDFW Crossing ID	Fish Barrier?
Shoreline/Seattle	Littles Creek	9.3	Silt/sand	High	996915	Yes
Shoreline/Seattle	Hamlin Creek	3	Cobble	Low	NA	Yes
Lake Forest Park	Lyon Creek	21.7	Cobble/gravel	Low	08.0052 0.10	No
Lake Forest Park	McAleer Creek	23.5	Silt/cobble/ boulders	Low	102 M004	No
Lake Forest Park	Bsche'tla Creek	6.0 (downstream)	Gravel/cobble	High	990274 (SR 522) 935205 (downstream)	Yes
Kenmore	Swamp Creek	31.5	Silt/gravel/ cobble	Moderate	201369 (SR 522) 201368 (Burke-Gilman Trail) 201367 (NE 175th St.)	No (all bridges)
Kenmore	Cat Whisker Creek	13.6	Silt/gravel	Low	990655 (SR 522) 998062 (Burke-Gilman Trail)	Yes
Bothell	SBO-1[2]	4	Gravel/cobble	High	NA	No[2]

[1] Table is a summary of information provided in **Appendix D** (Summary of Stream Physical Data).
[2] Stream SBO-1 is isolated, and there is no potential for fish access.

Hamlin Creek

Hamlin Creek is a tributary to the North Branch of Thornton Creek that originates in the neighborhoods north of Hamlin Park. It drains an area of approximately 400 acres. It is a daylighted channel through Hamlin Park, but it then flows back into a piped system for approximately 0.5 mile until it daylights on the south side of NE 145th Street adjacent to 20th Avenue NE. Further upstream in Hamlin Park, the creek goes subsurface, likely because much of the area runoff from above the park soaks into the local sandy soils (Seattle 2000). Hamlin Creek does not have a listed water or stream type in either municipal or state classification tables. Daylighted sections of Hamlin Creek in Shoreline are outside of the study area and, as such, were not evaluated. However, based on Shoreline Municipal Code 20.80.280, it is likely that Hamlin Creek would be classified as a Type Ns stream. In Shoreline, Type Ns streams have a standard buffer width of 45 feet. Piped stream segments have a buffer width of 10 feet (Shoreline Municipal Code 20.80.280(1)).

4.2.2.2 City of Seattle streams

Three streams are located within the study area in Seattle: Littles Creek, Hamlin Creek and Little Brook Creek. Both Littles Creek and Hamlin Creek were delineated in the field; Little Brook Creek was not delineated due to lack of property access. All of these creeks are located within the Thornton Creek watershed. Hamlin and Little Brook creeks are ditched or in pipes in the study area. None of these streams are classified as Shorelines of the State. A summary of streams in Seattle is presented in **Table 4-2** (Stream resources summary).

Littles Creek

As described above, Littles Creek is located within the Thornton Creek watershed. The stream originates north of the study area within Shoreline and flows south onto the Jackson Park Golf Course through a culvert under NE 145th Street. The stream is fed by an extensive stormwater system that feeds into open channel in the Paramount Open Space north of NE 145th Street. Littles Creek crosses NE 145th Street in a 135-foot-long, 30-inch-diameter concrete culvert (WDFW ID# 996915) that is not fish passable due to a vertical drop downstream and nonconforming slope (WDFW 2020c). Below the culvert, the stream has formed a plunge pool approximately 3 feet deep. From this point, the stream flows south through the golf course and joins with the main channel of the North Branch of Thornton Creek approximately 1 mile to the south. There are three additional fish passage blockages between the project area and North Thornton Creek (WDFW ID# 930657, 930662 and 932658). Just south of NE 145th Street, Littles Creek has a healthy, intact riparian zone that includes a well-developed forest canopy. There is also an adjacent wetland in this area (WSE-1). Downstream of the plunge pool, the creek channel averaged approximately 9.3 feet wide and less than 1 foot deep during the site visit. City of Seattle classifies Littles Creek as a Type F-nonanadromous stream, associating it with a standard 100-foot Riparian Zone. A summary of the Littles Creek characteristics south of NE 145th Street is included in **Table 4-3** (Summary of physical characteristics of delineated stream reaches in the study area[1]) and in **Appendix D** (Summary of Stream Physical Data).

Hamlin Creek

Hamlin Creek daylights at the southwest corner of the intersection of NE 145th Street and 20th Avenue NE. The stream flows in an intermittently open ditch due south. At this location, the stream continues as a drainage ditch with little quality habitat, approximately 4 feet wide and 2 feet deep. To the south, the ditched stream flows intermittently until it joins the North Branch of Thornton Creek near 20th Avenue NE just south of NE 130th Street. Many fish-passage barriers exist along this ditched system. The stream segment closest to the corridor is located in the yard of a multifamily residence. The stream channel is vegetated with a mix of native and nonnative species and is approximately 3 feet wide. The City of Seattle, per Seattle Municipal Code 25.09.012(5)(a), does not regulate Hamlin Creek as a riparian watercourse, and as such there is neither a stream type nor a riparian corridor associated with it. Hamlin Creek does not have a listed water or stream type in either municipal or state classification tables; therefore, it does not have a standard width for a setback buffer. This lower reach of Hamlin Creek in Seattle has poor habitat, with very little vegetative cover, numerous pollutant inputs from local land uses, and extensive piped segments.

Little Brook Creek

Little Brook Creek daylights approximately 150 feet south of the intersection of NE 145th Street and 27th Avenue NE. It drains an area of approximately 800 acres. The stream flows east for approximately 1,000 feet before turning south, away from the project corridor. Little Brook Creek joins the North Branch of Thornton Creek approximately 2 miles south of the project area near NE 115th Street. The stream segment closest to the project corridor is located in the yard of a single-family

residence. The stream corridor is dominated with landscape plants, and large rocks and concrete were observed within the stream channel. No project activities are planned in this area, and access to this private property was unavailable. Physical characteristics of the stream, therefore, were not measured. Many fish-passage barriers in the form of long piped segments are present downstream on Little Brook Creek. The City of Seattle and DNR classify Little Brook Creek as a Type Ns stream, associating it with a 100-foot standard buffer width.

4.2.2.3 City of Lake Forest Park streams

Three streams are located within the study area in Lake Forest Park: Lyon Creek, McAleer Creek and Bsche'tla Creek. All of these creeks, which flow directly to Lake Washington, were delineated within the project study area. None of these streams are classified as Shorelines of the State. **Table 4-2** (Stream resources summary) provides a summary of streams in Lake Forest Park.

Lyon Creek

Lyon Creek drains 3.85 square miles within the cities of Lake Forest Park, Mountlake Terrace and Brier. In the study area, Lyon Creek flows along the west side of the Lake Forest Park Town Center, then turns east and flows parallel to SR 522 for several hundred feet before crossing SR 522 in a fish-passable structure. The stream channel parallel to SR 522 was recently daylighted and restored with native trees and shrubs, providing this stream segment with improved riparian conditions (SnoKing Watershed Council 2020). Vegetation is dominated by herbaceous wetland plants (cattails, rushes and sedges) as well as willows and other shrubs. The bankfull width in this reach averages 22 feet. A wetted width of 8 feet was observed during the site visit. After crossing underneath SR 522, Lyon Creek turns sharply east for a short distance, then turns southeast underneath the Burke-Gilman Trail, flowing for approximately 300 feet before turning south and joining Lake Washington within Lyon Creek Park. The Ecology 303(d) list includes Lyon Creek for past exceedances of state water quality standards for bacteria, dissolved oxygen, temperature and bioassessment (Ecology 2020a). Lyon Creek is classified as Type F by local and state (City of Lake Forest Park and DNR) regulations, associating it with a 115-foot standard buffer. A summary of the characteristics of Lyon Creek in the study area are included in **Table 4-2** (Stream resources summary) and in **Appendix D** (Summary of Stream Physical Data).

McAleer Creek

McAleer Creek originates in Lake Ballinger and flows through Lake Forest Park for approximately 6 miles. McAleer Creek has a drainage basin that is approximately 8.9 square miles within the cities of Lake Forest Park, Shoreline and Mountlake Terrace. It enters the study area in Heron Park along Brookside Boulevard NE and flows through fish-passable culverts under NE 170th Street and SR 522. It flows under the Burke-Gilman Trail in another culvert and then into Lake Washington approximately 1,300 feet south of SR 522. A sediment control and flood control structure built in 2011 is connected to McAleer Creek just downstream of SR 522 to help minimize erosion and flooding impacts downstream. Two notched weirs are also present in the main channel between SR 522 and the trail bridge. In addition to sediment and flooding issues, the highly developed nature of the McAleer Creek basin has contributed various contaminants to the stream. As a result, the stream is regulated under the 303(d) list for bacteria, dissolved oxygen, temperature and bioassessment. McAleer Creek is classified as Type F by local and state (City of Lake Forest Park and DNR) regulations, associating it with a 115-foot standard buffer. Riparian habitat on McAleer Creek varies from dense forest canopy north of SR 522 in Heron Park to disturbed habitat adjacent to SR 522 that is dominated by nonnative species such as Himalayan blackberry. A summary of the McAleer Creek characteristics in the study area are included in **Table 4-2** (Stream resources summary) and in **Appendix D** (Summary of Stream Physical Data).

Bsche'tla Creek

Bsche'tla Creek is a small direct tributary to Lake Washington located in the southern portion of Lake Forest Park. Its drainage basin is approximately 200 acres in size, and the creek originates in residential areas west of SR 522. The stream flows down a steep ravine located northeast of the Acacia Memorial Cemetery, then enters a piped reach adjacent to the Woodland North Apartments, then passes underneath SR 522, daylights at the bottom of another deep ravine, and then flows approximately 1,200 feet to Lake Washington. The culvert and pipe system under SR 522 is a documented fish barrier (WDFW ID# 990274), as is another set of cascades between SR 522 and Lake Washington (WDFW ID# 935205). While fish have been documented in the lower reach of the stream, none have been documented upstream near SR 522. Nonetheless, WDFW considers the stream to be fish-bearing. Currently, Washington State Department of Transportation (WSDOT), WDFW and Sound Transit are in discussions about making the Bsche'tla Creek structure fish passable. WDFW conducted a Level A habitat assessment at crossing # 990274 on January 21, 2020. This assessment concluded that the crossing at this location involves a culvert approximately 700 feet long. The assessment also determined that the creek has fish use potential and that improved access would make available approximately 738 feet of upstream habitat that could benefit steelhead (*Oncorhynchus mykiss*), sea-run cutthroat (*Oncorhynchus clarkii*) and resident cutthroat trout (WDFW 2020d).

The riparian zone of Bsche'tla Creek east of SR 522 is dominated by native deciduous trees and shrubs with a groundcover of English ivy (*Hedera helix*). The riparian corridor is extremely steep and is reinforced with retaining walls along SR 522. Steep slopes border the properties to the north and south of the ravine. Upstream of the apartment complex, the stream flows down a very steep slope that is presumably a natural barrier to fish passage (with a slope of greater than 20 percent). Above this barrier, the creek flows through a riparian wetland area with high densities of invasive species, including Himalayan blackberry and English ivy.

The proposed project would not directly impact the existing structure, which is more than 50 vertical feet below the elevation of SR 522. The daylighted reach of Bsche'tla Creek was assessed as part of this project. At the time of the site visit, it had a bankfull width of 6 feet. Based on the existing contours, the overall gradient of the piped segment of Bsche'tla Creek from above the apartment complex to the downstream culvert outlet is 13 percent. Lake Forest Park does not classify Bsche'tla Creek, and as such does not assign a standard buffer width to it. Bsche'tla Creek is classified as a Type F water and a Type N stream by WAC and DNR, respectively, associating it with a 115-foot standard buffer width. A summary of the characteristics of Bsche'tla Creek in the study area is included in **Table 4-2** (Stream resources summary) and in **Appendix D** (Summary of Stream Physical Data).

4.2.2.4 City of Kenmore streams

A lake, a river and two streams are located within the study area in Kenmore: Lake Washington, Sammamish River, Swamp Creek and Cat Whisker Creek. Swamp Creek and Cat Whisker Creek were delineated within the project study area. Both of the streams and the river flow to Lake Washington. Lake Washington, the Sammamish River and Swamp Creek are classified as Shorelines of the State per WAC 173-20-370 and WAC 173-18-210. Information about Swamp Creek and Cat Whisker Creek is summarized in **Table 4-2** (Stream resources summary).

Lake Washington

The Lake Washington basin drains 178.03 square miles of King County and Snohomish County within the Lake Washington – Sammamish River Hydrologic Unit (HUC 171100120400). Lake Washington is on Ecology's 303(d) list of impaired waterbodies for exceeding state water quality standards for total phosphorous, dioxin, PCBs (polychlorinated biphenyls), 4,4'-DDE, dieldrin and chlordane (Ecology 2020a). Lake Washington is classified as a lake of statewide significance per WAC 173-20-370, and a Shoreline of the State. While Lake Washington is located south of the project corridor, its shoreline lies within 200 feet of the SR 522 right-of-way at its closest point. The City of Kenmore assigns two different buffer widths to Lake Washington within its jurisdiction. The zoned Downtown Waterfront portion of the lake has a 50-foot buffer, while the Shoreline Residential, Urban Conservancy, and Natural portions of the lake have a 150-foot buffer, per Kenmore Municipal Code 16.65.020.

Sammamish River

The Sammamish River drains 41.04 square miles of several cities within King County and Snohomish County. The Sammamish River is located within the Bear Creek – Sammamish River Hydrologic Unit (HUC 171100120304). The Sammamish River is on the Ecology 303(d) list for exceeding state water quality standards for temperature, bacteria and dissolved oxygen (Ecology 2020a). The Sammamish River is classified as a Shoreline of the State and as a Type S stream according to Kenmore Municipal Code. Type S streams require a 150-foot standard buffer. The City of Kenmore assigns a 100-foot buffer to the Sammamish River within the zoned Downtown Waterfront portion of the river (Kenmore Municipal Code 16.65.020). The Sammamish River occurs approximately 500 feet south of the nearest proposed project activity. Several of the streams that the proposed project would cross drain to the Sammamish River, including Swamp Creek and Horse Creek.

Swamp Creek

Swamp Creek is a major tributary to the Sammamish River. Its approximately 25-square-mile drainage basin originates in the area of south Everett around Paine Field and flows almost directly south through the area around the junction of I-405 and I-5, passing through a number of communities including Lynnwood, Mountlake Terrace, Brier, Bothell and Kenmore. Most of the basin is developed, which has resulted in negative effects to a variety of stream functions, including greater peak flows, reduced streambank stability, reduced floodplain connectivity, and increased bank erosion and scour. Swamp Creek is on the 303(d) list for exceeding state water quality standards for temperature and dissolved oxygen (Ecology 2020a). Nevertheless, many large wetland complexes are still present in the watershed, including the large wetland (Wetland WKE-1) abutting the Kenmore Park-and-Ride lot. This and other similar wetland complexes provide critical life history functions for a wide range of fish and wildlife species, including listed salmonids. The lower reach of Swamp Creek where it crosses SR 522 consists of a low-gradient glide with a bankfull width of 31.5 feet and substrate dominated by silt, gravel and cobble. A nearby frontage road, the Burke-Gilman Trail and SR 522 all cross Swamp Creek with fish-passable bridges. Swamp Creek is classified as a Shoreline of the State and a Type S stream according to Kenmore Municipal Code and the DNR. Type S streams require a 150-foot standard buffer. A summary of the stream characteristics of Swamp Creek in the study area is included in **Table 4-2** (Stream resources summary).

Cat Whisker Creek

Cat Whisker Creek is a small, direct tributary to Lake Washington that originates near the Snohomish County/King County line and flows south for approximately 1.3 miles through a mix of open and piped segments. When the stream reaches NE 181st Street, it flows into a pipe that extends approximately

450 feet south under 61st Avenue NE and SR 522 before daylighting again from a perched concrete box culvert (WDFW ID# 990655). This culvert is perched approximately 2 feet above the downstream plunge pool, which was observed to be about 2 feet deep during the site visit. From the plunge pool, the stream flows approximately 80 feet before reaching another fish-passage barrier, a perched weir with a 1-foot drop (WDFW ID# 998062) immediately upstream of the Burke-Gilman Trail. Below the trail, the stream flows into twin 40-inch-diameter pipes that extend underneath NE 175th Street and through adjacent private property. The stream daylights again from a fish-passable concrete box culvert (WDFW ID# 998061) on the east side of the Harbor Village Condominiums and flows another 500 feet to Lake Washington. This channel was a relatively recent restoration project, and has an average bankfull width of 14 feet and a silt/cobble substrate. The stream has a narrow but intact riparian zone in this reach. While fish cannot currently access the channel upstream of SR 522, the channel downstream is accessible to fish species that occur in Lake Washington. A summary of the stream characteristics of Cat Whisker Creek in the study area is included in **Table 4-2** (Stream resources summary). Although this stream is not classified as a Shoreline of the State, it is classified as a Type F stream by both the DNR and the City of Kenmore. Therefore, any development along the stream must be outside the regulated 100-foot standard buffer.

4.2.2.5 City of Bothell streams

Four streams and a river are located within the study area in Bothell: North Creek, Horse Creek, Stream SBO-1, Stream SBO-2 and the Sammamish River. All four streams flow to the Sammamish River. Only Stream SBO-1 was delineated. The Sammamish River and North Creek are classified as Shorelines of the State per WAC 173-18-210. While North Creek and the surrounding wetland complex fall under the regulation of the Shoreline Management Code (BMC 13.13), the buffers on these features fall under the regulation of the Critical Areas Code (BMC 14.04). A summary of streams in Bothell is included in **Table 4-2** (Stream resources summary).

North Creek

The North Creek basin drains approximately 30 square miles within several cities in King County and Snohomish County, including Mill Creek and Bothell. North Creek crosses I-405 just south of the Beardslee Boulevard exit and enters a large floodplain wetland complex east of the UW Bothell/Cascadia College campus. This wetland complex was the location of one of the largest regional wetland restoration projects in recent decades. Approximately 58 acres of wetland and stream habitats were created, restored or enhanced, greatly improving ecological functions. North Creek flows through the center of this area, then flows under SR 522, where it subsequently joins the Sammamish River. The eastern terminus of the study area at the intersection of Beardslee Boulevard and I-405 extends around the extreme north end of this large wetland complex and has some potential to impact regulatory buffers. Therefore, the northern end of the wetland complex was delineated as part of this study. North Creek itself was not delineated, because its alignment is outside the study area and is not accessible. North Creek is classified as a Shoreline of the State and a Type S stream according to Bothell Municipal Code. Type S streams require a buffer width between 15 feet and 150 feet, depending on the shoreline designation. Shoreline designations for North Creek within the study area are either high intensity (100-foot buffer), urban conservancy (100-foot buffer) or natural environment (150-foot buffer). Some reaches of North Creek are on the Ecology 303(d) list for exceeding state water quality standards for dissolved oxygen, bioassessment and temperature (Ecology 2020a).

Horse Creek

Horse Creek is a small stream that flows through the center of Bothell, originating at Lake Pleasant and generally paralleling Bothell Way NE before joining the Sammamish River at Bothell Landing Park. Much of Horse Creek in downtown Bothell was formerly piped, but the recent downtown Bothell redevelopment has daylighted substantial reaches of the channel. Within the study area, Horse Creek is daylighted on the east side of the Pop Keeney Stadium parking lot and the Lot P garage site. It continues south along the west side of 98th Avenue NE before joining the Sammamish River south of SR 522. Currently, the stream corridor is about 10 feet below 98th Avenue NE. Plantings of native deciduous and coniferous trees, shrubs and emergent species were observed in the narrow stream corridor, which is fully contained within a trench with concrete walls. Due to the creek's developed channel within the study area, a full stream delineation was not conducted. City of Bothell identifies Horse Creek as a Type Np water, which typically requires a 75-foot standard setback both outside and within the shoreline management zone. However, the City of Bothell has specifically stated that the daylighted sections of Horse Creek through the downtown core will have no regulatory buffer for vegetation (Bothell Municipal Code 12.64.302(C)(2). While Horse Creek is classified as a Type Np stream (Bothell 2020a), all of the stream crossings in the downtown core are fish passable now, so it is assumed that resident and anadromous fish have access to the lower reaches of this stream channel, which would make a Type F stream rating more appropriate.

SBO-1

Stream SBO-1 is a small, isolated stream segment that originates on the east side of SR 522 across from its intersection with Hall Road. Flows from an 18-inch-diameter PVC pipe discharge into a narrow (4-foot bankfull width) stream channel that extends approximately 40 feet before entering Wetland WBO-1 in Bothell Landing Park. At this point, the stream no longer has a discernable channel. At the stream outlet, a derelict concrete weir exists that may have been installed to reduce hydraulic forces that scoured the channel during storm flows. No upstream channel segments of this stream could be identified, but the City of Bothell maps a variety of stormwater pipes feeding into it from the vicinity of Hall Road. Stream SBO-1 is not mapped by any publicly available sources. Under WAC stream typing rules, it would be classified as a Type Ns, which has a 50-foot buffer based on the Bothell Municipal Code. **Table 4-2** (Stream resources summary) provides a summary of the stream characteristics of Stream SBO-1 in the study area.

SBO-2

Stream SBO-2 is a short seasonal stream that originates in the south end of Wetland WBO-1 and discharges directly into the Sammamish River. The stream's channel within the wetland is visible on aerial photos and is approximately 5 to 7 feet wide. It outlets Wetland WBO-1 through a shallow swale with a poorly defined channel, approximately 2 to 3 feet wide, into a 12-inch-diameter, partially buried corrugated metal pipe culvert underneath a paved trail along the Sammamish River. Water from the culvert flows approximately 40 feet before reaching the river. Stream SBO-1 is mapped by the City of Bothell, but is not mapped by any other publicly available sources. Under WAC stream typing rules, it would be classified as a Type Ns, which has a 50-foot buffer.

4.3 Fish

The previous section describes existing streams in the study area and their related characteristics, while this section describes in more detail the fish and other aquatic organisms potentially using streams and wetlands. An overall map of potential fish-passable waters is shown in **Figure 4-1** (Wetland and stream overview map). The study area includes several major fish-bearing waters

within WRIA 8 (Cedar-Sammamish-Lake Washington basin), including Lake Washington, Swamp Creek, North Creek, Lyon Creek and McAleer Creek, as described in Section 4.2. However, many of the smaller streams have numerous piped segments and other downstream barriers to fish passage in the study area.

4.3.1 City of Shoreline/City of Seattle

Fish use is generally not documented in any of the three streams that are discussed for these two jurisdictions—Littles Creek, Hamlin Creek or Little Brook Creek. While all three of these streams are upper tributaries to the North Branch of Thornton Creek, where anadromous and resident fish habitat has been documented in reaches farther downstream, they are separated from the North Branch of Thornton Creek by intermittent, long piped sections and numerous fish-passage barriers (WDFW 2020a). Also, both Hamlin Creek and Little Brook Creek are ephemeral in nature, drying up seasonally for long durations each year. In several cases, these streams are not even mapped by most available sources. Fish surveys have documented a variety of fish species occurring in Thornton Creek mainstem, including Chinook salmon (*O. tshawytscha*), coho salmon (*O. kisutch*), cutthroat trout, rainbow trout, three-spine stickleback (*Gasterosteus aculeatus*), sculpin (*Cottus spp*.), rock bass (*Ambloplites rupestris*), pumpkinseed (*Lepomis gibbosus*) and largemouth bass (*Micropterus salmoides*) (Washington Trout 2000; Tabor et al. 2010). By far the most abundant species observed in the mainstem and the North Branch Thornton Creek is cutthroat trout. The only fish species documented in any of the three streams in the study area was cutthroat trout in Little Brook Creek, where a few were observed in 2005 just above the confluence with Thornton Creek. Also, several introduced species have been observed in the ponds at Jackson Park Golf Course including largemouth bass, rock bass, pumpkinseed and sunfish (*Lepomis* sp.) (Tabor et al. 2010). No fish have been observed in Littles Creek or Hamlin Creek. It is likely that the existing fish barriers in these systems, combined with the large sections of highly unsuitable channel (no riparian cover, ditched, etc.), are key factors that make fish presence highly unlikely.

4.3.2 City of Lake Forest Park

Numerous fish species, including steelhead, coho, Chinook and sockeye (*O. nerka*) salmon, and cutthroat trout are documented in Lyon Creek and McAleer Creek. Specifically, McAleer Creek is documented to support spawning and rearing by coho salmon, sockeye salmon, fall Chinook salmon and cutthroat trout (WDFW 2020a; WDFW 2020b; Streamnet 2020). Winter steelhead also is documented in these streams (WDFW 2020a; WDFW 2020b). It is likely that the mouths of both McAleer and Lyon creeks provide important rearing habitat for juvenile salmon emigrating from salmon spawning streams in the Sammamish River basin, particularly juvenile Chinook salmon. Lyon Creek is documented to support spawning and rearing by coho and sockeye salmon, and the presence of winter steelhead (WDFW 2020a; WDFW 2020b; Streamnet 2020). Finally, there is no documented fish presence in Bsche'tla Creek, but it is assumed that there is fish access upstream to the barrier culvert below SR 522. During a January 2020 Level A fish barrier assessment, WDFW concluded that the SR 522 culvert (ID# 990274) was a complete fish-passage barrier due to the extent of the water surface elevation drop from the upstream inlet. WDFW also concluded that structural modifications to this culvert would potentially benefit sea-run cutthroat trout, resident cutthroat trout and steelhead. An additional barrier downstream (ID# 935205) was also identified that limits fish passage unless it is rectified. Available upstream habitat on Bsche'tla Creek is also limited by a natural slope break just upstream of the existing inlet.

4.3.3 City of Kenmore

Numerous fish species, including steelhead trout, coho salmon, Chinook salmon and sockeye salmon, are documented to occur in Swamp Creek, Sammamish River and Lake Washington in Kenmore. Lake Washington and the Sammamish River are generally used by anadromous fish primarily for migration and rearing during upstream migration and downstream emigration. Swamp Creek is documented to support spawning by sockeye salmon, fall Chinook salmon and coho salmon (WDFW 2020a; WDFW 2020b; Streamnet 2020). Steelhead is also present. Swamp Creek is also known to support freshwater mussels. During fish salvage activities in 2009, DEA biologists captured and released a wide range of fish species in a reach of Swamp Creek where an inline sediment pond was being proposed. Species captured included speckled dace (*Rhinichthys osculus*), sculpin, coho salmon, cutthroat trout, western brook lamprey (*Lampetra richardsoni*), yellow perch (*Perca flavescens*), largescale sucker (*Catostomus macrocheilus*), mountain whitefish (*Prosopium williamsoni*), three-spine stickleback and peamouth (*Mylocheilus caurinus*) (DEA 2009).

Although no fish species have been documented in Cat Whisker Creek (WDFW 2020a; WDFW 2020b), the lower 500 feet of the stream extending to Lake Washington is accessible to fish and could provide rearing habitat for coho salmon, steelhead and cutthroat trout. Currently, fish passage does not extend upstream of an existing barrier located immediately north of the Burke-Gilman Trail (WDFW ID# 998062) (WDFW 2020a).

4.3.4 City of Bothell

Numerous resident and anadromous fish species have been documented within North Creek in Bothell. However, fish use of the streams within the study area—Horse Creek, Stream SBO-1 and Stream SBO-2—is not well documented. Streams SBO-1 and SBO-2 are not mapped on any agency databases. SBO-1 is isolated, so it cannot support fish populations. SBO-2 has a poorly defined channel that is almost entirely within Wetland WBO-1. The outlet culvert under the local trail is not fish-passable. Horse Creek has no documented fish use (WDFW 2020a; WDFW 2020b) but has undergone extensive restoration in recent years, which has opened it up to fish species from the Sammamish River. It is assumed that any fish in the Sammamish River could access the lower reaches of Horse Creek. Several resident fish species are also present within Bothell streams, including sculpin, cutthroat trout and dace (*Rhinichthys spp)*.

4.3.5 Federal and state threatened, endangered and candidate fish species

There are three ESA-listed fish species or critical habitat known to occur within the project study area (NOAA 2016; USFWS 2020b) (see **Table 4-5** (Special status species list for SR 522/NE 145th BRT Project)): Puget Sound Chinook, Puget Sound steelhead and Puget Sound bull trout (*Salvelinus confluentus*), all of which are listed as threatened and inhabit portions of McAleer, Lyon and Swamp creeks, the Sammamish River and Lake Washington. Portions of these waterbodies cross the project corridor or are within the study area. Bull trout is very rare in the Lake Washington watershed. Only a few isolated records of bull trout and/or Dolly Varden (*S. malma*), which is similar in appearance, have been observed in the last decade, and therefore are not expected to occur in the study area. Fall Chinook are documented to occur within Lyon Creek and McAleer Creek, but in very low numbers. It is also possible that juvenile Chinook could rear in the lower reaches of these streams, as well as Horse Creek in Bothell. Similarly, winter steelhead are known to occur in Lyon and McAleer creeks, and could occur in the lower reach of Cat Whisker Creek or Horse Creek. Swamp Creek also supports both Chinook and steelhead.

Critical habitat is designated for both steelhead and Chinook in Puget Sound and the Lake Washington and Sammamish River basins, including Lake Washington proper and the Cedar River. The MSA protects Essential Fish Habitat (EFH) for federally managed species of Pacific salmon. Specifically, this includes Chinook salmon, pink salmon (*Oncorhynchus gorbuscha*) and coho salmon. EFH includes "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (NMFS 2002). Chinook and coho are present within portions of the study area. Pink salmon are not mapped in the study area. Chinook and coho are mapped in Lake Washington and Bsche'tla, McAleer, Lyon, Swamp and North creeks.

4.3.6 Tribal fishing

Judicial decisions have affirmed that federally recognized Tribes have treaty rights that include, but are not limited to, the rights to harvest fish free of state interference (subject to conservation principles) and to co-manage the fishery resource. Lake Washington and the Sammamish River are among the usual and accustomed fishing areas of the federally recognized Snoqualmie Indian Tribe, Muckleshoot Indian Tribe and the Tulalip Tribes of Washington. Project impacts to tributaries of these waterbodies could affect the productivity of Tribal fisheries, and thereby pose a risk to the fishing interests of these and possibly other tribes. Sound Transit therefore addresses potential downstream effects on fish and fish habitat in this report.

4.4 Upland vegetation and wildlife resources and habitat

The project study area is in a highly urbanized area. Overall, the study area is within the western hemlock forest zone of western Washington (Franklin and Dyrness 1988). Western hemlock (*Tsuga heterophylla*) and western red cedar are the dominant forest species in this zone, although Douglas-fir (*Pseudotsuga menziesii*) is also very common. Deciduous species occur primarily in disturbed areas and along rivers and streams.

Due to the heavily developed nature of the project corridor, most of the vegetation present in the study area reflects landscaping practices for urban and suburban areas, with remnant tree canopy retained for shade or aesthetics or along riparian corridors. Within the maintained road rights-of-way, the vegetation includes a mixture of trees at the rights-of-way margins, native and nonnative shrubs, landscaped areas, mowed grasses and disturbance-tolerant forbs. Habitats are categorized as one of the following: developed, forested, open space, golf course, open water or riparian, and are shown according to these categories in **Figure 4-3** (Fish and wildlife habitat).

Most native vegetation and habitat are along streams and wetlands or in areas that are unsuitable or marginal for development (for example, steep slopes). Vegetation in these parcels typically includes a mixture of native and introduced species.

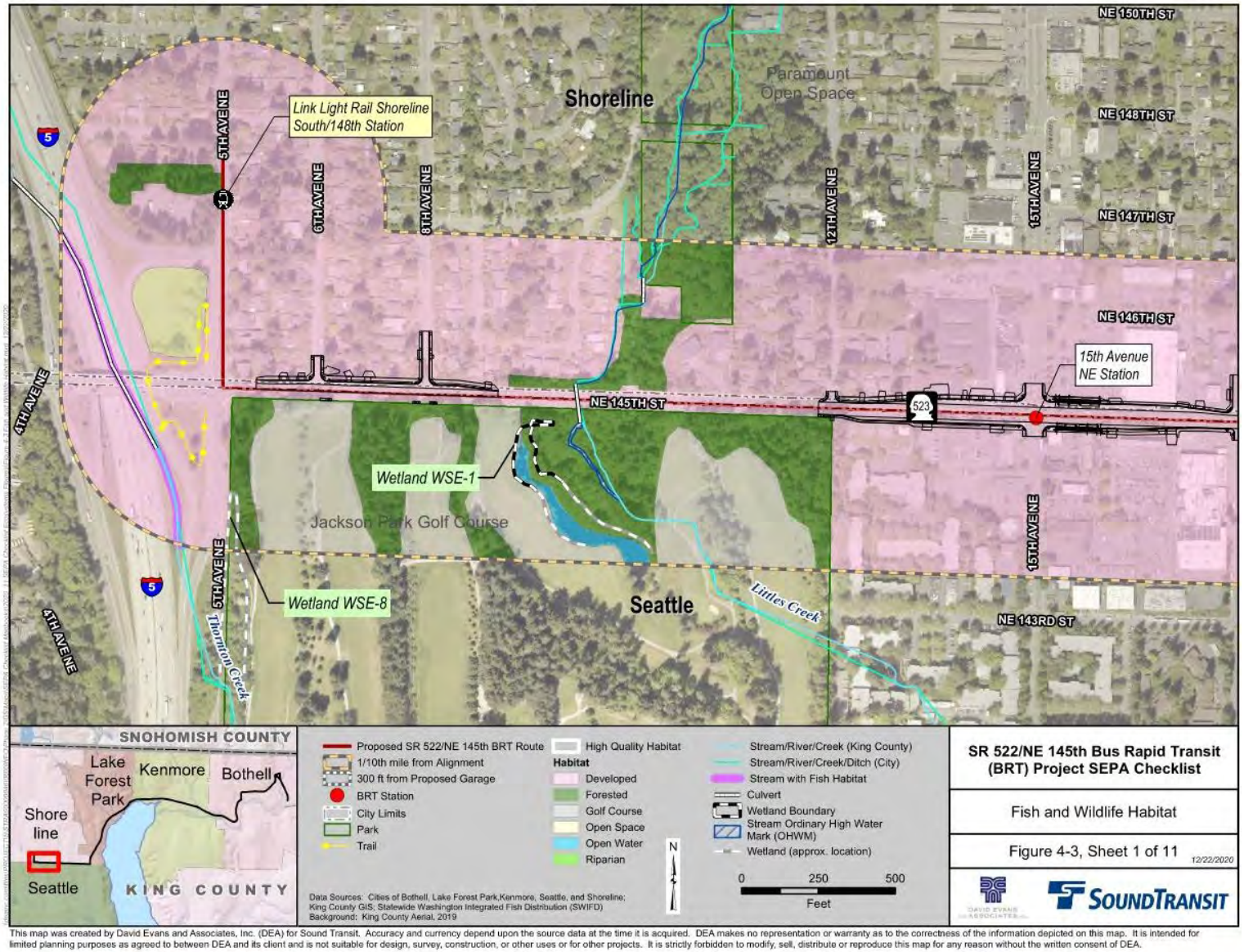

Figure 4-3, sheet 1 of 11 Fish and wildlife habitat

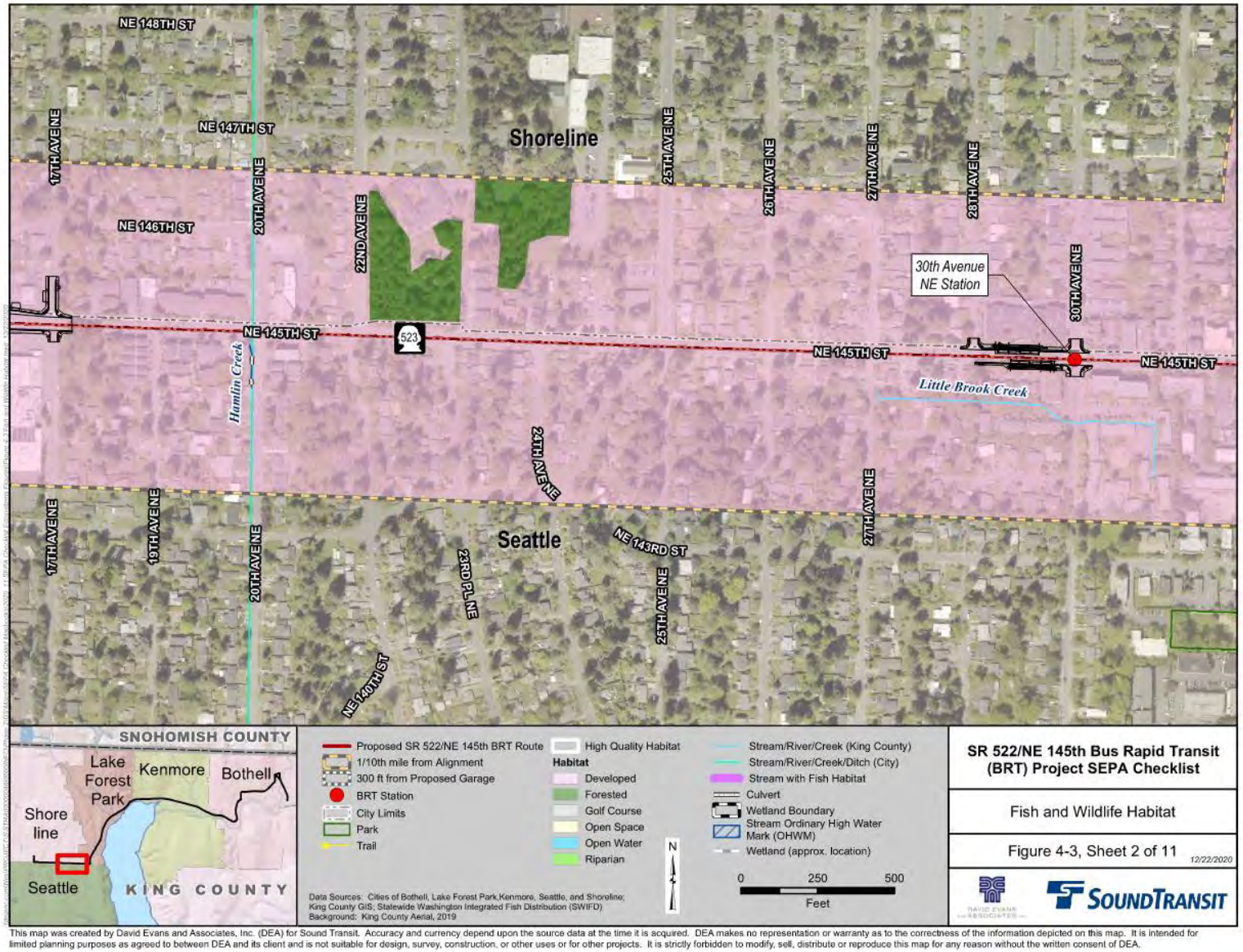

Figure 4-3, sheet 2 of 11 Fish and wildlife habitat

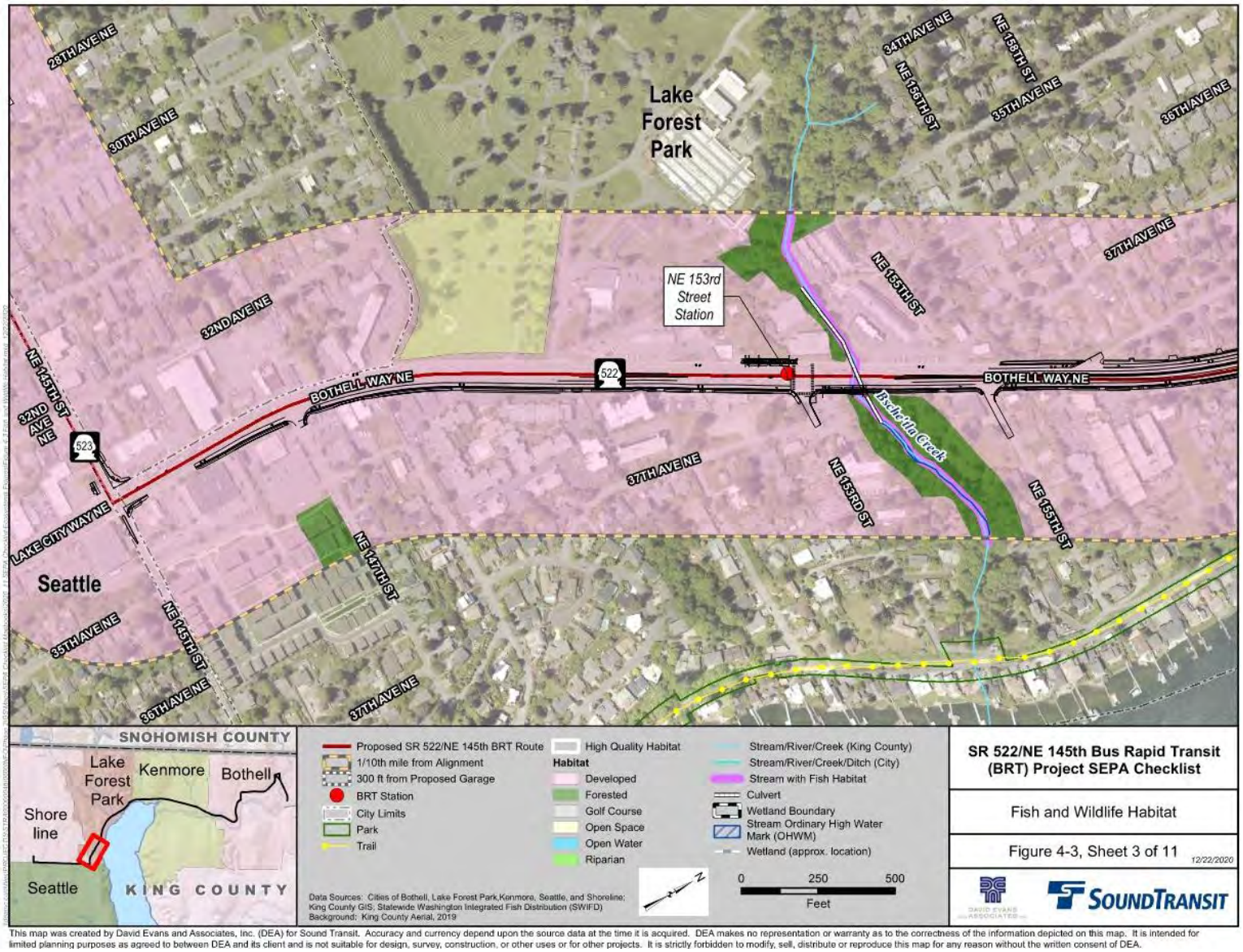

Figure 4-3, sheet 3 of 11 Fish and wildlife habitat

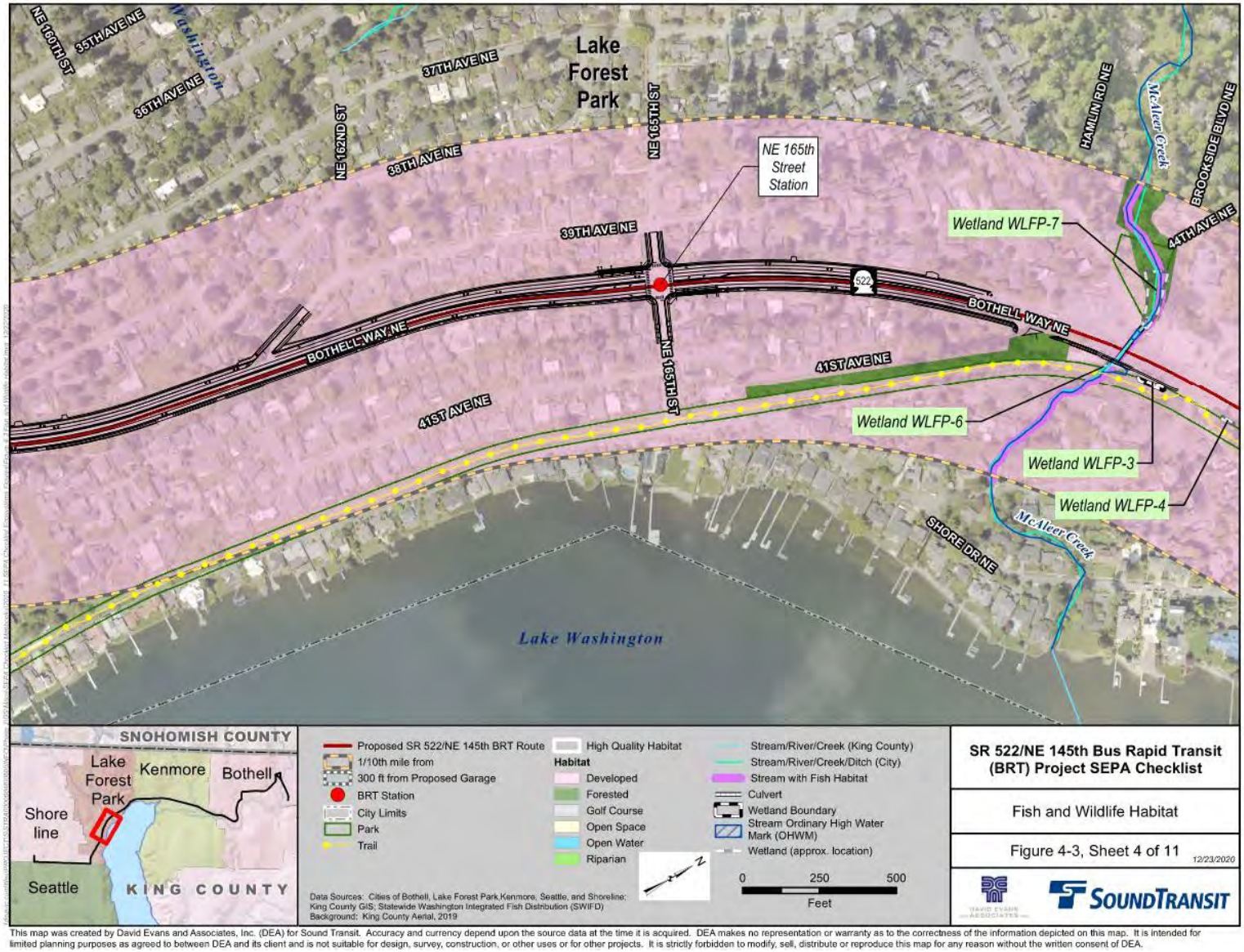

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Figure 4-3, sheet 4 of 11 Fish and wildlife habitat

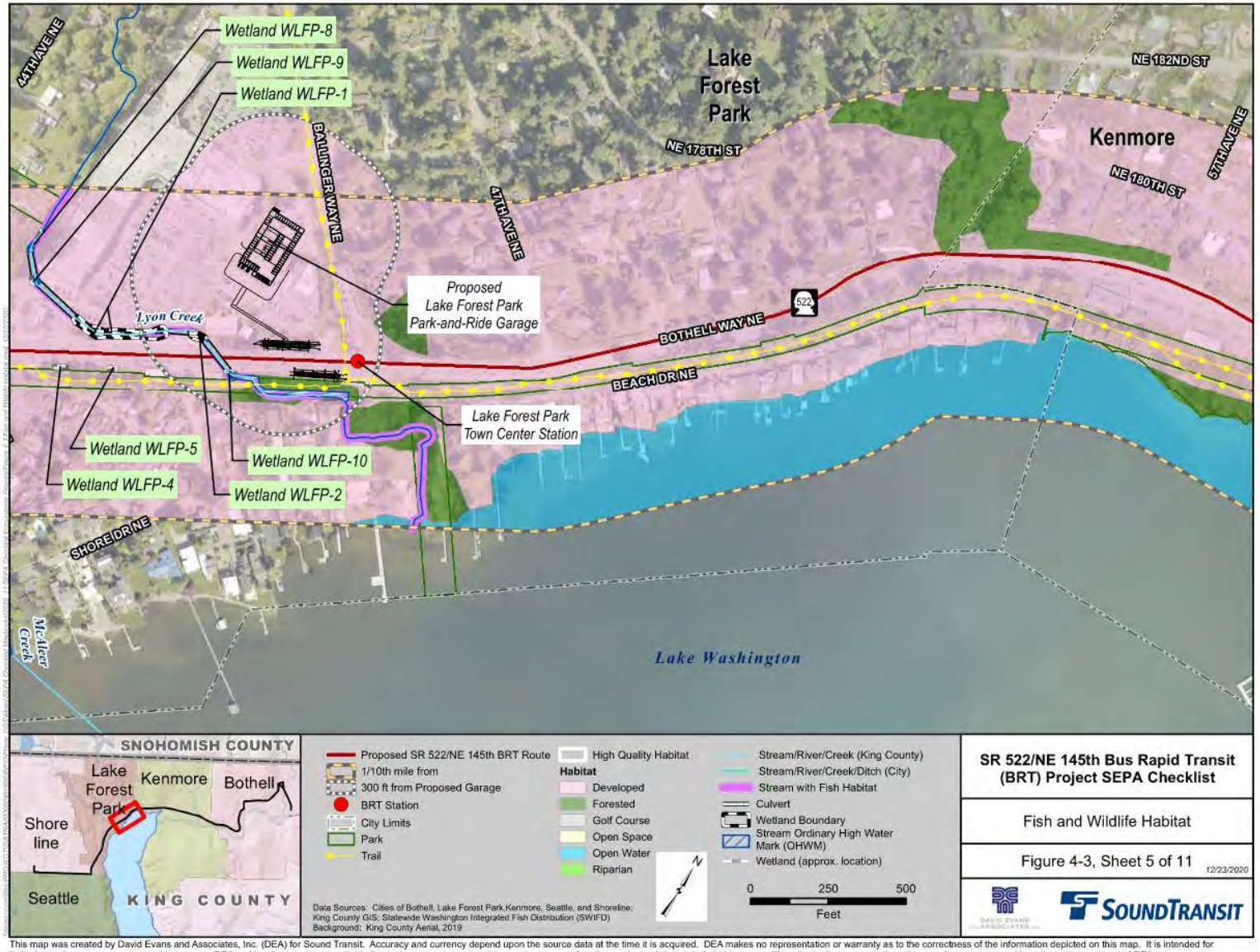

Figure 4-3, sheet 5 of 11 Fish and wildlife habitat

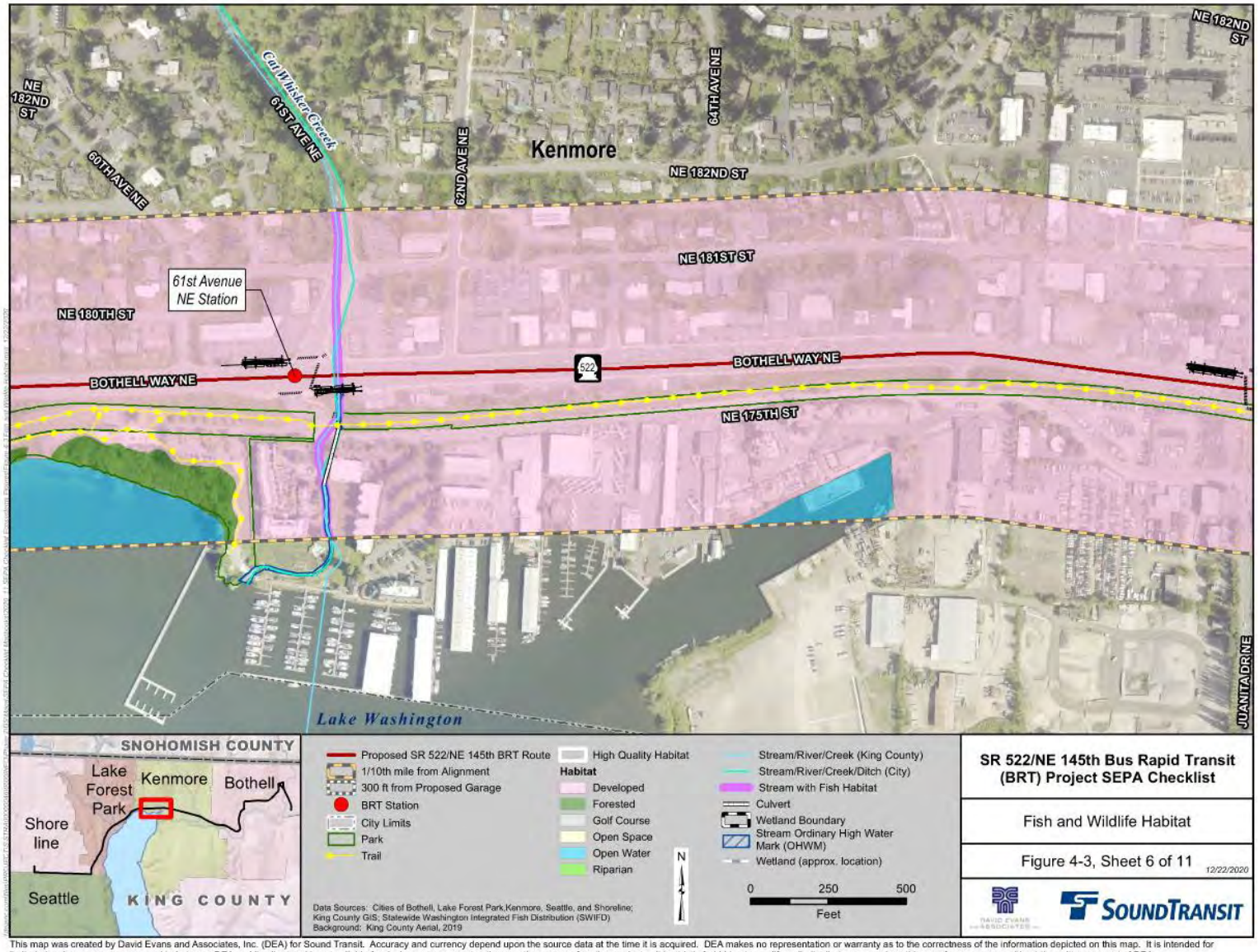

Figure 4-3, sheet 6 of 11 Fish and wildlife habitat

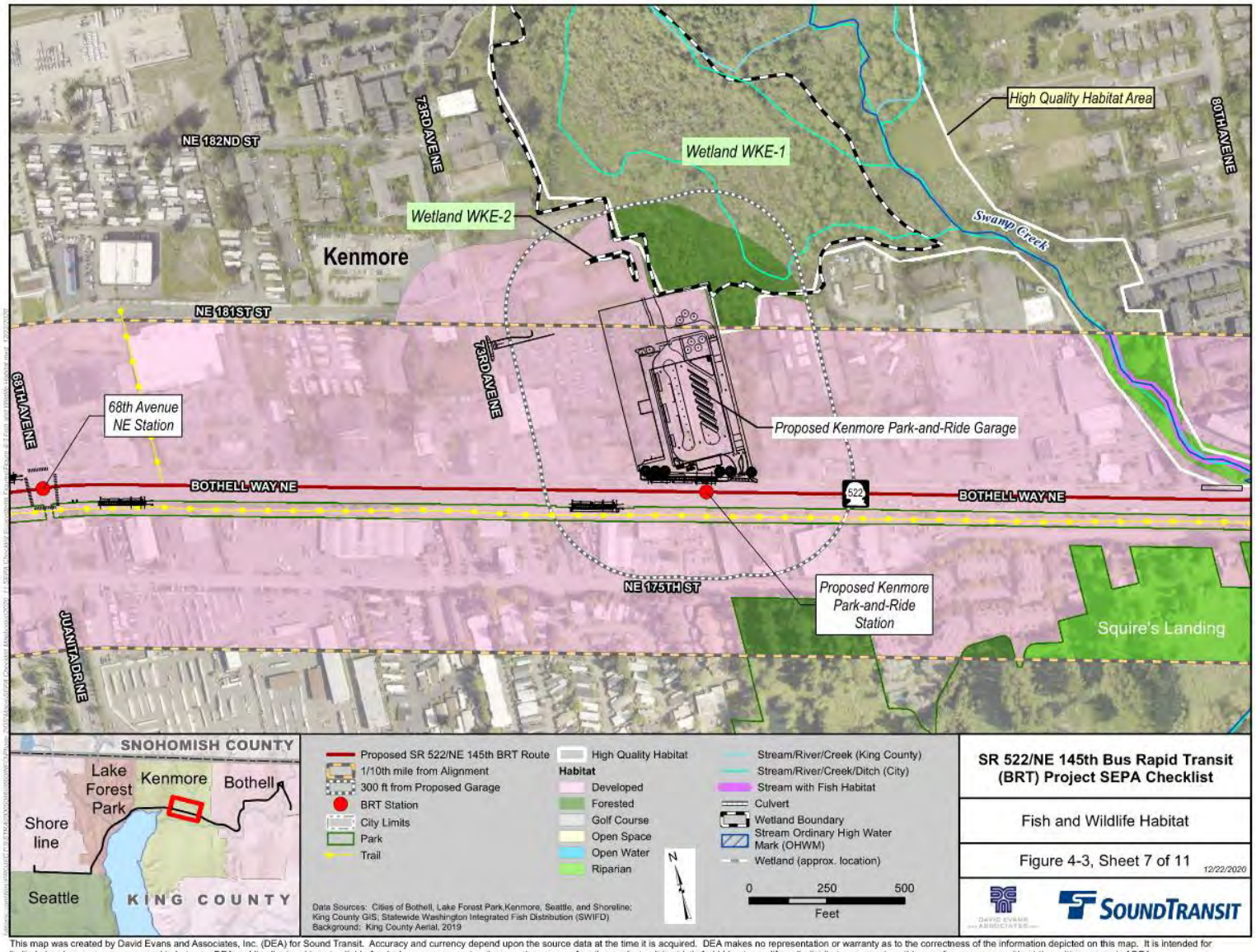

Figure 4-3, sheet 7 of 11 Fish and wildlife habitat

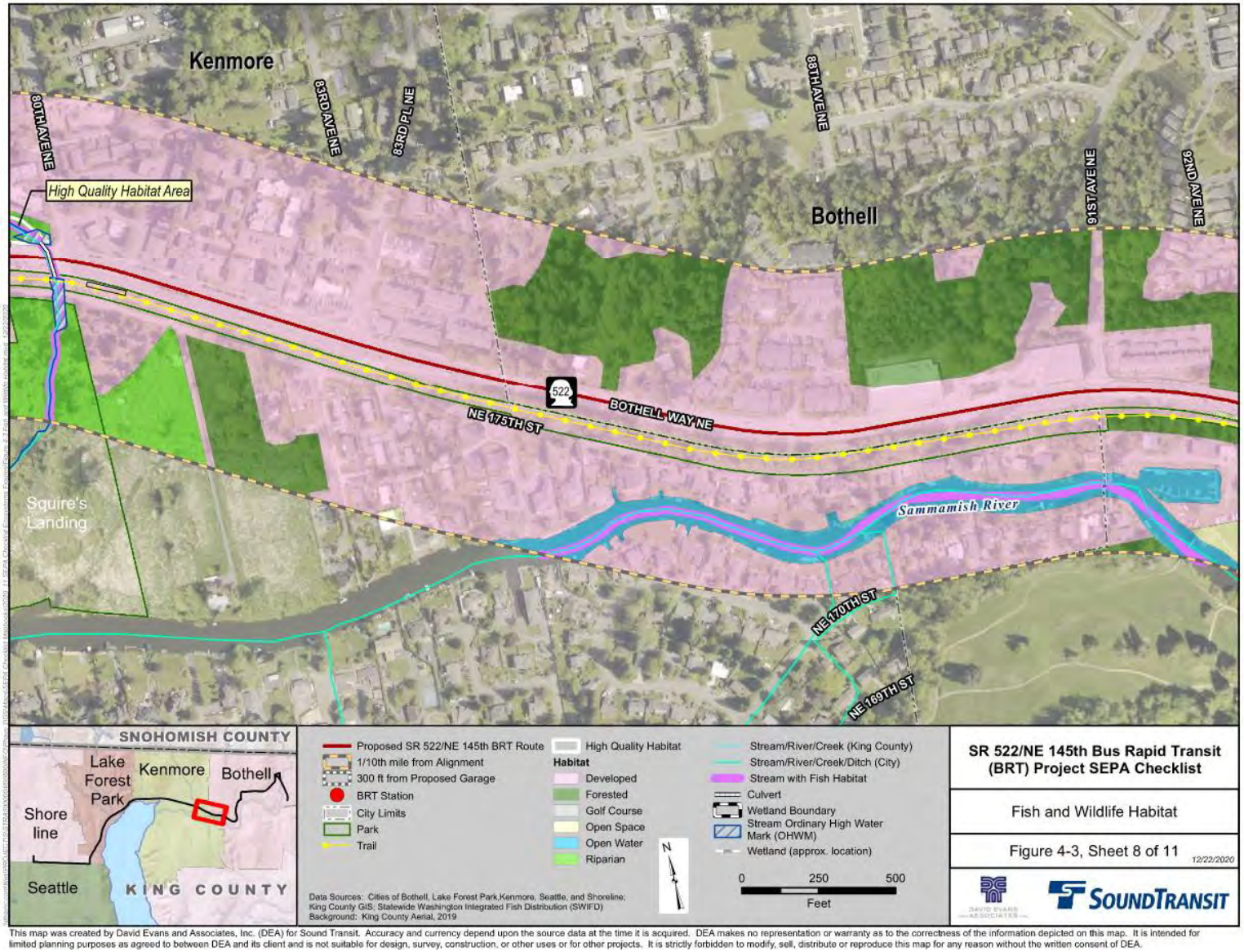

Figure 4-3, sheet 8 of 11 Fish and wildlife habitat

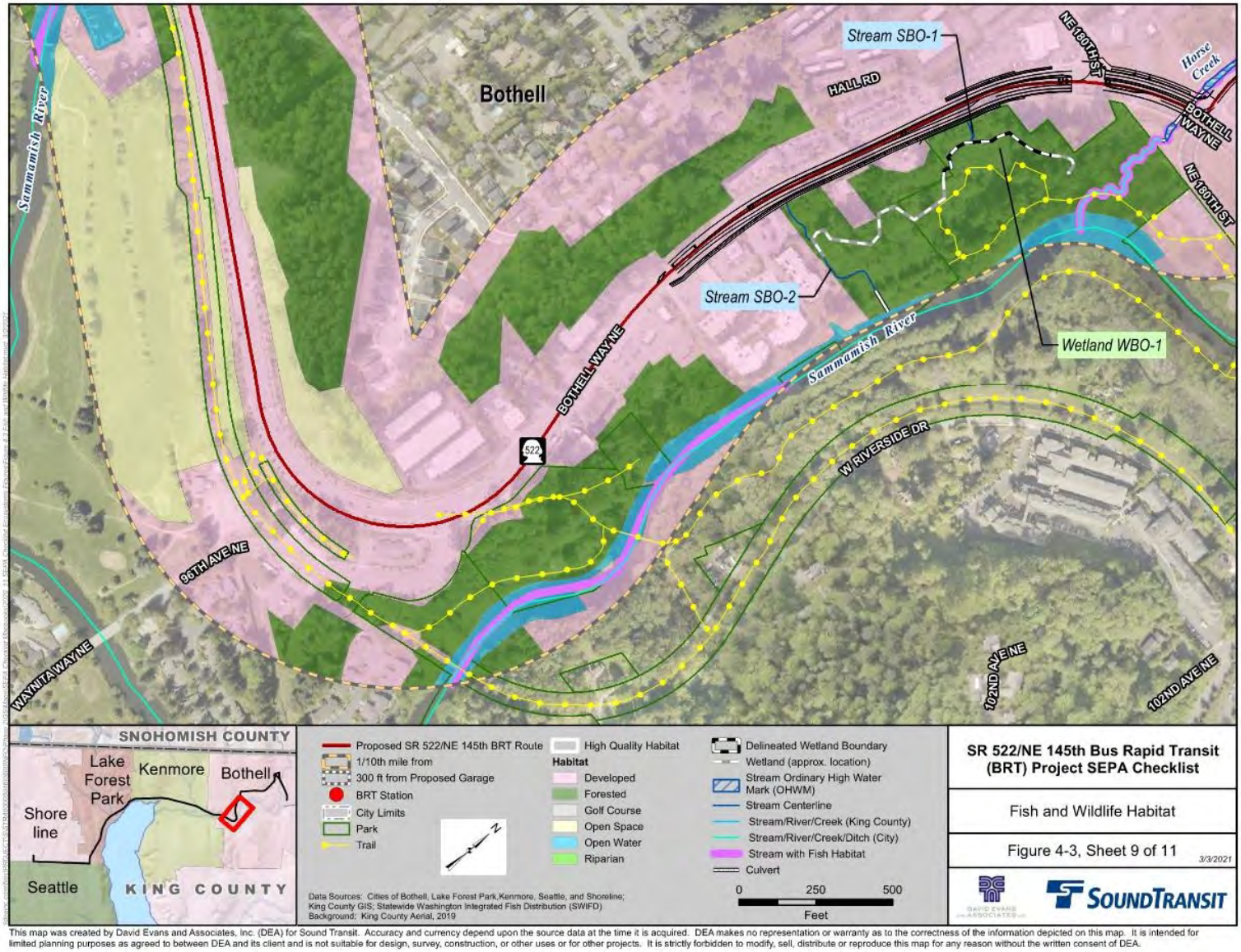

Figure 4-3, sheet 9 of 11 Fish and wildlife habitat

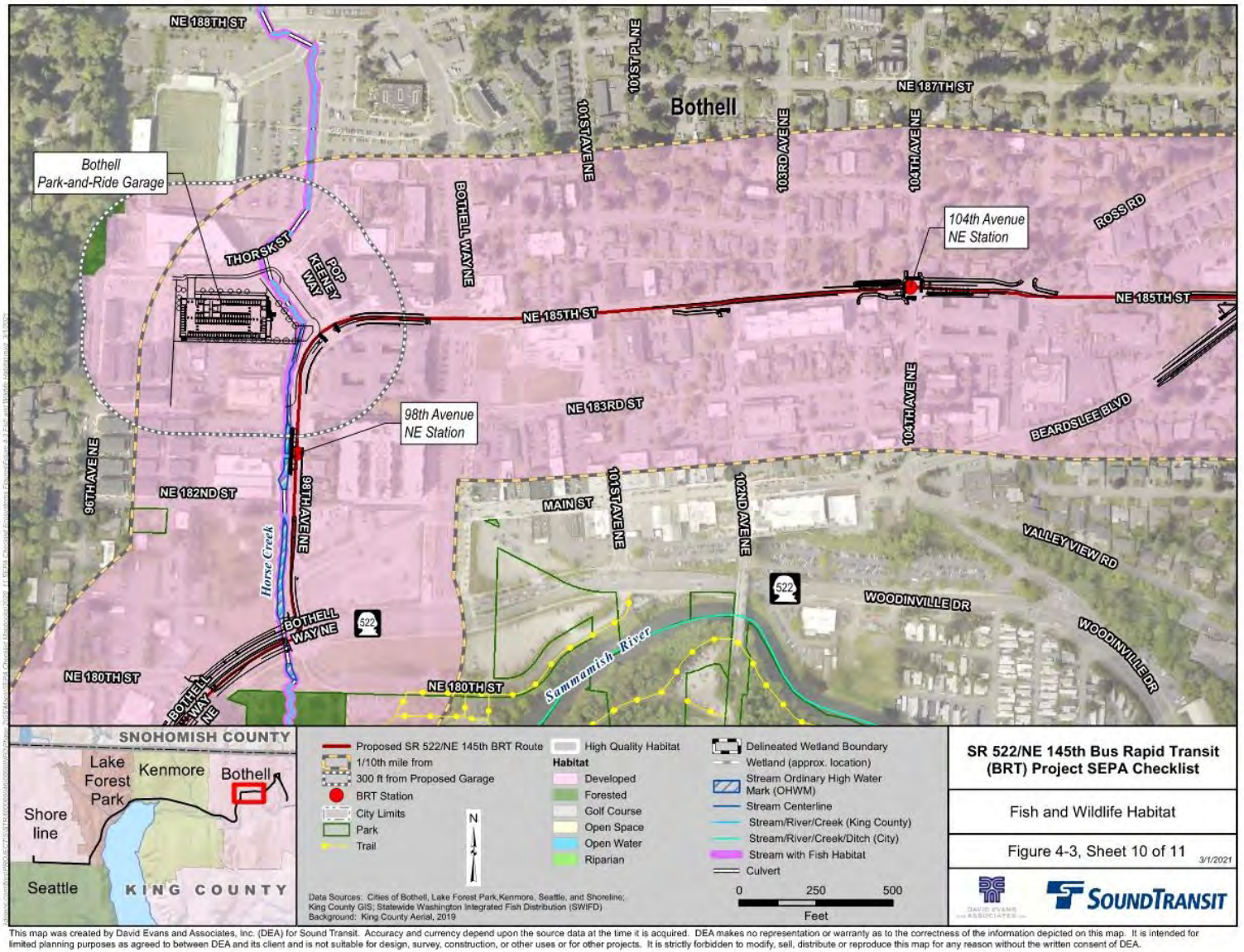

Figure 4-3, sheet 10 of 11 Fish and wildlife habitat

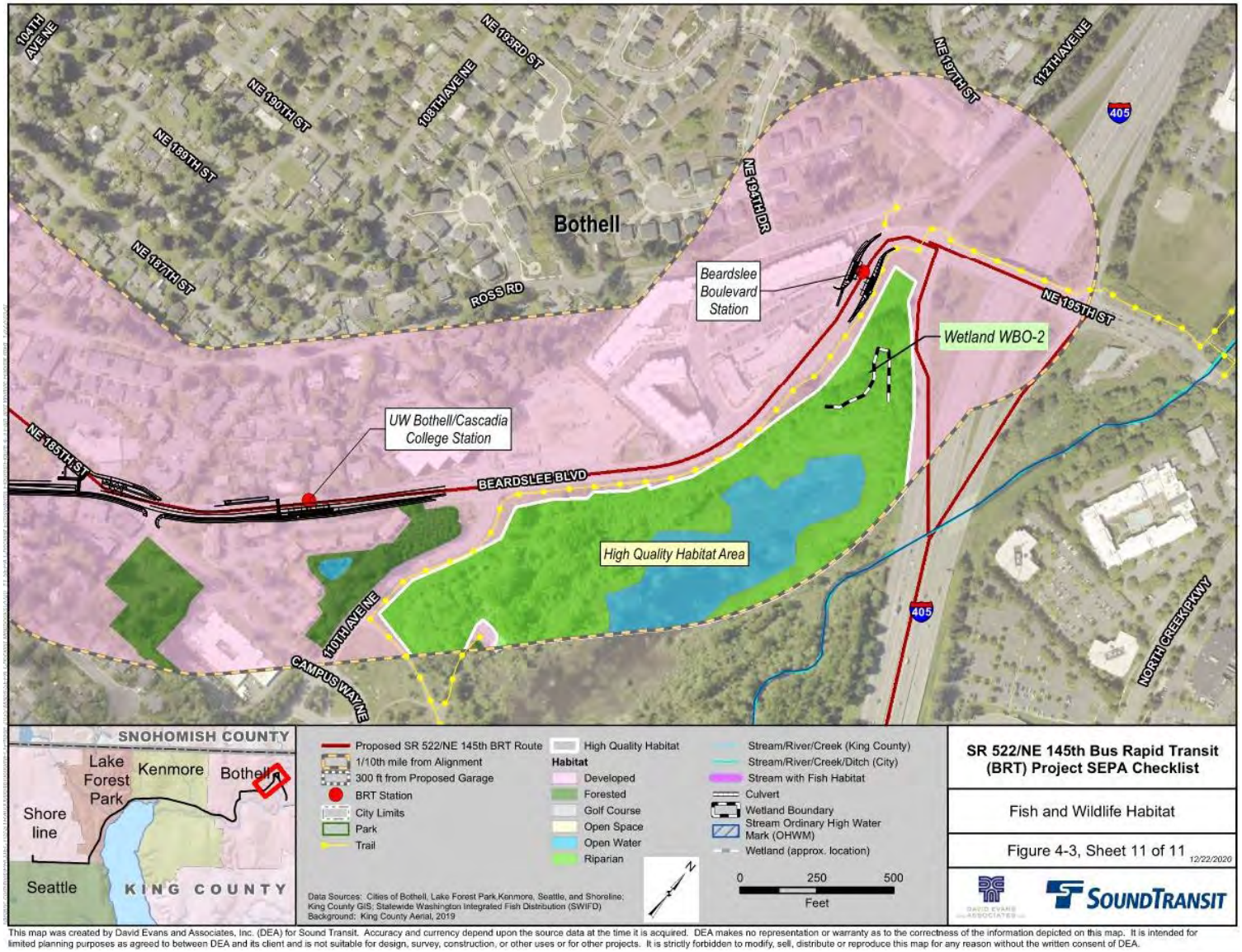

Figure 4-3, sheet 11 of 11 Fish and wildlife habitat

There are notable areas of wildlife habitat within the study area, as mapped in **Figure 4-3** (Fish and wildlife habitat). There is a good quality forest and riparian corridor along Littles Creek that begins north of the study area in the Paramount Open Space and extends south onto Jackson Park Golf Course. In addition to forested areas associated with Littles Creek, the golf course provides a wide range of grass, shrub and forest habitat interspersed with the recreation elements of the facility. A small stand of second growth forest remains adjacent to NE 145th Street at the St. Joseph's Carmelite Monastery. Moving north, there is a narrow and steep forested corridor along Bsche'tla Creek and open space at the adjacent Acacia Memorial Park. In Lake Forest Park, wildlife habitat is associated only with the narrow riparian corridors of McAleer Creek and Lyon Creek. In Kenmore, there is a narrow stand of forest associated with a ravine on the north side of SR 522 near the western city limit. There is also a large intact riparian corridor along Swamp Creek with a large wetland complex (Wetland WKE-1) north of the study area and a large protected area south of SR 522 to the Sammamish River. In Bothell, there is a narrow band of upland forest remaining on the steep slopes north of SR 522, and there are multiple patches of upland forest, wetland and open spaces along the Sammamish River. Last, there is a Category I wetland complex (Wetland WBO-2) along North Creek on the UW Bothell/Cascadia College campus.

Most natural habitat areas in the study area consist of mixed deciduous and coniferous forest with a disturbed understory that includes both native and invasive species. Canopy species in these areas is dominated by red alder, big-leaf maple, Douglas-fir and western red cedar. Shrub species typically include Indian plum (*Oemleria cerasiformis*) and Himalayan blackberry. In places, invasive species are the dominant species (see Section 4.4.1 below). For instance, the forested ravine adjacent to the Acacia Memorial Park is overrun with English ivy. Conversely, many areas, such as the large wetland complex associated with North Creek, are the result of mitigation and restoration actions that have bolstered the value of these areas for terrestrial and aquatic wildlife species.

4.4.1 Noxious and invasive plants

Table 4-4 (Noxious weeds observed in the study area) describes noxious weeds observed in the study area and their status with the Washington State Noxious Weed Control Board (Washington WCB 2020), which classifies noxious weed species according to three classes: Class A, Class B and Class C. Class A weeds are new to the state and are generally not yet widespread. The state's goal is to completely eradicate these species. Thus, landowners are required by law to completely eliminate Class A weeds. Class B weeds are widespread in some parts of the state. The goal is not to eradicate them but to prevent them from spreading into new areas, and to reduce their populations. Control of Class B weeds may be required, depending on local regulations. Class C weeds are usually widespread or are of particular concern to the agricultural industry. Control of Class C weeds is not usually required, but it is recommended. The Class C status allows county weed boards to require control if locally desired, or they may choose to provide education or technical consultation. Weeds of concern are not classified as noxious weeds in Washington state, but they often impact and degrade native plant and animal habitat. Control is recommended where possible, and new plantings are discouraged (King County 2020c).

Table 4-4 Noxious weeds observed in the study area

Common Name	Scientific Name	Status[1]	Notes
Evergreen blackberry	*Rubus lacianatus*	C	Common in most undeveloped areas in study area
Himalayan blackberry	*Rubus armeniacus*	C	Common in most undeveloped areas in study area
Herb Robert	*Geranium robertianum*	B	Locally common
English ivy	*Hedera helix*	C	Dense in Bsche'tla Creek riparian corridor
Japanese knotweed	*Polygonum cuspidatum*	B	Present in some riparian areas
Reed canarygrass	*Phalaris arundinacea*	C	Very common in large wetlands
Scotch broom	*Cytisus scoparius*	B	Present in disturbed areas along SR 522
Morning glory	*Calistegia sepium*	WC	Common in residential areas
Creeping buttercup	*Ranunculus repens*	WC	Common in wet, sunny areas

B = Class B weed; C = Class C weed; WC = Weed of Concern by King County (2020c).

None of the Class B or C weeds on this list are required for control by King County, but they are recommended for control. Control of reed canarygrass is of particular concern in wetland and stream mitigation and restoration sites. Similarly, English ivy can become a serious infestation in upland forested areas, as it has in the Bsche'tla Creek ravine.

4.4.2 Terrestrial wildlife

In urban environments such as the project corridor, remaining natural habitats are fragmented and isolated, and often dominated by invasive species. Natural habitat for wildlife in the project study area is a mosaic of habitats interspersed with human development. These habitats include mixed conifer-hardwood forest, shrub-dominated areas, riparian corridors, lawns, streams and wetlands. Wildlife found in and around these remnant habitats is usually those species adapted to tolerate a high level of human activity and habitat disturbance. These species are often referred to as "generalist" species that do not have overly specific habitat or diet requirements and can tolerate disturbance (Forman et al. 2003). Other more specialized species likely are present only in the largest unbroken stands of forest or in specialized habitats such as streams and wetlands.

4.4.2.1 Herpetofauna

Herpetofauna is a collective term referring to reptiles and amphibians. Reptiles can occur in both upland and riparian/wetland areas. Amphibians are closely associated with wetland areas. Typical reptile species that would occur in the study area include three species of native garter snakes: common garter snake (*Thamnophis sirtalis*), northwestern garter snake (*Thamnophis ordinoides*) and western terrestrial garter snake (*Thamnophis elegans*). Other reptile species that could be encountered include western fence lizard (*Sceloporus occidentalis*), northern alligator lizard (*Elgaria coerulea*), slider (*Trachemys scripta*) and painted turtle (*Chrysemys picta*). The latter two aquatic reptiles are nonnative species that would be closely associated with open water, such as the ponds

on the Jackson Park Golf Course, the Sammamish River or the large wetland complexes. Amphibian species that could occur in the study area include long-toed salamander (*Ambystoma macrodactylum*), northwestern salamander (*Ambystoma gracile*), Pacific treefrog (*Hyla regilla*), red-legged frog (*Rana aurora*) and western redback salamander (*Plethodon vehiculum*). Bullfrog (*Rana catesbiana*), an aggressive introduced amphibian, is also present in the study area. Pacific treefrogs were heard during field visits. Frogs and salamanders usually use still water wetland areas to lay their eggs in large masses, and then use adjacent upland areas for foraging and overwintering.

4.4.2.2 Mammals

Small mammal species that inhabit high-density urban habitats include rat (*Rattus* sp.), mouse (*Peromyscus* spp.), vole (*Microtus* spp.), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), Eastern gray squirrel (*Sciurus carolinensis*) and possibly skunk (*Mephitis mephitis*). Several bat species, including big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*) and little brown bat (*Myotis lucifugus*), are also present and inhabit forested, riparian, as well as urban and suburban areas. Beaver (*Castor canadensis*) were not observed but likely would occur in the larger wetland stream systems in the study area. Coyote (*Canis latrans*) would likely use the habitat corridors along the study area. Carnivore Spotter, a citizen observation tool managed by the Woodland Park Zoo, allows people to report observations of carnivores in Washington, including the study area. That application reports observation of coyote, raccoon, opossum, river otter (*Lontra canadensis*) and bobcat (*Lynx rufus*) in the study area (Woodland Park Zoo 2020). Coyote was the most commonly reported species throughout the Seattle area. Other larger mammals that would occur in the study area include black-tailed deer (*Odocoileus hemionus*). Black bear (*Ursus americanus*) and cougar (*Puma concolor*) would not be expected in these highly urbanized areas.

Most of the wildlife species listed above would be limited to the isolated forest fragments in the study area for foraging, breeding or cover habitat. Some of these species (such as opossum, raccoon and the Norway rat [*Rattus norvegicus]*) forage widely in residential areas, feeding on garbage, bird seed and any other food sources available. Bats may roost in trees, snags, buildings and bridges in the study area. It is possible that the existing structures in the study area support roosting bats. Various forested areas and greenbelts have numerous decadent trees with snags and loose bark that could be used as roost sites by bats. These sites would most likely be used during the spring and summer.

Aquatic mammals, including muskrat (*Ondatra zibethicus*) and river otter, would access the study area from local lakes and rivers. River otters have been observed in ponds on Jackson Park Golf Course.

4.4.2.3 Birds

The project occurs within the Pacific Flyway, a migratory corridor consisting of the western coastal areas of South, Central and North America. Wetlands, lakes and vegetated areas in the project vicinity serve as foraging or resting grounds for migratory and resident bird species. Numerous bird species that are known to use the study area or were observed during the field visit include starling (*Sturnus vulgaris*), spotted towhee (*Pipilo maculatus*), house sparrow (*Passer domesticus*), white-crowned sparrow (*Zonotichia leucophrys*), song sparrow (*Melospiza melodia*), northern flicker (*Colaptes auratus*), American robin (*Turdus migratorius*), American crow (*Corvus brachyrhynchos*), dark-eyed junco (*Junco hyemalis*), black-capped chickadee (*Poecile atricapillus*) and marsh wren (*Cistothorus palustris*). These and other urban-adapted birds can find limited breeding sites in the remnant patches of terrestrial habitat in the study area, and abundant forage in surrounding residential areas and parks. Several species of waterfowl were observed using wetlands and rivers in the study area. These included mallards (*Anas platyrhynchos*), buffleheads (*Bucephala albeola*),

Canada geese (*Branta canadensis*) and common goldeneyes (*Bucephala clangula*). The ponds on Jackson Park Golf Course, Lake Washington and the North Creek wetland complex all provide high quality waterfowl habitat. Raptors expected to occur in the study area include red-tailed hawk (*Buteo jamaicensis*), osprey (*Pandion haliaetus*) and bald eagle (*Haliaeetus leucocephalus*). No bald eagle nests are documented in the study area. There is a known great blue heron (*Ardea herodias*) colony within the study area, which is discussed in greater detail in Section 4.4.3, below.

4.4.3 Special status plant and wildlife species

Special status species include any plants or animals of federal, state or local significance that may occur in the project study area. **Table 4-5** (Special status species list for SR 522/NE 145th BRT Project) below lists special status species that may occur in the study area. Sources for the list include the species lists included in **Appendix F** (Species List). No special status plant species were mapped by an agency or identified during site visits.

No documented wildlife observations are identified by WDFW PHS within the study area (WDFW 2020b). However, priority species such as pileated woodpecker (*Dryocopus pileatus)* would be expected to occur in any forest patches within the study area.

A known great blue heron colony occurs adjacent to the Kenmore Park-and-Ride lot. This colony was active during the 2020 breeding season. It contains approximately 40 active nests. These birds fly to and from local foraging habitats over the study area, particularly to locations along the Sammamish River. These species are fairly common throughout the region and are not listed federally or in Washington State. However, local and state regulations require the preparation of a Habitat Management Plan (HMP) if a project has potential impacts to a known colony. Given the fact that the colony is only approximately 200 feet north of the park-and-ride lot where a new park-and-ride garage would be constructed for the project, preparation of an HMP is warranted. A Draft HMP is included in **Appendix E** (Great Blue Heron Draft Habitat Management Plan). This HMP will be finalized once further details about construction and design of the park-and-ride garage are known.

Table 4-5 Special status species list for SR 522/NE 145th BRT Project

Common Name	Scientific Name	State Status[1]	Federal Status[1]	Comments
Fish				
Bull trout	*Salvelinus confluentus*	SC	FT	Rare in the Lake Washington watershed. Only known from strays in major river systems such as Cedar River.
Chinook salmon (Puget Sound)	*Oncorhynchus tshawytscha*	SC	FT	Anadromous salmon documented to occur in Sammamish River, Swamp Creek, North Creek and McAleer Creek in the study area.
Steelhead (Puget Sound)	*Oncorhynchus mykiss*	None	FT	Anadromous salmonid documented to occur in Sammamish River, North Creek, Swamp Creek, McAleer Creek and Lyon Creek in the study area.
Olympic mudminnow	*Novumbra hubbsi*	*SS*	*None*	Small minnow restricted to slow-moving shallow coastal streams. Washington's only endemic freshwater fish. Restricted to drainages in mostly Grays Harbor and Thurston counties. Documented from a few isolated locations in Snohomish and King counties. Depends on healthy wetland systems for survival.
Reptiles and Amphibians				
Oregon spotted frog	*Rana pretiosa*	SE	FT	Medium-sized frog endemic to the Pacific Northwest. In 2012, known from only 6 populations, none of which are close to the study area.
Western toad	*Anaxyrus boreas*	SC	None	Formerly widespread in Puget Sound; more than 80% of populations have gone extinct. Breeds in wetlands, ponds and other aquatic habitats, but uses adjacent upland areas more extensively than other amphibians. Can travel long distances between breeding sites.
Mammals				
Keen's myotis	*Myotis keenii*	SC	None	Known to roost in trees in low-elevation conifer forests.
Townsend's big-eared bat	*Corynorhinus townsendii*	SC	None	Widespread but uncommon bat found in wide range of forested, shrub-steppe and scrub-shrub habitats across Washington. Caves, lava tubes, mines, old buildings, bridges and concrete bunkers used as day roosts. Large hibernacula occur mostly in caves, mines and buildings. Not documented in the study area.
Birds				
Bald eagle	*Haliaeetus leucocephalus*	SS	FCo	Nests in large trees with exposed limbs; feeds on salmon and carrion. Known to forage and nest along the north shores of Lake Washington. Known to predate the Kenmore heron colony.
Common loon	*Gavia immer*	SS	None	Widespread in the Puget Sound area but uncommon. Most likely to be observed loafing and foraging on Lake Washington in study area.

Common Name	Scientific Name	State Status[1]	Federal Status[1]	Comments
Great blue heron	*Ardea herodias*	None	None	Species of Local Significance. Documented great blue heron rookery adjacent to Kenmore Park-and-Ride lot. Herons forage widely in wetlands, rivers and lakes throughout the area.
Marbled murrelet	*Brachyramphus marmoratus*	ST	FT	Nests in old growth conifer trees within 50 miles of the coast. Overwinters on Puget Sound. Could occur as a transient on Lake Washington. Does not occur in the highly urbanized study area.
Peregrine falcon	*Falco peregrinus*	SS	FCo	Known to nest on buildings and cliffs in Puget Sound. Likely to forage in the study area.
Pileated woodpecker	*Dryocopus pileatus*	SC	None	Widespread and common in the suburban/rural interface of Puget Sound. Likely to occur in forest patches throughout the study area.
Purple martin	*Progne subis*	SC	None	Purple martin is the largest swallow in North America. It is a seasonal migrant fairly common in the Puget Sound area during spring and summer and typically uses nest boxes. Documented in Kenmore at Log Boom Park.
Sandhill crane	*Grus canadensis*	SE	None	Uncommon migrant in Puget Sound. Commonly seen in agricultural areas of Skagit Valley. Not expected to occur in the study area.
Streaked horned lark	*Eremophila alpestris strigata*	SE	FT	Subspecies is adapted to the threatened prairie habitats of Puget Sound, which occur mostly in Pierce County and on the outer coast. Not documented to occur in the study area.
Vaux's swift	*Chaetura vauxi*	SC	None	Small swift that nests in large colonies in natural cavities in large snags or in human-made structures such as industrial chimneys. Forages widely in search of insects. Fairly common in Puget Sound during the summer but not documented in the study area.
Yellow-billed cuckoo	*Coccyzus americanus*	SC	FPT	Rare transient in Washington State. No documented breeding. Occurred historically in riparian gallery forests around Lake Washington, but habitat almost completely removed by urbanization.

Note: Species list is applicable to all jurisdictions in the study area.
[1] Status definitions: SS = State Sensitive; SC = State Candidate; ST = State Threatened; SE = State Endangered; FCo = Federal Species of Concern; FT = Federal Threatened; FPT = Federal Proposed Threatened.
Sources: USFWS IPaC (2020b); NOAA 2016; WDFW 2019.

4.4.3.1 City of Shoreline special status plants and animals

City of Shoreline designates the following as fish and wildlife conservation areas (Shoreline Municipal Code 20.80.270):

- Areas with which state or federally designated endangered, threatened and sensitive species have a primary association
- State priority habitats and areas associated with state priority species
- Commercial and recreational shellfish areas
- Kelp and eelgrass beds, and herring and smelt spawning area
- Waters of the state, as defined in WAC 222-16-030

Of these designated resources, waters of the state, including lakes, ponds and streams, are described above in the Wetlands and Streams sections. **Table 4-5** (Special status species list for SR 522/NE 145th BRT Project) above lists special status species (including state and federally listed, sensitive, priority and local importance species that may occur in the study area). Note that **Table 4-5** (Special status species list for SR 522/NE 145th BRT Project) is applicable to the entire study area, for all jurisdictions.

WDFW does not identify any wildlife as PHS within the Shoreline portion of the study area. However, priority species such as pileated woodpecker would be expected to occur in any forest patches within the study area, such as the Paramount Open Space and the St. Joseph's Carmelite Monastery.

4.4.3.2 City of Seattle special status plants and animals

City of Seattle designates the following as fish and wildlife conservation areas (Seattle Municipal Code 25.09.012(D)):

- Areas defined and/or mapped by WDFW as biodiversity areas and corridors
- Areas designated by WDFW as priority habitats and species areas, except wetlands
- Corridors of land or water connecting priority habitats and species areas or habitat areas for species of local importance
- Areas that provide habitat for species of local importance
- Riparian corridors
- Priority habitat areas as regulated in Sections 23.60A.156 and 23.60A.160 of the Seattle Municipal Code and associated setbacks
- Areas where state or federally designated endangered, threatened and sensitive species have a primary association

Of these designated resources, waters of the state and lakes, ponds and streams are described above in Section 4.2 (Waters: streams). No WDFW biodiversity areas or corridors occur in the study area. **Table 4-5** (Special status species list for SR 522/NE 145th BRT Project) lists special status species (including state and federally listed, sensitive, priority and local importance species) that may occur in the study area. No documented occurrences of PHS wildlife species are mapped in the study area (WDFW 2020b). Some priority species, including pileated woodpecker, would be expected to use the forest patches in the study area.

4.4.3.3 City of Lake Forest Park special status plants and animals

City of Lake Forest Park designates the following as fish and wildlife conservation areas (Lake Forest Park Municipal Code 16.16.040(H)):

- Priority habitats
- Areas where endangered, threatened and sensitive species, or priority species have a primary association
- Habitats and species of local importance
- Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat
- Waters of the state, as defined in WAC 222-16-030
- Lakes, ponds, streams and rivers planted with game fish by a governmental or tribal entity
- State Natural Area Preserves and Natural Resource Conservation Areas

Of these designated resources, waters of the state and lakes, ponds and streams are described above in Section 4.2 (Waters: streams). No Natural Area Preserves or Natural Resource Conservation Areas occur in the study area. **Table 4-5** (Special status species list for SR 522/NE 145th BRT Project) lists special status species (including state and federally listed, sensitive, priority and local importance species) that may occur in the study area.

No documented occurrences of PHS wildlife species are mapped in the study area (WDFW 2020b). The City of Lake Forest Park does not identify any specific habitats or species of local importance.

4.4.3.4 City of Kenmore special status plants and animals

City of Kenmore designates the following as fish and wildlife habitats of importance (Kenmore Municipal Code 18.55.500):

- Documented presence of species listed by the federal government or the state of Washington as endangered or threatened
- Heron rookeries or active nesting trees
- Pileated woodpecker breeding habitat as mapped by WDFW in its Priority Habitats and Species Program

- Biodiversity areas and corridors as mapped by WDFW in its Priority Habitats and Species Program
- Bald eagle habitat shall be protected pursuant to the Washington State Bald Eagle Protection Rules
- Anadromous fish habitat
- Habitat for species nominated and approved by the City of Kenmore

Of these designated resources, wetlands and streams are described above in Section 4.1 (Waters: wetlands) and Section 4.2 (Waters: streams). **Table 4-5** (Special status species list for SR 522/NE 145th BRT Project) lists special status species (including state and federal listed, sensitive, priority and local importance species) that may occur in the study area.

Anadromous fish are mapped within Kenmore streams, including Swamp Creek and the lower reach of Cat Whisker Creek. A great blue heron breeding colony is mapped by both WDFW PHS and the City of Kenmore within the Wetland WKE-1 complex. Per Kenmore Municipal Code 18.55.530(A), a buffer of 656 feet from the outermost nest tree is to be established and maintained with native vegetation. See **Appendix E** (Great Blue Heron Draft Habitat Management Plan) for more information on the great blue heron rookery and potential project impacts to it.

Bald eagles utilize the Lake Washington and Sammamish River corridors for forage and nesting. Nests or communal roosts identified in the vicinity of the study area will be protected in accordance with Kenmore Municipal Code 18.55.530(A). No bald eagle nests are documented in the study area. The nearest documented nest is approximately 0.25 mile south of the study area near the Sammamish River in Bothell (WDFW 2020e).

4.4.3.5 City of Bothell special status plants and animals

City of Bothell designates the following as fish and wildlife conservation areas (Bothell Municipal Code 14.04.005(F)):

- Areas with which state or federally designated endangered, threatened and sensitive species have a primary association
- Habitats and species of local importance, including but not limited to areas designated as priority habitat by WDFW
- Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat
- Waters of the state, as defined in WAC 222-16-030
- Lakes, ponds, streams and rivers planted with game fish by a governmental or tribal entity
- State Natural Area Preserves and Natural Resource Conservation Areas
- Land essential for preserving connections between habitat blocks and open space

Of these designated resources, waters of the state and lakes, ponds and streams are described above in Section 4.1 (Waters: wetlands) and Section 4.2 (Waters: streams). No Natural Area Preserves or Natural Resource Conservation Areas occur in the study area. **Table 4-5** (Special status species list for SR 522/NE 145th BRT Project) lists special status species (including state and federally listed, sensitive, priority and local importance species) that may occur in the study area. Of these wildlife species, several anadromous fish (Chinook salmon and steelhead trout) are documented in multiple Bothell streams, including Horse Creek and North Creek. Of upland wildlife species, purple martin is documented in the study area. Pileated woodpecker can be expected to occur in any forest patch in the study area. Other species, including bald eagle, peregrine falcon (*Falco peregrinus*), common loon (*Gavia immer*) and both bat species (see **Table 4-5** (Special status species list for SR 522/NE 145th BRT Project)), could occur on a transient basis in the study area.

5 ENVIRONMENTAL IMPACT ANALYSIS

This impact analysis assesses the potential direct and indirect ecosystem impacts of the proposed project on wetlands, streams, fish, vegetation and wildlife. Each section below describes both long-term operations impacts and short-term construction impacts. The impact analysis describes the extent, magnitude, duration and character of impacts on ecosystem resources. Impacts are quantified where appropriate and possible (e.g., area of wetland impacts). Other topics are discussed only qualitatively due to the preliminary stage of design (e.g., stormwater).

5.1 Direct impacts

Direct impacts to ecosystem resources are those that would involve both short-term impacts related to construction and long-term permanent impacts from activities such as filling or habitat removal.

5.1.1 Wetlands

The proposed project has been designed to avoid and minimize impacts to wetlands to the greatest extent practicable. The project proposes no direct permanent impacts to wetlands; however, there would be unavoidable permanent impacts to the outer edges of some wetland buffers. These impacts are summarized in **Table 5-1** (Temporary and permanent impacts to wetland buffers) below and shown in **Figure 5-1** (Wetland and stream impacts).

Table 5-1 Temporary and permanent impacts to wetlands and their buffers

Jurisdiction	Wetland ID	Category[1]	Buffer (feet)	Temporary Buffer Impact (square feet)	Permanent Buffer Impact (square feet)
Shoreline	*No wetland or wetland buffer impacts.*				
Seattle	*No wetland or wetland buffer impacts.*				
Lake Forest Park	WLFP-3	III	105	544	926
Lake Forest Park	WLFP-6[2]	III	105	0	0
Kenmore	*No wetland or wetland buffer impacts.*				
Bothell	WBO-1	II	165	3,073	1,562
Total				**3,617**	**2,488**

[1] Wetland Rating System for Western Washington (Hruby 2014).

[2] Wetland WLFP-6 would be spanned by a pedestrian bridge to support the new sidewalk; the pedestrian bridge would shade approximately 35 square feet of the wetland.

The buffers of Wetland WLFP-3 and McAleer Creek overlap. The impacts shown in **Table 5-1** (Temporary and permanent impacts to wetland buffers) for Wetland WLFP-3 are only those impacts outside of the stream buffer. Stream buffer impacts are shown in **Table 5-2** (Temporary and permanent impacts to stream buffers) and discussed in Section 5.1.2, below. Similarly, the buffer of Wetland WLFP-6 is entirely within the buffer of McAleer Creek, so it is discussed in Section 5.1.2 below. Although there would be no direct impacts to wetlands, approximately 35 square feet of WLFP-6 would be shaded by the proposed pedestrian bridge. This shading is not expected to seriously influence vegetation in the wetland, which is dominated by hardy species such as reed canarygrass and nightshade. Permanent impacts to the buffer of Wetland WLFP-3 would belimited to previously disturbed areas immediately adjacent to SR 522. City of Lake Forest Park staff regularly maintain this area, which is dominated by grass and invasive species. Permanent impacts to the buffer of Wetland WBO-1 may be eliminated during final design. The affected buffer of WBO-1 is a narrow strip of mixed nonnative and native vegetation within approximately 10 feet of the base of the existing retaining wall in this area. Vegetation includes a variety of shrubs and herbaceous plants, including nonnatives such as Himalayan blackberry. At least one large native western red cedar tree exists adjacent to the impact area and would probably need to be removed as part of construction.

Short-term impacts to wetlands from construction activities would be avoided. In many cases, local wetlands are completely surrounded by developed surfaces, such as Wetlands WLFP-1 and WLFP-2 at Lake Forest Park Town Center and Wetlands WKE-1 and WKE-2 in Kenmore. In several locations, construction would occur close to wetlands, including Wetlands WLFP-3 and WKE-1. Appropriate implementation of best management practices (BMPs), such as silt fence or straw wattles, is anticipated to minimize the risks of introducing sediment or contaminants into these wetlands. Temporarily impacted portions of the wetland buffer would be restored with native species once construction is finished.

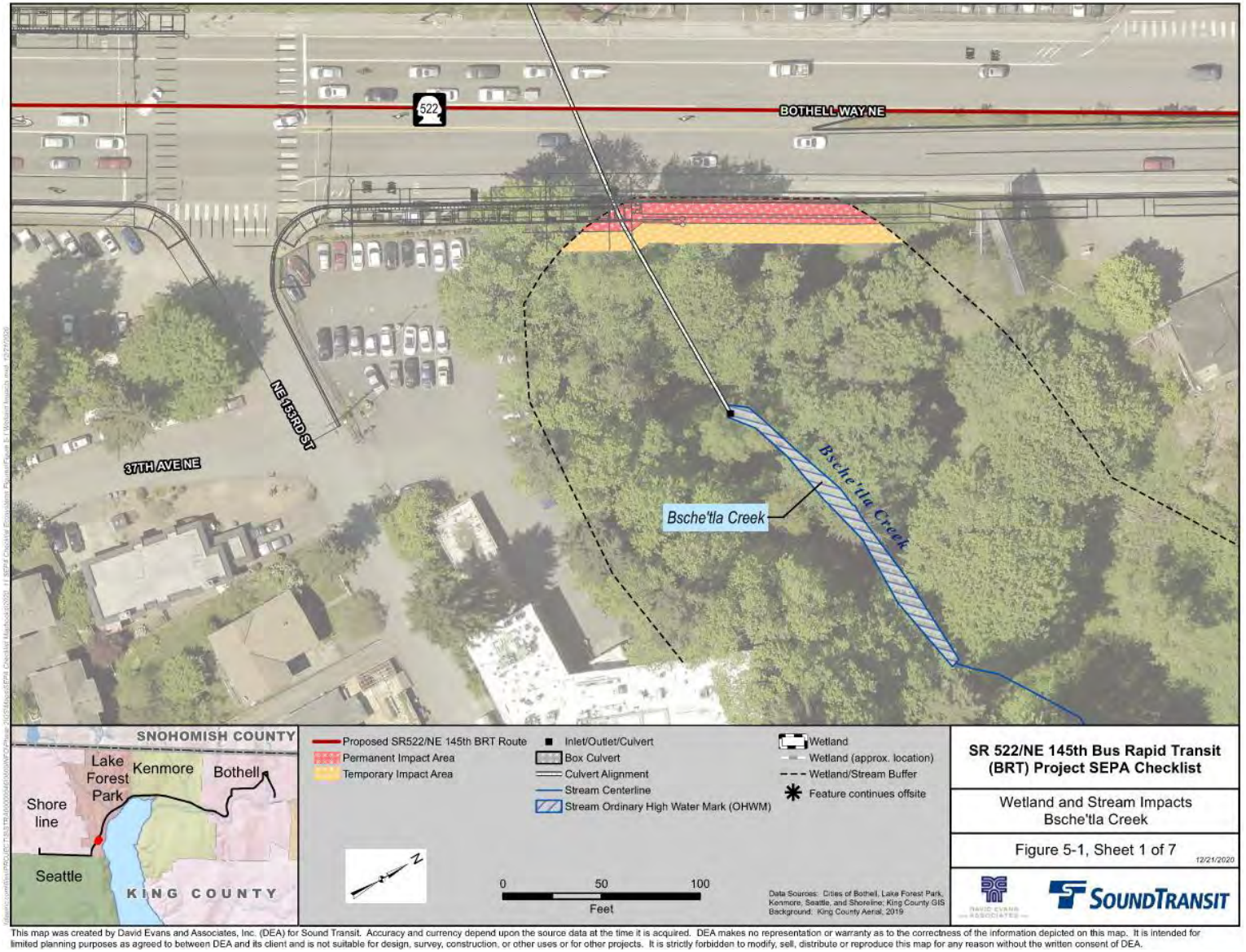

Figure 5-1, sheet 1 of 7 Wetland and stream impacts – Bsche’tla Creek

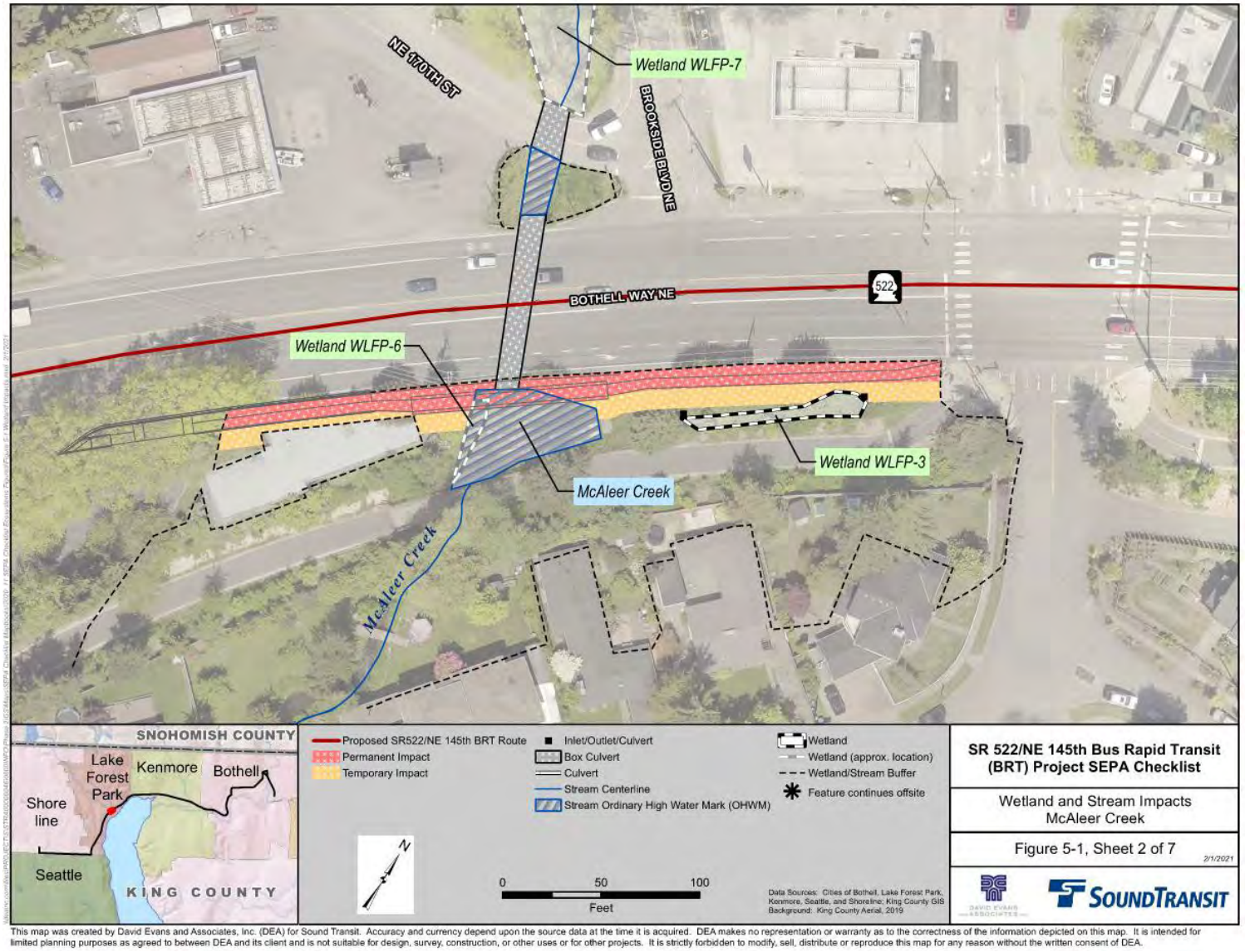

Figure 5-1, sheet 2 of 7 Wetland and stream impacts – McAleer Creek

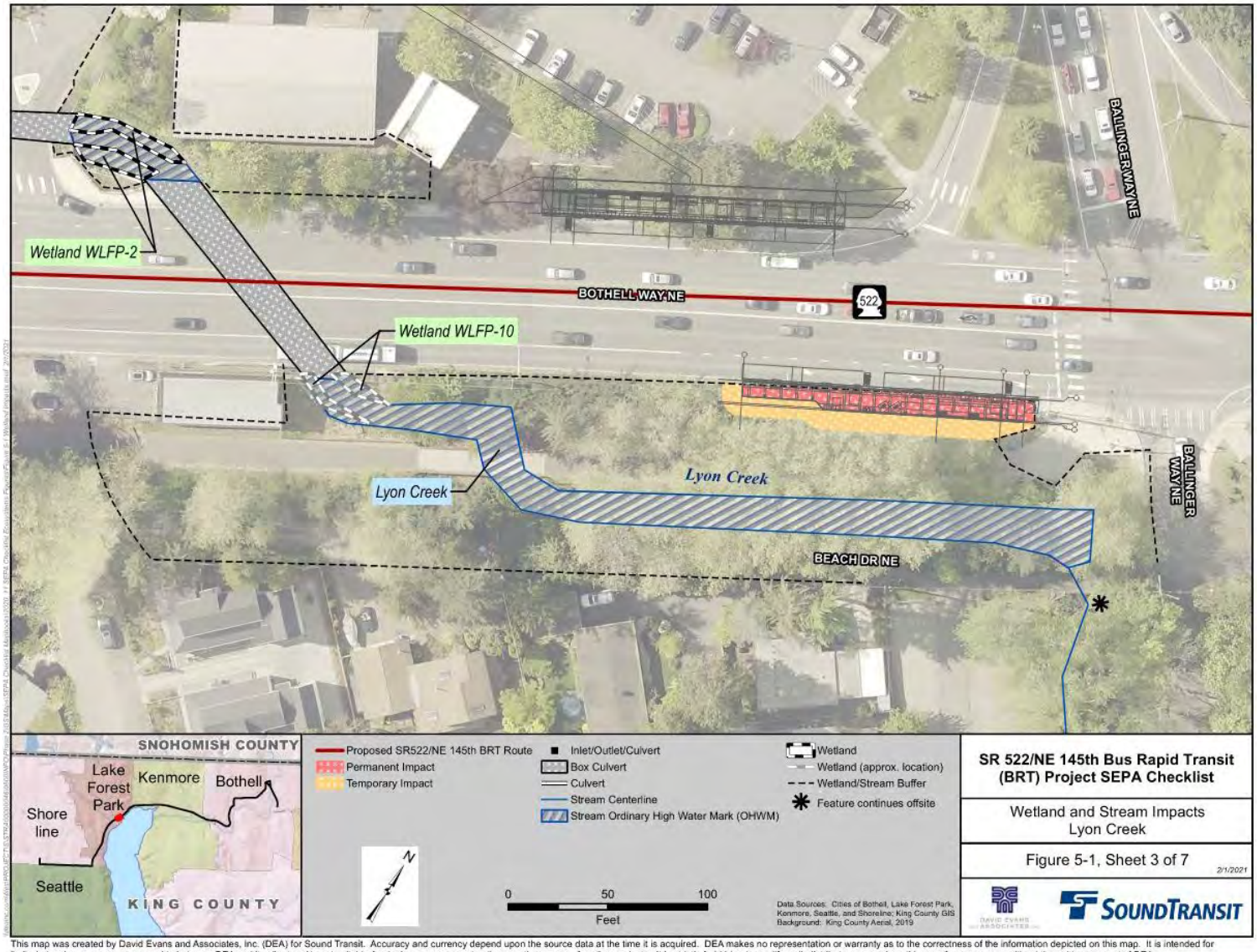

Figure 5-1, sheet 3 of 7 Wetland and stream impacts – Lyon Creek

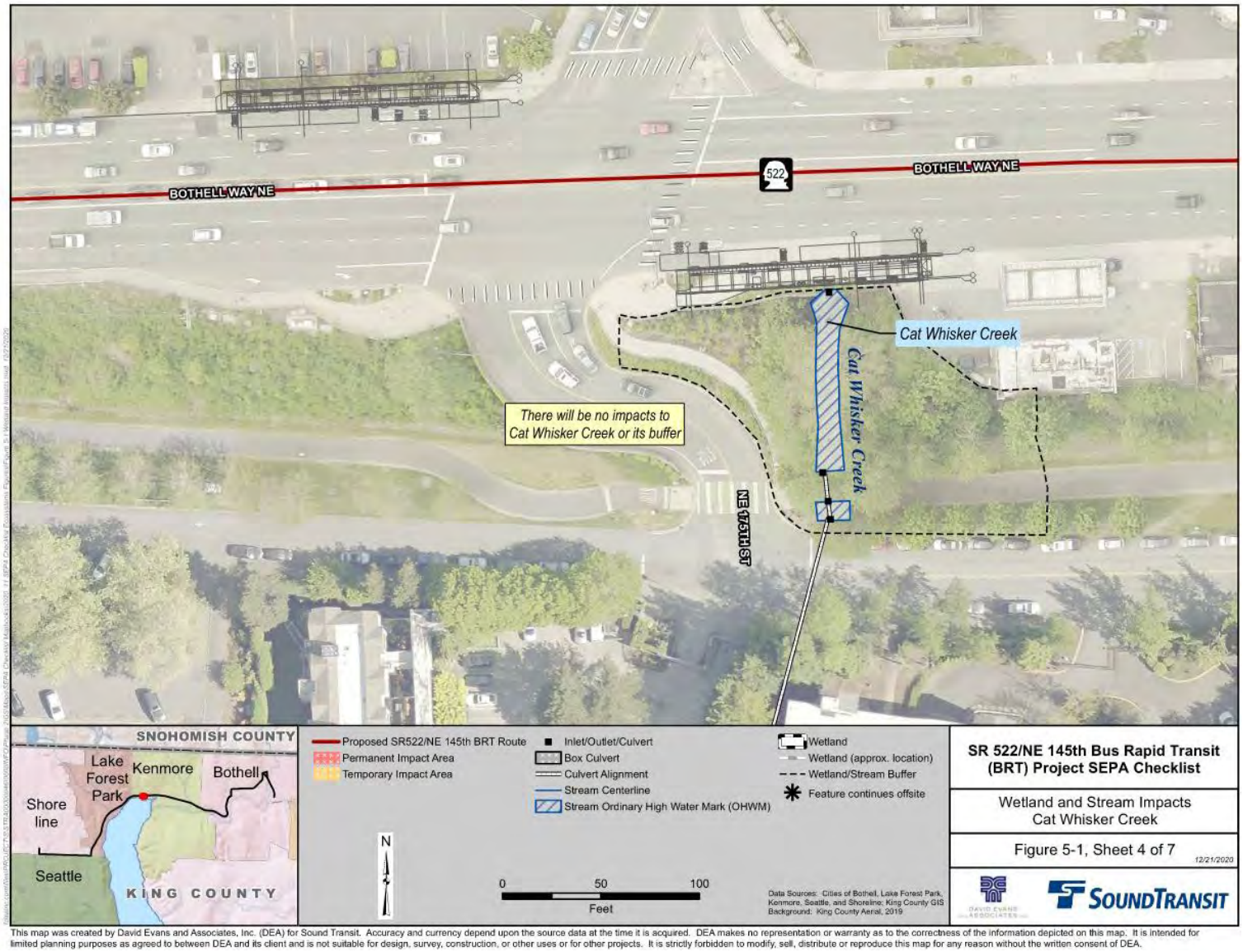

Figure 5-1, sheet 4 of 7 Wetland and stream impacts – Cat Whisker Creek

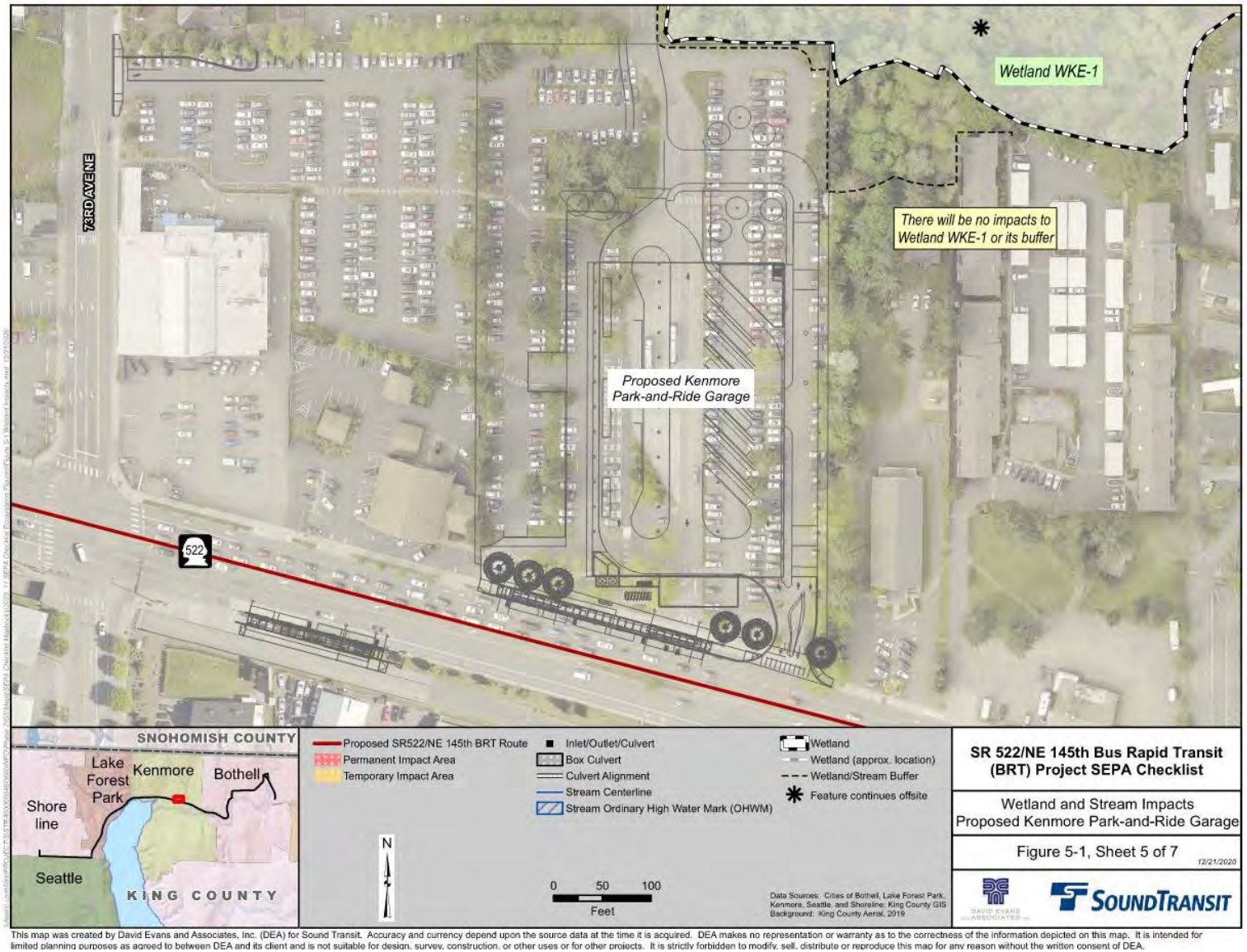

Figure 5-1, sheet 5 of 7 Wetland and stream impacts – Kenmore proposed Park-and-Ride Garage

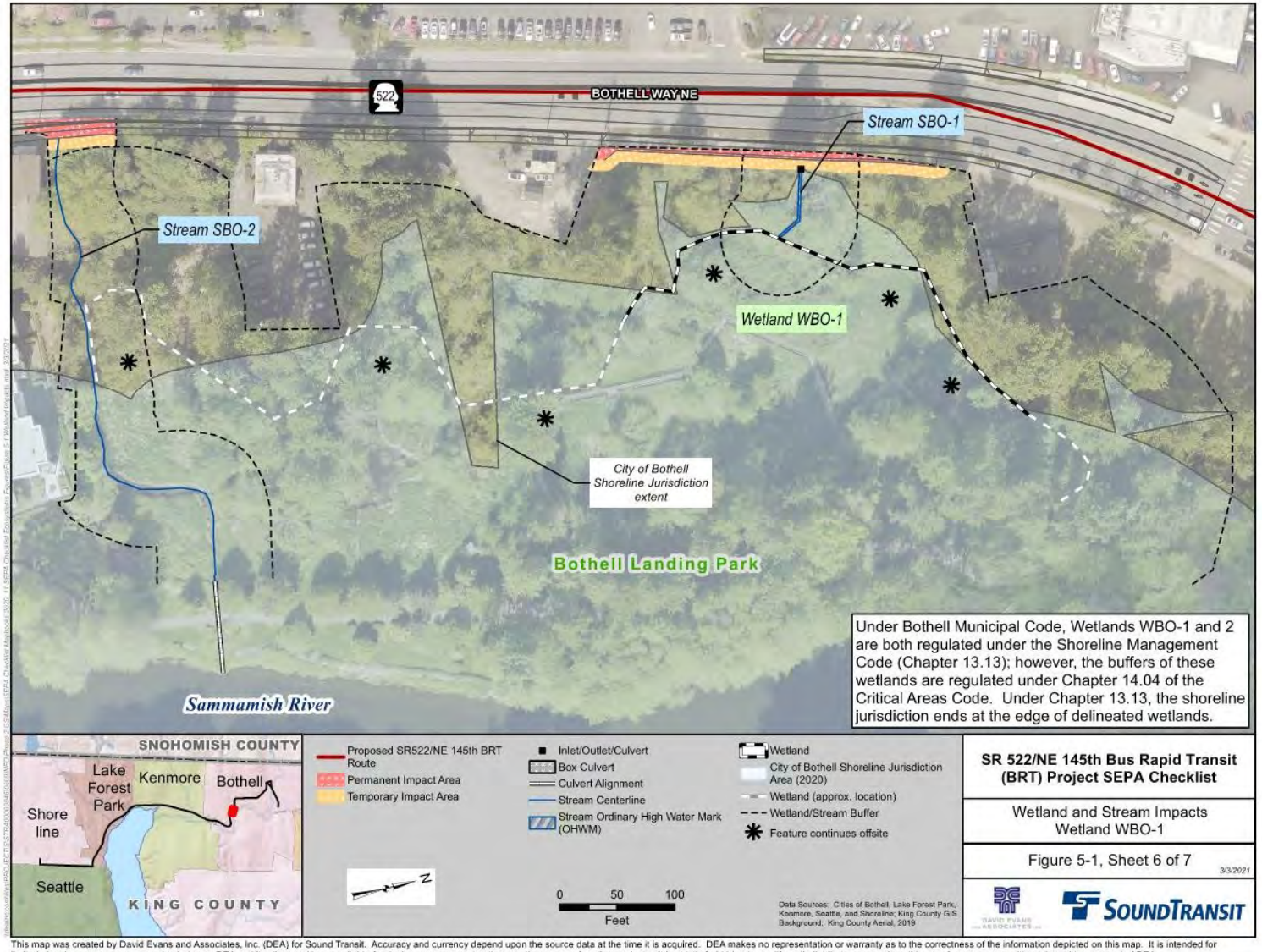

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Figure 5-1, sheet 6 of 7 Wetland and stream impacts – Wetland WBO-1

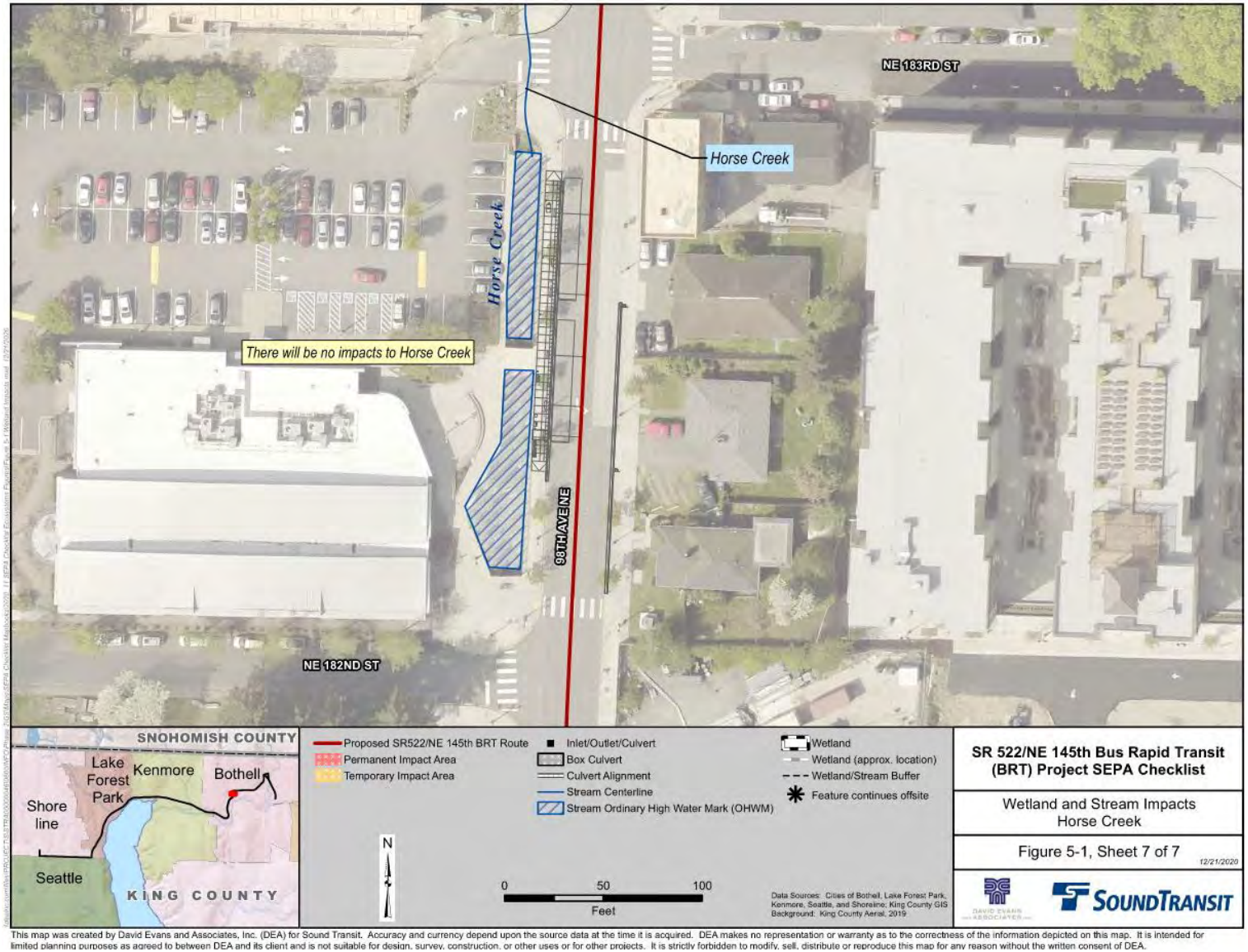

Figure 5-1, sheet 7 of 7 Wetland and stream impacts – Horse Creek

5.1.2 Streams

The proposed project has avoided and minimized impacts to streams to the greatest extent practicable. The project proposes no direct impacts of any stream. There would be unavoidable temporary and permanent impacts to the outer edges of four stream buffers. These impacts are summarized in **Table 5-2** (Temporary and permanent impacts to stream buffers) below and shown in **Figure 5-1** (Wetland and stream impacts).

Table 5-2 Temporary and permanent impacts to stream buffers

Jurisdiction	Stream ID	Category[1]	Buffer (feet)	Temporary Buffer Impact (square feet)	Permanent Buffer Impact (square feet)
Seattle	*No stream or stream buffer impacts.*				
Shoreline	*No stream or stream buffer impacts.*				
Lake Forest Park	Bsche'tla Creek	F	115	1,639	1,655
Lake Forest Park	McAleer Creek[2]	F	115	1,924	2,819
Lake Forest Park	Lyon Creek	F	115	1,548	1,477
Kenmore	*No stream or stream buffer impacts.*				
Bothell	SBO-1	Ns	50	600	1,140
Total				**5,711**	**7,091**

[1] F = Fish-bearing stream

[2] McAleer Creek would be spanned by a pedestrian bridge to support the new sidewalk; the pedestrian bridge would provide approximately 300 square feet of shaded cover to the stream.

Impacts to the buffers of each of these streams would generally be limited to the disturbed outer edges and road prism adjacent to SR 522, which are dominated by grasses and invasive species. At Bsche'tla Creek, there are existing retaining walls within the buffer that reduce its function. Impacts to the Bsche'tla Creek buffer include the removal of some trees. At McAleer Creek, the existing buffer is degraded by human activities adjacent to SR 522, the Burke-Gilman Trail and the adjacent business. McAleer Creek would be spanned by a pedestrian bridge to support the new sidewalk; the pedestrian bridge would provide approximately 300 square feet of shaded cover to the stream. Abutments for this structure would be placed outside the OHWM of the stream and would not involve any in-water work. Two trees are proposed to be removed in the buffer of McAleer Creek.

Impacts to the buffer of Lyon Creek would be on the opposite side of the Burke-Gilman Trail from the stream but still would count as impacts, because the overhead canopy extends across the trail and provides habitat and shading for the stream. However, the understory is generally lacking due to landscaping maintenance, and therefore its effects are limited. Approximately eight significant trees (all deciduous) would be removed in this portion of the Lyon Creek buffer (Lake Forest Park Municipal Code 16.14).

Impacts to the buffer of Stream SBO-2 are worst-case. This stream was not evaluated in the field, and it's very likely that the stream channel does not extend close enough to SR 522 to have impacts from the proposed project.

Similar to wetlands, appropriate implementation of BMPs would be expected to avoid temporary construction impacts to these streams. In particular, robust BMPs would be provided at the top of the slope above Bsche'tla Creek to ensure slope stabilization and prevent scour downstream.

Proposed project activities would also occur in proximity to two other streams: Cat Whisker Creek in Kenmore and Horse Creek in Bothell (see **Figure 5-1** (Wetland and stream impacts)). The eastbound platform of the project's proposed 61st Avenue NE Station in Kenmore would be located directly above Cat Whisker Creek. The stream in this location flows out of a long, piped segment into a box culvert at the base of a large retaining wall (see description above in Section 4.2.2.4). The proposed platform would be constructed entirely on top of the existing retaining wall between the railing and the existing SR 522, and no impacts would extend past the developed edge of the existing wall. Thus, there would be no impacts to Cat Whisker Creek or its buffer at this location. The southbound platform of the project's proposed 98th Avenue NE Station (between NE 183rd Street and NE 182nd Street) would be constructed immediately adjacent to the daylighted channel of Horse Creek. However, the current design avoids impacts within the stream channel. No impacts to the stream buffer would occur, because Bothell does not have a regulated stream buffer on Horse Creek in this area.

5.1.3 Vegetation, wildlife and wildlife habitat

Potential impacts to vegetation and wildlife habitat would be limited primarily to those previously discussed for wetlands and streams and their buffers. The proposed project would avoid direct impacts to most high quality habitat blocks, as shown in **Figure 4-3** (Fish and wildlife habitat). There would be approximately 2,000 square feet of impact to the forested ravine surrounding Bsche'tla Creek. This impact is described above as part of the impact to the stream buffer. A narrow impact area would occur to forested habitat along the west side of SR 522 between Carriage Rebuild and the Northlake Montessori School. Approximately 1,000 square feet of this area would be removed by the proposed project. However, most of this impact would involve previously disturbed roadside dominated by invasive species and grass. No mature trees would be removed. No other high quality habitat areas would be affected by the project.

A variety of individual trees with a diameter at breast height (dbh) greater than 6 inches would be removed throughout the corridor. Most trees of this size are located within public right-of-way or in landscaped areas, and are not associated with large blocks of habitat. Based on visual reconnaissance, an estimated 727 trees of this size class could be removed by the project. The estimated number of trees that could be removed is displayed, by jurisdiction, in **Table 5-3** (Estimated tree[1] removal by jurisdiction) below. These estimates will be refined during final design.

Table 5-3 Estimated tree[1] removal by jurisdiction

Jurisdiction	# of Deciduous Trees Removed	# of Conifer Trees Removed	# of Total Trees Removed
Shoreline	21	31	52
Seattle	50	10	60
Lake Forest Park	236	203	439
Kenmore	25	10	35
Bothell	104	37	141
Total	**436**	**291**	**727**

[1] Trees greater than 6 inches dbh.

5.1.4 Special status species

5.1.4.1 City of Shoreline

There would be no potential impacts to special status species in Shoreline, because there would be no impacts to waterbodies that could support listed fish species, or to high quality habitat areas that could support listed birds and mammals. Similarly, there would be no impacts to wetlands and streams or their buffers.

5.1.4.2 City of Seattle

There would be no potential impacts to special status species in Seattle, because there would be no impacts to waterbodies that could support listed fish species, or to high quality habitat areas that could support listed birds and mammals. Similarly, there would be no impacts to wetlands and streams or their buffers.

5.1.4.3 City of Lake Forest Park

The proposed project in Lake Forest Park would have direct impacts to some habitats important to special status species, including the buffers of McAleer Creek, Lyon Creek and Bsche'tla Creek. The upland buffer surrounding Bsche'tla Creek could provide habitat for pileated woodpecker, a state priority species. Removal of trees from 1,655 square feet of the forested ravine could remove foraging and nesting habitat for this species. Also, individuals present in the project vicinity during construction could avoid the area due to disturbance from elevated noise and human activity.

McAleer Creek and Lyon Creek provide habitat for listed fish species, including Chinook salmon and steelhead trout. While there would be no direct impacts to either waterbody, installation of a pedestrian bridge at McAleer Creek would permanently remove approximately 2,567 square feet of the buffer. The proposed pedestrian bridge would create approximately 300 square feet of overwater coverage over McAleer Creek. This incremental reduction of the buffer would reduce its ability to treat stormwater runoff, which could affect water quality in the creek for salmon. However, this area is dominated by disturbed roadside habitat, which has limited stormwater treatment function. Similarly, placement of the eastbound platform on the south side of SR 522 at Lake Forest Park Town Center would remove approximately 2,376 square feet of the buffer of Lyon Creek. However, this portion of the buffer is on the opposite side of the Burke-Gilman Trail and provides limited water quality function to the stream, particularly for treatment of runoff. The overhead canopy does provide other functions,

such as shade to the stream, which helps reduce ambient surface water temperatures. However, the removed trees are too far from the stream to provide substantial detritus input. Removal of trees at this location would reduce the habitat value of the buffer to a minor degree.

No other high quality habitat areas would be affected in Lake Forest Park.

5.1.4.4 City of Kenmore

Potential impacts to special status species in Kenmore would be limited to potential short-term noise impacts from construction that could disturb the great blue heron colony adjacent to the Kenmore Park-and-Ride lot. No other direct impacts to wetlands, streams or habitat areas would occur.

Impacts to Great Blue Heron Colony

Construction

Construction of the park-and-ride garage at the Kenmore Park-and-Ride lot would occur approximately 500 feet south of the heron rookery and would not result in direct impacts to heron habitat (see **Figure 5-2** (Heron Colony – Kenmore Park-and-Ride lot)). Indirect impacts from construction could affect the rookery if work occurs during the breeding season, because construction noise impacts during the breeding season pose a risk of nest abandonment. The planned parking garage would be about 450 feet from the rookery. WDFW guidelines recommend that no loud construction occur within 656 feet of a rookery, and this recommendation has been adopted into the City of Kenmore's existing CAO.

The WDFW guidelines recommend a buffer of 1,320 feet for "unusually loud activities like blasting," further defined as those activities that generate sounds exceeding 92 decibels at the outer boundary of a rookery.

While blasting is not proposed as part of the project, construction of the park-and-ride garage could include the use of pile-driving or similar impact equipment that generates loud noise. Based on modeling using the Federal Highway Administration Construction Noise Handbook (FHWA 2006), standard construction noise would generate a maximum 89.5 A-weighted decibels (dBA) 50 feet from the source and attenuate to about 69.5 dBA at the edge of the rookery. Impact driving equipment would generate a maximum 110 dBA 50 feet from the source and attenuate to approximately 85 dBA at the edge of the rookery. Therefore, construction-related noise is not expected to occur at an unusually loud level (i.e., exceeding 92 dBA) at the outer boundary of the rookery.

Based on the proposed location of the park-and-ride garage, construction would likely be in the direct line-of-sight to the rookery, which may cause some visual disturbance along with the corresponding noise disturbance. The combination of noise and visual disturbances could disrupt nesting behavior of the nearby herons. Construction traffic would likely access the site from SR 522 and the existing north access road. An increase in heavy truck traffic may have the highest likelihood of disrupting heron nesting, because if these trucks use the north access road, they would travel within 100 feet of the rookery and within the 197-foot core buffer zone for this urban colony (WDFW 2012). However, while increased heavy truck traffic would cause a visual disturbance and an increase in noise at the site, it would not occur at an unusually loud level (i.e., greater than 92 dBA).

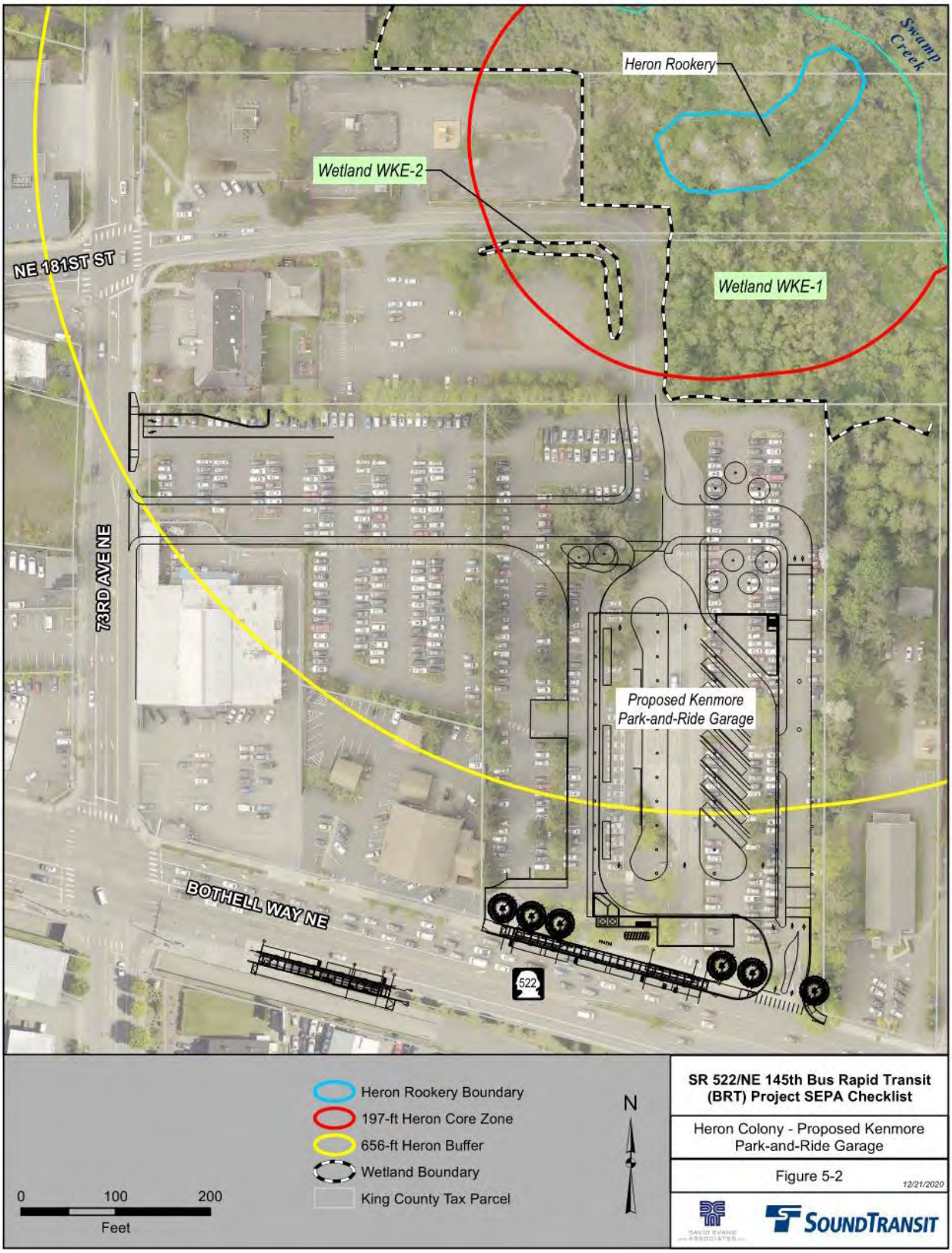

Figure 5-2 Heron Colony – Kenmore Park-and-Ride lot

Operation

Operation of the new Kenmore Park-and-Ride garage would be similar to existing conditions. The rookery appears habituated to the current level of activity when, for most of the day, the park-and-ride lot is relatively inactive. Buses would still enter the site from the north access road and exit the site on SR 522. There would be a slight increase in buses using the site—approximately four buses per day. Similarly, there would be an increase in the amount of passenger vehicles using the site, primarily during the PM peak commute hours—approximately 150 vehicles (DEA 2020). If these additional passenger vehicles use the north access road, they could increase the amount of traffic and noise disturbance to the heron colony during the nesting season (February 1 through the end of August). However, current design includes development of a new signal on 73rd Avenue NE that would provide a new point of access to the garage for passenger vehicles. This new signal, combined with proposed traffic controls, should reduce any potential traffic disturbance to a negligible level. Only a handful of nesting trees are available for the herons within the limits of the existing colony. The herons would not be able to shift away from new noise disturbances (i.e., heavy truck traffic) to another part of the wetland because of a lack of suitable alternative nest trees within the surrounding wetland. Thus, this type of disturbance during the breeding season could cause the herons to abandon the rookery, or could disrupt successful breeding.

The addition of a park-and-ride garage would add a new vertical structure and potential disturbance vector at “eye-level” to the rookery. Car headlights at night shining out of the garage toward the rookery would represent a new visual disturbance vector at about the height of the rookery nests, which has the potential to affect the breeding herons. In one documented instance, increased light near a rookery resulted in entire colony abandonment (Eissinger 2007). There are other noises besides traffic noise that would be associated with the operation of the facility, including horns from vehicles and loud voices, cell phone ring tones and bike bells, but these elements and types of noises are already present, and the herons appear to be habituated to these factors.

See the Draft HMP in **Appendix E** (Great Blue Heron Draft Habitat Management Plan) for more information.

5.1.4.5 City of Bothell

There would be very limited potential impacts to special status species in Bothell. There would be no proposed direct impacts to wetlands or streams, although there would be minor impacts to the buffer of Wetland WBO-1. This wetland is not known to provide habitat for special status species. Several mature trees that could provide habitat for pileated woodpecker and solitary roosting bats could be removed from the wetland buffer. A proposed station platform on the west side of 98th Avenue NE just south of NE 183rd Street will require the installation/modification of a handrail at the top of the retaining wall that forms the daylighted left bank of Horse Creek. However, the City of Bothell does not impose regulatory buffers on this daylighted section of the stream (outside of the concrete channel walls).

5.2 Indirect impacts

Indirect impacts include those effects that are caused by the project later in time or farther removed in distance, but that are still reasonably foreseeable. For ecosystem resources, these indirect impacts may include effects from other nearby area developments resulting from changes in land use patterns, population density or water quality. Indirect impacts may also occur through the implementation of project-related mitigation measures. Potential indirect effects to ecosystem

resources could include water quality impacts from increased pollution-generating impervious surfaces (PGIS) in the study area, and increased disturbance from increased/changed bus service and associated facilities in the study area. The most specific example of the last item would be disturbance to the Kenmore Great Blue Heron Rookery from increased operations at the Kenmore Park-and-Ride garage.

The proposed project would add PGIS to the study area due to construction of project components, including road and sidewalk pavement and station platforms. Park-and-ride garages would add PGIS to the extent that (1) additional levels of vehicle parking represent new PGIS, and (2) the existing surface is pervious. Based on stormwater information available at the current level of design, the following approximate areas of PGIS would be added to the study area:

- Seattle/Shoreline – 20,700 square feet
- Lake Forest Park – 44,000 square feet
- Kenmore – 0 square feet (garage and stations are all proposed on top of existing PGIS)
- Bothell – 30,000 square feet

Stormwater treatment requirements vary slightly in each jurisdiction, based on which stormwater manual is applied to the design. For instance, both Lake Forest Park and Kenmore use the 2016 King County Surface Water Design Manual, but Bothell uses the city's Surface Water Design Manual (Bothell 2020b). City of Seattle's requirements are contained in the Seattle Stormwater Code, Seattle Municipal Code Chapter 880, and in the *City of Seattle Stormwater Manual* (Seattle 2017). The Shoreline Municipal Code specifies compliance with the effective, current version of the *Stormwater Management Manual for Western Washington* published by Ecology (Ecology 2014), the Western Washington Phase II Municipal Stormwater Permit, and the City of Shoreline Engineering Development Manual.

Within each threshold discharge area, water quality treatment is required whenever new PGIS is greater than 5,000 square feet in size. Media filter vaults and bioretention cells would be used to provide water quality treatment for equivalent PGIS in most cases. Nevertheless, the project could eventually contribute to an incremental increase in stormwater runoff into study area waterbodies. However, compliance with current stormwater treatment standards as the area continues to redevelop should reduce stormwater runoff and related impacts.

The proposed project would not add detectable levels of human activity to the study area. Given the high level of traffic in the study area already, the proposed increase in bus trips would not elevate noise levels sufficiently to affect local wildlife species. Human activity in localized areas along the project corridor would increase during operation of the BRT service, including in areas around each station and park-and-ride garage. All of these areas, however, already experience high vehicular and pedestrian movement, so it is not expected that there would be a measurable change in such activity.

6 MITIGATION MEASURES

The project would be designed to comply with all federal, state and local regulations. The project would implement a mitigation sequencing approach based on a hierarchy of avoiding and minimizing adverse impacts through careful design, rectifying temporary impacts, and compensating for unavoidable adverse impacts. Beyond these measures that the project would implement, no mitigation is expected to be needed.

Some of the measures used to date to avoid and minimize impacts to ecosystem resources include:

- Avoiding all direct impacts to wetlands and streams through elimination of project components (for example, BAT lanes would end before reaching Littles Creek to avoid impacts to this stream)
- Avoiding all impacts to the Jackson Park Golf Course and its associated wetland, streams and habitat areas
- Using a pedestrian bridge that fully spans McAleer Creek to avoid in-water work and direct impacts to the stream
- Siting the Lake Forest Park Park-and-Ride garage to avoid impacts to Lyon Creek
- Use of retaining walls where appropriate to minimize impacts to private property, trees, etc.
- Designing the eastbound platform at Cat Whisker Creek to avoid impacts to the stream
- Widening to the west along Bothell Way NE to avoid impact to the wetlands and habitat areas in Bothell Landing Park
- Siting the Kenmore Park-and-Ride garage as far south as possible to minimize impacts to the heron colony
- Creating a new signalized intersection on 73rd Avenue NE to improve access to the Kenmore Park-and-Ride garage and to avoid increased passenger car traffic on the north access road that could increase operational disturbance to the heron rookery
- Implement all appropriate recommended BMPs identified in project construction documents, including but not limited to, a Stormwater Pollution Prevention Plan and/or a Temporary Erosion and Sediment Control Plan, which will avoid and minimize stormwater runoff into sensitive aquatic habitats such as wetlands and streams

Following application of these project-specific avoidance and minimization measures, permanent direct impacts to ecosystem resources are anticipated to occur to critical areas involving four locations:

- Bsche’tla Creek
- McAleer Creek
- Lyon Creek
- Bothell Landing Park

The remaining impacts to these critical areas, including significant trees, would be mitigated as required under local and state code.

Compensatory mitigation typically takes the form of one of three types: (1) mitigation bank credits, (2) in-lieu fee (also referred to as ILF), or (3) permittee-responsible. Under the first option, the applicant can buy credits from an accredited mitigation bank. This option is usually preferred for several reasons: it is preapproved and permitted; it requires no monitoring and maintenance by the applicant; and pricing is set and predictable. It also is located and designed using a watershed approach and restores numerous limiting factors for fish and wildlife. Second, in King County, it is possible to purchase ILF credits from the King County Mitigation Reserves Program to apply to a more watershed-based mitigation project. Finally, permittee-responsible mitigation typically means an applicant purchases or otherwise gains control of a private parcel or portion of a public parcel and conducts on-site mitigation as appropriate. This option usually takes the form of wetland creation, wetland enhancement or buffer enhancement. Local jurisdictions typically require this type of mitigation to be implemented on or near the project site, but off-site mitigation is permissible as long as it is justified.

For the proposed project, potential options for permittee-responsible mitigation are rare. The dense development along the project corridor provides few opportunities for on-site mitigation. A better option would be to purchase credits from the recently approved Keller Farm Mitigation Bank in Redmond, Washington. The Keller Farm Mitigation Bank is a 75-acre site located within WRIA 8 that consists of wetlands, streams and riparian habitat. The mitigation bank service area includes the Lake Sammamish and Lake Washington watersheds within WRIA 8, and is divided into a primary service area and a secondary service area. The entire project is in the service area of the mitigation bank. The western half of the proposed project (extending along NE 145th Street and SR 522 until 61st Avenue NE in Kenmore) is located within the secondary service area of the mitigation bank, and the remainder of the project is located in the primary service area. This mitigation bank started selling credits on April 29, 2020. The purchase of credits for the mitigation of the project's buffer impacts is preferred, because by doing so, Sound Transit would not be required to purchase, maintain and monitor an independent mitigation site or sites. The Keller Farm Mitigation Bank is a consolidated location that would have a higher functional lift than numerous small sites extending across the landscape. Alternatively, Sound Transit would be able to purchase ILF credits through the King County Mitigation Reserves Program. Acquisition of mitigation bank credits or purchase of ILF credits would be finalized during project permitting in final design. Additionally, both state and federal permitting agencies give preference to the use of a mitigation bank or ILF program, because both options use a watershed approach towards implementing compensatory mitigation (Ecology 2020c).

A suite of potential mitigation measures to reduce impacts to the heron rookery in Kenmore is outlined in Section 9 of the Great Blue Heron Colony Draft HMP (**Appendix E** (Great Blue Heron Draft Habitat Management Plan)). These measures include the following:

- Avoid construction traffic (particularly heavy trucks) on the north access road
- Use artificial screening (temporary walls or sheeting) to block lights, noise and disturbance
- Conduct pile-driving outside the nesting season
- Use noise-reduction measures to reduce noise of pile-driving, such as vibratory driving, wood cushion blocks and double-walled piles

- Maximize retention of vegetation, particularly mature trees, at the park-and-ride lot to maintain screening and foraging and roosting habitat
- Improve vegetative screening by planting native trees and shrubs wherever possible around the periphery of the park-and-ride garage

Sound Transit would prepare a Final HMP, and would consult with WDFW and the City of Kenmore throughout that process, to identify and confirm all final avoidance and minimization measures.

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APPENDIX A

Summary of Regulations

Federal Regulations

Endangered Species Act

The criteria for determining threatened and endangered plant and animal species is provided by the Endangered Species Act (ESA), which is administered by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the U.S. Fish and Wildlife Service (USFWS). The goals of the ESA include species conservation, ecosystem conservation, and species recovery. Section 4 of the ESA allows for the listing of species as threatened or endangered based on habitat loss or degradation, over-utilization, disease or predation, inadequacy of existing regulatory mechanisms, or other human-cause factors. Section 4(D) allows for the promulgation of regulations to provide for the protection and conservation of listed species. It may allow for the "take" of threatened species. Take is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or attempt to engage in such conduct" (1532(18)). Section 7 of the ESA requires each federal agency to ensure its actions to authorize, permit, or fund a project do not jeopardize the continued existence of any threatened or endangered species. It describes consultation procedures and conservation obligations. Section 9 of the ESA prohibits a take of listed species. An exception to the take prohibition applies to endangered plants on non-federal lands, unless the taking is in knowing violation of state law (1538(a)(2)).

Clean Water Act

The Clean Water Act (CWA) was established to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The CWA makes it illegal to discharge pollutants from a point source to the waters of the United States (U.S.). Navigable waters, tributaries to navigable waters, and wetlands that abut any of these waters are "Waters of the U.S." Any activity resulting in the placement of dredge or fill material to Waters of the U.S. requires a permit from the U.S. Army Corps of Engineers (the Corps) under Section 404 of the CWA. Fill is defined as any material that replaces any portion of a U.S. water with dry land or changes the bottom elevation of any portion of a U.S. water. Wetlands that are hydrologically isolated are not Waters of the U.S. based on the United States Supreme Court ruling of Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC Decision, 2001), No. 99-1178, January 9, 2001. Isolated waters, including wetlands, do not require permitting to fill but still have ecological value.

Section 401(a) of the CWA requires that before issuing a license or permit that may result in any discharge to Waters of the U.S., a federal agency must obtain, from the state in which the proposed project is located, a certification that the discharge is consistent with the CWA. CWA provisions to which Section 401 certification applies include National Pollutant Discharge Elimination System (NPDES) permits (described under Section 402) issued by the U.S. Environmental Protection Agency (EPA), and Section 404 permits from the Corps. In Washington State, EPA has delegated authority to manage Section 401and Section 402 of the CWA to the Department of Ecology.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act, administered by the USFWS, makes it unlawful to take, import, export, possess, sell, purchase, or barter any migratory bird, with the exception of taking of game birds during established hunting seasons. The law also applies to feathers, eggs, nests, and products made from migratory birds. Executive Order 13186, signed by President Bill Clinton effective January 10, 2001, outlines federal agency responsibilities for protecting

migratory birds under the Migratory Bird Treaty Act and other statutes. It requires the Federal Highway Administration to enter into a Memorandum of Understating with the USFWS on protecting a wide range of migratory bird species.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act, administered by the USFWS, makes it unlawful to take, import, export, sell, purchase, or barter any bald or golden eagle, their parts, products, nests, or eggs. Take includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing the eagles. Permits may be issued by the USFWS for scientific or exhibition use, or for traditional and cultural use by Native Americans.
Sustainable Fisheries Act

Magnuson-Stevens Fishery Conservation and Management Act

Public Law 104-267, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act to: (1) establish new requirements for Essential Fish Habitat (EFH) descriptions in Federal Fishery Management Plans, and (2) require federal agencies to consult with NOAA Fisheries on Activities that may adversely affect EFH.

State Regulations

Washington Department of Fish and Wildlife (RCW Title 77)

Washington Department of Fish and Wildlife (WDFW) and the Washington Fish and Wildlife Commission are charged with the authority and responsibility of protecting and managing Washington state fish and wildlife resources under Revised Code of Washington (RCW) Title 77. If WDFW determines that a native wildlife species is at risk, the agency director may request the Washington Fish and Wildlife Commission to designate that species as sensitive, threatened, or endangered (RCW 77.12.020). These species are listed under Washington Administrative Code (WAC) 232-12. Complete regulations governing the listed, delisted, and management of animal species are given in WAC 232-12-297. Primarily for the protection of fish life, WDFW must issue a Hydraulic Project Approval for any work below the ordinary high water mark or mean higher high water mark that would use, divert, obstruct, or chance the natural flow or bed of a water of the state.

Washington Department of Natural Resources (RCW 79.70.030)

RCW 79.70.030 authorizes the Washington Department of Natural Resources to establish and maintain a natural heritage program that “shall maintain a classification of natural heritage resources,” which, as defined in RCW 79.70.020, includes special plant species. The Washington Natural Heritage Program assigns endangered, threatened, or sensitive status to plants that face varying risks of extinction. These listings do not provide regulatory protection. Landowners whose property supports a state-listed plant species are encouraged to provide voluntary protection.

Washington State Department of Transportation

The Washington State Department of Transportation (WSDOT) Transportation Commission Policy Catalog contains a specific policy on fish and wildlife protection. Policy 6.3.3 states that: “Efforts will be made to mitigate the potential adverse effects that transportation activities can have on fish and wildlife populations.” WSDOT intends to “protect, restore, and enhance, where

feasible, fish and wildlife habitat and populations within transportation corridors." Action strategies include the following:

- Conduct a study to inventory transportation barriers to fish passage, establish criteria for identifying which barriers pose the most significant environmental harm, prioritize the removal of identified transportation barriers, and seek program funding for fish-passage barrier removal;
- Identify transportation corridors with significant wildlife losses due to "road kill" or habitat impacts, and develop strategies for reducing wildlife losses within these corridors;
- Improve interagency communications, consultations, and agreements on habitat protection issues; and
- Minimize impacts to natural habitats in design, construction, and maintenance activities.

Executive Order 1031, Protections and Connections for High Quality Natural Habitats – This executive order is WSDOT's habitat connectivity policy directive. It mandates consideration of habitat values and wildlife movement needs in all transportation activities. This policy will improve connectivity by rectifying existing problems and incorporating guidance into transportation planning, project development, and operation of the transportation system.

APPENDIX B

Wetland Data Forms and Rating Forms

Wetland name or number WSE-1

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT - WSE-1 Date of site visit: 11/08/19

Rated by R. Pratt Trained by Ecology?__ Yes X No Date of training 2014

HGM Class used for rating Depressional Wetland has multiple HGM classes?___Y X N

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

OVERALL WETLAND CATEGORY II (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality			Hydrologic			Habitat			TOTAL
	Circle the appropriate ratings									
Site Potential	H	**M**	L	H	**M**	L	H	**M**	L	
Landscape Potential	**H**	M	L	**H**	M	L	H	M	**L**	
Value	**H**	M	L	**H**	M	L	**H**	M	L	
Score Based on Ratings	8			8			6			22

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	NA

Wetland name or number WSE-1

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	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

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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.

Wetland name or number WSE-1

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

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

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

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

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

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

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

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

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

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

Wetland name or number WSE-1

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	**2**
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	**1**
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	**4**
Total for D 1 Add the points in the boxes above	**7**

Rating of Site Potential If score is: ___ **12-16 = H** **X** **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	**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_____ Yes = 1 No = 0	**1**
Total for D 2 Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: **X** **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	**1**
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	**1**
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	**2**

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

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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:		**2**
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	
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.*		**5**
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	
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.*		**0**
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	
Wetl area ~ 1.67 ac *Basin ~ 841 ac*		
Total for D 4 — Add the points in the boxes above		**7**

Rating of Site Potential If score is: ___ **12-16 = H** X **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	**1**
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	**1**
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	**1**
Total for D 5 — Add the points in the boxes above		**3**

Rating of Landscape Potential If score is: X **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.*		**2**
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	
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	**2**
Total for D 6 — Add the points in the boxes above		**4**

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

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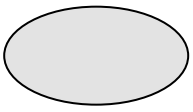
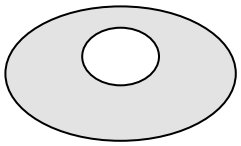
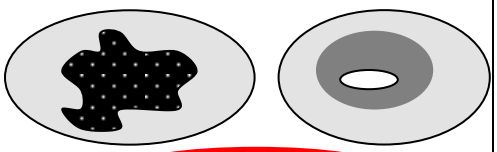
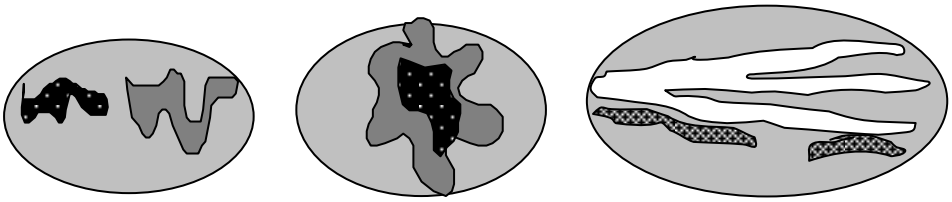
These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested 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 __X__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*). __X__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 __X__Saturated only — 1 type present: points = 0 __X__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 	**2**

Wetland name or number WSE-1

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.* __X__ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). __X__ 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)* __X__ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	**3**
Total for H 1 Add the points in the boxes above	**8**

Rating of Site Potential If score is: ___ **15-18 = H** __X__ **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 **6** + [(% moderate and low intensity land uses)/2] **7** = **13** % 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 Connected to habitat on golf course: - ~ 100 acres mod/low - ~ 50 acres und.	**1**
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat **8** + [(% moderate and low intensity land uses)/2] **7** = **15** % 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 Habitat on golf course plus 16 acres of und. habitat in Paramount Park	**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	**0**

Rating of Landscape Potential If score is: ___ **4-6 = H** ___ **1-3 = M** __X__ **< 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 __X__ 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	**2**

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

Wetland name or number WSE-1

WDFW Priority Habitats

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

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

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

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

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

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

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

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

— **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*).

X **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.

X **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 WSE-1

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

Wetland name or number WSE-1

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland name or number WLFP-1, 2, 9, and 10

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT - WLFP-1, 2, 9, 10 Date of site visit: 11/08/19

Rated by R. Pratt Trained by Ecology?__ Yes X No Date of training 2014

HGM Class used for rating Riverine Wetland has multiple HGM classes?___Y X N

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

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			TOTAL
	Circle the appropriate ratings									
Site Potential	H	**M**	L	H	**M**	L	H	M	**L**	
Landscape Potential	**H**	M	L	**H**	M	L	H	M	**L**	
Value	**H**	M	L	H	M	**L**	**H**	M	L	**TOTAL**
Score Based on Ratings	**8**			**6**			**5**			**19**

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	**NA**

Wetland name or number WLFP-1, 2, 9, and 10

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	1
Hydroperiods	H 1.2	1
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	1
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number WLFP-1, 2, 9, and 10

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

Wetland name or number WLFP-1, 2, 9, and 10

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

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

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

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

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

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

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

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

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

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

Wetland name or number WLFP-1, 2, 9, and 10

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 Depressions cover > ½ area of wetland Depressions present but cover < ½ area of wetland No depressions present	points = 8 points = 4 **(points = 2)** points = 0	**2**
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 Trees or shrubs > $^{1}/_{3}$ area of the wetland Herbaceous plants (> 6 in high) > $^{2}/_{3}$ area of the wetland Herbaceous plants (> 6 in high) > $^{1}/_{3}$ area of the wetland Trees, shrubs, and ungrazed herbaceous < $^{1}/_{3}$ area of the wetland	points = 8 **(points = 6)** points = 6 points = 3 points = 0	**6**
Total for R 1 Add the points in the boxes above		**8**

Rating of Site Potential If score is: ___**12-16 = H** **X** **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	**2**
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	**(Yes = 1)** No = 0	**1**
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	**1**
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 _____	**(Yes = 1)** No = 0	**1**
Total for R 2 Add the points in the boxes above		**5**

Rating of Landscape Potential If score is: **X** **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	**1**
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	**(Yes = 1)** No = 0	**1**
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		**2**

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

Wetland name or number WLFP-1, 2, 9, and 10

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 ~15' / ~ 12' = 1.25 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		**2**
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		**7**
Total for R 4	Add the points in the boxes above	**9**

Rating of Site Potential If score is: ___ **12-16 = H** **X** **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	**1**
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	**1**
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	**1**
Total for R 5	Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: **X** **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 Lk Wa downstream 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	**0**

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

Wetland name or number WLFP-1, 2, 9, and 10

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
__X__	Emergent	3 structures: points = 2
__X__	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
__X__	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
__X__	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.

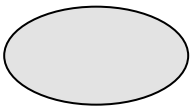
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

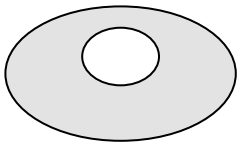
1

H 1.4. Interspersion of habitats

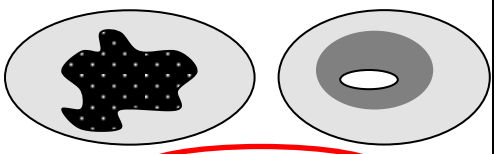
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

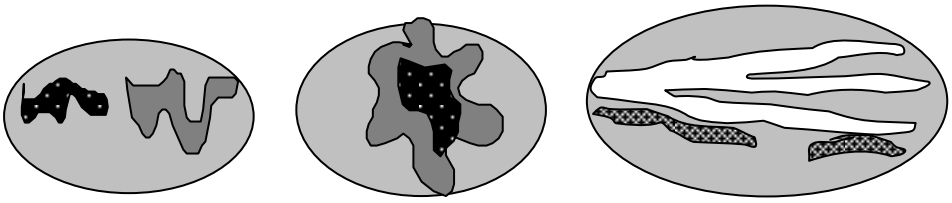


Low = 1 point



(**Moderate** = 2 points)

All three diagrams in this row are **HIGH** = 3points



2

Wetland name or number WLFP-1, 2, 9, and 10

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)* __X__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	**6**

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** __X__**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___ + [(% moderate and low intensity land uses)/2]___ = **0** % 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 1 km Area = 907 acres Habitat Area = 0 acres Percent Accessible Habitat = 0%	**0**
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat **5** + [(% moderate and low intensity land uses)/2]___ = **5** % 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 km Area = 907 acres Habitat Area = 47 acres Percent Undisturbed Habitat = 5%	**0**
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	**-2**

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** __X__**< 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 __X__ 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	**2**

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

Wetland name or number WLFP-1, 2, 9, and 10

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).

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

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

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

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

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

— **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*).

X **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.

X **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 WLFP-1, 2, 9, and 10

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland name or number WLFP-3, 4, and 5

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT -WLFP-3, 4, and 5 Date of site visit: 9/17/19

Rated by R. Pratt Trained by Ecology? __ Yes X No Date of training 2014

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___Y X N

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

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			TOTAL
	Circle the appropriate ratings									
Site Potential	H	M	**L**	H	**M**	L	H	M	**L**	
Landscape Potential	**H**	M	L	**H**	M	L	H	M	**L**	
Value	**H**	M	L	H	M	**L**	**H**	M	L	
Score Based on Ratings	**7**			**6**			**5**			**18**

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	**NA**

Wetland name or number WLFP-3, 4, and 5

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	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	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	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number WLFP-3, 4, and 5

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?
X 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.

Wetland name or number WLFP-3, 4, and 5

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

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

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

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

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

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

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

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

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

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

Wetland name or number WLFP-3, 4, and 5

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	**2**
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 Most of wetlands gets mowed periodically.	**1**
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	**3**

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **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	**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_____ Wetland likely receives drainage from another location. Yes = 1 No = 0	**1**
Total for D 2 Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: X **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	**1**
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	**1**
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	**2**

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

Wetland name or number WLFP-3, 4, and 5

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	**2**
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	

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	**3**
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	

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	**3**
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	

Total for D 4	Add the points in the boxes above	**8**

Rating of Site Potential If score is: ___ **12-16 = H** **X** **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	**1**
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	**1**
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	**1**
Total for D 5	Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: **X** **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):		**0**
• 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* Constrained channel	points = 0	
There are no problems with flooding downstream of the wetland.	points = 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	**0**

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

Wetland name or number WLFP-3, 4, and 5

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
__X__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
__X__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**

0

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

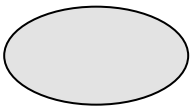
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

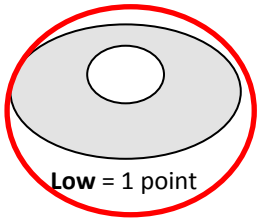
1

H 1.4. Interspersion of habitats

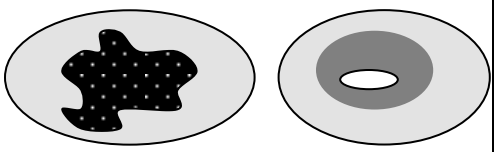
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

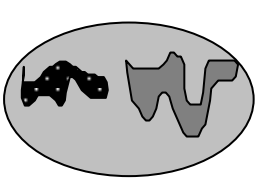


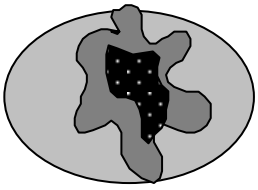
Low = 1 point

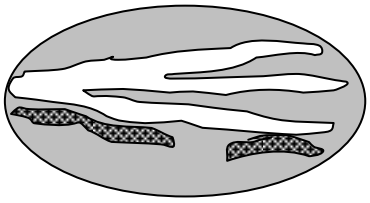


Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points







1

Wetland name or number WLFP-3, 4, and 5

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	**2**

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** **X** **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___ + [(% moderate and low intensity land uses)/2]___ = **0** % 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 1 km Area = 776 acres Habitat Area = 0 acres Percent Accessible Habitat = 0%	**0**
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat **6** + [(% moderate and low intensity land uses)/2]___ = **6** % 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 km Area = 776 acres Habitat Area = 46 acres Percent Undisturbed Habitat = 6%	**0**
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	**-2**

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** **X** **< 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 **X** 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	**2**

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

Wetland name or number WLFP-3, 4, and 5

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).

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

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

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

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

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

— **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*).

X **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.

X **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 WLFP-3, 4, and 5

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

Wetland name or number WLFP-3, 4, and 5

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland name or number WLFP-6

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT - WLFP-6 Date of site visit: 11/08/19

Rated by R. Pratt Trained by Ecology?__ Yes X No Date of training 2014

HGM Class used for rating Riverine Wetland has multiple HGM classes?___Y X N

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

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			TOTAL
	Circle the appropriate ratings									
Site Potential	H	[M]	L	H	[M]	L	H	M	[L]	
Landscape Potential	[H]	M	L	[H]	M	L	H	M	[L]	
Value	[H]	M	L	H	M	[L]	[H]	M	L	
Score Based on Ratings	**8**			**6**			**5**			**19**

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	**NA**

Wetland name or number WLFP-6

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	1
Hydroperiods	H 1.2	1
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	1
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number WLFP-6

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

Wetland name or number WLFP-6

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

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

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

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

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

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

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

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

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

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

Wetland name or number WLFP-6

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 Depressions cover > ½ area of wetland Depressions present but cover < ½ area of wetland No depressions present	points = 8 points = 4 points = 2 points = 0 (circled)	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 Trees or shrubs > 1/3 area of the wetland Herbaceous plants (> 6 in high) > 2/3 area of the wetland Herbaceous plants (> 6 in high) > 1/3 area of the wetland Trees, shrubs, and ungrazed herbaceous < 1/3 area of the wetland	points = 8 points = 6 points = 6 (circled) points = 3 points = 0	6
Total for R 1	Add the points in the boxes above	6

Rating of Site Potential If score is: ___**12-16 = H** **X** **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 (circled) No = 0	2
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	Yes = 1 (circled) No = 0	1
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 (circled)	0
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 (circled) No = 0	1
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 _____	Yes = 1 (circled) No = 0	1
Total for R 2	Add the points in the boxes above	5

Rating of Landscape Potential If score is: **X** **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 (circled) No = 0	1
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 (circled) No = 0	1
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 (circled)	0
Total for R 3	Add the points in the boxes above	2

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

Wetland name or number WLFP-6

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 ~5' / ~ 20' = 1.5 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		**7**
Total for R 4	Add the points in the boxes above	**8**

Rating of Site Potential If score is: ___ **12-16 = H** **X** **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	**1**
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	**1**
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	**1**
Total for R 5	Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: **X** **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 Lk Wa downstream 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	**0**

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

Wetland name or number WLFP-6

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
__X__	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
__X__	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
__X__	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.

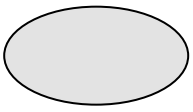
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

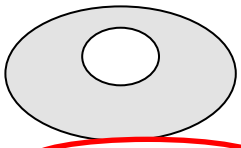
0

H 1.4. Interspersion of habitats

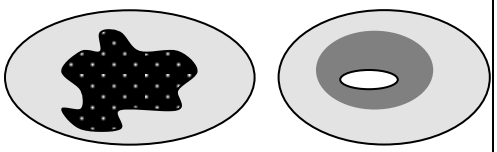
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

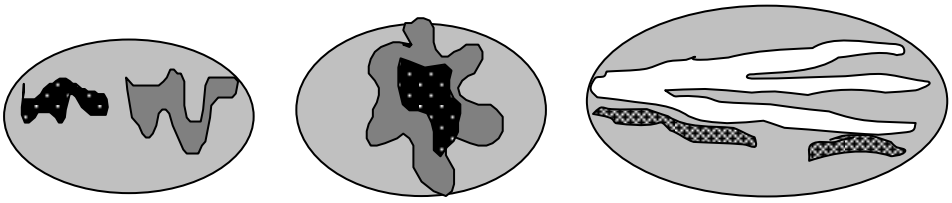


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



1

Wetland name or number WLFP-6

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	**2**

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** **X** **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___ + [(% moderate and low intensity land uses)/2]___ = **0** % 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 1 km Area = 776 acres Habitat Area = 0 acres Percent Accessible Habitat = 0%	**0**
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat___ + [(% moderate and low intensity land uses)/2]**5** = **5** % 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 km Area = 776 acres Habitat Area = 43 acres Percent Undisturbed Habitat = 5%	**0**
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	**-2**

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** **X** **< 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 **X** 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	**2**

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

Wetland name or number WLFP-6

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).

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

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

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

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

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

— **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*).

X **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.

X **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 WLFP-6

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

Wetland name or number WLFP-6

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland name or number WLFP-7

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT - WLFP-7 Date of site visit: 11/08/19

Rated by R. Pratt Trained by Ecology?__ Yes X No Date of training 2014

HGM Class used for rating Riverine Wetland has multiple HGM classes?___Y X N

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

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			TOTAL
	Circle the appropriate ratings									
Site Potential	H	[M]	L	H	[M]	L	H	M	[L]	
Landscape Potential	[H]	M	L	[H]	M	L	H	M	[L]	
Value	[H]	M	L	H	M	[L]	[H]	M	L	
Score Based on Ratings	**8**			**6**			**5**			**19**

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	**NA**

Wetland name or number WLFP-7

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	1
Hydroperiods	H 1.2	1
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	1
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number WLFP-7

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

Wetland name or number WLFP-7

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

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

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

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

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

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

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

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

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

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

Wetland name or number WLFP-7

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 Depressions cover > ½ area of wetland Depressions present but cover < ½ area of wetland No depressions present	points = 8 points = 4 **points = 2** points = 0	**2**
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 Trees or shrubs > $^{1}/_{3}$ area of the wetland Herbaceous plants (> 6 in high) > $^{2}/_{3}$ area of the wetland Herbaceous plants (> 6 in high) > $^{1}/_{3}$ area of the wetland Trees, shrubs, and ungrazed herbaceous < $^{1}/_{3}$ area of the wetland	points = 8 points = 6 **points = 6** points = 3 points = 0	**6**
Total for R 1 Add the points in the boxes above		**8**

Rating of Site Potential If score is: ___**12-16 = H** **X** **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	**2**
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	**Yes = 1** No = 0	**1**
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	**1**
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 _____	**Yes = 1** No = 0	**1**
Total for R 2 Add the points in the boxes above		**5**

Rating of Landscape Potential If score is: **X** **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	**1**
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	**Yes = 1** No = 0	**1**
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		**2**

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

Wetland name or number WLFP-7

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 ~30' / ~ 10' = 3 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		**2**
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		**7**
Total for R 4	Add the points in the boxes above	**8**

Rating of Site Potential If score is: ___ **12-16 = H** **X** **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	**1**
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	**1**
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	**1**
Total for R 5	Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: **X** **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 Lk Wa downstream 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	**0**

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

Wetland name or number WLFP-7

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
__X__	Emergent	3 structures: points = 2
__X__	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
__X__	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
__X__	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.

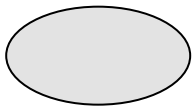
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

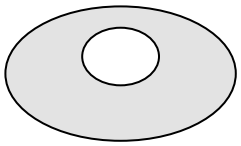
1

H 1.4. Interspersion of habitats

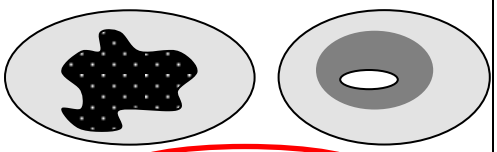
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

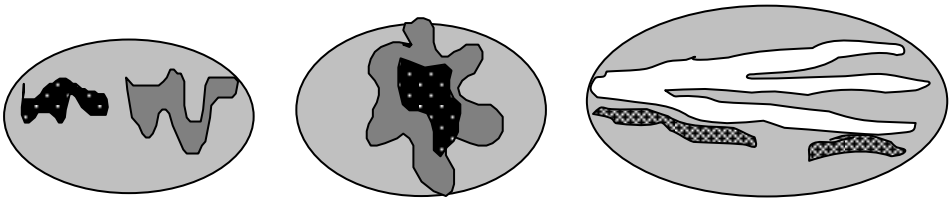


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



2

Wetland name or number WLFP-7

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	**2**

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** **X** **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___ + [(% moderate and low intensity land uses)/2]___ = **0**% 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 1 km Area = 776 acres Habitat Area = 0 acres Percent Accessible Habitat = 0%	**0**
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat **6** + [(% moderate and low intensity land uses)/2]___ = **6**% 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 km Area = 776 acres Habitat Area = 47 acres Percent Undisturbed Habitat = 6%	**0**
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	**-2**

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** **X** **< 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 **X** 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	**2**

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

Wetland name or number WLFP-7

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).

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

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

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

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

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

— **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*).

X **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.

X **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 WLFP-7

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

Wetland name or number WLFP-7

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland name or number WLFP-8

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT - WLFP-8 Date of site visit: 11/08/19

Rated by R. Pratt Trained by Ecology?__ Yes X No Date of training 2014

HGM Class used for rating Riverine Wetland has multiple HGM classes?___Y X N

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

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			TOTAL
	Circle the appropriate ratings									
Site Potential	H	[M]	L	H	[M]	L	H	M	[L]	
Landscape Potential	[H]	M	L	[H]	M	L	H	M	[L]	
Value	[H]	M	L	H	M	[L]	[H]	M	L	
Score Based on Ratings	**8**			**6**			**5**			**19**

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	**NA**

Wetland name or number WLFP-8

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	1
Hydroperiods	H 1.2	1
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	1
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number WLFP-8

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

Wetland name or number WLFP-8

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

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

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

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

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

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

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

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

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

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

Wetland name or number WLFP-8

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 Depressions cover > ½ area of wetland Depressions present but cover < ½ area of wetland No depressions present	points = 8 points = 4 **points = 2** points = 0	**2**
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 Trees or shrubs > $^1/_3$ area of the wetland Herbaceous plants (> 6 in high) > $^2/_3$ area of the wetland Herbaceous plants (> 6 in high) > $^1/_3$ area of the wetland Trees, shrubs, and ungrazed herbaceous < $^1/_3$ area of the wetland	points = 8 points = 6 **points = 6** points = 3 points = 0	**6**
Total for R 1 Add the points in the boxes above		**8**

Rating of Site Potential If score is: ___**12-16 = H** **X** **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	**2**
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	**Yes = 1** No = 0	**1**
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	**1**
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 _____	**Yes = 1** No = 0	**1**
Total for R 2 Add the points in the boxes above		**5**

Rating of Landscape Potential If score is: **X** **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	**1**
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	**Yes = 1** No = 0	**1**
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		**2**

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

Wetland name or number WLFP-8

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 ~15' / ~ 10' = 1.5 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		**2**
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		**7**
Total for R 4	Add the points in the boxes above	**9**

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

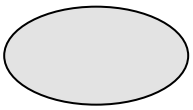
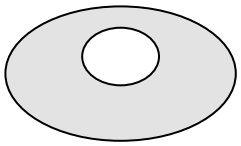
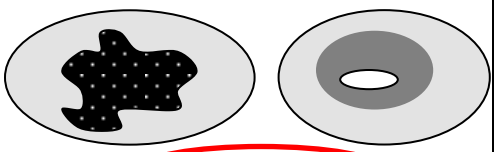
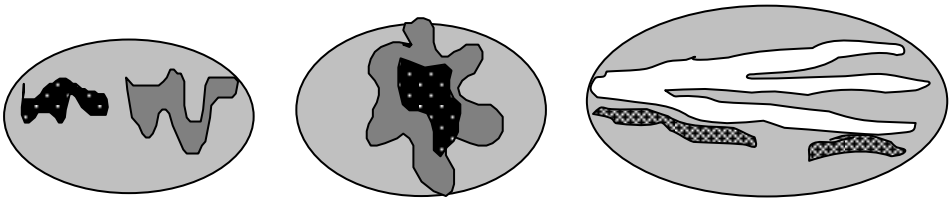
R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	**1**
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	**1**
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	**1**
Total for R 5	Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: X **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 Lk Wa downstream 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	**0**

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

Wetland name or number WLFP-8

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 __X__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 __X__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 __X__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 	**2**

Wetland name or number WLFP-8

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)* __X__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	**5**

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** __X__**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___ + [(% moderate and low intensity land uses)/2]___ = **0**% 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 1 km Area = 776 acres Habitat Area = 2 acres Percent Accessible Habitat = 0%	**0**
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat**6** + [(% moderate and low intensity land uses)/2]___ = **6**% 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 km Area = 776 acres Habitat Area = 48 acres Percent Undisturbed Habitat = 6%	**0**
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	**-2**

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** __X__**< 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 __X__ 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	**2**

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

Wetland name or number WLFP-8

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).

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

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

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

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

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

— **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*).

X **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.

X **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 WLFP-8

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

Wetland name or number WLFP-8

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland name or number WKE-1

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT - WKE-1 Date of site visit: 10/4/2019

Rated by R. Pratt Trained by Ecology?__ Yes X No Date of training 2014

HGM Class used for rating Riverine Wetland has multiple HGM classes?___Y X N

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

OVERALL WETLAND CATEGORY I (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

__X__ **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	H	M	L	H	M	L	H	M	L	
Landscape Potential	H	M	L	H	M	L	H	M	L	
Value	H	M	L	H	M	L	H	M	L	TOTAL
Score Based on Ratings	9			8			6			23

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	NA

Wetland name or number WKE-1

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	1
Hydroperiods	H 1.2	1
Ponded depressions	R 1.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	1
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number WKE--1

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

Wetland name or number WKE-1

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

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

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

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

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

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

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

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

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

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

Wetland name or number WKE--1

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	4
Depressions cover > ½ area of wetland	points = 4 (circled)	
Depressions present but cover < ½ area of wetland	points = 2	
No depressions present	points = 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 (circled)	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	
Total for R 1	Add the points in the boxes above	12

Rating of Site Potential If score is: X **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 (circled) No = 0	2
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	Yes = 1 (circled) No = 0	1
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 (circled)	0
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 (circled) No = 0	1
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 _____	Yes = 1 (circled) No = 0	1
Total for R 2	Add the points in the boxes above	5

Rating of Landscape Potential If score is: X **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 (circled) No = 0	1
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 (circled) No = 0	1
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 (circled) No = 0	2
Total for R 3	Add the points in the boxes above	4

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

Wetland name or number WKE-1

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 If the ratio is 10-20 If the ratio is 5-<10 If the ratio is 1-<5 If the ratio is < 1	points = 9 points = 6 points = 4 points = 2 points = 1	**9**
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 Forest or shrub for > $^1/_{10}$ area OR emergent plants > $^1/_3$ area Plants do not meet above criteria	points = 7 points = 4 points = 0	**7**
Total for R 4	Add the points in the boxes above	**16**

Rating of Site Potential If score is: **X 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	**1**
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	**1**
Total for R 5	Add the points in the boxes above	**2**

Rating of Landscape Potential If score is: **___3 = H** **X 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) Surface flooding problems are in a sub-basin farther down-gradient No flooding problems anywhere downstream	points = 2 points = 1 points = 0	**2**
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	**2**
Total for R 6	Add the points in the boxes above	**4**

Rating of Value If score is: **X 2-4 = H** **___1 = M** **___0 = L** *Record the rating on the first page*

Wetland name or number WKE-1

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
__X__	Emergent	3 structures: points = 2
__X__	Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
__X__	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
__X__	Seasonally flooded or inundated	3 types present: points = 2
____	Occasionally flooded or inundated	2 types present: points = 1
__X__	Saturated only	1 type present: points = 0
__X__	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.

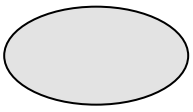
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

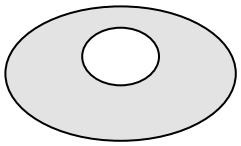
1

H 1.4. Interspersion of habitats

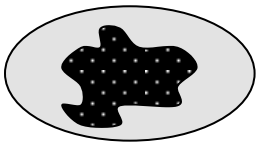
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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

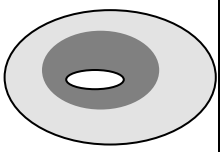


None = 0 points



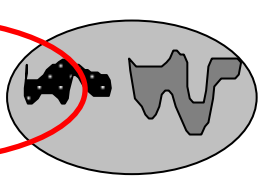
Low = 1 point

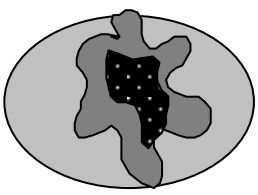


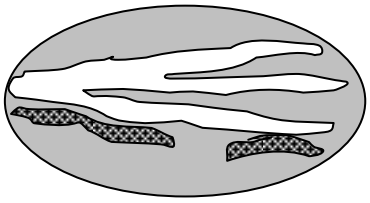


Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points







3

Wetland name or number WKE-1

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.* __X__ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). __X__ Standing snags (dbh > 4 in) within the wetland __X__ 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)* __X__ 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*)	**4**
Total for H 1 Add the points in the boxes above	**12**

Rating of Site Potential If score is: ___ **15-18 = H** __X__ **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] **1** = **1** % 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 **10** + [(% moderate and low intensity land uses)/2] **4** = **14** % 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 **~57%** 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** __X__ **< 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 __X__ 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) __X__ 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 __X__ 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	**2**

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

Wetland name or number WKE-1

WDFW Priority Habitats

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

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

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

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

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

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

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

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

— **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*).

X **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.

X **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 WKE--1

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

Wetland name or number WKE-1

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland name or number WKE-2

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT - WKE-2 Date of site visit: 10/4/2019

Rated by R. Pratt Trained by Ecology? __ Yes X No Date of training 2014

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___Y X N

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

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
	Circle the appropriate ratings									
Site Potential	H	M	**L**	H	**M**	L	H	M	**L**	
Landscape Potential	H	**M**	L	**H**	M	L	H	M	**L**	
Value	**H**	M	L	**H**	M	L	H	**M**	L	**TOTAL**
Score Based on Ratings	**6**			**8**			**4**			**18**

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	**NA**

Wetland name or number WKE-2

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	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number WKE-2

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.

Wetland name or number WKE-2

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

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

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

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

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

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

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

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

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

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

Wetland name or number WKE-2

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	**2**
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 Ditch maintained/mowed	**1**
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	**2**
Total for D 1 Add the points in the boxes above	**5**

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **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	**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_____ Yes = 1 No = 0	**0**
Total for D 2 Add the points in the boxes above	**2**

Rating of Landscape Potential If score is: ___ **3 or 4 = H** X **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	**1**
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	**1**
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	**2**

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

Wetland name or number WKE-2

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	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	
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	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	
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	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	
Total for D 4	Add the points in the boxes above	8

Rating of Site Potential If score is: ___ **12-16 = H** **X** **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	1
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	1
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	1
Total for D 5	Add the points in the boxes above	3

Rating of Landscape Potential If score is: **X** **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	2
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	
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	2

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

Wetland name or number WKE-2

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
_X_	Emergent	3 structures: points = 2
____	Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
_X_	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
_X_	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**

0

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

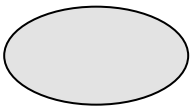
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

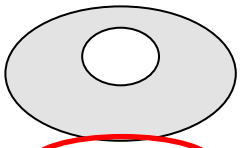
1

H 1.4. Interspersion of habitats

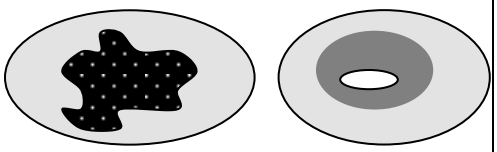
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

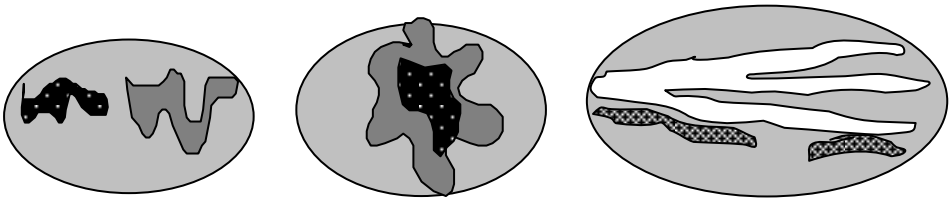


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points



1

Wetland name or number WKE-2

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** **X** **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] **0** = **0** % 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 **10** + [(% moderate and low intensity land uses)/2] **4** = **14** % 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 ~57% 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** **X** **< 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 **X** 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	**2**

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

Wetland name or number WKE-2

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).

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

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

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

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

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

— **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.

X **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 WKE-2

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

Wetland name or number WKE-2

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland name or number WBO-1

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT - WBO-1 Date of site visit: 9/17/19

Rated by R. Pratt Trained by Ecology? __ Yes X No Date of training 2014

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___Y X N

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

OVERALL WETLAND CATEGORY II (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

X **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	H **M** L	H **M** L	H **M** L	
Landscape Potential	H **M** L	**H** M L	H M **L**	
Value	**H** M L	**H** M L	**H** M L	**TOTAL**
Score Based on Ratings	**7**	**8**	**6**	**21**

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	**NA**

Wetland name or number WBO-1

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	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number WBO-1

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?
X 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.

Wetland name or number WBO-1

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

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

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

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

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

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

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

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

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

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

Wetland name or number WBO-1

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	**2**
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	**4**
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	**3**
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	**2**
Total for D 1 Add the points in the boxes above	**11**

Rating of Site Potential If score is: ___ **12-16 = H** **X** **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	**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_____ Yes = 1 No = 0	**0**
Total for D 2 Add the points in the boxes above	**2**

Rating of Landscape Potential If score is: ___ **3 or 4 = H** **X** **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	**1**
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	**1**
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	**2**
Total for D 3 Add the points in the boxes above	**4**

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

Wetland name or number WBO-1

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	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	
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	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	
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	5
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	
Total for D 4	Add the points in the boxes above	10

Rating of Site Potential If score is: ___ **12-16 = H** X **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	1
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	1
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	1
Total for D 5	Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **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	2
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	
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	2

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

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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
__X__Emergent	3 structures: points = 2
__X__Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
__X__Forested (areas where trees have > 30% cover)	1 structure: points = 0

If the unit has a Forested class, check if:

__X__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

4

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
__X__Seasonally flooded or inundated	3 types present: points = 2
____Occasionally flooded or inundated	2 types present: points = 1
__X__Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
____Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

1

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

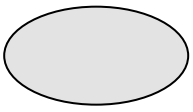
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

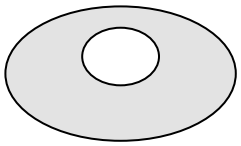
1

H 1.4. Interspersion of habitats

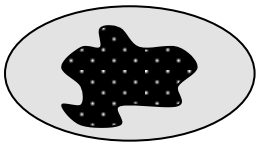
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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

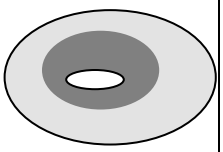


None = 0 points



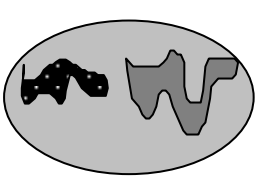
Low = 1 point

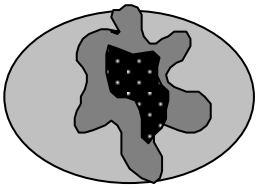


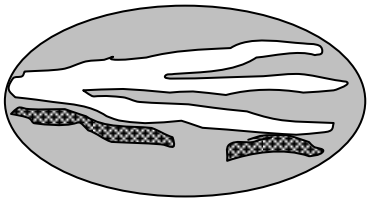


Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points







3

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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.* X Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). X 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*)	**2**
Total for H 1 Add the points in the boxes above	**11**

Rating of Site Potential If score is: ___**15-18 = H** **X** **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 **5** + [(% moderate and low intensity land uses)/2] **0** = **5** % If total accessible habitat is: 41 ac/776 ac x100 = 5% > 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 **22** + [(% moderate and low intensity land uses)/2] **4** = **26** % 173 ac/776ac x100 = 22% 61 ac/776ac/2 x 100 - 4% 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** **X** **< 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 X 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	**2**

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

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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).

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

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

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

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

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

— **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*).

X **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.

X **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 WBO-1

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

Wetland name or number WBO-1

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland name or number WBO-2

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR522/SR523 BRT - WBO-2 Date of site visit: 04/04/20

Rated by R. Pratt Trained by Ecology?__ Yes X No Date of training 2014

HGM Class used for rating Riverine Wetland has multiple HGM classes?___Y X N

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

OVERALL WETLAND CATEGORY I (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

X **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			TOTAL
	Circle the appropriate ratings									
Site Potential	**H**	M	L	**H**	M	L	**H**	M	L	
Landscape Potential	**H**	M	L	**H**	M	L	H	M	**L**	
Value	**H**	M	L	**H**	M	L	**H**	M	L	
Score Based on Ratings	**9**			**9**			**7**			**25**

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	**NA**

Wetland name or number WBO-2

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	1
Hydroperiods	H 1.2	1
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	1
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	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	
Hydroperiods	H 1.2	
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	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number WBO-2

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

Wetland name or number WBO-2

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

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

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

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

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

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

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

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

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

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

Wetland name or number WBO-2

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:		**4**
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	
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes)		**8**
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	
Total for R 1 — Add the points in the boxes above		**12**

Rating of Site Potential If score is: **X 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	**2**
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	**Yes = 1** No = 0	**1**
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	**1**
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 _____	**Yes = 1** No = 0	**1**
Total for R 2 — Add the points in the boxes above		**5**

Rating of Landscape Potential If score is: **X 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	**1**
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	**Yes = 1** No = 0	**1**
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	**2**
Total for R 3 — Add the points in the boxes above		**4**

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

Wetland name or number WBO-2

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	North Creek = 27+30+25/3 = 27 Wetland = 1000 + 420 + 900/3 = 773 773/27 = 29	**9**
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		**7**
Total for R 4	Add the points in the boxes above	**16**

Rating of Site Potential If score is: X **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	**1**
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	**1**
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	**1**
Total for R 5	Add the points in the boxes above	**3**

Rating of Landscape Potential If score is: X **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	**2**
Total for R 6	Add the points in the boxes above	**2**

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

Wetland name or number WBO-2

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.*

__X__ Aquatic bed	4 structures or more: points = 4
__X__ Emergent	3 structures: points = 2
__X__ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
__X__ 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

4

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
__X__ Seasonally flooded or inundated	3 types present: points = 2
____Occasionally flooded or inundated	2 types present: points = 1
__X__ Saturated only	1 type present: points = 0
__X__ 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.

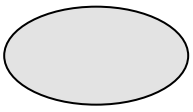
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

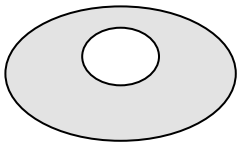
2

H 1.4. Interspersion of habitats

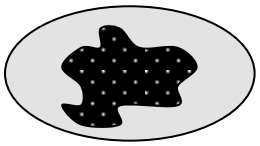
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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

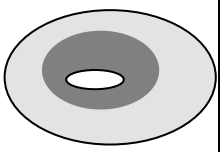


None = 0 points



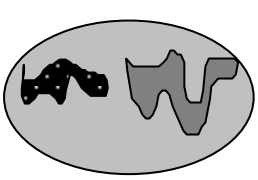
Low = 1 point

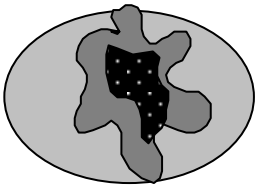


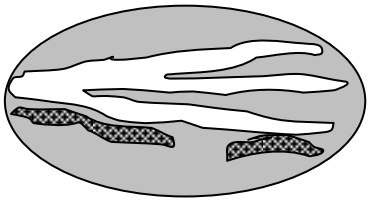


Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points







3

Wetland name or number WBO-2

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.* __X__ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). __X__ 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)* __X__ 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)* __X__ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	**4**
Total for H 1 — Add the points in the boxes above	**15**

Rating of Site Potential If score is: __X__ **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] **0** = **0** % 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 **22** + [(% moderate and low intensity land uses)/2] **0** = _____ % 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 1km = 776ac Hab = 36+35+48+12+22+20 = 173 173/776 = 22%	**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** __X__ **< 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 __X__ 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	**2**

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

Wetland name or number WBO-2

WDFW Priority Habitats

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

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

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

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

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

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

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

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

— **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*).

X **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.

X **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 WBO-2

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**	**Cat. I**
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 un-mowed 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**	**Cat. I** **Cat. II**
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**	**Cat. I**
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**	**Cat. I**

Wetland name or number WBO-2

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**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**NA**

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Wetland Rating System Figures:

Wetland Name: WSE1

Figure 1. Detail view of Wetland W1 (red outline is the wetland and yellow is 150-foot boundary).

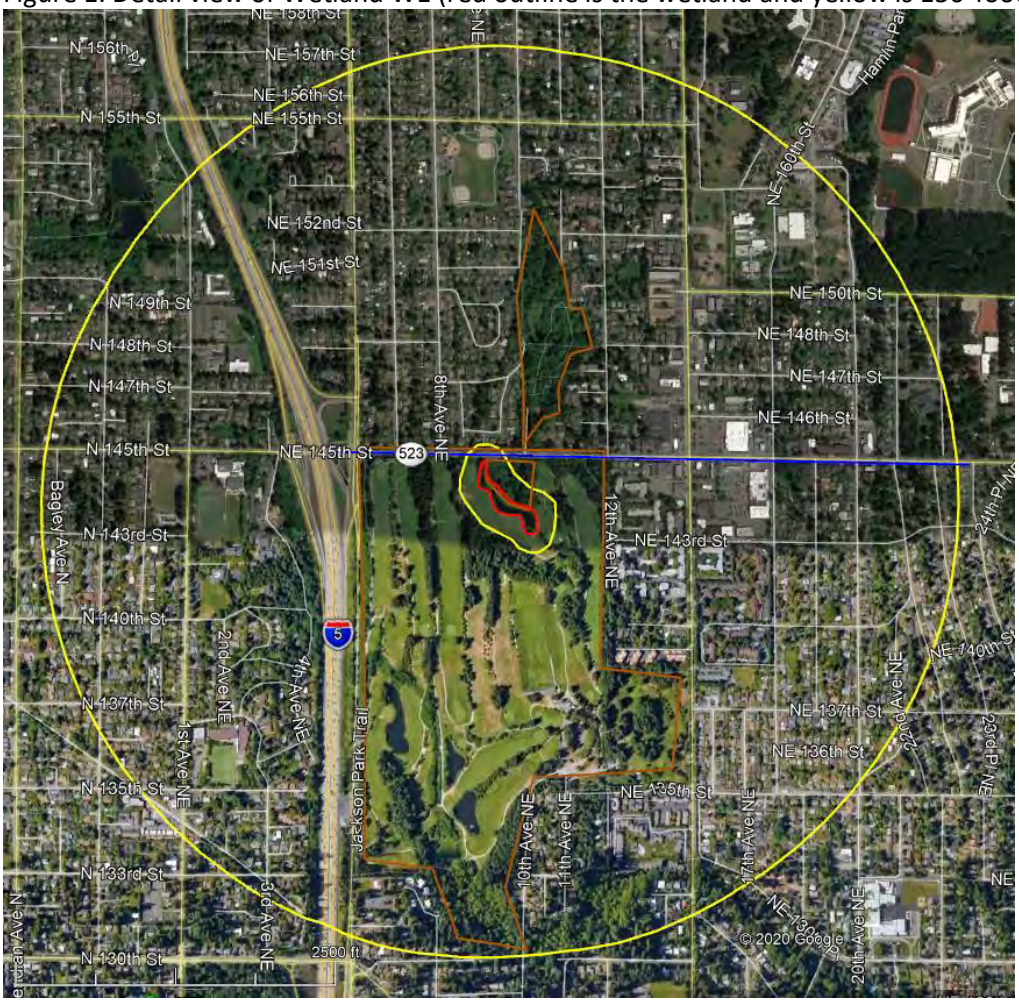


Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment and Brown lines are habitat polygons.

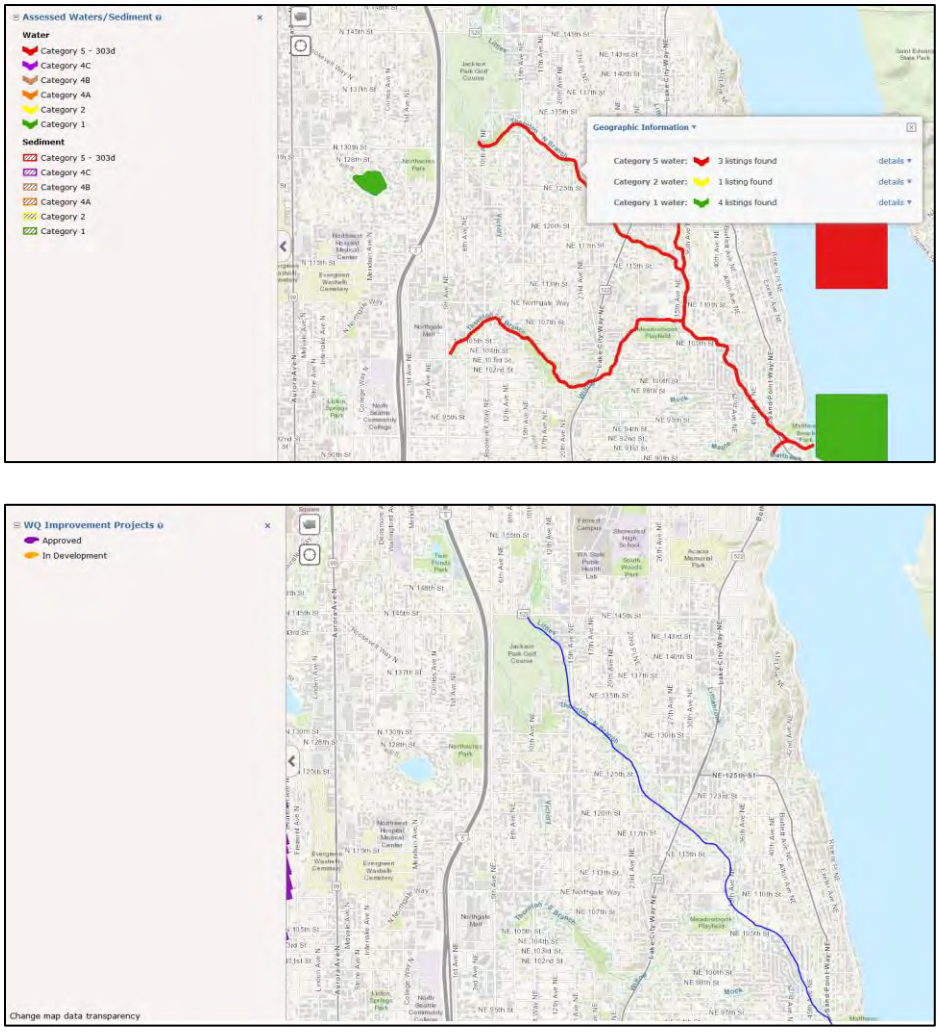


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

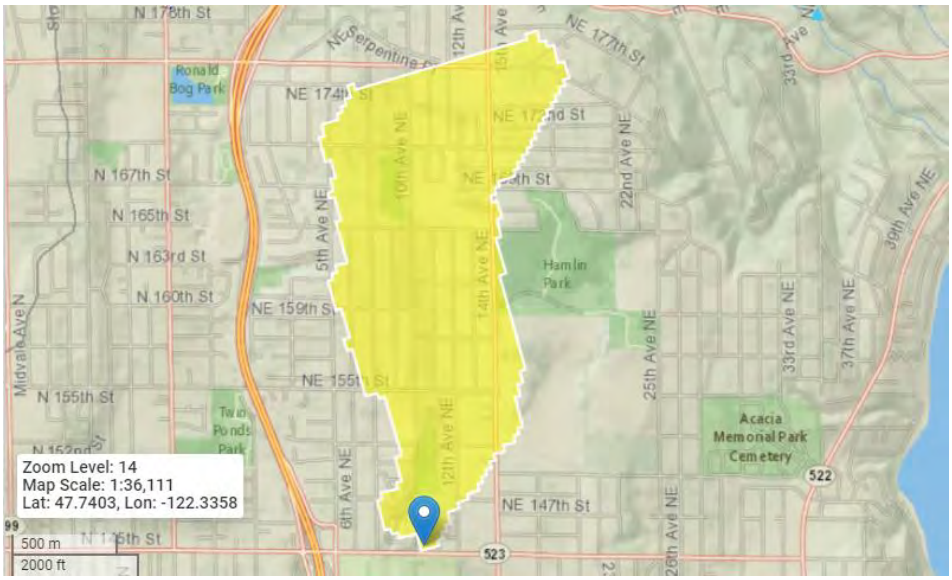


Figure 4. Contributing Basin.

Wetland Name: WLFP-1, 2, 9, and 10

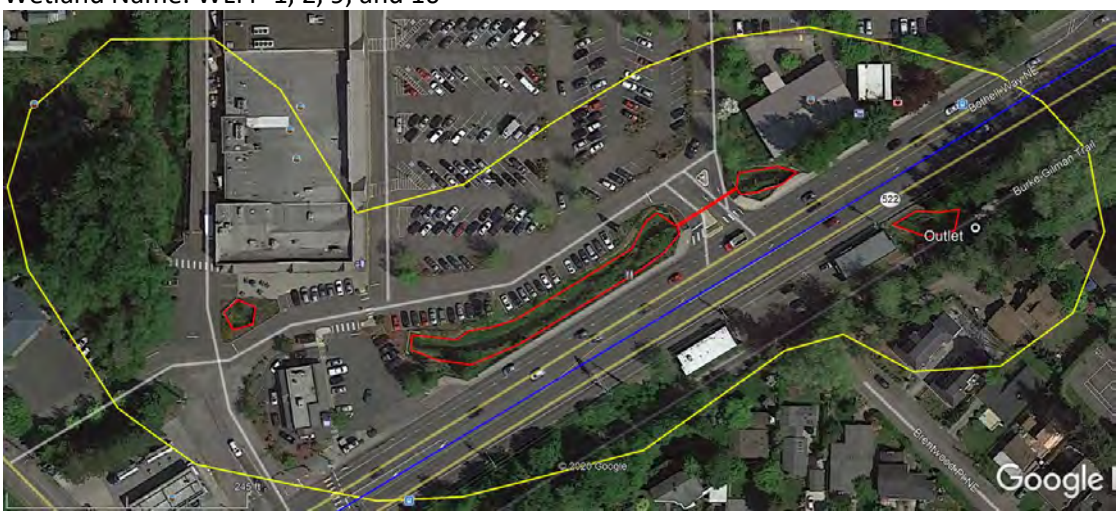


Figure 1. Detail view of Wetland WLFP-9, 1, 2, and 10 from left to right (red outline are the wetlands and yellow is 150-foot boundary for all these wetlands).

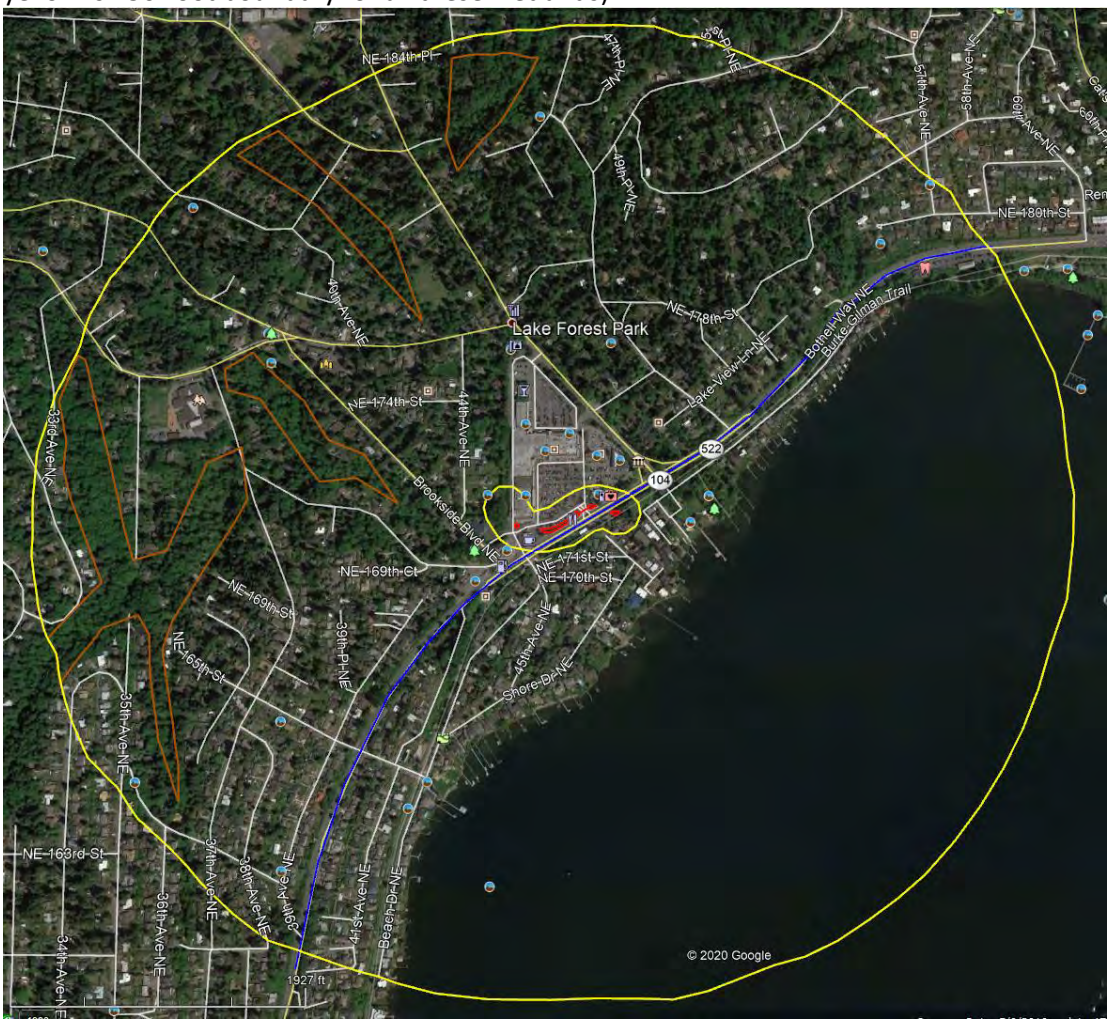


Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment and brown lines are habitat polygons (Lake WA habitat is not undisturbed habitat because of boat traffic).

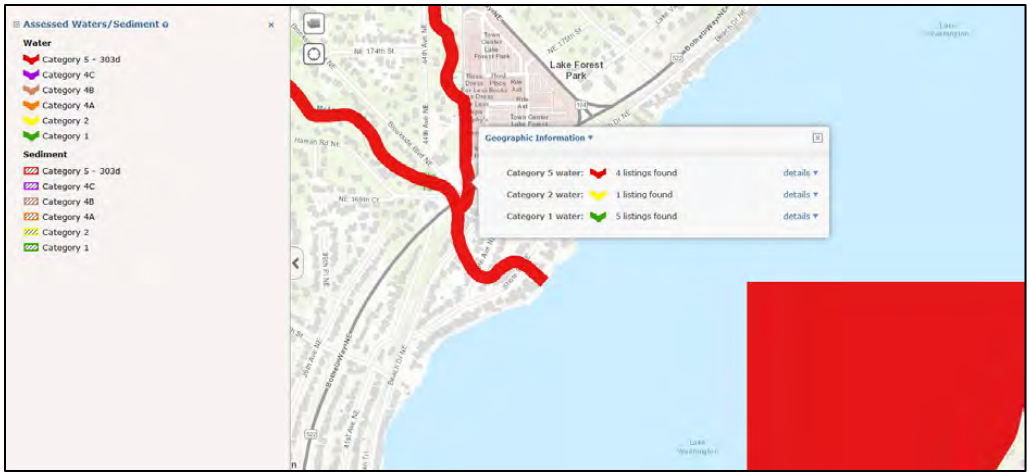


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

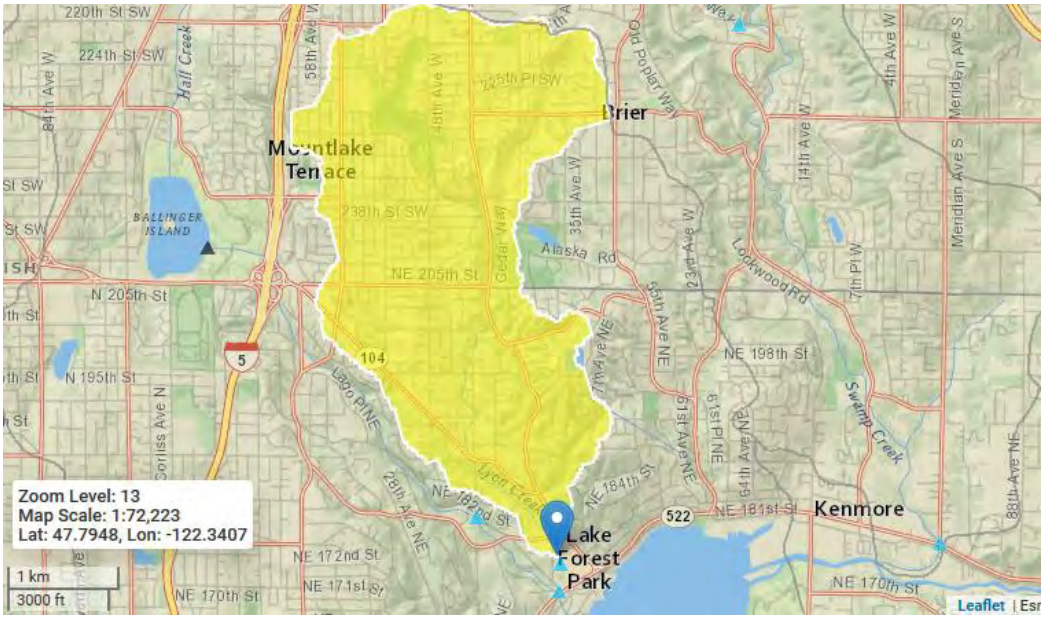


Figure 4. Contributing Basin.

Wetland Name: WLFP-3, 4, and 5

Figure 1. Detail view of Wetland WLFP-3, 4, and 5 from left to right (red outline are the wetlands, yellow is 150-foot boundary for all these wetlands, and light blue is the drainage basin).

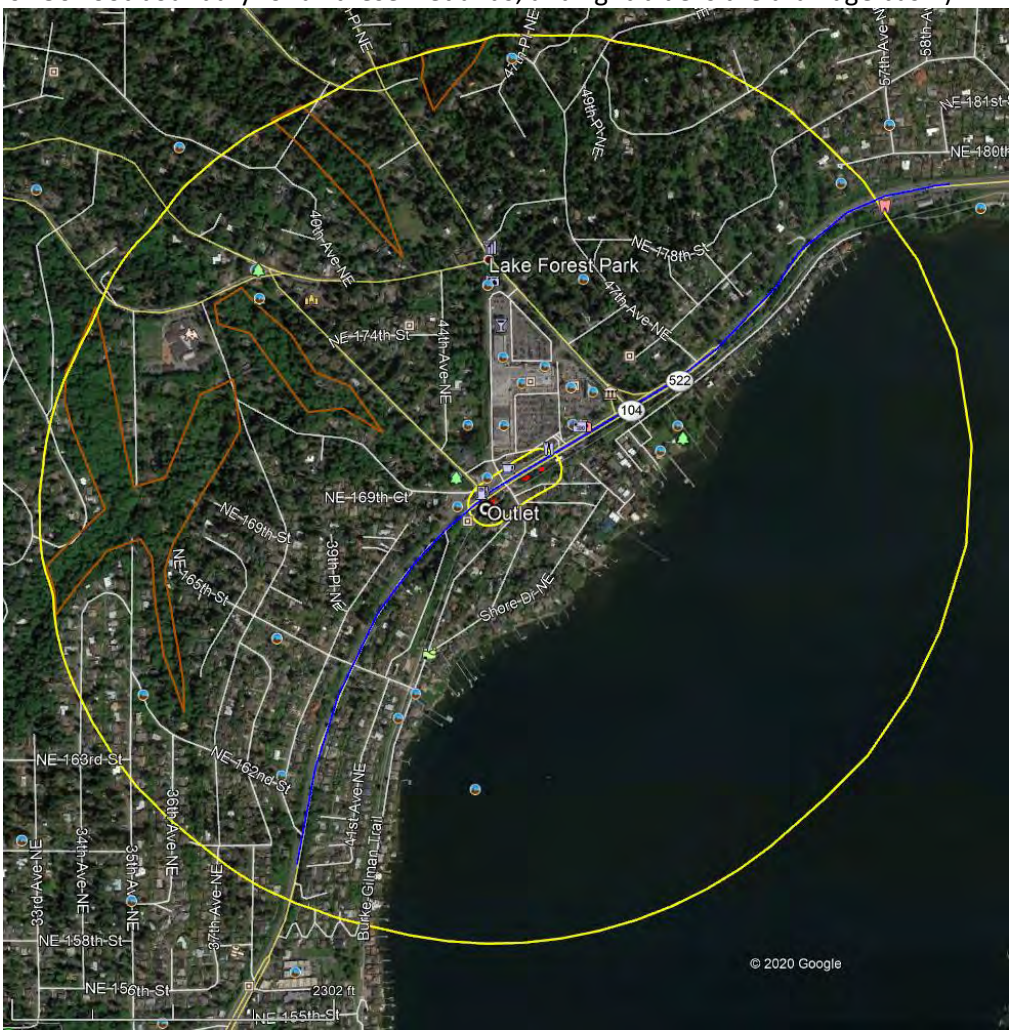


Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment and Brown lines are habitat polygons (Lake WA habitat is not undisturbed habitat because of boat traffic)

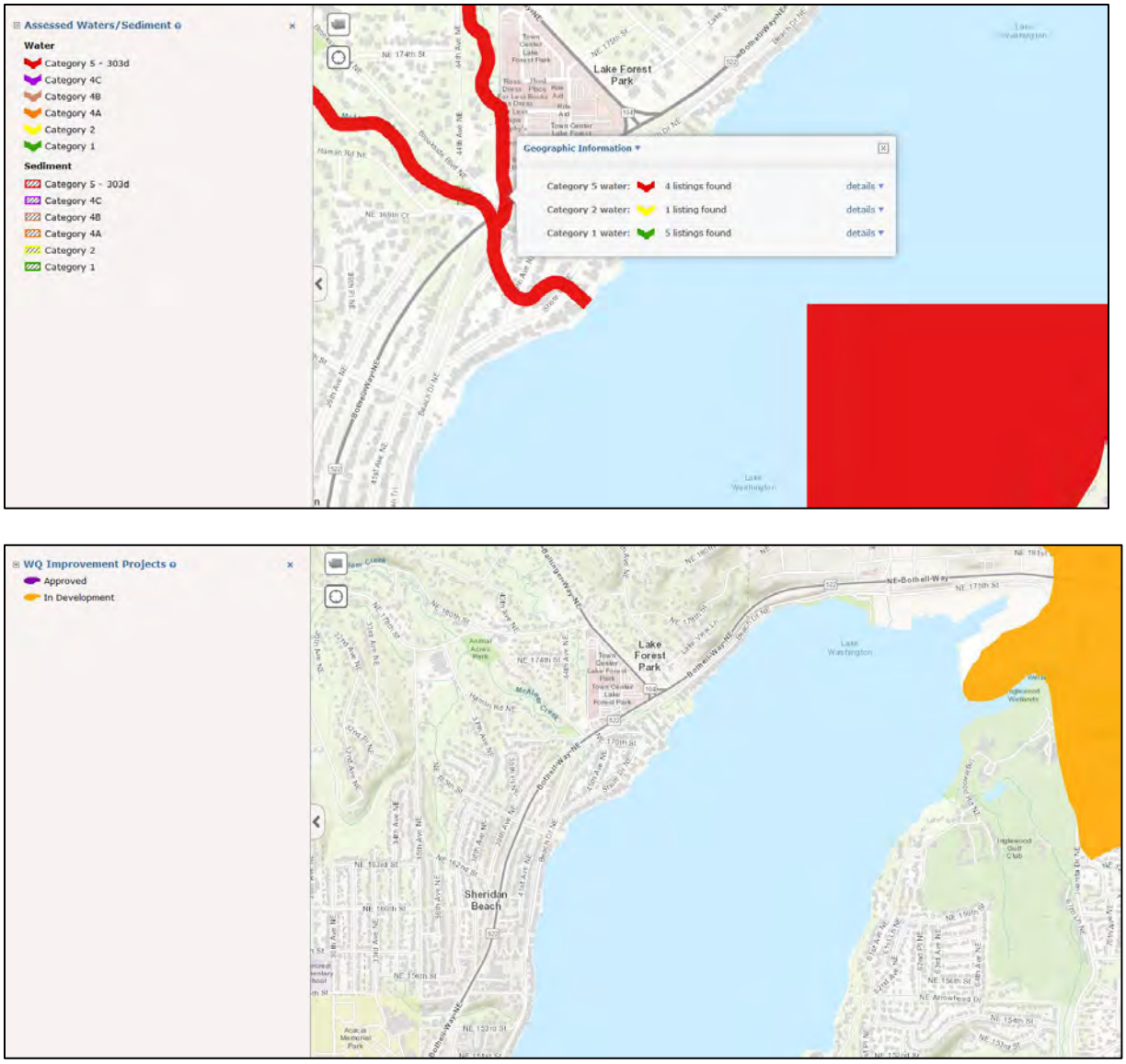


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

Wetland Name: WLFP-6

Figure 1. Detail view of Wetland WLFP-6 (red outline is the wetland and yellow is 150-foot boundary for the wetland).

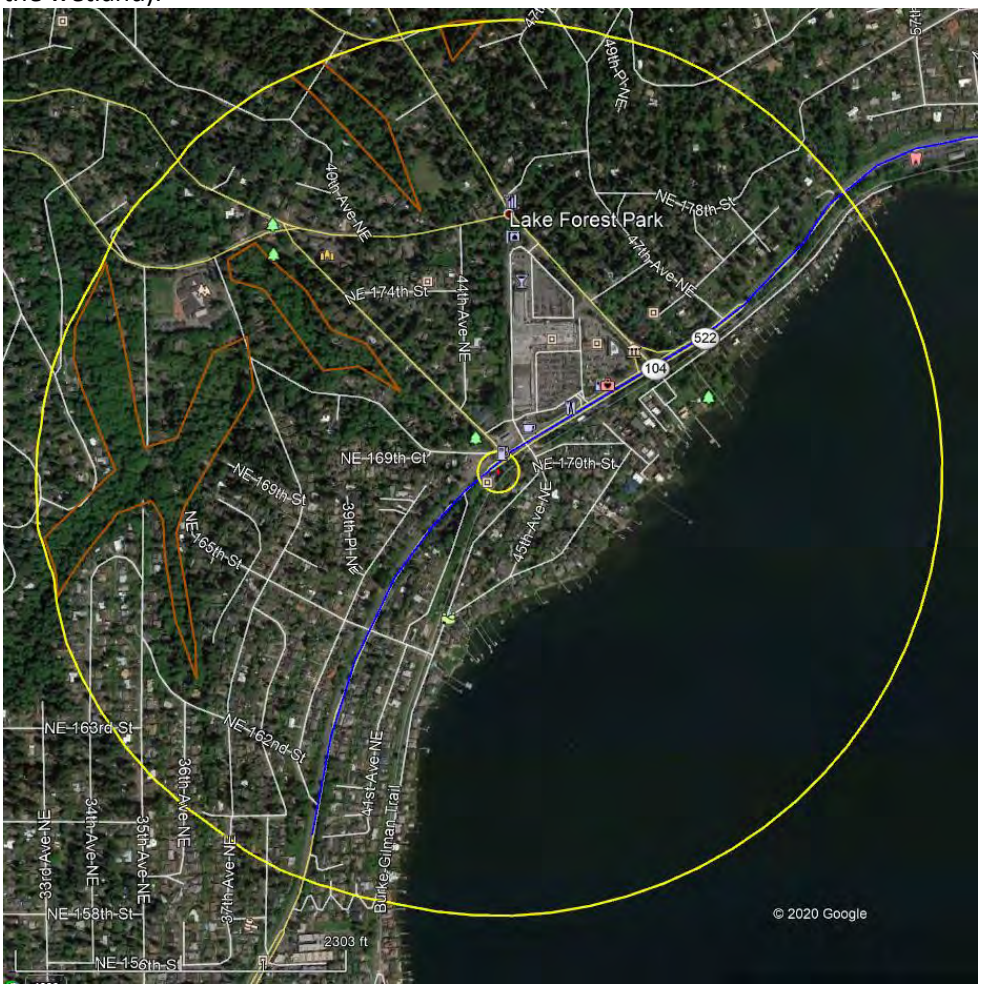


Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment and Brown lines are habitat polygons (Lake WA habitat is not undisturbed habitat because of boat traffic).

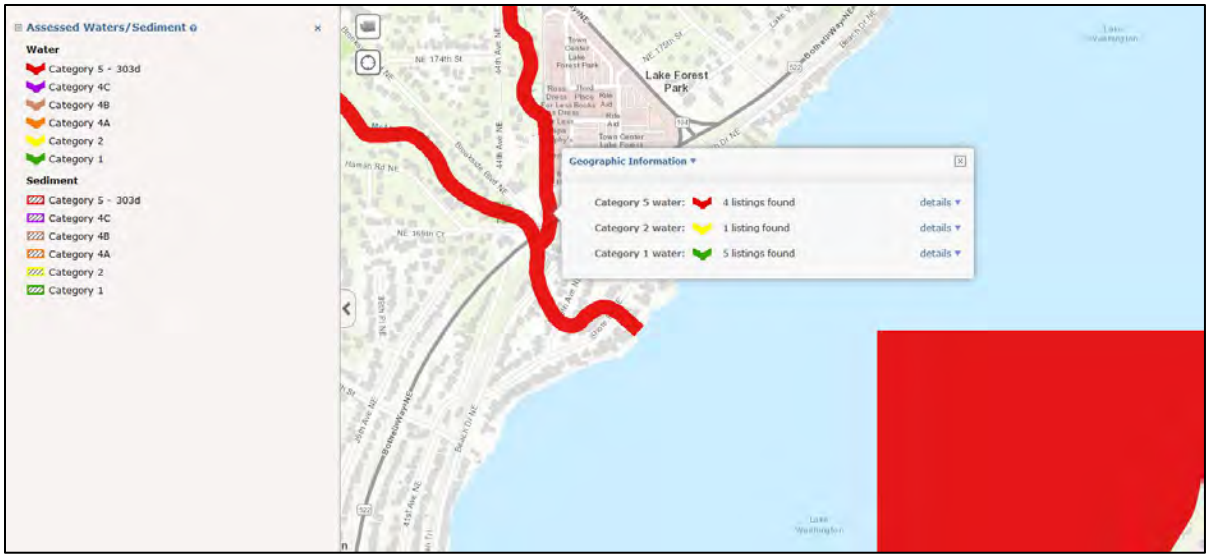


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

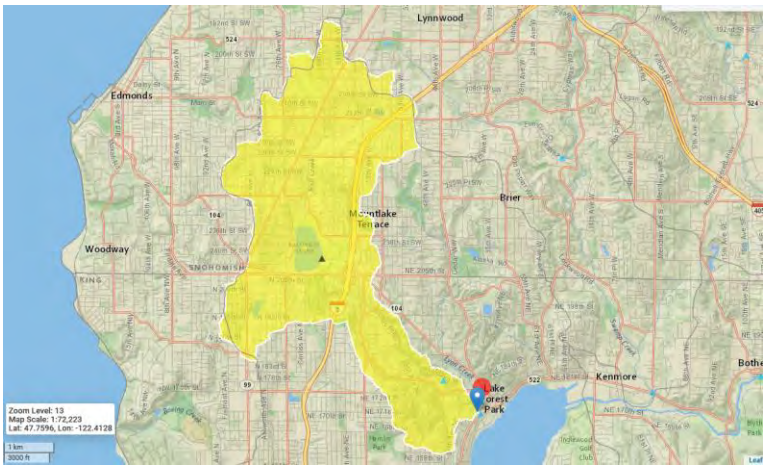


Figure 4. Contributing Basin.

Wetland Name: WLFP-7

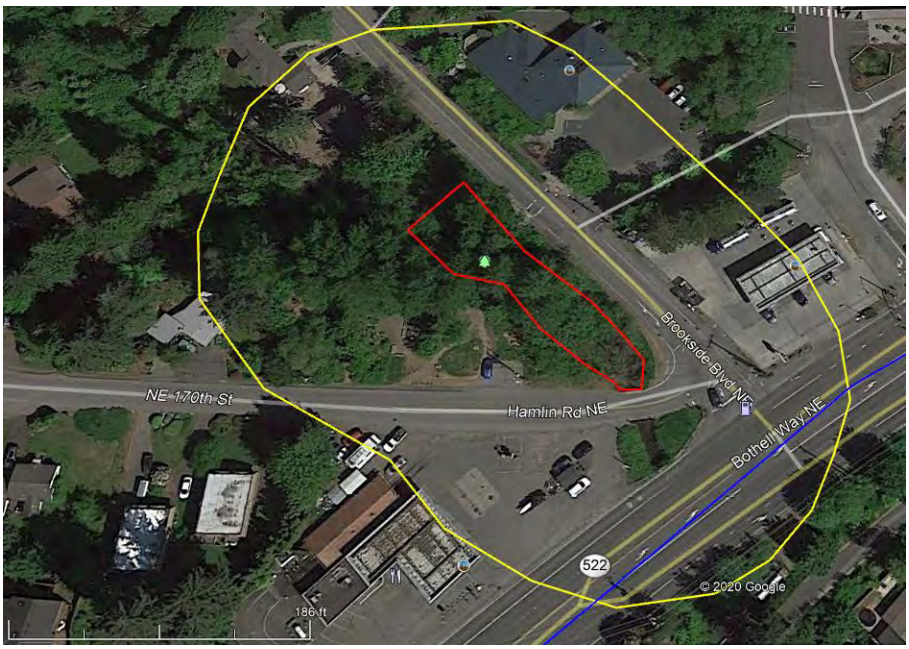


Figure 1. Detail view of Wetland WLFP-7 (red outline is the wetland and yellow is 150-foot boundary for the wetland).

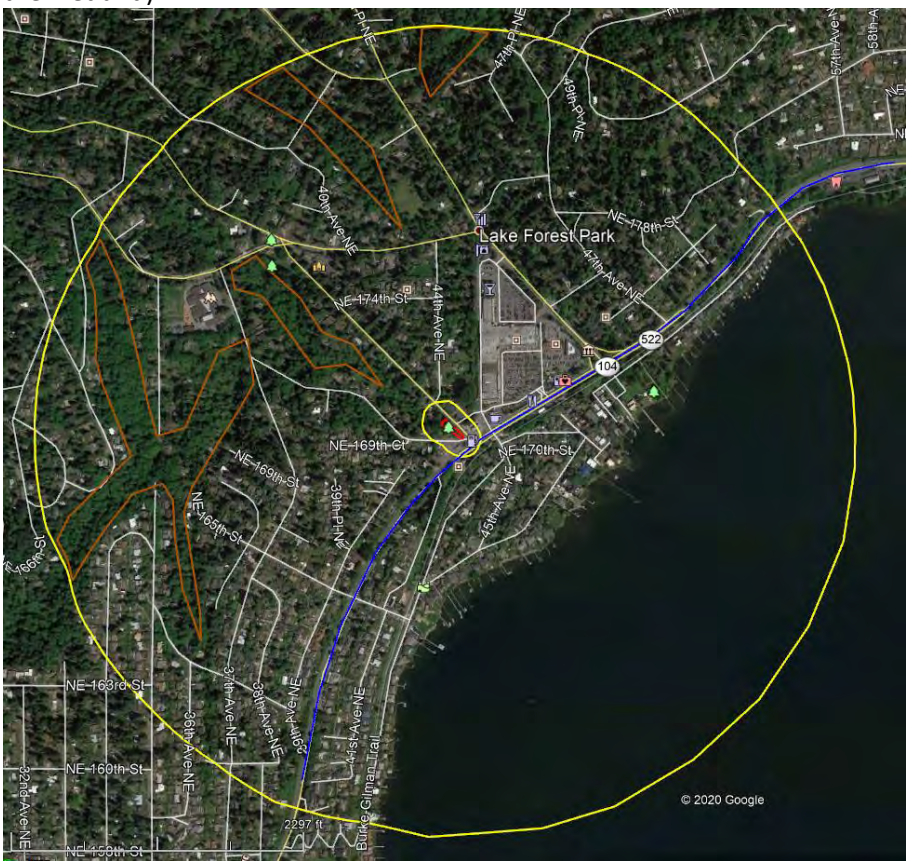


Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment and Brown lines are habitat polygons (Lake WA habitat is not undisturbed habitat because of boat traffic).

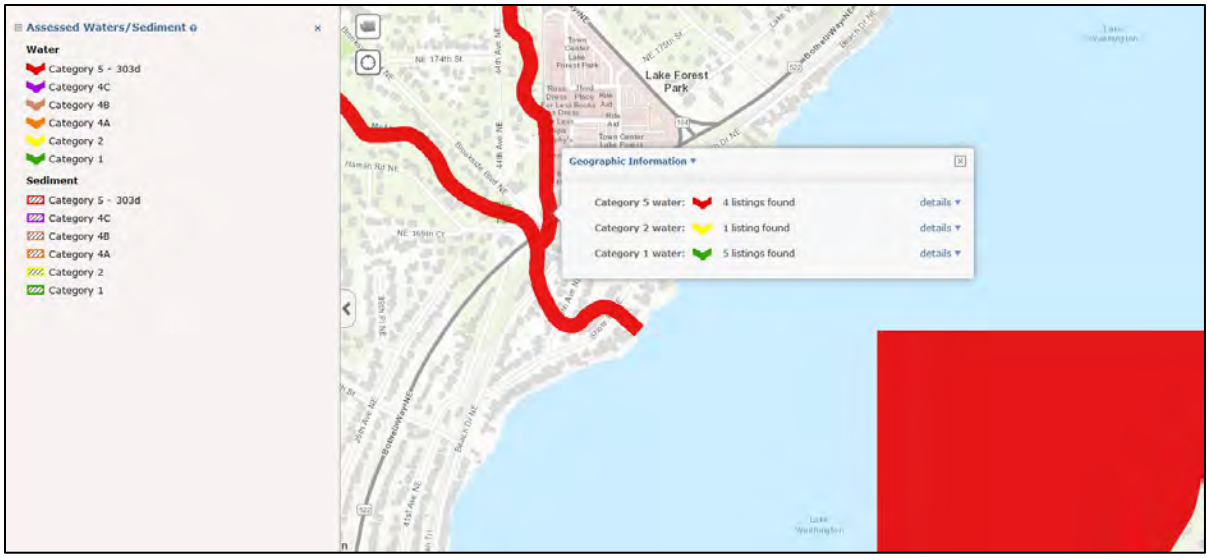


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

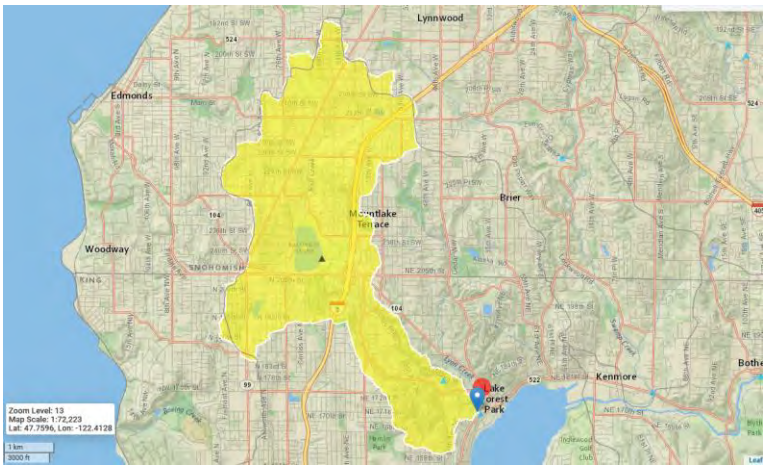


Figure 4. Contributing Basin.

Wetland Name: WLFP-8

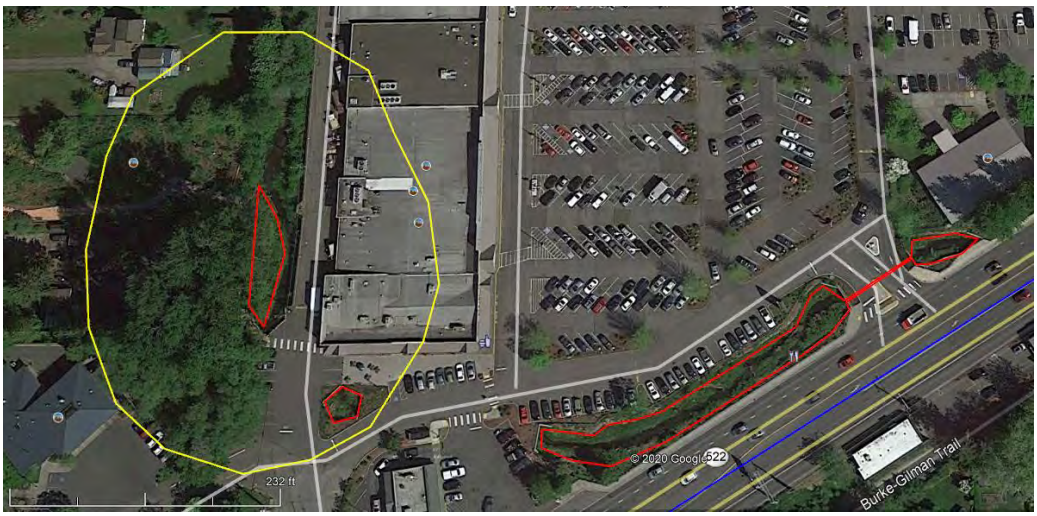


Figure 1. Detail view of Wetland WLFP-8 (red outline is the wetland and yellow is 150-foot boundary for the wetland).

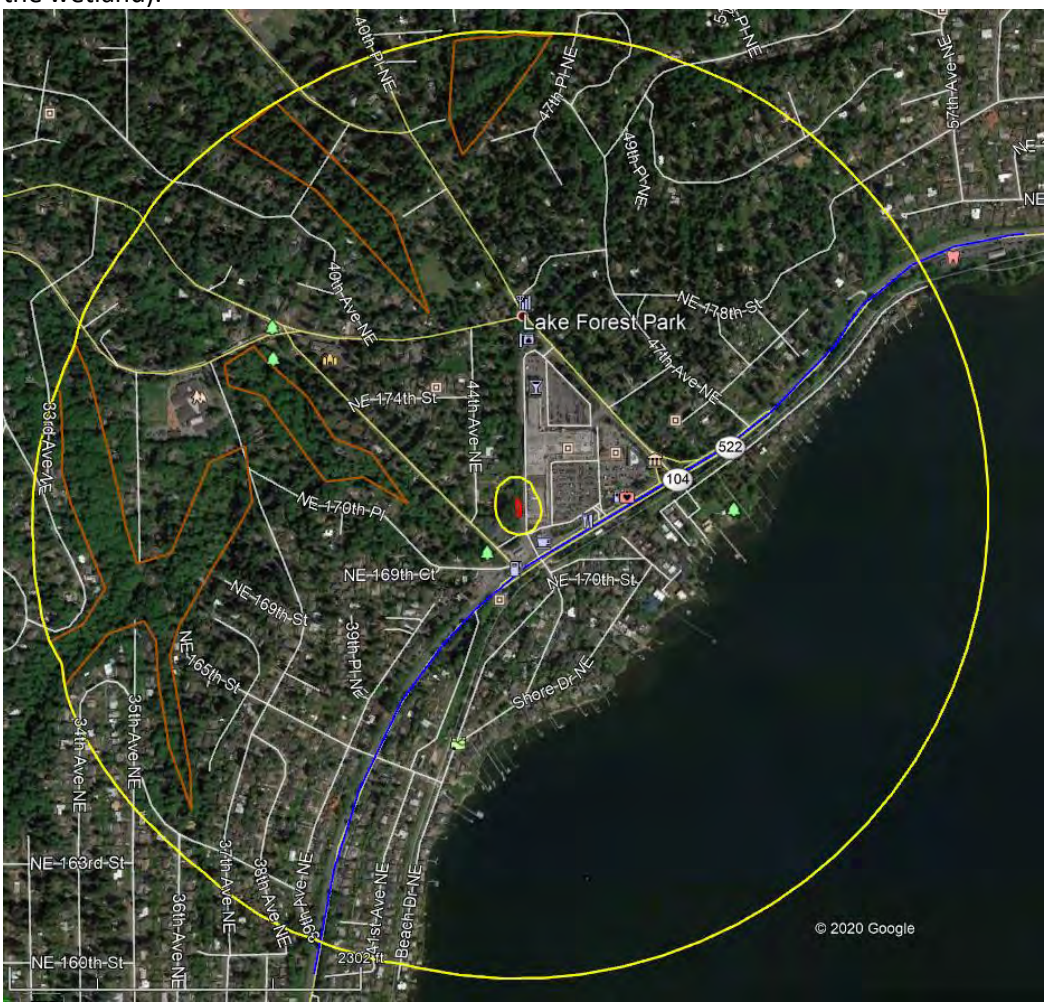


Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment and Brown lines are habitat polygons (Lake WA habitat is not undisturbed habitat because of boat traffic).

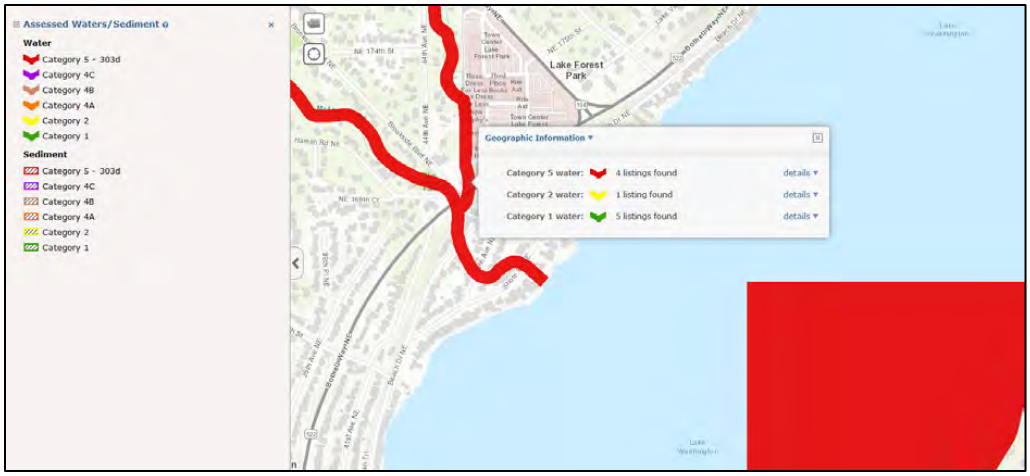


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

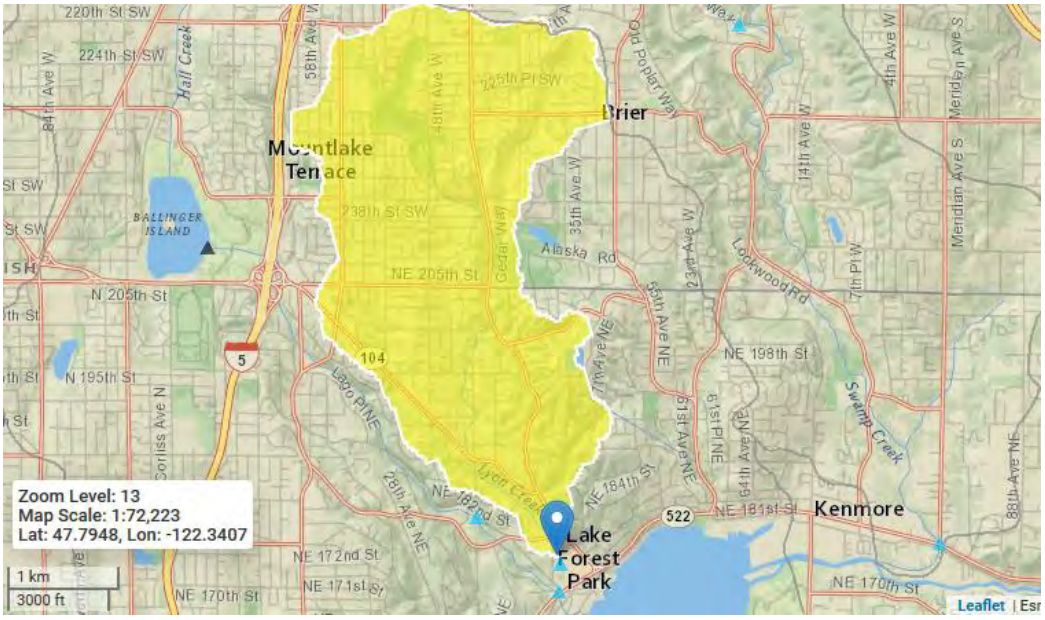


Figure 4. Contributing Basin.

Wetland Name: WKE1

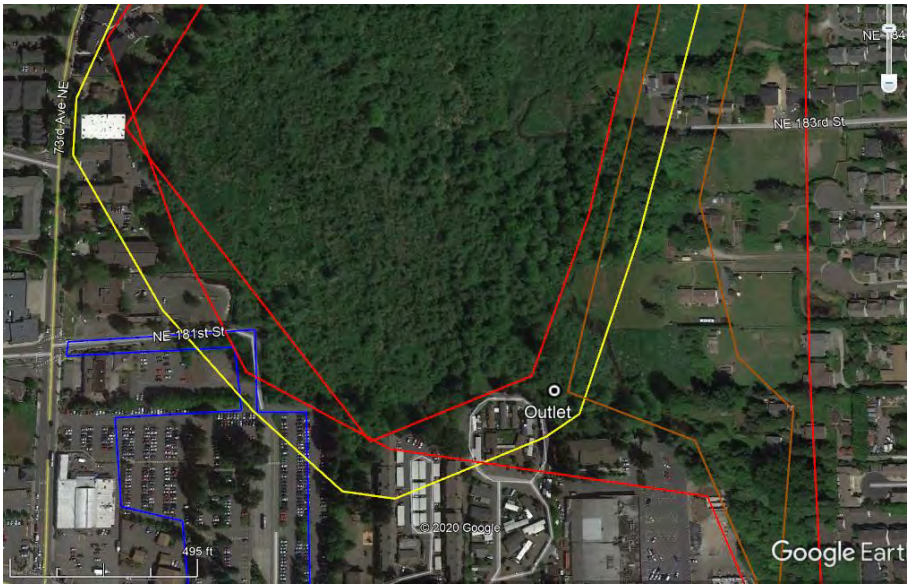


Figure 1. Detail view of Wetland WKE1 (red outline is the wetland and yellow is 150-foot boundary).

Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment (and Park and Ride) and Brown lines are habitat polygons.

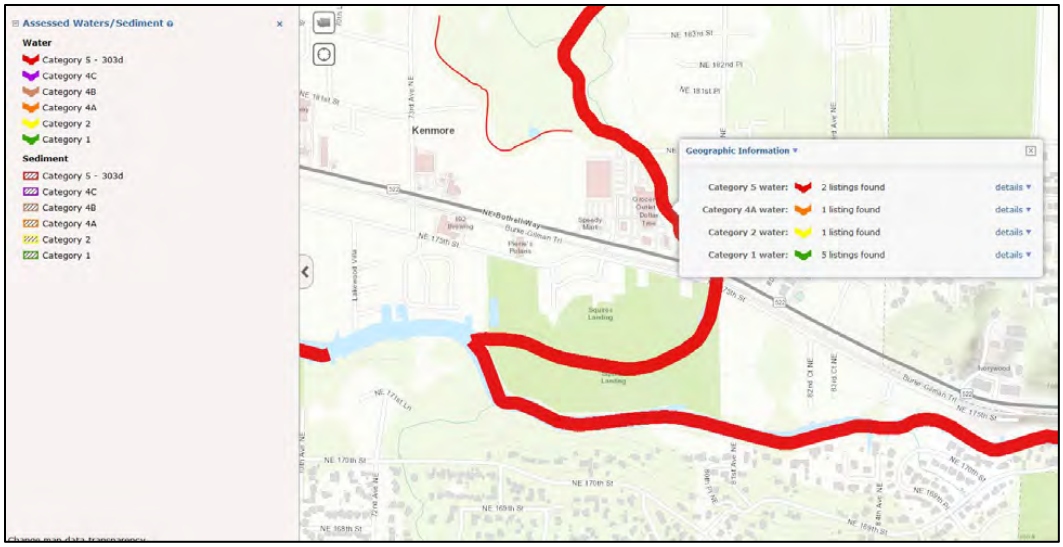


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

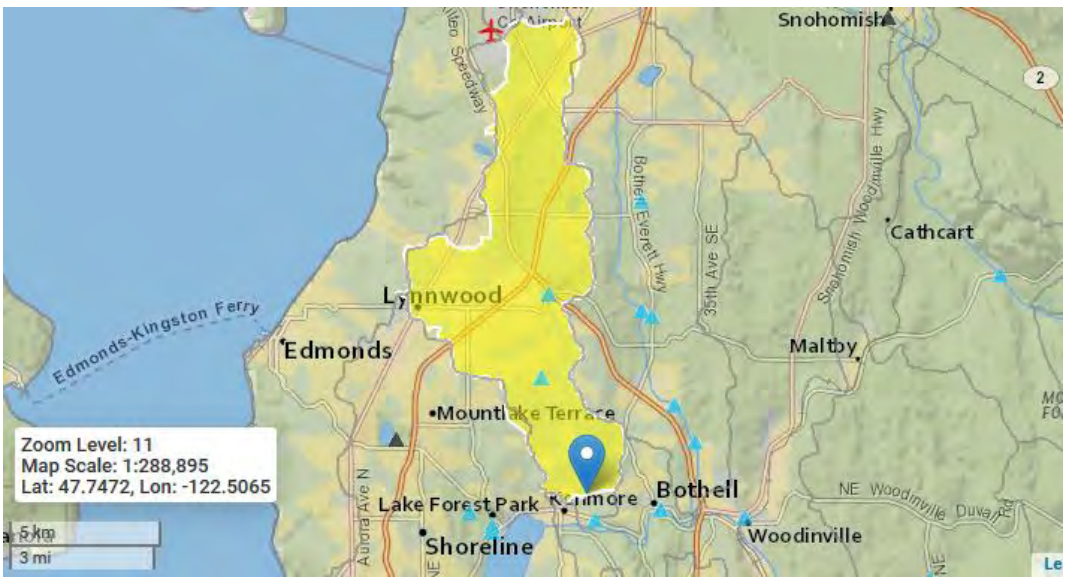


Figure 4. Contributing Basin.

Wetland Name: WKE2

Figure 1. Detail view of Wetland WKE2 (red outline is the wetland and yellow is 150-foot boundary). Light blue line is contributing basin.

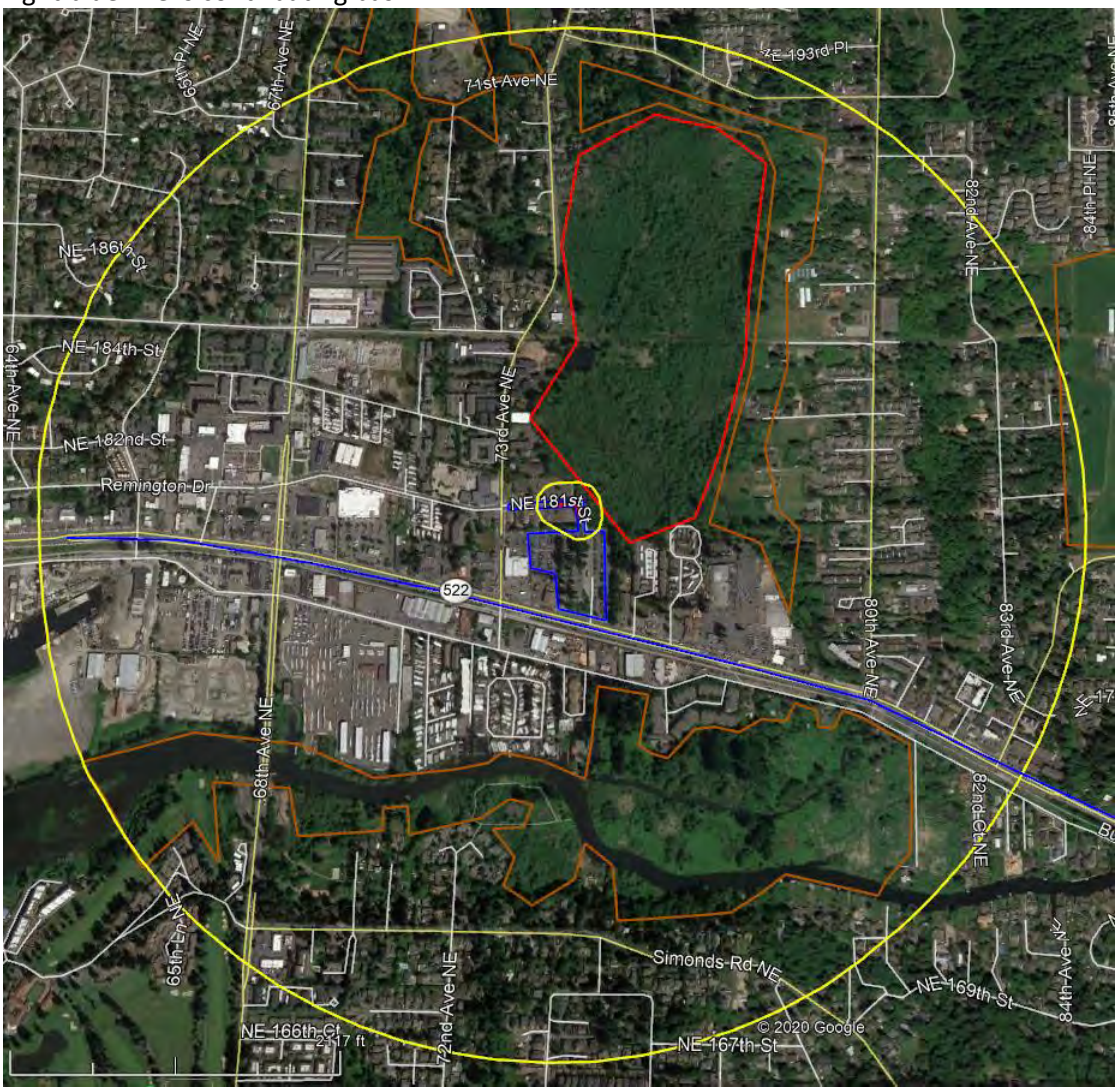
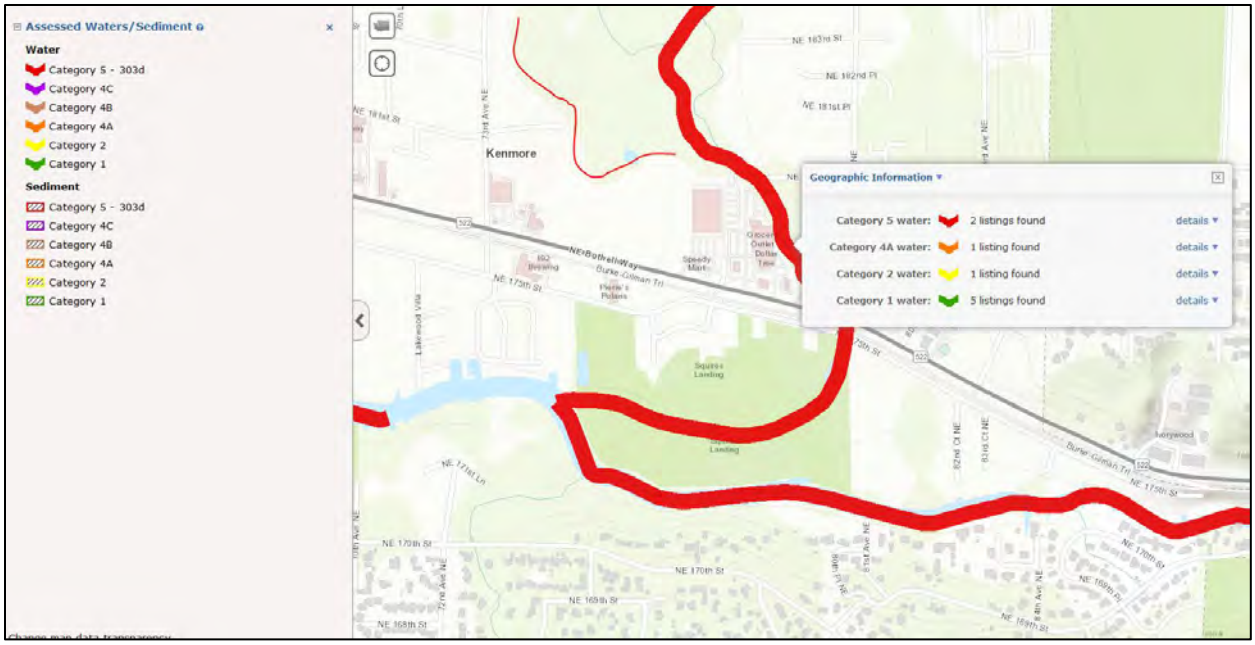


Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment (and Park and Ride) and Brown lines are habitat polygons.



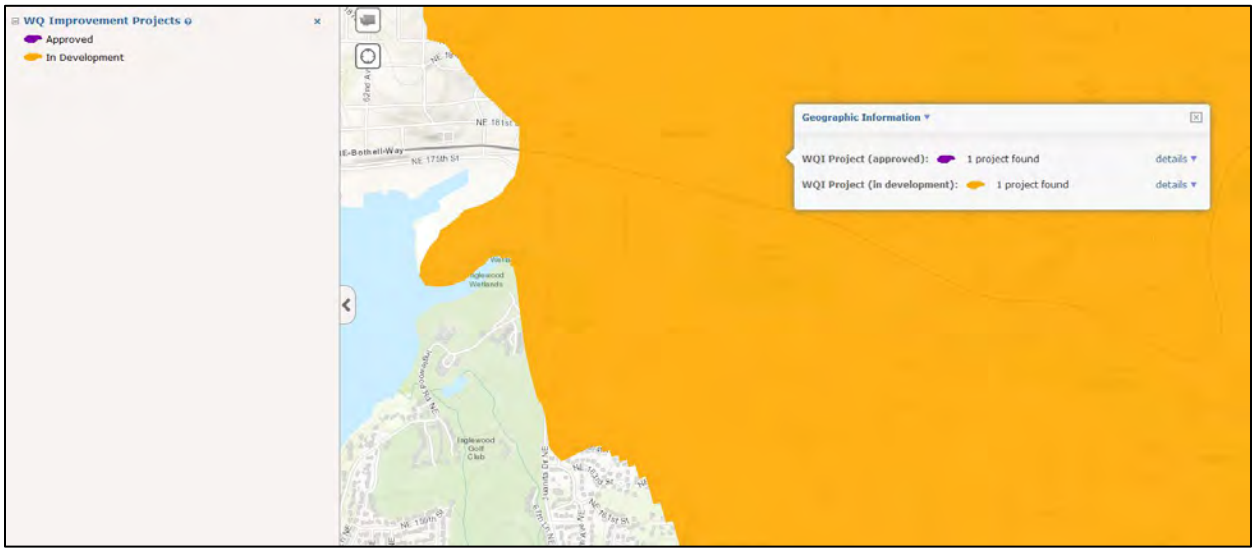


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

Wetland Name: WBO1

Figure 1. Detail view of Wetland WBO1 (red outline is the wetland and yellow is 150-foot boundary). Light blue line is contributing basin.

Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment and Brown lines are habitat polygons.

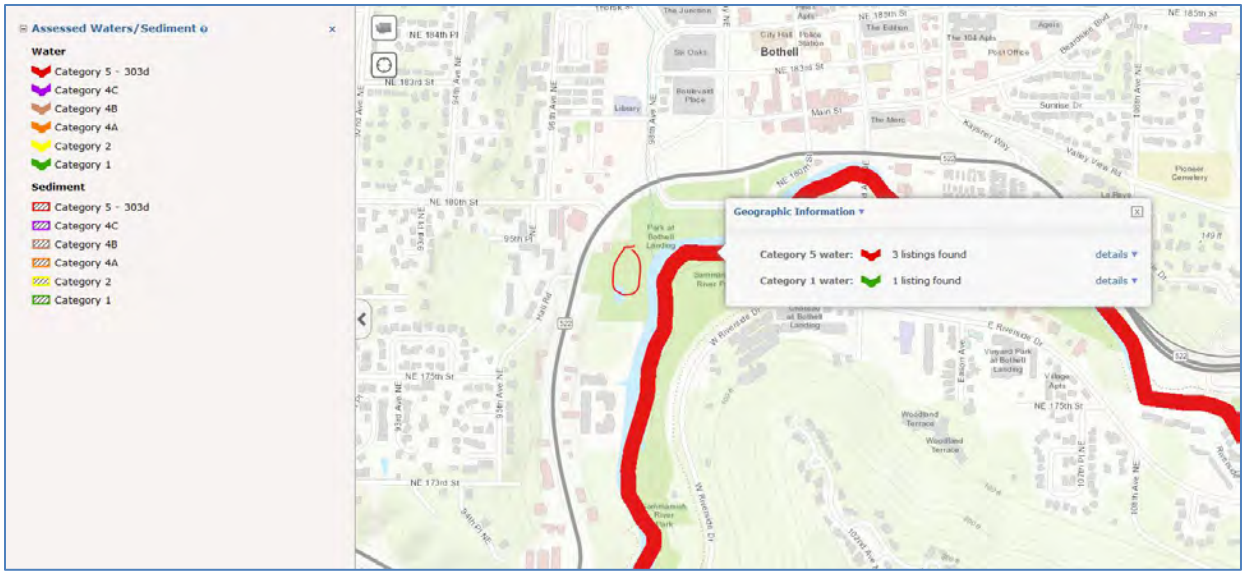


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

Wetland Name: WBO2

Figure 1. Detail view of Wetland WBO2 (red outline is the wetland and yellow is 150-foot boundary).

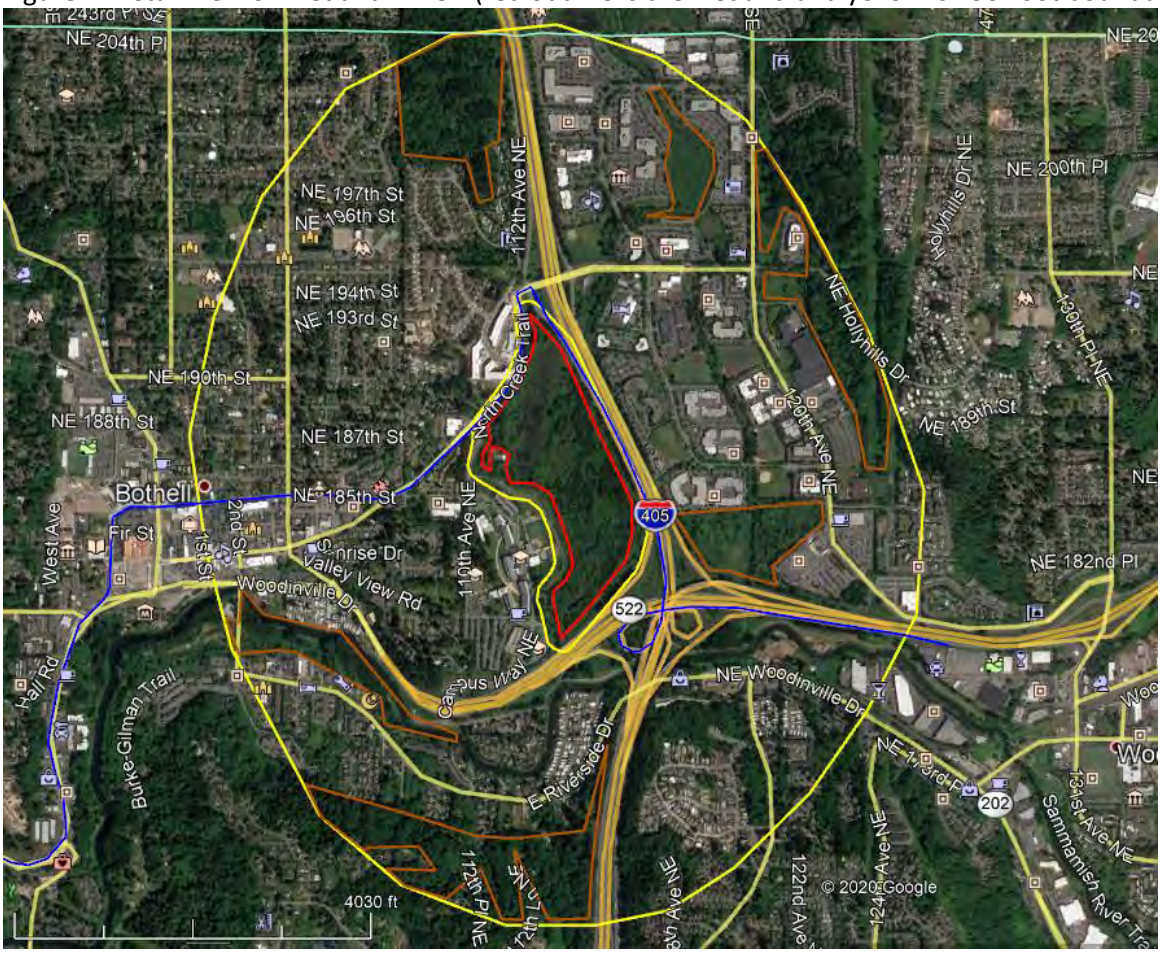


Figure 2. 1 km view (red outline is wetland and yellow outer outline is 1 km polygon). Blue line is the project alignment and Brown lines are habitat polygons.

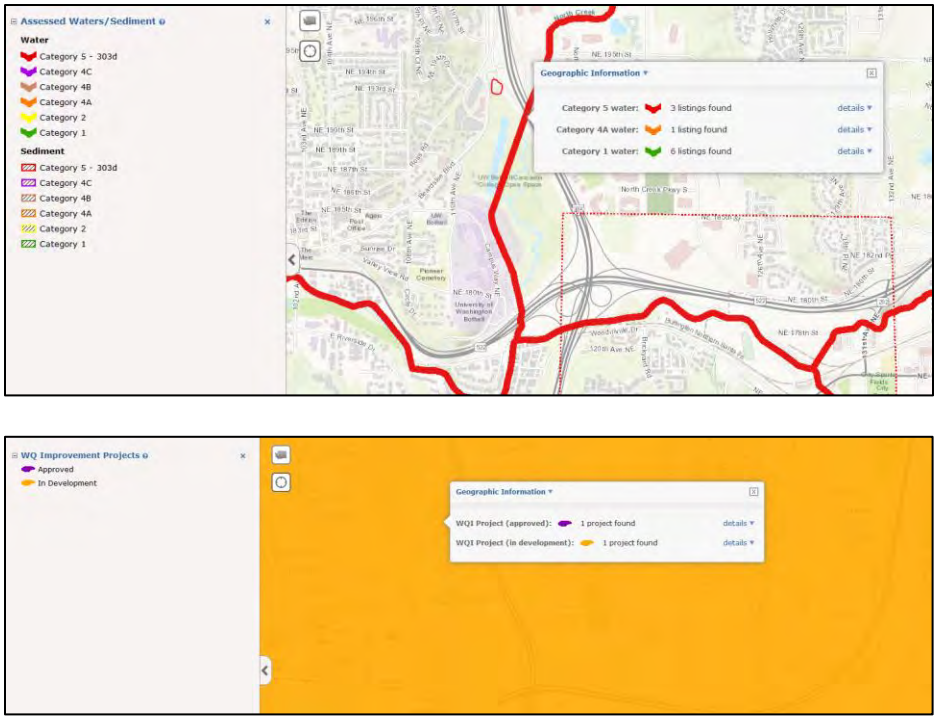


Figure 3. Assessed Waters/Sediment and TLMD projects data per Washington Department of Ecology.

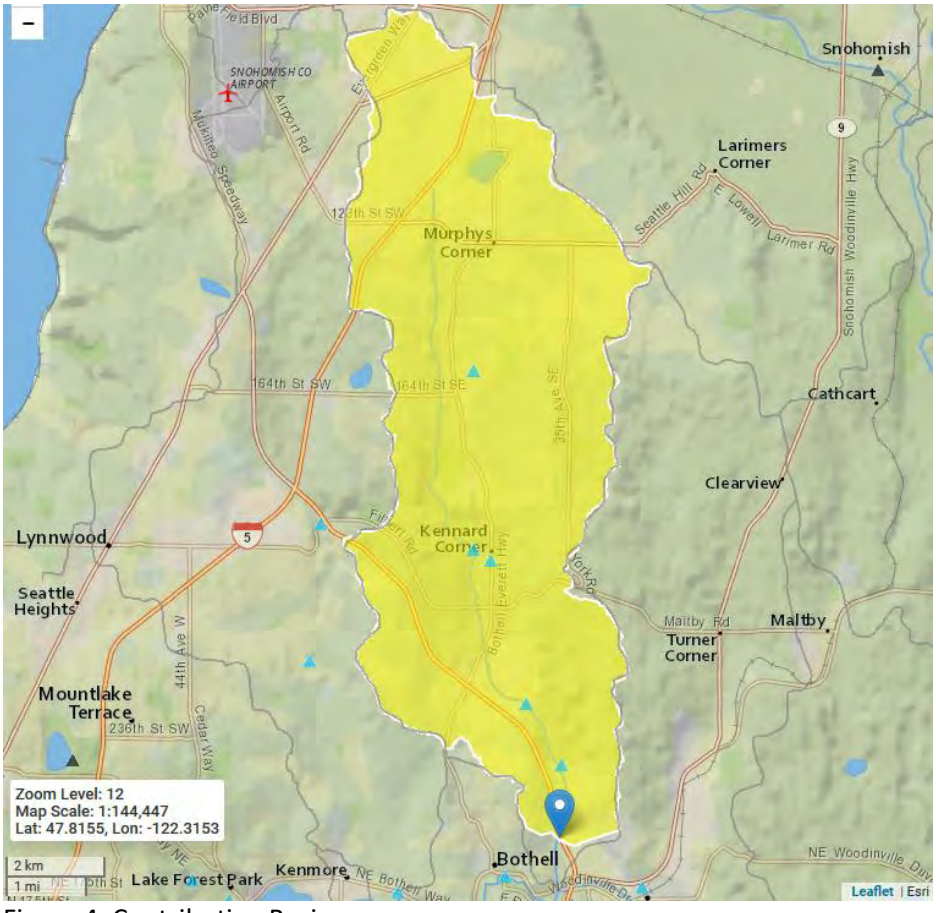


Figure 4. Contributing Basin.

APPENDIX C

Wetland and Stream Summary Sheets

STREAM SUMMARY SHEETS

Littles Creek – INFORMATION SUMMARY

Location: SR522/NE 145th Street Bus Rapid Transit (Lat. 47.7338° N Long. -122.3188° W).

Littles Creek downstream outlet pipe under NE 145th Street looking north.

Littles Creek south of NE 145th Street looking south.

WRIA / HUC	08 – Cedar/Sammamish / HUC #17110012006517 Lake Washington-Sammamish River
WA Stream Catalog #	08-0042
DNR FPARS mapper	This stream is not mapped by DNR.
WAC Stream Type	F = Fish [defined WAC 222-16-031]
King County iMap (2020)	U = Unclassified
Documented Fish Use	Salmonscape (WDFW 2020a) reports no fish species in Littles Creek (there are winter steelhead in North Thornton Creek). There are three total blockages (culverts) between project area and North Thornton Creek (WDFW ID#930657, 930662, and 932658). PHS (WDFW 2020) does not map fish species in Littles Creek in the study area.
Location of Stream Relative to Study Area	Littles Creek crosses under NE 145th Street along the north side of the Jackson Park Golf Course within the City of Seattle (WDFW ID#996915)
Connectivity (where stream flows from/to)	Little Creek originates from wetlands to the north in the Paramount Park Neighborhood. The stream extends south through Jackson Park Golf Course. It joins the north fork of Thornton Creek and flows to Lake Washington and then to into Puget Sound.
Stream Characteristics	Stream channel includes a 16-foot wide plunge pool south of the NE 145th Street culvert. The creek extends south through the golf course with a 6 to 14 feet wide channel, slope is 1 to 5%, channel depth is 3 to 15 inches, substrate includes silt, sand, cobble, and quarry spall. Flow observed during site visit, and the stream is assumed to have perennial flow. There is woody debris present in the stream up and down stream of NE 145th Street.
Riparian/Buffer Condition	The buffer is mostly forest within the golf course. The roadway prism is to the north. On the golf course, there is up to 200 feet of forested buffer with native trees and shrubs but also with a dominance of invasive shrubs and herbaceous species. Forest includes red alder and western red cedar. Native undergrowth includes vine maple, Indian plum and salmonberry. Invasive species are prevalent including English holly, English ivy, laurel, and Himalayan blackberry.

General Description and Comments

Littles Creek is a tributary to the north branch of Thornton Creek. It originates in residential areas north of NE 145th Street and enters the golf course via a culvert under NE 145th Street.

Bsche'tla Creek – INFORMATION SUMMARY

Location: Bus Rapid Transit SR522/NE 145th Corridor (Lat. 47.7401° N Long. -122.2886° W).

Bsche'tla Creek looking southwest toward culvert under SR522.

Stream bed sediment.

WRIA / HUC	08 – Cedar/Sammamish / HUC #17110012000622 Lake Washington-Sammamish River
WA Stream Catalog #	Not listed on WDFW map
DNR FPARS mapper	N = Non-fish [defined WAC 222-16-031]
WAC Water Type	F = Fish [defined WAC 222-16-031]
King County iMap (2020)	U = Unclassified.
Documented Fish Use	Salmonscape (WDFW 2020a) does not map fish species in the study area (there are sockeye, winter steelhead, coho, and fall Chinook in lowest reach of stream). SR 522 is a documented fish passage blockage (WDFW ID#990274) as is a cascade barrier downstream of the study area (WDFW ID#935205). PHS (WDFW 2020) does not map fish species in the study area.
Location of Stream Relative to Study Area	Bsche'tla Creek crosses under SR 522 in the southern portion of the City of Lake Forest Park.
Connectivity (where stream flows from/to)	Bsche'tla Creek originates from seeps and wetlands along the north side of Acacia Memorial Park and Funeral Home. The stream extends east to Lake Washington and then to into Puget Sound.
Stream Characteristics	Bsche'tla Creek channel width averages 6 feet wide downstream of SR 522, slope is 1 to 5%, channel depth is 6 to 12 inches, substrate includes cobble and gravels with much wood and debris. Flow was observed during site visit, and the stream is assumed to have perennial flow.
Riparian/Buffer Condition	The buffers are steep slopes to the north and south with the steep roadway prism extending to SR 522. The forest includes bigleaf maple, red alder, and western red cedar. The understory is a mix of native shrubs (vine maple, Indian plum, and red elderberry) and English ivy with western swordfern, stinging nettle, and common ladyfern.

General Description and Comments

Bsche'tla Creek drains from an area of seeps west of SR 522 and adjacent to the Acacia Memorial Park and Funeral Home. The SR 522 roadway prism is substantial and approximately 75 feet in height. While there are native trees and shrubs the ground cover includes more than 50% cover of English ivy.

McAleer Creek – INFORMATION SUMMARY

Location: SR522/NE 145th Street Bus Rapid Transit (Lat. 47.7515° N Long. -122.2810° W).

McAleer Creek looking northwest to SR 522 bridge.

Stream sediment.

WRIA / HUC	08 – Cedar/Sammamish / HUC #17110012000153 McAleer Creek
WA Stream Catalog #	08-0049
DNR FPARS mapper	F = Fish [defined WAC 222-16-031]
WAC Water Type	F = Fish [defined WAC 222-16-031]
King County iMap (2020)	Class 2S = Stream with salmonids
Documented Fish Use	Salmonscape (WDFW 2020a) include fall Chinook, sockeye, coho documented spawning; winter steelhead documented presence. There are no documented blockages downstream of the study area. PHS (WDFW 2020) documents winter steelhead and resident coastal cutthroat occurrence/migration; coho and sockeye occurrence and breeding area; Chinook occurrence; and fall Chinook breeding area.
Location of Stream Relative to Study Area	McAleer Creek crosses under SR 522 on the south side of the Lake Forest Park Town Center within the City of Lake Forest Park.
Connectivity (where stream flows from/to)	McAleer Creek originates from Lake Ballinger and surrounding area. The stream crosses under SR 522 and in 0.25 miles enters Lake Washington and then to Puget Sound.
Stream Characteristics	Stream channel width averages approximately 23.5 feet wide, slope is 1 to 5%, channel depth is 6 to 12 inches, substrate includes silt, cobble and gravel and some boulders near the Burke-Gilman Trail. Flow observed during site visit, and the stream is assumed to have perennial flow.
Riparian/Buffer Condition	Stream buffer in the study area is degraded. Some intact forested buffer present in Heron Park to the north. South of SR 522, buffer interrupted by Burke-Gilman Trail and residential areas.

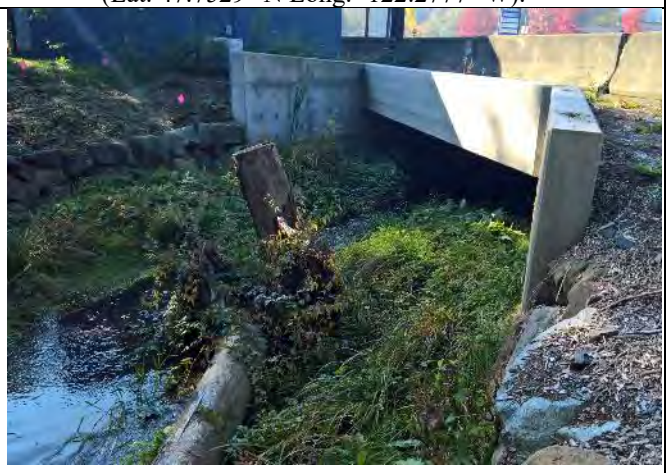
General Description and Comments

McAleer Creek crosses SR 522 in a series of fish passable box culverts. Just downstream of SR 522, the stream flows through a flood control and sediment trap structure that diverts flow. The main channel is spanned by two notched weirs in the same location.

Lyon Creek – INFORMATION SUMMARY

Location: SR522/NE 145th Street Bus Rapid Transit (Lat. 47.7529° N Long. -122.2777° W).

Lyon Creek looking east to bike trail from SR 522 bridge.



Lyon Creek looking west at the SR 522 bridge.

WRIA / HUC	08 – Cedar/Sammamish / HUC #17110012000152 Lyon Creek
WA Stream Catalog #	08-0052 Lyon Creek
DNR FPARS mapper	F = Fish [defined WAC 222-16-031]
WAC Water Type	F = Fish [defined WAC 222-16-031]
King County iMap (2020)	Class 2S = Stream with salmonids
Documented Fish Use	Salmonscape (WDFW 2020a) include coho spawning and rearing, winter steelhead documented presence, sockeye spawning, and accessible to fall Chinook. There are no documented blockages downstream of the study area. PHS (WDFW 2020) documents winter steelhead, resident coastal cutthroat, and coho occurrence/migration, and sockeye breeding area.
Location of Stream Relative to Study Area	Lyon Creek crosses under SR 522 on the east side of the Lake Forest Park Town Center within the City of Lake Forest Park.
Connectivity (where stream flows from/to)	Lyon Creek originates in Mountlake Terrace to the north. The stream crosses under SR 522 and in 0.20 miles enters Lake Washington and then into Puget Sound.
Stream Characteristics	Stream channel width averages 22 feet wide with 6 to 10 feet of riverine wetland. The slope is 1 to 5%. Channel depth is 8 to 15 inches, substrate includes cobble, gravel, sand, and fines, Flow observed during site visit, and the stream is assumed to have perennial flow.
Riparian/Buffer Condition	Most of the buffer is developed as roadway or parking. There is a narrow buffer that includes some vegetation. Because of the width of the stream channel there is little to no functional buffer upstream of SR 522.

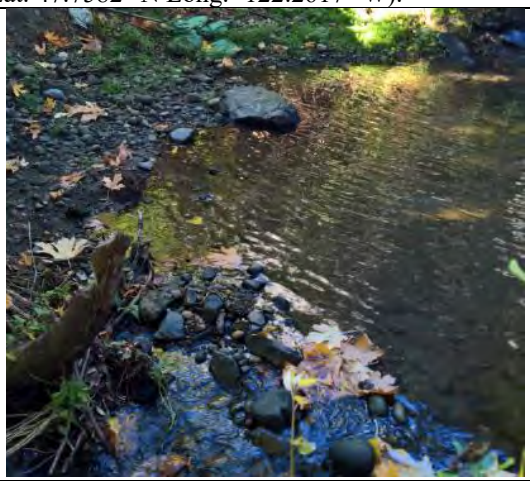
General Description and Comments

Lyon Creek is highly engineered through the Lake Forest Park Town Center and along SR 522. While the channel was constructed there is little buffer around the channel.

Cat Whisker Creek – INFORMATION SUMMARY

Location: SR522/NE 145th Street Bus Rapid Transit (Lat. 47.7582° N Long. -122.2617° W).

Cat Whisker Creek outlet from culvert under SR 522 looking north.



Plunge pool downstream of SR 522.

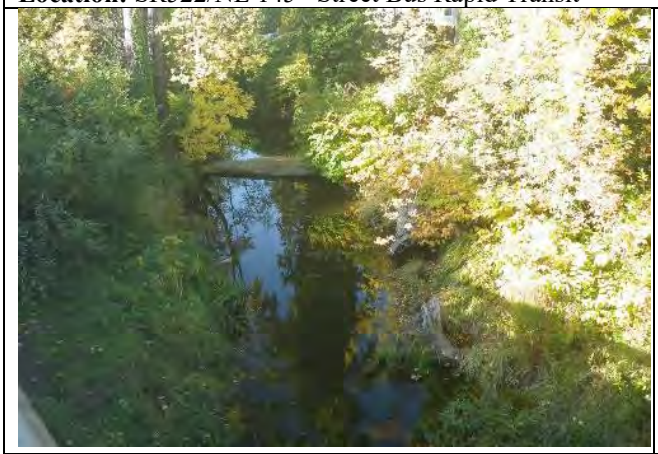
WRIA / HUC	08 – Cedar/Sammamish / HUC #17110012000624 Lake Washington-Sammamish River
WA Stream Catalog #	08-0056
DNR FPARS mapper	F = Fish [defined WAC 222-16-031]
WAC Water Type	F = Fish [defined WAC 222-16-031]
King County iMap (2020)	U = Unclassified.
Documented Fish Use	Salmonscape (WDFW 2020a) documents fall Chinook, coho, winter steelhead, and sockeye streams as gradient accessible. There are three current blockages (2 dams and 1 culvert) between project area and Lake Washington (WDFW ID#990655, 998062, and 998061). PHS (WDFW 2020) does not map fish species in the study area. Above SR 522, stream is in a piped reach for approximately 400 feet.
Location of Stream Relative to Study Area	Cat Whisker Creek crosses under SR 522 east of Log Boom Park within the City of Kenmore.
Connectivity (where stream flows from/to)	Cat Whisker Creek originates from drainages north of the study area near the Snohomish County line. The stream extends south through a residential development and in 0.14 mile enters Lake Washington and then to into Puget Sound.
Stream Characteristics	Stream channel width averages 14 feet wide, slope is 1 to 5%, channel depth is 2 to 6 inches, substrate includes gravels and fines, Flow observed during site visit, and the stream is assumed to have perennial flow.
Riparian/Buffer Condition	The buffer is roadway to the north and then east. The remaining buffer is residential, lawn, and a narrow but dense shrub riparian zone.

General Description and Comments

Fish cannot access Cat Whisker Creek above the plunge pool downstream of SR 522 due to a perched culvert.

Swamp Creek – INFORMATION SUMMARY

Location: SR522/NE 145th Street Bus Rapid Transit (Lat. 47.7555° N Long. -122.2339° W).



Swamp Creek looking northwest from the SR 522 bridge.

Swamp Creek looking south from the Burke Gilman Trail bridge.

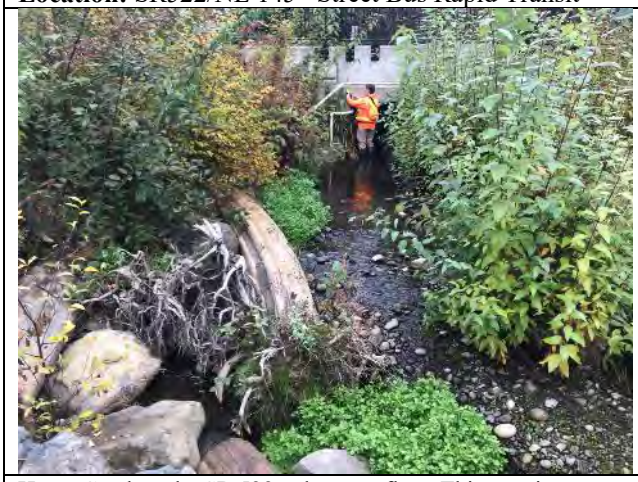
WRIA / HUC	08 – Cedar/Sammamish / HUC #17110012000118 Swamp Creek
WA Stream Catalog #	08-0059 Swamp Creek
DNR FPARS mapper	S = Shoreline [defined WAC 222-16-031]
WAC Water Type	S = Shoreline [defined WAC 222-16-031]
King County iMap (2020)	Class 1 = Shoreline of the State
Documented Fish Use	Salmonscape (WDFW 2020a) include fall Chinook documented spawning, coho documented rearing and spawning and; winter steelhead, sockeye, and Kokanee documented presence. There are no documented blockages downstream of the study area. PHS (WDFW 2020) documents Chinook, coho, and steelhead, occurrence; sockeye, winter steelhead, and resident coastal cutthroat occurrence/migration; and fall Chinook and coho breeding area.
Location of Stream Relative to Study Area	Swamp Creek crosses under SR 522 near the SR 522 and 80th Ave NE intersection within the City of Kenmore.
Connectivity (where stream flows from/to)	Swamp Creek originates from Snohomish County in Lynnwood and near Paine Field area. The stream crosses under SR 522 and in 0.40 miles enters Lake Washington and then to into Puget Sound.
Stream Characteristics	Stream channel width averages 31.5 feet wide, slope is 1 to 5%, channel depth is 1 to 2 feet, substrate includes silt, gravel and cobble. Stream is perennial.
Riparian/Buffer Condition	Buffer is constricted at SR 522, but intact and wide south of SR522. To the north, the riparian corridor is fairly narrow until reaching Wetland WKE-1.

General Description and Comments

Swamp Creek crosses SR 522, the Burke-Gilman Trail, and a frontage road under fish passable bridges.

Horse Creek – INFORMATION SUMMARY

Location: SR522/NE 145th Street Bus Rapid Transit (Lat. 47.7585° N Long. -122.2098° W).



Horse Creek at the SR 522 culvert outflow. This area is a part of a recent restoration project on the Creek channel.

Horse Creek above the SR 522 culvert looking north. This area is a part of a recent restoration project on the Creek channel.

WRIA / HUC	08 – Cedar/Sammamish / HUC #17110012000713 Lake Washington-Sammamish River
WA Stream Catalog #	Not listed on WDFW map
DNR FPARS mapper	F = Fish [defined WAC 222-16-031]
WAC Water Type	F = Fish [defined WAC 222-16-031]
King County iMap (2020)	U = Unclassified.
Documented Fish Use	Salmonscape (WDFW 2020a) documents no fish species in Horse Creek. PHS (WDFW 2020) does not map fish species in the study area. Since the major daylighting of Horse Creek through downtown Bothell, it is assumed that the creek in the study area is fish passable.
Location of Stream Relative to Study Area	Horse Creek flows along west side of the Bothell City Center and crosses under SR 522 west of 98th Ave NE.
Connectivity (where stream flows from/to)	Horse Creek flows from Lake Pleasant in Snohomish County. The stream extends south into the Sammamish River, Lake Washington and then to into Puget Sound.
Stream Characteristics	Stream channel width averages 10 to 15 feet wide, slope is 1 to 5%, channel depth is 6 to 12 inches, substrate includes gravels and fines, Flow observed during site visit, and the stream is assumed to be perennial.
Riparian/Buffer Condition	Horse Creek has an intact functioning buffer south of SR 522. North of SR 522 the daylighted channel has no intact buffer.

General Description and Comments

Horse Creek has undergone significant amounts of restoration through the Bothell Downtown Core. North of SR 522, the daylighted sections have no regulated buffer under City code.

Stream SBO-1 – INFORMATION SUMMARY

Location: SR522/NE 145th Street Bus Rapid Transit (Lat. 47.7570° N Long. -122.2115° W).

Stream SBO-1 looking at the culvert discharge under SR 522.

Vegetated channel between SR 522 and Wetland WBO-1.

WRIA / HUC	08 – Cedar/Sammamish / HUC does not identify Stream SBO-1
WA Stream Catalog #	Not listed on WDFW map
DNR FPARS mapper	This stream is not mapped by DNR.
WAC Water Type	Non-fish Seasonal [defined WAC 222-16-031]
King County iMap (2020)	U = Unclassified.
Documented Fish Use	Salmonscape (WDFW 2020a) documents no fish species in Stream SBO-1. PHS (WDFW 2020) does not map fish species in the study area.
Location of Stream Relative to Study Area	Stream SBO-1 flows from mostly collected stormwater and isolated stream segments on the slopes west of SR 522 and crosses under SR 522 near Hall Road within the City of Bothell.
Connectivity (where stream flows from/to)	Stream SBO-1 flows for a short distance from SR 522 to Wetland WBO-1. There is no stream channel through Wetland WBO-1. Wetland BO-1 drains to the Sammamish River and Lake Washington and then to into Puget Sound.
Stream Characteristics	Stream channel width averages 4 feet wide, slope is 3 to 5%, channel depth is 2 to 6 inches, substrate includes gravels and fines and some large cobble. Flow observed during site visit, and the stream is assumed to have perennial flow.
Riparian/Buffer Condition	Intact riparian buffer is present south and east of SR 522 and consists of forest and wetland.

General Description and Comments

Stream SBO-1 is an isolated stream reach that conveys collected stormwater flows from west of SR 522.

Stream SBO-2 – INFORMATION SUMMARY

Location: Bus Rapid Transit SR522/NE 145th Corridor (Lat. 47.7558° N Long. -122.2120° W).

Stream SBO-2 looking from the outflow culvert toward SR 522.

Channalized portion of stream within Wetland WBO-1 looking west toward SR 522 in the distance.

WRIA / HUC	08 – Cedar/Samish / HUC does not identify Stream SBO-2
WA Stream Catalog #	Not listed on WDFW map
DNR FPARS mapper	This stream is not mapped by DNR.
WAC defined Fish Stream	Non-fish Seasonal [defined WAC 222-16-031]
King County iMap (2020)	This stream is not mapped by King County.
Documented Fish Use	Salmonscape (WDFW 2020a) did not map the stream. PHS (WDFW 2020) on the web did not map the stream. The outflow 12-inch culvert is buried in sediment and there is a steep drop from the walking path to the Sammamish River.
Location of Stream Relative to Study Area	Stream SBO-2 is largely within Wetland WBO-1 and seems to be a ditch within the wetland. There is no mapped inflow of water for the stream from west of SR 522. The upper terminus of the channel may be within 100 feet of the proposed project but the site was not accessed.
Connectivity (where stream flows from/to)	Stream SBO-2 begins somewhere east of the base of the SR 522 roadway prism or other property fill and drains east across the site and then under a public path in a 12-inch culvert to the Sammamish River and Lake Washington and then to into Puget Sound.
Stream Characteristics	Stream channel width averages 3 to 4 feet wide, slope is 0 to 1%, it looks to be a historically excavated ditch within Wetland WBO-1. The substrate includes mostly fine grained sediments. Stream is assumed to have seasonal flow based on evidence of a dry channel on aerial photos.
Riparian/Buffer Condition	The buffer is roadway to the west, parkland to the north, the Sammamish River to the east, and apartments to the south. The buffer is open space wetland (Wetland WBO-1) with reed canarygrass (*Phalaris arundinacea*) and ornamental landscaping, or invasive Japanese knotweed (*Reynoutria japonica*).

General Description and Comments

Stream SBO-2 drains portions of Wetland WBO-1. There is no data supporting connections to the west of SR 522. There is an outflow culvert to the east that connects to the Sammamish River.

WETLAND SUMMARY SHEETS

WETLAND WSE-1 – INFORMATION SUMMARY

Location: Bus Rapid Transit SR522/NE 145th Corridor (Lat. 47.7338° N Long. -122.3196° W).

Wetland WSE-1 looking south from near 145th Ave roadway.

PEM and PUB along the golf course south of 145th Avenue.

WRIA / HUC	08- Cedar/Samish / 171100120400 Lake Washington-Sammamish Watershed
Ecology Rating	II
Wetland Size (acre)	Approximately 1.5
Cowardin Classifications	PFO, PUB
HGM Classification	Depressional
Wetland Data Sheet(s)	WSE–1–DP–3
Upland Data Sheet(s)	WSE–1–DP–1 and WSE–1–DP–2
Dominant Vegetation	Red alder, salmonberry, and water parsley.
Soils	Soil Survey data: Anthraltic Xerorthents gravelly sandy loam, 12 to 35 percent slopes. Field data: Hydric soil indicator(s) include Sandy Redox (S5), FAC Neutral Test (D5).
Hydrology	Assumed Source: Precipitation, groundwater, and adjacent area runoff. Field Data: Saturation (A3), Water marks (B1), Sediment Deposits (B2).

Wetland Functions Summary

Function (*Circle ratings*)	**Water Quality**	**Hydrologic**	**Habitat**	
Site Potential	H [M] L	H [M] L	H [M] L	
Landscape Potential	[H] M L	[H] M L	H M [L]	
Value	[H] M L	[H] M L	[H] M L	**TOTAL**
Score Based on Ratings	8	8	6	22

General Description and Comments

Wetland is associated with a golf course water feature. Its upstream end is connected by a rock-lined ditch to Littles Creek, where presumably occasionally high flows from the stream may get routed into the wetland. During the site visit, consistent presence of water in the ditch ended approximately 50 feet east of the wetland along the ditch.

WETLAND WLFP-1 and -2 – INFORMATION SUMMARY

Location: Bus Rapid Transit SR522/NE 145th Corridor (Lat. 47.7527° N Long. -122.2790° W).

Wetland WLFP-1 on left and on right looking east with SR-522 in the background.

Wetland WLFP-2 on left and on right looking east with SR-522 in the background.

WRIA / HUC	08- Cedar/Samish / 171100120400 Lake Washington-Sammamish Watershed
Ecology Rating	III
Wetland Size (acre)	Approximately 0.1 and 0.02 respectively
Cowardin Classifications	PSS, PEM.
HGM Classification	Riverine
Wetland Data Sheet(s)	WLFP–1–DP–1, WLFP–1–DP–3, WLFP–1–DP–4, WLFP–2–DP–1, WLFP–2–DP–2
Upland Data Sheet(s)	WLFP–1–DP–2 and WLFP–1–DP–5
Dominant Vegetation	redosier dogwood, Scouler's willow, sedges (*Carex spp.*), soft rush, soft-stem bulrush, reed canarygrass, and small-fruited bulrush.
Soils	Soil Survey data: Urban land-Alderwood complex, 0 to 5 percent slopes. Field data: Hydric soil indicator(s) include Sandy Gleyed Matrix (S4), Sandy Redox (S5), Redox Dark Surface (F6).
Hydrology	Assumed Source: Precipitation, groundwater, and adjacent area runoff. Field Data: Saturation (A3), Drift Deposits (B3), FAC-Neutral Test (D5).

Wetland Functions Summary

Function (*Circle ratings*)	**Water Quality**	**Hydrologic**	**Habitat**	
Site Potential	H [M] L	H [M] L	H M [L]	
Landscape Potential	[H] M L	[H] M L	H M [L]	
Value	[H] M L	H M [L]	[H] M L	**TOTAL**
Score Based on Ratings	8	6	5	19

General Description and Comments

Wetlands are within the OHWM of Lyon Creek and for on shallow benches outside the active channel. This area is a constructed stream channel system associated with adjacent development.

WETLAND WLFP-3 – INFORMATION SUMMARY

Location: Bus Rapid Transit SR522/NE 145th Corridor (Lat. 47.7517° N Long. -122.2806° W).

Wetland WLFP-3 looking southwest along the swale.

Cleared vegetation in the swale looking northeast.

WRIA / HUC	08- Cedar/Samish / 171100120400 Lake Washington-Sammamish Watershed
Ecology Rating	III
Wetland Size (acre)	Approximately 0.01
Cowardin Classifications	PEM,
HGM Classification	Depressional
Wetland Data Sheet(s)	WLFP–3–DP–1
Upland Data Sheet(s)	WLFP–3–DP–2
Dominant Vegetation	vine maple, Indian plum, reed canarygrass, and creeping buttercup.
Soils	Soil Survey data: Urban land-Alderwood complex, 0 to 5 percent slopes. Field data: Hydric soil indicator(s) include Depleted Below Dark Surface (A11).
Hydrology	Assumed Source: Precipitation, groundwater, and adjacent area runoff. Field Data: Saturation (A3), Algal Mat or Crust (B4), Water Stained Leaves (B9), Drainage Pattern (B11), and Geomorphic Position (D2).

Wetland Functions Summary

Function (*Circle ratings)*	**Water Quality**	**Hydrologic**	**Habitat**	
Site Potential	H M [L]	H [M] L	H M [L]	
Landscape Potential	[H] M L	[H] M L	H M [L]	
Value	[H] M L	H M [L]	[H] M L	**TOTAL**
Score Based on Ratings	7	6	6	18

General Description and Comments

Wetland is associated with a swale between SR 522 and a paved trail. Bigleaf maple is an overstory plant over much of this wetland but it is rooted outside the wetland. While this species is greater than 20 percent cover it is not used in vegetation dominance.

WETLAND WKE-1 – INFORMATION SUMMARY

Location: Bus Rapid Transit SR522/NE 145th Corridor Project (Lat. 47.7595° N Long. -122.2414° W).

Wetland WKE1 north of Park and Ride main lot looking north.

Wetland WKE1 near NE 181 Street alignment looking east.

WRIA / HUC	08- Cedar/Sammamish / 171100120400 Lake Washington-Sammamish Watershed
Ecology Rating	I
Wetland Size (acre)	Approximately 75
Cowardin Classifications	PFO, PSS, PEM,
HGM Classification	Riverine
Wetland Data Sheet(s)	WKE – 1 – DP – 2, WKE – 1 – DP – 3
Upland Data Sheet(s)	WKE – 1 – DP – 1
Dominant Vegetation	Red alder, Pacific willow, redosier dogwood, salmonberry, hardhack slough sedge, common ladyfern, and English ivy.
Soils	Soil Survey data: Alderwood-Everett complex, 0 to 12 slopes. Field data: Hydric soil indicator(s) include Loamy Mucky Mineral (F1).
Hydrology	Assumed Source: Precipitation, groundwater, and adjacent area runoff. Field Data: Saturation (A3), Surface Water (A1), Saturation (A3).

Wetland Functions Summary

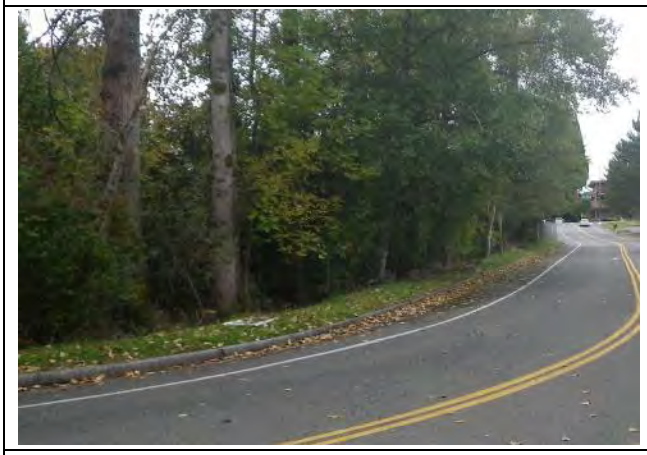
Function (*Circle ratings*)	**Water Quality**	**Hydrologic**	**Habitat**	
Site Potential	[H] M L	[H] M L	H [M] L	
Landscape Potential	[H] M L	H [M] L	H M [L]	
Value	[H] M L	[H] M L	[H] M L	**TOTAL**
Score Based on Ratings	9	8	6	23

General Description and Comments

This is a large wetland complex associated with Swamp Creek.

WETLAND WKE-2 – INFORMATION SUMMARY

Location: Bus Rapid Transit SR522/NE 145th Corridor (Lat. 47.7590° N Long. -122.2410° W).



Wetland WKE2 is along the base of black cottonwood along NE 181st Street to right of photo.

Wetland WKE2 with roadway prism on left.

WRIA / HUC	08- Cedar/Samish / 171100120400 Lake Washington-Sammamish Watershed
Ecology Rating	III
Wetland Size (acre)	0.04
Cowardin Classifications	PFO, PEM,
HGM Classification	Depressional
Wetland Data Sheet(s)	WKE – 2 – DP–3
Upland Data Sheet(s)	
Dominant Vegetation	red alder, black cottonwood, redosier dogwood, common ladyfern, and slough sedge.
Soils	Soil Survey data: Alderwood-Everett complex. Field data: Hydric soil indicator(s) include: Thick Dark Surface (A12).
Hydrology	Assumed Source: Precipitation, groundwater, and adjacent area runoff. Field Data: Saturation (A3), Water-Stained Leaves (B9), Drainage Pattern (B11), FAC-Neutral Test (D5).

Wetland Functions Summary

Function (*Circle ratings*)	**Water Quality**	**Hydrologic**	**Habitat**	
Site Potential	H M [L]	H [M] L	H M [L]	
Landscape Potential	H [M] L	[H] M L	H M [L]	
Value	[H] M L	[H] M L	H [M] L	**TOTAL**
Score Based on Ratings	6	8	4	18

General Description and Comments

Wetland is a narrow drainage between paved areas. The bottom of drainage likely has native soil.

WETLAND WBO-1 – INFORMATION SUMMARY

Location: Bus Rapid Transit SR522/NE 145th Corridor Project (Lat. 47.7571° N Long. -122.2110° W).

Wetland WBO1 looking north in PSS and PEM habitat.

Reed canarygrass PEM with areas of willow PSS.

WRIA / HUC	08- Cedar/Samish / 171100120400 Lake Washington-Sammamish Watershed
Ecology Rating	II
Wetland Size (acre)	Approximately 2.50
Cowardin Classifications	PFO, PSS, PEM,
HGM Classification	Depressional
Wetland Data Sheet(s)	WBO – 1 – DP – 1 and WBO – 1 – DP-4
Upland Data Sheet(s)	WBO – 1 – DP – 2 and WBO – 1 – DP-3
Dominant Vegetation	red alder, salmonberry, giant horsetail, and reed canarygrass.
Soils	Soil Survey data: Alderwood gravelly sandy loam, Puget silty clay loam. Field data: Hydric soil indicator(s) include Thick Dark Surface (A12), Loamy Mucky Mineral.
Hydrology	Assumed Source: Precipitation, groundwater, and adjacent area runoff. Field Data: Surface Water (A1), Saturation (A2), Oxidized Rhizospheres along Living Roots (C3), Drainage Pattern (B11), Geomorphic Position (D2), FAC-Neutral Test (D5).

Wetland Functions Summary

Function (*Circle ratings*)	**Water Quality**	**Hydrologic**	**Habitat**	
Site Potential	H [M] L	H [M] L	H [M] L	
Landscape Potential	H [M] L	[H] M L	H M [L]	
Value	[H] M L	[H] M L	[H] M L	**TOTAL**
Score Based on Ratings	7	8	6	21

General Description and Comments

Depressional area along an upper bench of the Sammamish River.

WETLAND WBO-2 – INFORMATION SUMMARY

Location: Bus Rapid Transit SR522/NE 145th Corridor Project (Lat. 47.76742° N Long. -122.19022° W).

WBO2 looking north in PFO. End of wetland is in photo

PFO and PEM vegetation looking southwest

WRIA / HUC	08- Cedar/Samish / 171100120302 North Creek Watershed
Ecology Rating	I
Wetland Size (acre)	Approximately 58
Cowardin Classifications	PAB, PFO, PSS, PEM,
HGM Classification	Riverine
Wetland Data Sheet(s)	WBO – 2 – DP – 1
Upland Data Sheet(s)	WBO – 2 – DP – 2
Dominant Vegetation	black cottonwood, red alder, salmonberry, twinberry honeysuckle, and slough sedge.
Soils	Soil Survey data: Seattle Muck. Field data: Hydric soil indicator(s) include Thick Dark Surface (A12).
Hydrology	Assumed Source: Precipitation, groundwater, and adjacent area runoff. Field Data: Saturation (A2), Water-Stained Leaves (B9), Geomorphic Position (D2), FAC-Neutral Test (D5).

Wetland Functions Summary

Function (*Circle ratings)*	**Water Quality**	**Hydrologic**	**Habitat**	
Site Potential	[H] M L	[H] M L	H [M] L	
Landscape Potential	[H] M L	[H] M L	H M [L]	
Value	[H] M L	[H] M L	[H] M L	**TOTAL**
Score Based on Ratings	9	9	6	24

General Description and Comments

This is a large wetland complex that was created form agriculture land around 1998. Only a small portion of the northern tip of the wetland was delineated.

APPENDIX D

Summary of Stream Physical Data

ST SR 522/NE 145th BRT Project
Stream Habitat Assessment Data Matrix
Prepared by: *Gray Rand, DEA* *May-20*

Stream Name	Jurisdiction	Date	Transect	Reach Location (relative to 522)	Transect Location	BFW	Wetted Width	Substrate	Gradient (%)	Water Depth (feet)	Riparian Cover	Riparian Species	Other Notes
Littles Creek	Seattle	11/8/2019	1	Downstream	Approx. 300 feet downstream of 145th	6	4	Silt/sand	1	<1	High	Salmonberry, lady fern, blackberry, holly, English ivy, horsetail, cedar, cottonwood	
Littles Creek	Seattle	11/8/2019	2	Downstream	Approx. 200 feet downstream of 145th	13.5	6	Sand/cobble	1	<1	High	Same as #1	Intact forest overstory; 2 small pieces of LWD nearby;
Littles Creek	Seattle	11/8/2019	3	Downstream	At bottom end of plunge pool below 145th slope	8.5	7	Quarry spall	1	<1	Moderate	Same as #1	Culvert under 145th is 30-inch concrete; pool is 2 feet deep; culvert perched slightly (about 0.5 foot during site visit)
Bsche'tla Creek	Lake Forest Park	9/17/2019	1	Upstream	Just above trash rack	7	5	Gravel/sand/silt	1	<1	Low		Edge of disturbed area for apartment complex; no DWD
Bsche'tla Creek	Lake Forest Park	9/17/2019	2	Upstream	30 feet upstream of #1	10	4	Gravel/silt	2	<1	High	Cedar, laurel, alder, bigleaf maple	Bottom of steep scarp reach
Bsche'tla Creek	Lake Forest Park	9/17/2019	3	Upstream	Top of steep scarp below funeral home	2	2	Gravel/sand	3	<1	High	Salmonberry, cottonwood, alder; large amounts of blackberry and English ivy	No dwd; between Transects 3 and 4 is wide wetland area dominated by PSS with diffuse flow and braided channels; wetland mitigation opportunity
Bsche'tla Creek	Lake Forest Park	9/17/2019	4	Upstream	100' upstream of #3	25	6	Gravel/sand	5	<1	High	Cottonwood, cedar, Doug fir, invasives	Lots of dwd
Bsche'tla Creek	Lake Forest Park	9/17/2019	5	Downstream	100 downstream of culvert	10	8	Cobble/gravel	5	<1	High	Vine maple, bigleaf maple, Indian plum, swordfern, bracken fern, English ivy	Lots of DWD and trash debris blocking channel; 5-10 shallow pools in reach; culvert outlet not perched, culvert is 4-foot wide concrete box at grade
Bsche'tla Creek	Lake Forest Park	9/17/2019	6	Downstream	50 feet downstream of #5	2	2	Cobble/gravel	5	<1	High	Cedar, ivy, lady fern	Narrowest point of channel at erosion resistant outcrop;
McAleer Creek	Lake Forest Park	4/7/2020	1	Upstream	In isolated section of stream between SR 522 and Heron Park	17	15	Silt/gravel	1	<1	Low	Blackberry	Culvert under SR 522 is fish passable
McAleer Creek	Lake Forest Park	4/7/2020	2	Downstream	About 25 feet downstream of 522, just upstream of Burke-Gilman Trail	30	20	Boulders/cobble/gravel	2	1	Low	Blackberry, various shrubs	Stream between SR 522 and trail includes a flood control/sediment control structure on left bank; also, stream ha two notched weirs in main channel
Lyon Creek	Lake Forest Park	11/8/2019	1	Upstream	At upper end of restored reach	25	6	Gravel/sand/silt	1	<1	Low	Water parsley, small-fruited bulrush, not shrubs or trees	Riparian wetlands present on both sides of stream
Lyon Creek	Lake Forest Park	11/8/2019	2	Upstream	About 100 feet downstream of #1	20	8	Large gravel and cobble	1	<1	Low	Common rush, bulrush, willowa all too smal to provide shade	
Lyon Creek	Lake Forest Park	11/8/2019	3	Upstream	About 10 feet upstream of lower culvert over driveway entrance	30	10	Cobble/gravel	1	<1	Moderate	Scouler's willow, reed canarygrass, bulrush, and common rush	
Lyon Creek	Lake Forest Park	11/8/2019	4	Kenmore	In short section in front of Bank of America	15	10	Gravel/fines	1	1	Low	Emergents only	Isolated secton of Lyon Creek between driveways
Lyon Creek	Lake Forest Park	11/8/2019	5	Downstream	In channel between SR 522 and Burke-Gilman Trail	18.5	6	Gravel/cobble	2	<1	Low	Emergents only	Lyon Creek culverts in this area (including Town Center driveways and SR 522) are all fish passable
Cat Whisker Creek	Kenmore	9/27/2019	1	Downstream	At outlet culvert approx. 50 feet south of frontage road	18	16	Silt/gravel	2	1	Low	Blackberry, nightshade, butterfly bush	10-15 feet of buffer on either side then lawn associated with multifamily developments
Cat Whisker Creek	Kenmore	9/27/2019	2	Downstream	115 feet downstream of #1	14.5	12	Silt/cobble	2	<1	Low	Small-fruited bulrush, nightshade, landscaping	Remnant beaver dam slowing water velocities; about a 1 foot drop in water elevation, not a fish barrier
Cat Whisker Creek	Kenmore	9/27/2019	3	Downstream	500 downstream of #1 at property boundary	10	6	Gravel/cobble/sc me riprap	2	1	High	Willow, dogwood, nightshade, blackberry	Thick overhanging shrub vegetation
Cat Whisker Creek	Kenmore	9/27/2019	4	Downstream	About 30 feet downstream of SR 522 retaining wall (upstream of #1-3)	12	10	Cobble/boulders	2	<1	High	Bigleaf maple, cottonwood, red alder	Transect below plunge pool at outlet of culvert under SR 522. Pool about 20 feet wide and 2 feet deep; no LWD in stream; culvert outlet under SR 522 is a concrete box culvert approx. 4 feet wide and perched about 2 feet above the channel; A wier with another drop of about 1 foot is just upstream of the Burke-Gilman Trail. Stream flows into two 40-inch diameter pipes embedded in concrete wall as stream flows under 175th Street
Swamp Creek	Kenmore	11/8/2019	1	Downstream	About 300 downstream of SR 522	35	31	Silt/sand	1	2	Moderate	Doug Fir; hazelnut, bamboo,	
Swamp Creek	Kenmore	11/8/2019	2	Downstream	About 25 feet downstream of frontage road bridge	26	24	Gravel/cobble	1	2	Moderate	Similar to #1	
Swamp Creek	Kenmore	11/8/2019	3	Downstream	About 75 feet downstream of frontage road bridge	33.5	32	Gravel/cobble	1	2	Moderate	Similar to #1	Large gravel bar
SBO-1	Bothell	9/17/2019	1	Downstream	20 feet downstream of culvert outlet	4	4	Gravel/cobble	4	1	High	Cedar, salmonberry	Short stream reach (about 40 feet long total) starting below retaining wall that supports 522; old concrete weir just below culvert outlet, which is 18-inch diameter black PVC pipe

Bus Rapid Transit (BRT)

APPENDIX E

Great Blue Heron Draft Habitat Management Plan

SR 522 BUS RAPID TRANSIT KENMORE PARK AND RIDE

Kenmore Heron Rookery Draft Habitat Management Plan

Prepared for

Sound Transit

July 2019

SR 522 BUS RAPID TRANSIT KENMORE PARK AND RIDE

Kenmore Heron Rookery Draft Habitat Management Plan

Prepared for
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July 2019

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EXECUTIVE SUMMARY

Environmental Science Associates (ESA) prepared this Draft Habitat Management Plan (HMP) to assist Sound Transit with the planning of modifications to the existing Kenmore Park and Ride lot and the potential implementation of Transit-Oriented-Development (TOD) (residential and/or commercial mixed use). The potential modifications to the site involve three major components: (1) construct a 3-story 300-stall parking garage; (2) improve the roadway at two garage entrances; and (3) develop retail space on the bottom floor of the parking garage facing State Route 522 (SR 522) and/or high-density housing somewhere on the site. The park and ride lot is adjacent to a great blue heron rookery that is protected under the City of Kenmore's Critical Areas Ordinance (CAO). Under the CAO, a Habitat Management Plan is required for development within 656 feet of the heron rookery.

The Master Planning Study Area for the project is between 73rd Avenue NE to the west and SR 522 (also known as NE Bothell Way) to the south and encompasses three parcels in Kenmore, Washington. The existing park and ride lot is mostly used by commuters who access King County Metro and Sound Transit bus service on SR 522. The facility is typically filled to 90 percent capacity during the week (City of Kenmore 2015). The great blue heron rookery is in the Swamp Creek wetland area within 300 feet of the study area and within 500 feet of the location of the current concept for the new parking garage.

Great blue herons are a colonial breeding bird species vulnerable to human disturbance, predation, and competition for nesting habitat. Because herons are particularly sensitive to human disturbance during breeding, the Washington Department of Fish and Wildlife (WDFW) lists them as a priority species and provides management recommendations (Azerrad 2012). The purpose of the Kenmore Heron Rookery Habitat Management Plan is to identify the protection parameters and management considerations needed to comply with City of Kenmore regulations, Washington State guidance, and the scientific literature to ensure there are minimal impacts on the Kenmore heron rookery.

To prepare this HMP, ESA reviewed:

- Federal, state, and local laws, legislation, and guidelines for the protection of great blue herons.
- Previous analyses conducted on the Kenmore heron rookery.
- Recent literature on heron rookery management.

This informed the analysis of potential project effects and the recommendations for the project. These recommendations are:

- Avoid construction during the critical breeding period of January through August.
- Adjust parking garage location to farthest from the rookery as possible.
- Design parking structure to minimize the amount of light from cars that shines outside of the structure.
- Plant conifers adjacent to the new parking structure to screen light from cars during evening hours.
- Use temporary heavy plastic or canvas screening over parking garage opening facing toward the rookery for several years while conifers grow to a sufficient height to screen the structure.
- Enhance the wetland where the rookery is located by planting black cottonwood or other appropriate trees that can eventually serve as rookery nest sites.
- Work with WDFW and the City to confirm any mitigation measures that may be appropriate to allow construction to occur within the designated buffer during the nesting season.

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ACRONYMS AND ABBREVIATIONS

BRT	Bus Rapid Transit
CAO	Critical Areas Ordinance
dBA	A-weighted Decibels
ESA	Environmental Science Associates
FHWA	Federal Highway Administration
HMP	Habitat Management Plan
KMC	Kenmore Municipal Code
MBTA	Migratory Bird Treaty Act
Metro	King County Metro
NEPA	National Environmental Policy Act
PHS	Priority Habitats and Species
SEPA	State Environmental Policy Act
SR	State Route
TOD	Transit-Oriented-Development
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife

1.0 INTRODUCTION AND PURPOSE

Environmental Science Associates (ESA), at the request of Sound Transit, prepared this Kenmore Heron Rookery Draft Habitat Management Plan (HMP) to assist with the planning of potential modifications to the existing Kenmore Park and Ride lot and associated properties (also known as the "Master Planning Study Area" and hereafter known as the "study area"). The planning may include the implementation of a Transit-Oriented Development (TOD) of residential and/or commercial mixed-use, although this option is not yet clearly defined. The Kenmore Park-and-Ride Modifications and TOD project (project) is part of the Sound Transit State Route (SR) 522/NE 145th Street Bus Rapid Transit (BRT) project to provide "fast, frequent and reliable transit service" from the city of Shoreline to the city of Woodinville (Sound Transit 2019). The study area is in proximity to a great blue heron (*Ardea herodias*) rookery that is protected under the City of Kenmore's (City) Municipal Code (KMC) under the Shoreline Management Code (KMC Chapter 16.05) and Critical Areas Ordinance (CAO) (KMC Chapter 18.55). Under the CAO, an HMP is required for development within 656 feet of the Kenmore heron rookery (Kenmore rookery). The HMP must summarize the potential effects of the proposed project on the rookery and demonstrate adherence to the City's CAO.

Great blue herons (herons) are a colonial breeding bird species vulnerable to human disturbance, predation, and competition for nesting habitat. Because herons are particularly sensitive to human disturbance during breeding, the Washington Department of Fish and Wildlife (WDFW) lists them as a priority species and provides management recommendations for the species (Azerrad 2012). Herons also are protected under the federal Migratory Bird Treaty Act (MBTA).

The herons of the Kenmore rookery appear to be adapted to the current level of human activity associated with the park and ride lot. Typically, peak human activity is associated with the workday commute in the early morning and early evening. Outside of those times, there is not much human activity at the lot. While the literature provides some guidance regarding buffer widths from new noise or development, it does not specifically address adding a new vertical element (parking garage or other buildings) within an established development footprint where current activity is at ground level.

The purpose of the Kenmore Heron Rookery Draft HMP is to outline the protection needs and management requirements to sustain and continue the herons' successful use of the Kenmore rookery and associated habitat. Management plans for herons, as outlined in the WDFW Management Recommendations, typically include a description of "active or historical nesting sites, pre-nesting congregation areas, and potential foraging sites; past, present, and future land uses; habitat features and processes potentially impacted by the proposal; habitat enhancement or mitigation measures, including quantitative goals and objectives (if needed); objectives that carefully balance the needs of the species with that of the landowner; implementation plan with maps, as-built drawings, and operation and maintenance plan; specific prescriptions and project timing

to best meet the species' needs and to promote the health of their habitat; a schedule for periodic monitoring, and a contingency plan with corrective actions if conservation or mitigation actions do not lead to a desired outcome" (Azerrad 2012).

The Kenmore Heron Rookery Draft HMP consists of the following components:

- Site Description and Land Use
- Project Proposal
- Regulatory Context
- Site History and Previous Analyses
- Field Assessment Results (including study area and land use description)
- Literature Review
- Analysis of Potential Project Effects
- Recommendations (including habitat protection, disturbance reduction, and monitoring)

The project will not directly affect the rookery or its buffer. The issues of concern are potential noise and visual disturbances from construction and operation of the facility. No habitat will be removed or modified from project construction, which would occur within the boundaries of an existing park and ride lot. Thus, the recommendations for the HMP concentrate on these potential disturbance vectors.

2.0 SITE DESCRIPTION AND LAND USE

The study area is adjacent to 73rd Avenue NE to the west and SR 522 (also known as NE Bothell Way) to the south and encompasses three parcels, approximately 8 acres (Figure 1). King County owns the east parcel (Tax Parcel #0114100920) in the proposed Master Planning Study Area, and St. Vincent de Paul owns the two west parcels (Tax Parcel #0114100940 and #0114100945) (King County 2019a). Sound Transit has the opportunity to purchase the latter two parcels. The study area currently houses 603 parking spaces on approximately 7 acres that are located on parcels #0114100920 and #0114100940 (King County 2019b). The park and ride lot is mostly used by commuters who access King County Metro (Metro) and Sound Transit bus service on SR 522 (King County 2019b). Bus service for the study area includes Sound Transit route 522 and Metro routes 234, 243, 244, 309, 312, 331, 342, and 372 (King County 2019b). The park and ride lot is typically filled to 90 percent capacity during the week (City of Kenmore 2015).

The Kenmore heron rookery is north of the study area and east of the Columbia Crest Montessori School and Mary's Place group care home parking lots. The rookery is within 300 feet of the study area and 500 feet of the location of the current conceptual parking garage. The rookery is in the Swamp Creek wetland area and is surrounded by dense forested and scrub-shrub wetland vegetation encompassing at least 100 acres. Dense wetland vegetation extends more than 900 feet north, 600 feet east, and 300 feet south of the rookery, and only about 50 feet of vegetation separates the rookery from the north access road to the park and ride lot. The fenced wetland boundary extends to the edge of the existing park and ride lot and access road, adjacent to the study area and approximately 175 feet northeast of the parking garage conceptual layout. No vegetated wetland buffer is present between the existing park and ride lot and the wetland boundary (Adolfson Associates 2003).

In the 2015 Comprehensive Plan, the City rezoned the study area to allow housing development, with a requirement that 25 percent of the area address affordable housing needs (City of Kenmore 2015). The current zoning for the east King County parcel is Public/Semi-Public, while the zoning for the west two St. Vincent de Paul parcels is Downtown Commercial (City of Kenmore 2015).

3.0 PROJECT PROPOSAL

The Kenmore Park-and-Ride Modifications and TOD project is currently in Phase 1. Table 1 summarizes the phasing and workflow elements for the project. The proposed modifications under the Master Planning process involve three major components: (1) construction of a 3-story 300-stall parking garage; (2) roadway improvements at two garage entrances; and (3) potential development of retail space on the bottom floor of the parking garage as required per the City's planning code or possibly residential uses on site. The planning concept includes an option for residential housing on the site, but this concept is not yet developed.

TABLE 1
SUMMARY OF KENMORE PARK AND RIDE AND POTENTIAL TRANSIT ORIENTED DEVELOPMENT (TOD) WORKFLOW

Phasing	Highlights	Time Period
Phase 1		
Project Refinements	Phase 1 includes creating a parking garage conceptual layout and baseline assumptions, a site map of the Master Planning Study Area at the park and ride lot (Figure 2), and TOD planning workflow.	2018–May 2019
Phase 2		
Community Engagement and TOD Feasibility and Master Planning	Phase 2 involves TOD feasibility and Master Planning. Sound Transit plans to establish the vision and goals for the project, set components of the Master Planning Study Area, and establish zones of responsibilities.	May 2019–October 2019
Environmental Work and TOD Concepts	The second part of Phase 2 includes environmental review for the site, establishing a baseline TOD, and exploring advance TOD concepts.	October 2019–April 2020
Phase 3		
Project Engineering	Sound Transit will create design plans, advance the TOD concept, and establish agreements on the plans for implementation.	April 2020–2021
Construction	The park and ride garage and TOD will be constructed.	2022–2023
TOD and BRT Open	The Kenmore Park and Ride and potential TOD open to the public.	2024

Under Phase 1, the parking garage conceptual layout, site map of the study area, and TOD planning workflow are being developed (Figure 2). The parking garage conceptual layout currently identifies the garage within 500 feet of the heron rookery.

4.0 REGULATORY CONTEXT

Federal, state, and local laws, legislation, and guidelines provide regulatory guidance for the protection of great blue herons.

4.1 Federal Regulatory Requirements

Great blue herons are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code [U.S.C.] 703-712). The MBTA prohibits the "taking" (defined as to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect) of any MBTA-protected bird, including great blue heron. MBTA provisions permit certain activities, such as hunting and possession of eggs or parts for scientific or educational purposes only. The U.S. Fish and Wildlife Service (USFWS) requires a federal permit anytime an individual or project plans to destroy eggs or nests or plans to capture, relocate, disturb, or kill great blue herons. This permit is typically granted only when extreme damage occurs and only after all other non-lethal control techniques have proven to be unsuccessful.

4.2 State Regulatory Requirements

The great blue heron is recognized as a WDFW priority species, and heron colonies are considered priority habitats (WDFW 2008). Great blue heron habitat management recommendations are provided in *Management Recommendations for Washington's Priority Habitats and Species: Great Blue Heron* (Azerrad 2012). WDFW identifies the breeding season for herons as between mid-February and the end of August; therefore, the non-breeding season is September through mid-February (Azerrad 2012).

WDFW recommends a 656-foot distance buffer for noise generation that results in a 92 A-weighted decibel (dBA) level measured at the outer edge of heron rookeries. A 1,320-foot buffer is recommended for extremely loud construction, such as blasting (Azerrad 2012; Figure 2). The management recommendations carry no statutory authority, but WDFW strongly encourages jurisdictions and project proponents to follow these and will provide related official comments during a project's State Environmental Policy Act (SEPA) or National Environmental Policy Act (NEPA) processes. Sound Transit is in discussion with WDFW regarding any mitigation measures that may be possible during construction to address indirect effects (noise disturbance). This discussion is occurring under WDFW's delegated authority from USFWS under the federal MBTA.

4.3 Local Regulatory Requirements

The project area is located in the City of Kenmore, and their local regulations are applicable during site development. The mainstem of Swamp Creek is a "shoreline of the

State," and the Swamp Creek wetlands are associated wetlands; therefore, the heron rookery falls under shoreline jurisdiction. The City of Kenmore's shoreline regulations defer to the CAO to regulate Fish and Wildlife Habitats of Importance (KMC 18.55.500). The heron rookery adjacent to the park and ride lot requires a 656-foot buffer measured from the outermost nest tree in the active rookery, excluding the SR 522 right-of-way and 73rd Avenue SE right-of-way. The City currently does not allow clearing, grading, or land-disturbing activities within the 656-foot buffer during the heron breeding season (January 1 to July 31). WDFW recommendations identify the breeding season as mid-February through August.

The City recently updated its CAO to reduce the disturbance buffer around the park and ride rookery from 900 feet to 656 feet (Shannon and Wilson 2018). This change reflects the 656-foot buffer width that WDFW recommends for suburban/rural areas, which was deemed more appropriate considering the surrounding land use compared to 900 feet commonly applied for undeveloped areas.

5.0 SITE HISTORY

According to WDFW Priority Habitats and Species (PHS) database, the Kenmore heron rookery is the only heron rookery in Kenmore. WDFW has monitored the rookery since its establishment in 1990, with active nest counts ranging from 24 to 66 (WDFW 2008). The heron rookery was established in the Swamp Creek wetlands after the park and ride lot was built (City of Kenmore 2015).

5.1 Previous Analyses

King County completed a redevelopment project in 2004 to expand the park and ride facility by 225 parking spaces within Parcel #0114100940 (Adolfson Associates 2003; Figure 2). Prior to the redevelopment, several large metal sheds used by St. Vincent de Paul were present on the property. King County's environmental review of the potential effects of the redevelopment project are documented in the *Potential Impacts on Kenmore Great Blue Heron Colony from Proposed Kenmore Park and Ride Expansion* report (KCDOT 2002).

In June 2002, SHAPIRO conducted a nest count for the proposed King County expansion at the park and ride facility and observed 25 active nests (2002). Nests were located in dead and dying red alder (*Alnus rubra*) and black cottonwood (*Populus balsamifera*) trees (SHAPIRO 2002). The herons were observed leaving and arriving the rookery from the south and west, indicating that they were likely foraging along the shorelines of Lake Washington and the Sammamish River (SHAPIRO 2002). The review suggested that the success of the rookery in a high disturbance area may be due to the screening effect of the surrounding wetland vegetation (SHAPIRO 2002). Potential impacts presented in the review included indirect effects from construction noise during the breeding season, but no significant, long-term impacts were expected (SHAPIRO 2002). Mitigation measures, including restricting construction during the nesting season and planting a native vegetation buffer along the northeast corner of the park and ride facility to provide vegetative screening, were recommended.

In April 2003, Adolfson Associates conducted a site visit at the park and ride lot and observed herons engaging in nesting activity during rush hour traffic (Adolfson Associates 2003). These results suggested that nesting birds appear to be habituated to bus and car activities in the existing park and ride lot. During the site visit, nesting herons were observed using tall conifers overhanging the park and ride lot for perching and obtaining nesting material (Adolfson Associates 2003).

Two more observations were conducted to assess the impact of increased bus traffic passing the rookery along the north access road (NWC 2003, 2004). The field surveys to test and monitor potential disturbance responses to increased bus traffic during the breeding season showed no disturbance to breeding birds (NWC 2003, 2004). These

results indicated that there was no need to implement noise-related mitigation measures as the herons were acclimated to the noise levels and movements (NWC 2004). In April 2004, approximately 49 nests were active; however, many nests were lost in a May 2004 wind event; about 25 active nests remained (D. Norman, email communication, May 28, 2004).

5.2 Nesting Chronology

Table 2 proves summary breeding period information for general heron rookeries from Puget Sound and British Columbia.

TABLE 2
WDFW GREAT BLUE HERON CHRONOLOGY

January–February	February–April	April–May	June	July–August	August	September–December
Variable period	Variable period	28 days	28 days	28 days	Variable period	Variable period
Non-breeding season	Pre-courtship, pre-nesting, and courtship	Egg laying and incubation	Hatching and brooding, rearing	Rearing large active young	Fledging and dispersal from rookery	Non-breeding season

Source: Butler 1991, 1997; Eissinger 1996, 2007.

The chronology of the Kenmore heron rookery is generally established. The monitoring report from 2004 states that the rookery exhibits earlier-than-usual occupancy (NWC 2004). In 2000, the summary in the report indicates that nest construction and incubation began on February 12, and in 2001, incubation began on February 19. Nests were active on June 17 during a 2002 site visit (SHAPIRO 2002). In 2004, incubation was observed in two nests during a site visit on February 16. During pre-construction baseline nest monitoring in 2004, the nesting season began around January 10 (NWC 2004).

Based on this information, the City of Kenmore considers the rookery to be active from January 1 through July, which provides a buffer to deal with the uncertainty of when nesting begins and ends.

6.0 FIELD ASSESSMENT RESULTS

On May 14, 2019, ESA ecologist, Amanda Brophy, and senior ecologist, Jim Keany, visited the Kenmore park and ride and heron rookery. Ecologists arrived on site at 0900 and made observations until 1030. Because the nesting season is underway, the exact rookery boundary was not mapped but its distance was approximated from the park and ride.

The Swamp Creek associated wetland the rookery resides in is a Category II wetland that is classified as palustrine forested (USFWS 2019). Approximately 55 active nests were observed within a tree stand about 300 feet north of the study area. The rookery was observed from multiple locations: 550 feet south, 800 feet south, and 60 feet southwest of the rookery (Figure 3 and Photos 1–6). The nests are between 80 and 100 feet above the ground in a stand of large black cottonwood trees and a few small red alder trees. Approximately 15 to 20 nests were observed in one large black cottonwood tree. Many of the nest trees appeared to be dying.

During the May 2019 site visit, the nests at the Kenmore rookery were in the hatching and rearing phase of the breeding season, and multiple nestlings were observed. The birds were not seen leaving or entering the rookery during observations and were not disturbed by our presence within 60 feet of the rookery.

Light traffic was observed in the park and ride lot and associated access road during the site visit, with constant traffic along SR 522 and 73rd Avenue NE. Nesting birds appeared to be habituated to bus and car activities in the existing park and ride lot.

7.0 LITERATURE REVIEW

A literature review was conducted to assess how herons may react to construction and operation of the proposed project based on applicable science. ESA reviewed peer-reviewed journal articles, data summaries, and gray literature. The results of this review are summarized below.

Mature forest free of human disturbance is ideal nesting habitat for herons; however, some nesting occurs in areas of persistent human activity, for instance at the Kenmore heron rookery or at the Ballard Locks in Seattle (Vennesland and Norman 2006). Great blue heron response to human disturbance varies depending on several factors: the region, degree of habituation to local disturbance, rookery size, nesting stage, habitat type surrounding the rookery, and type of disturbance (Vennesland and Butler 2004; Vennesland 2010). Sensitivity to disturbance decreases as the nesting period progresses (Vennesland 2010). The herons' reactions to disturbance also vary in sensitivity, ranging from flushing behavior, where the bird ultimately returns to the nest, to nest abandonment (Vennesland 2010). However, the herons' threshold for disturbance is unknown (A. Eissinger, personal communication, May 23, 2019).

According to WDFW, "new activities should not add to the intensity of disturbance a rookery has historically tolerated and adapted to." Increased intensity could occur if a new activity is planned to be located closer to the rookery than that of existing activities and/or when the scale of the proposed activity is greater than existing activities located the same distance from the rookery (Azerrad 2012). Examples include planning a development closer to a rookery than currently exists, planning a larger-than-existing development in the same location as historic development, upzoning, or converting to a more intensive land use practice (Azerrad 2012).

Some heron colonies, such as the Kenmore heron rookery, can tolerate moderate levels of human activity. A number of these rookeries occur in urban areas throughout the Puget Sound region; however, herons will abandon their nests if they perceive a threat, such as human disturbance, bald eagle invasions and predation, food limitation, weather, or other unaccounted for disturbance vectors (Butler 1995; Eissinger 2000; Gebauer and Moul, 2001; Vennesland and Butler 2004). Although the herons' threshold for a human disturbance threat is generally not very well understood, in some circumstances nesting attempts have been abandoned because of actions as benign as pedestrians walking past colonies (Vennesland and Butler 2004).

Another important consideration is planning for and considering heron flyways during the design and construction of the developments (Eissinger 2007). During the breeding season, herons use feeding flyways up to hundreds of flights per hour, particularly while rearing young (A. Eissinger, personal communication, May 23, 2019). Constructing new buildings close to a rookery may cause herons to alter flight patterns, and they may be disturbed by a new vertical intrusion.

Birds nesting in large rookeries and those accustomed to a certain amount of disturbance are less likely to desert a rookery (Taylor et al. 1981). Herons are particularly sensitive to human activity and development during breeding; maintenance of trees and shrubs around a rookery provides a screen and buffer that reduces the disturbance risk (Vermont Fish and Wildlife Department 2002).

Overall, best available science recommends not conducting construction activities during the nesting season. Certain activities, specifically clearing vegetation, grading, and construction, should occur as far away as possible from the rookery year-round for the greatest protection (Azerrad 2012). WDFW recommends a year-round 197-foot buffer in urban settings (Azerrad 2012). Together, the rookery nesting area and year-round buffer area create the "core zone." If it is not feasible to situate the project-related activities outside of the core zone, the development should be located where the nests will be visually screened as this helps minimize disturbance by removing visual cues. Activities occurring between the outer edge of the core zone and breeding season buffer (also known as "seasonal buffer") should be out of the rookery's line of sight. Screening trees should be as tall as the rookery's tallest nesting trees. If the project enters the core zone, mitigation should occur (Azerrad 2012).

8.0 ANALYSIS OF POTENTIAL PROJECT EFFECTS

8.1 Potential Effects from Construction

Construction of the parking garage where conceptually located would occur approximately 500 feet southwest of the heron rookery and would not result in direct effects on heron habitat. Indirect effects from construction work could affect the rookery if construction occurs during the breeding season. Construction noise effects during the breeding season pose a risk of nest abandonment. The planned parking garage is about 500 feet from the rookery. WDFW guidelines recommend that no loud construction occur within 656 feet of a rookery, and this recommendation has been adopted into the City's existing CAO.

The WDFW guidelines recommend a buffer of 1,320 feet for "unusually loud activities like blasting," further defined as those activities that generate sounds exceeding 92 dB at the outer boundary of a rookery.

Construction of the parking garage could include the use of pile driving or similar impact equipment that generates loud noise. Based on modeling using the Federal Highway Administration (FHWA) *Construction Noise Handbook* (FHWA 2017), standard construction noise would generate a maximum 89.5 dBA 50 feet from the source and attenuate to about 69.5 dBA at the edge of the rookery. Impact driving equipment would generate a maximum 95 dBA 50 feet from the source and attenuate to 75 dBA at the edge of the rookery.

Depending on the final design location of the parking garage, construction could be in the direct line-of-sight to the rookery, which may cause some visual disturbance along with the corresponding noise disturbance. The combination of noise and visual disturbances could disrupt nesting behavior of the nearby herons.

8.2 Potential Effects from Facility Operations

Operation of a residential or retail TOD would increase human use of the area, which could cause indirect effects on the rookery. The rookery appears habituated to the current level of activity when, for most of the day, the park and ride lot is relatively inactive. The addition of commercial and residential buildings would increase the vertical structure of the site and the corresponding human activity outside of the current morning and evening activity peaks. It is difficult to predict what effect this may have on the herons. This type of disturbance poses a potential risk to the rookery. Only a handful of nesting trees are available for the herons. The herons would not be able to shift away from new disturbances to another part of the wetland because of a lack of suitable

alternative nest trees within the surrounding wetland. Thus, additional disturbances during the breeding season risk causing the herons to abandon the rookery or disrupt successfully breeding.

The addition of a parking garage would add a new vertical structure and potential disturbance vector at “eye-level” to the rookery. Car headlights at night shining out of the garage toward the rookery would represent a new visual disturbance vector at about the height of the rookery nests, which has the potential to affect the breeding herons. In one documented instance, increased light near a rookery resulted in abandonment (Eissinger 2007). There are other noises associated with the operation of the facility including from vehicles and people, but these elements are already present and the herons appear to be habituated to these noise factors.

9.0 MANAGEMENT RECOMMENDATIONS

The herons at the Kenmore rookery appear to be adapted to the current level of vehicle traffic and human activity. Construction of a new parking garage has a potential of disturbing the breeding birds if conducted during the nesting season. Potential construction of TOD elements at the site also poses a similar risk to the nesting birds.

The literature provides strong evidence that new noises and visual disturbances can significantly affect nesting herons. But there is not clear guidance on how nesting herons perceive new vertical structures adjacent to rookeries. Therefore, some caution should be used in planning and constructing the proposed project. Management recommendations for project construction and operation are provided below.

9.1 Construction Timing and Buffers

Construction would cause noise and visual effects that may disturb the herons and potentially may affect breeding success in the rookery. Seasonal buffers from the WDFW management recommendations are up to 1,320 feet if extremely loud activities are planned. The current location of the planned parking garage is about 500 feet from the rookery; thus, construction should not occur during the heron breeding season, which is from January through August, which addresses Kenmore's CAO requirements (January – July) and WDFW recommendations (mid-February – September).

The current concept places the parking garage within view of the rookery (Figure 4). Moving the garage to the west would provide some screening of construction due to existing vegetation. Sound Transit should review options for design alternatives to the extent possible.

Construction of TOD elements would add additional potential noise and visual disturbance vectors. No plans are available at this time; thus, further analysis of potential effects is not possible. Sound Transit is in discussion with WDFW on the potential benefits of some type of incidental take authorization, which could possibly include mitigation measures allowing construction to occur within the nesting season, within the seasonal nesting buffer.

9.2 Facility Operation

The addition of the parking garage would add a new vertical element to the park and ride facility. The St. Vincent de Paul building, a one-story structure, is located on parcel #0114100945 in the western edge of the study area (Figure 4). Herons are habituated to the current configuration of buildings and the level of traffic and human activity, which currently is all at ground level. A 7-foot-high chain link fence is present on the perimeter of the of the wetland where the rookery occurs, separating it from the park and ride lot.

The presence of a new three-story building, and particularly facility lighting and vehicle lights at the height of the nests, represents a new potential disturbance vector.

Conifers should be planted on the north and east sides of the parking garage (in the current design location) to screen the structure and reduce potential light effects. The garage should be designed in a manner to reduce light "bleeding" outside of the structure to the extent possible. One concern, however, is that even with planting large saplings, it will take several years for conifer trees to fully screen the parking garage. In conversations with WDFW staff, they suggested using some type of temporary screening such as heavy construction drapes over the garage openings for several years to block light emanating from the garage (Anderson, C. personal communication 2019). This would provide time for the conifers to grow and screen the facility. In addition, design elements of the parking garage could aid in blocking light from shining outside of the facility.

Adding residential buildings to the site, depending on the location and density, may pose an increased disturbance risk beyond the current level. The herons are habituated to the current level of activity, and it is difficult to assess the risk of increased disturbance without definitive plans. All current activity is at the ground level, and adding buildings may provide line-of-sight changes that could affect heron flight lines or provide a new element of potential disturbance. The literature is not clear on how herons may react to such a new vertical element. In general, new buildings are assumed to have a greater effect the closer they are to a rookery.

If the proposed parking garage incorporates residential housing, the increased frequency of human presence in the area may affect the rookery. At this time, it is not possible to fully assess these potential effects as there are no definitive plans for building location, height, and density of use.

9.3 Potential Restoration and Enhancement

Nesting habitat and buffer at the Kenmore heron rookery are limited due to the surrounding development and lack of large potential nest trees within the wetland surrounding the rookery. The ammonia in avian guano is detrimental to tree leaves, and herons also pull small branches and leaves for nesting material, which often leads to the death of the nesting tree. With only a handful of tall trees available, the herons are unable to move to another part of the wetland for nesting. Wetland enhancement is recommended within the Swamp Creek wetland, including planting trees within the core zone to provide future nesting areas.

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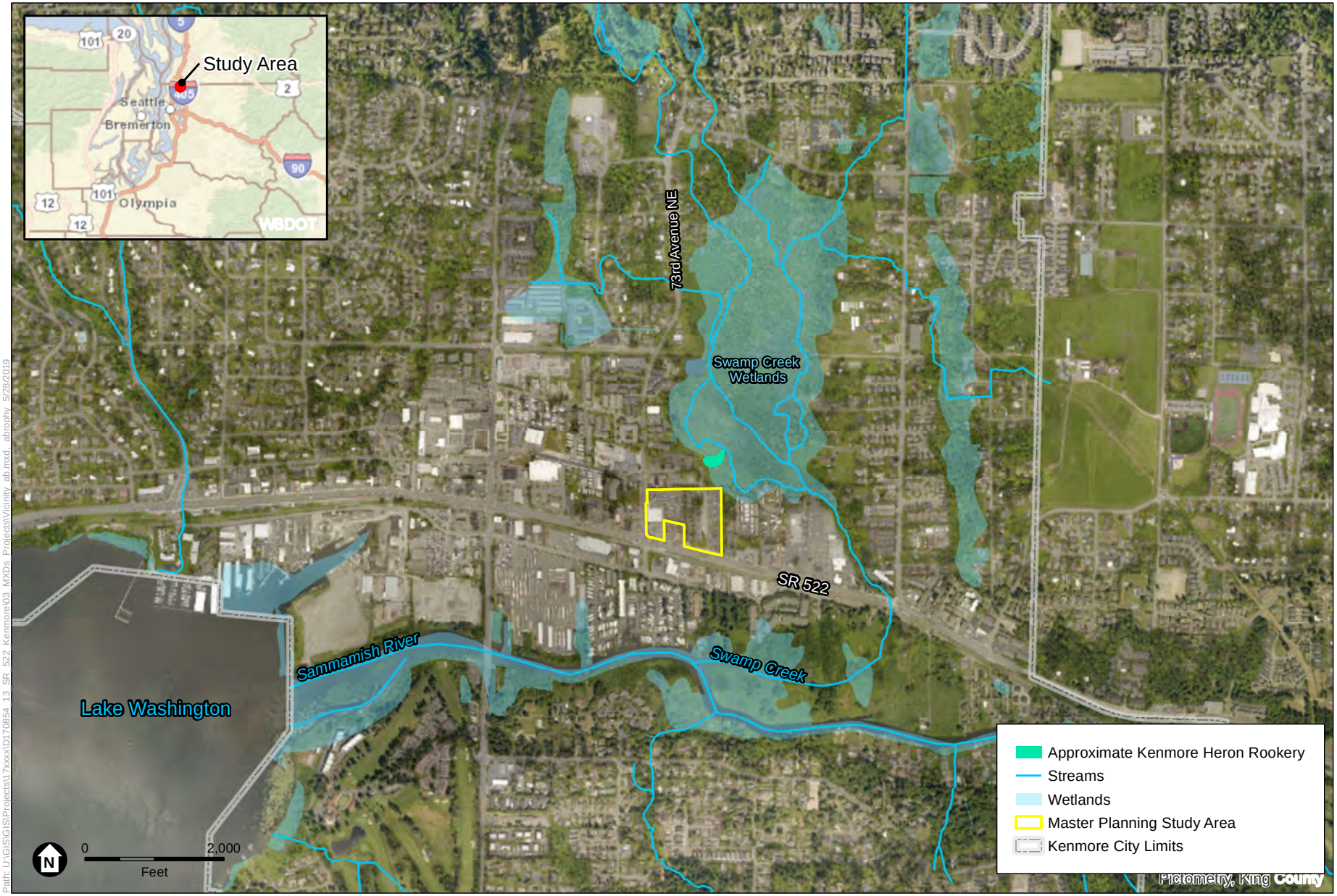
Figures



SOURCE: City of Kenmore 2019; ESA, 2019; King County 2017; WSDOT 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Figure 1
Master Planning Study Area Vicinity
Kenmore, Washington

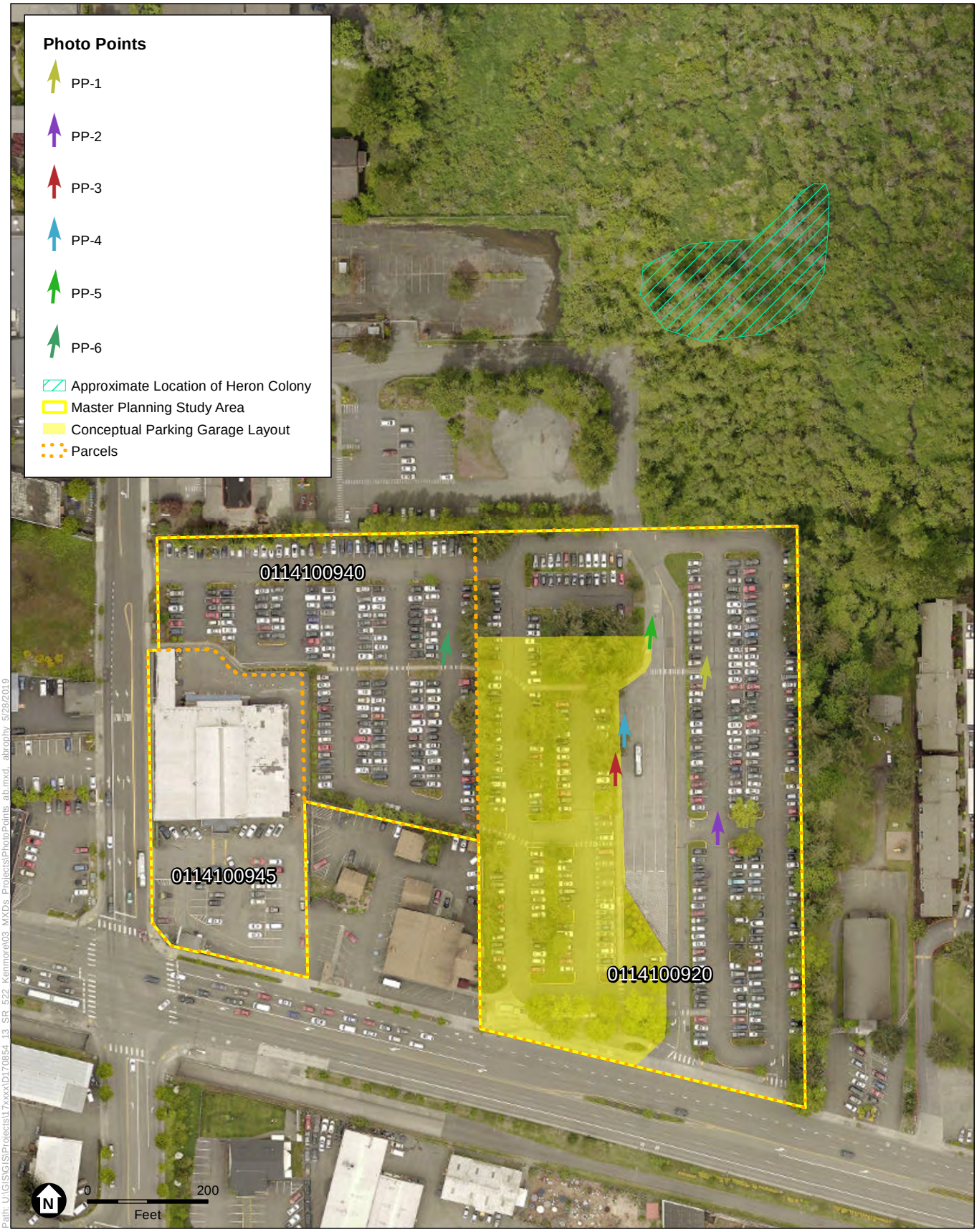
ESA

SOURCE: ESA 2019; King County 2017; Sound Transit 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Figure 2
Kenmore Heron Rookery Buffers
Kenmore, Washington

ESA

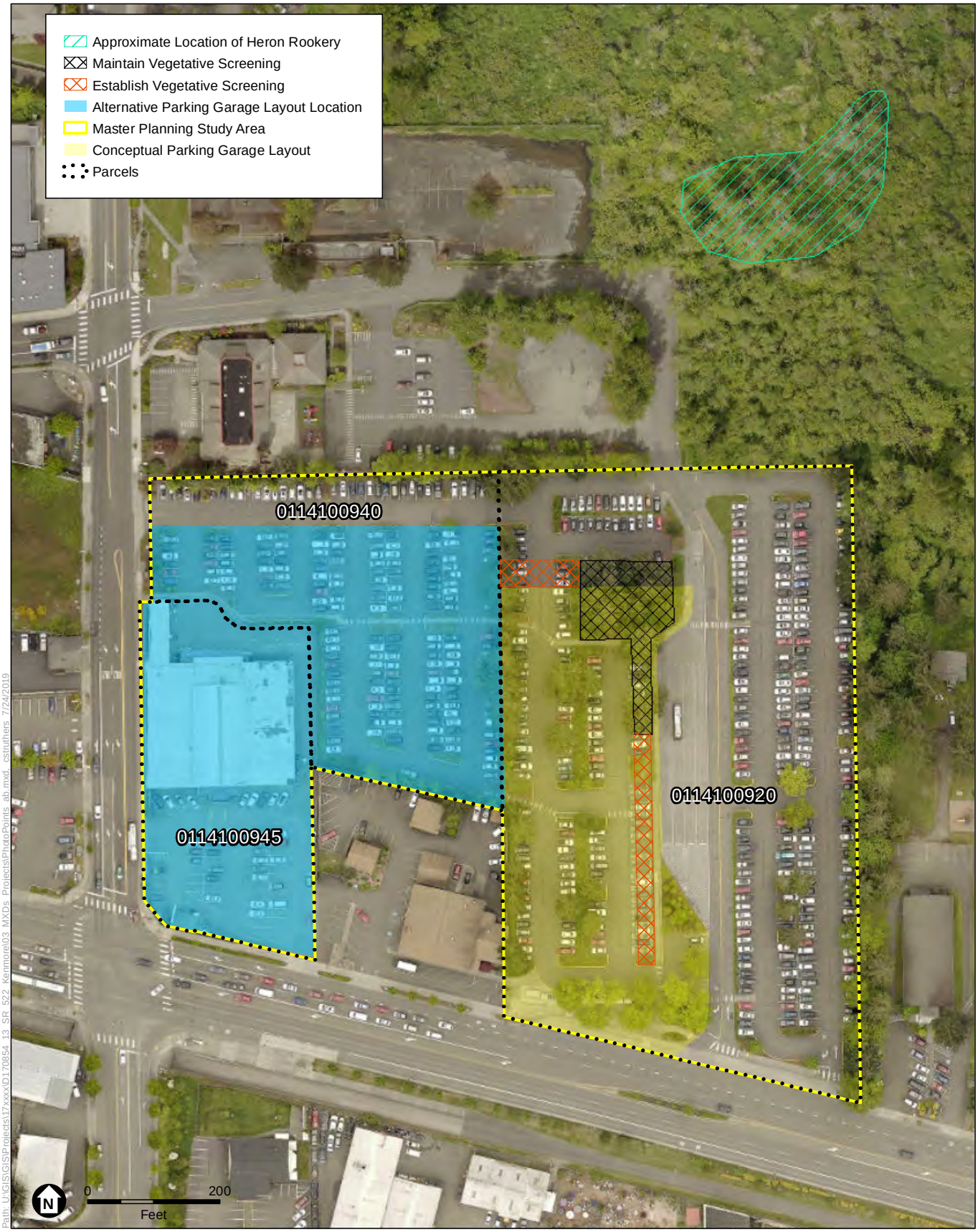


SOURCE: ESA 2019; King County 2017; Sound Transit 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Figure 3
Master Planning Study Area Photo Points
Kenmore, Washington

ESA



SOURCE: ESA 2019; King County 2017; Sound Transit 2019

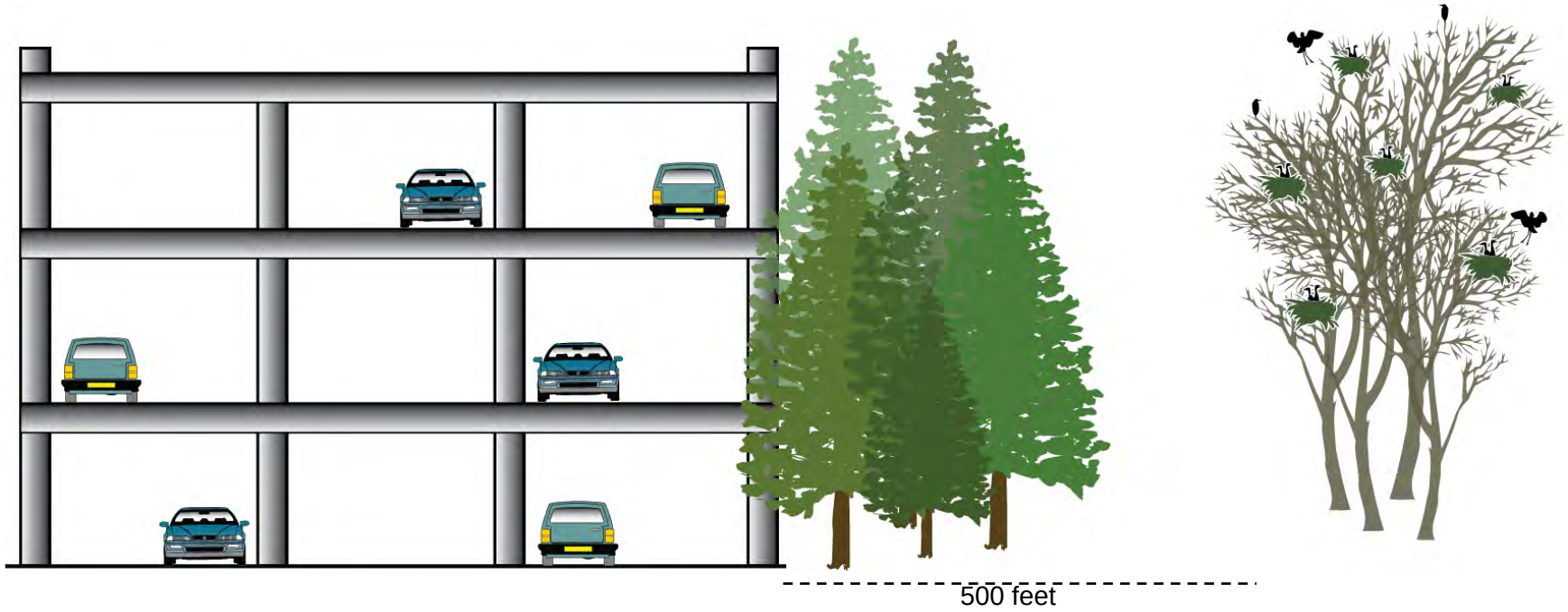
SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Figure 4

Conceptual Parking Garage Layout Recommendations - Vegetative Screening or Relocation
Kenmore, Washington

ESA

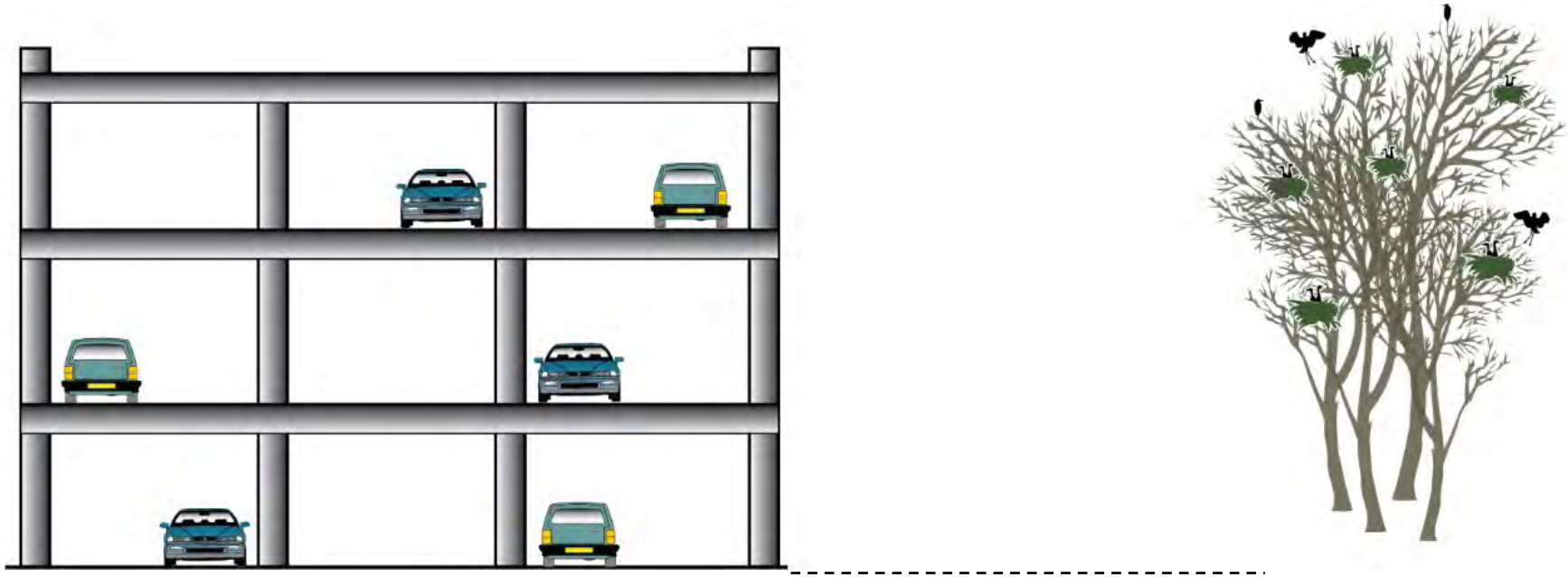
Graphics



SOURCE: ESA 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Graphic 1
Conceptual Layout of Parking Garage with Vegetative Screening between the Parking Garage and Heron Rookery



SOURCE: ESA 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Graphic 2
Conceptual Layout of Parking Garage without Vegetative Screening between the Parking Garage and Heron Rookery

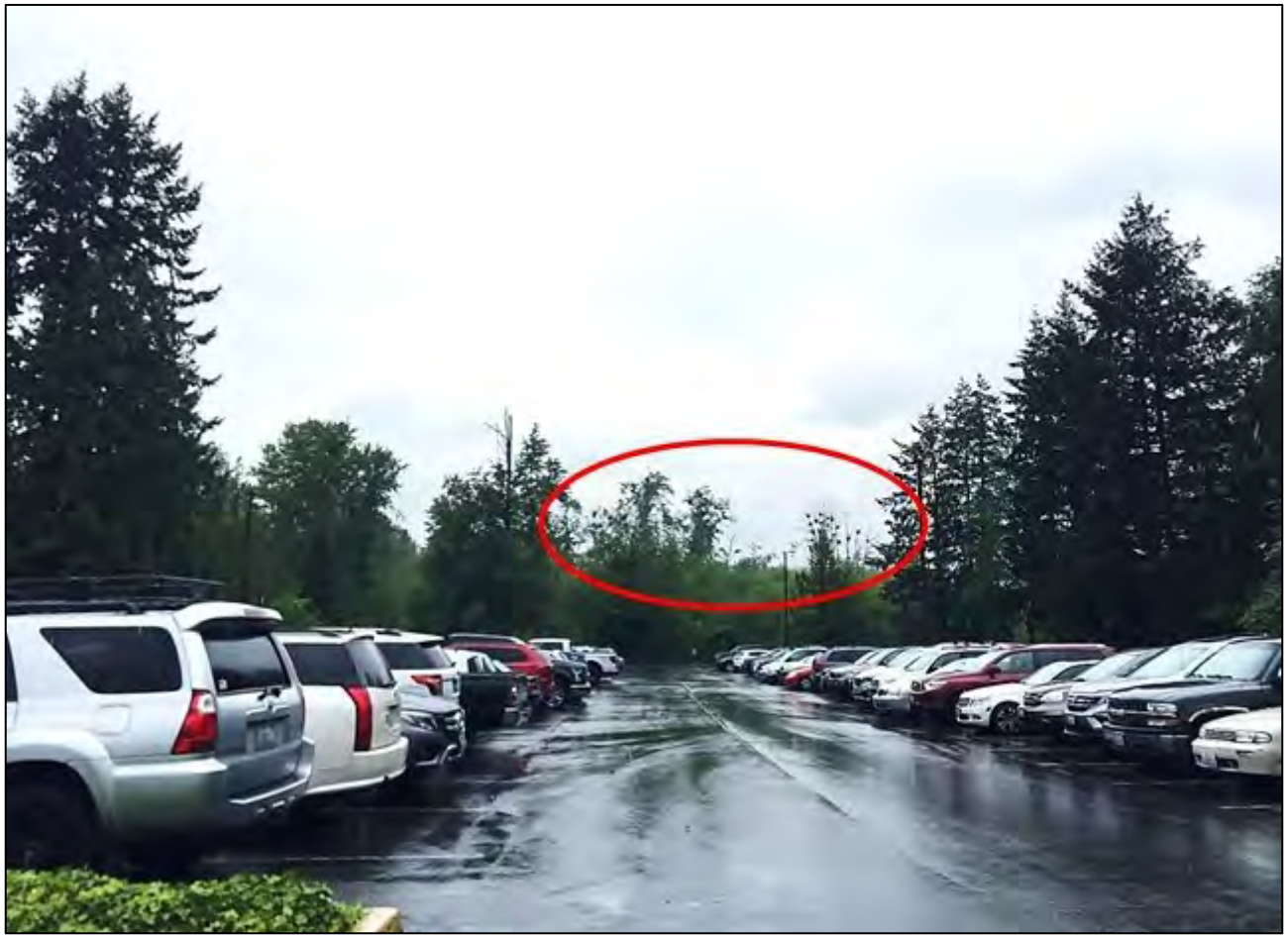
Photo Points

SOURCE: ESA 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Photo Point 1

Red circle identifies the rookery looking north from the east side of the existing Kenmore park and ride lot

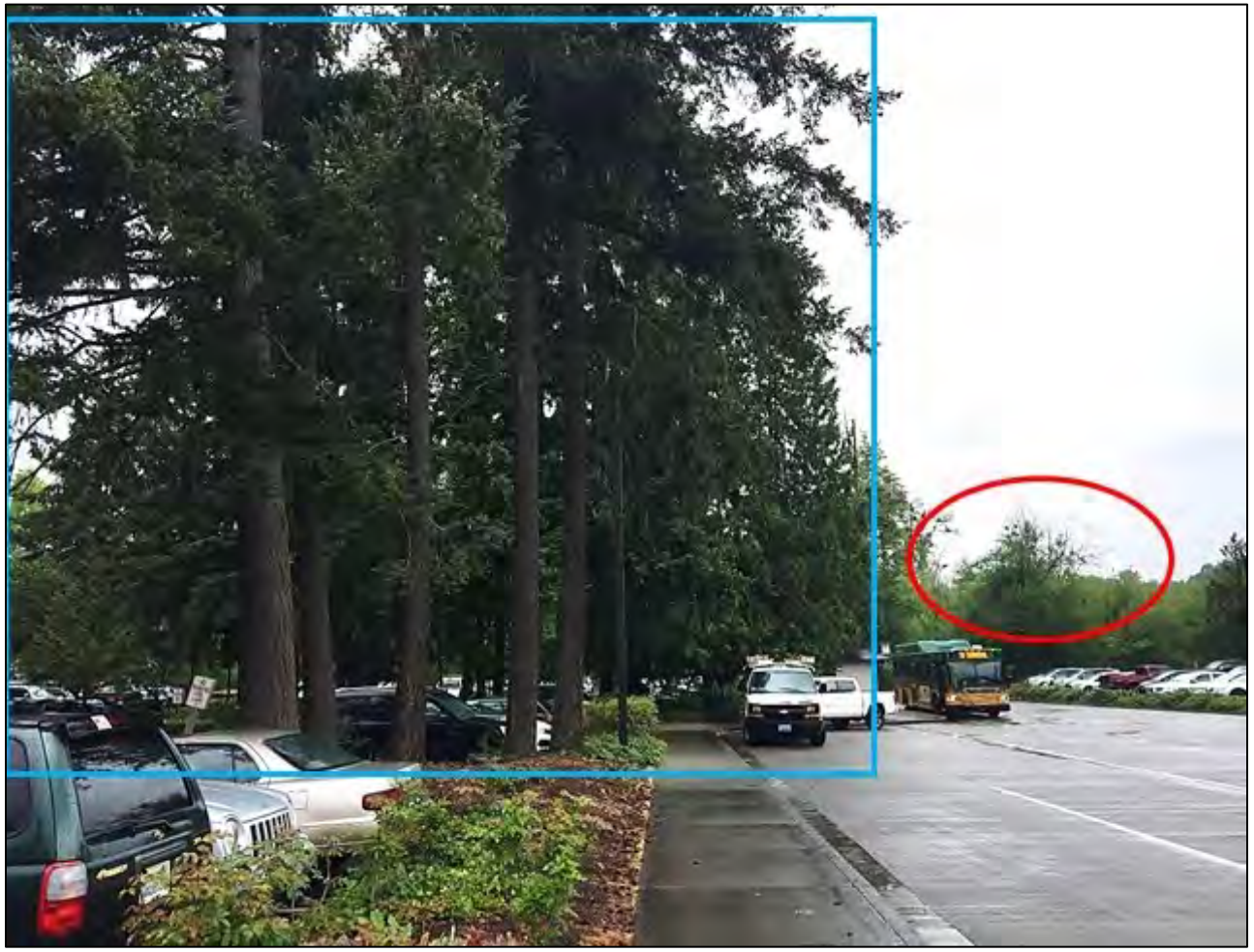


SOURCE: ESA 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Photo Point 2

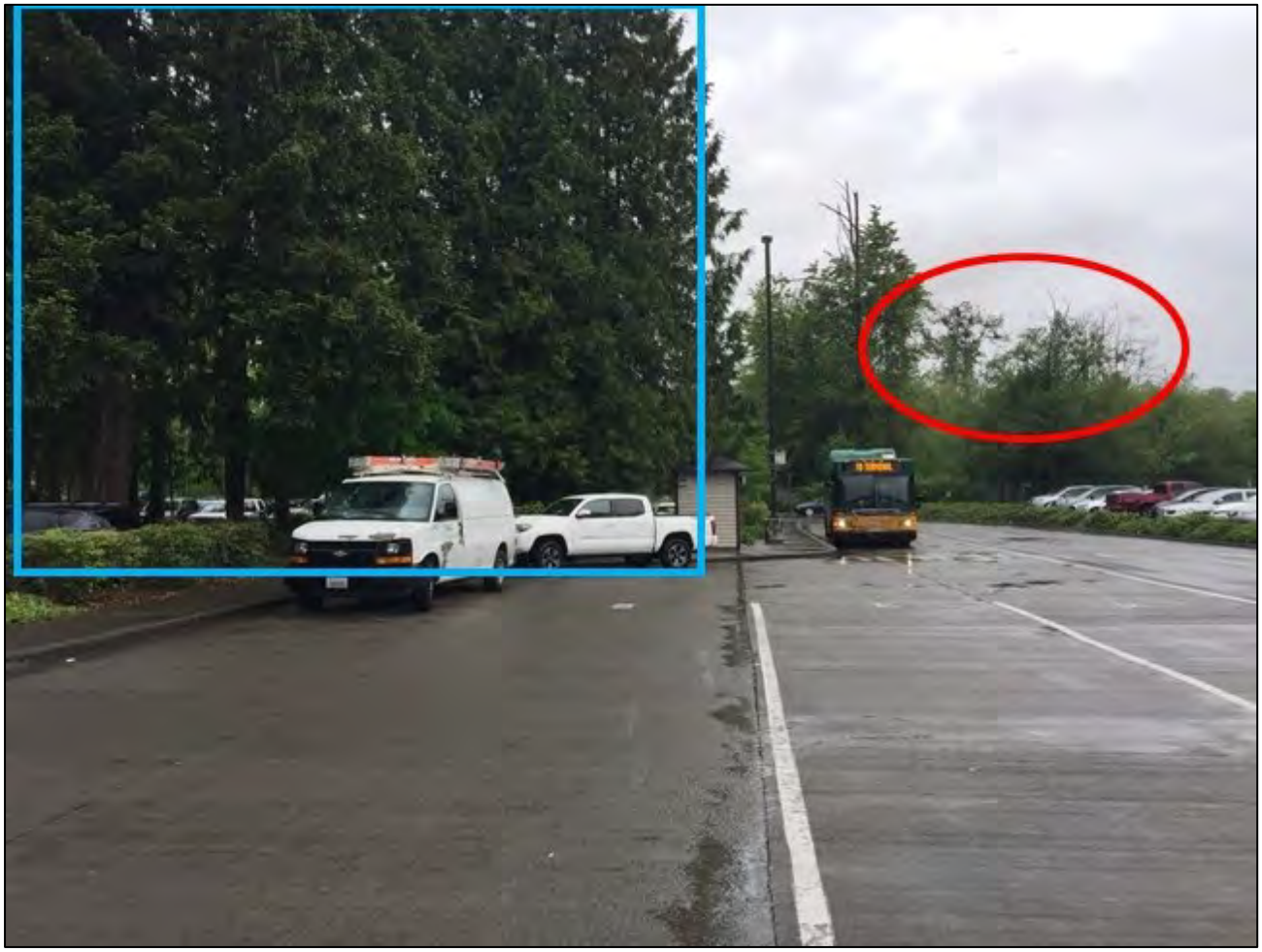
Red circle identifies the rookery looking north from the east side of the existing Kenmore park and ride lot



SOURCE: ESA 2019 SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Photo Point 3

Red circle identifies the rookery looking north along the east side of the conceptual parking garage layout, and blue box identifies vegetation to be maintained



SOURCE: ESA 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Photo Point 4

Red circle identifies the rookery looking north along the east side of the conceptual parking garage layout, and blue box identifies vegetation to be maintained

SOURCE: ESA 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Photo Point 5

Red circle identifies the rookery looking north from the northeast corner of the conceptual parking garage layout

SOURCE: ESA 2019

SR 522 BRT Kenmore Park and Ride Heron Rookery Habitat Management Plan

Photo Point 6

Looking northeast from the west parcel along the west side of the conceptual parking garage layout

APPENDIX F

Species Lists

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405
http://www.fws.gov/wafwo/

In Reply Refer To: May 11, 2020
Consultation Code: 01EWFW00-2020-SLI-1037
Event Code: 01EWFW00-2020-E-02004
Project Name: Sound Transit Bus Rapid Transit Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated and proposed critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list is currently compiled at the county level. Additional information is available from the Washington Department of Fish and Wildlife, Priority Habitats and Species website: http://wdfw.wa.gov/mapping/phs/ or at our office website: http://www.fws.gov/wafwo/species_new.html. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether or not the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). You may visit our website at http://www.fws.gov/pacific/eagle/for information on disturbance or take of the species and information on how to get a permit and what current guidelines and regulations are. Some projects affecting these species may require development of an eagle conservation plan: (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Also be aware that all marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas. The importation of marine mammals and marine mammal products into the U.S. is also prohibited. More information can be found on the MMPA website: http://www.nmfs.noaa.gov/pr/laws/mmpa/.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Related website:
National Marine Fisheries Service: http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
(360) 753-9440

Project Summary

Consultation Code: 01EWFW00-2020-SLI-1037

Event Code: 01EWFW00-2020-E-02004

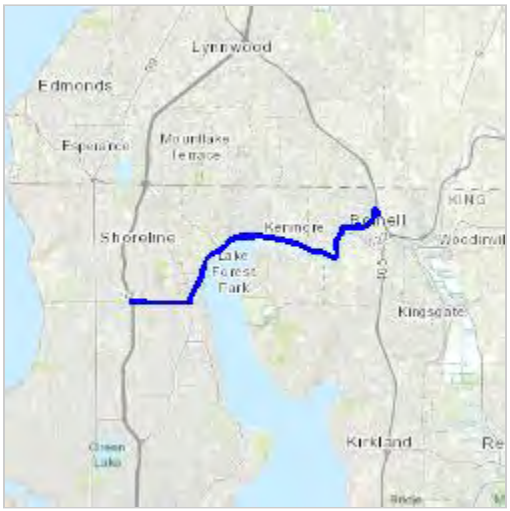
Project Name: Sound Transit Bus Rapid Transit Project

Project Type: TRANSPORTATION

Project Description: The is a transit project from Seattle to Woodinville.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/47.75109064107046N122.21402113718231W



Counties: King, WA

Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Wolf *Canis lupus* Population: Western Distinct Population Segment No critical habitat has been designated for this species.	Proposed Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Streaked Horned Lark *Eremophila alpestris strigata* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7268	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

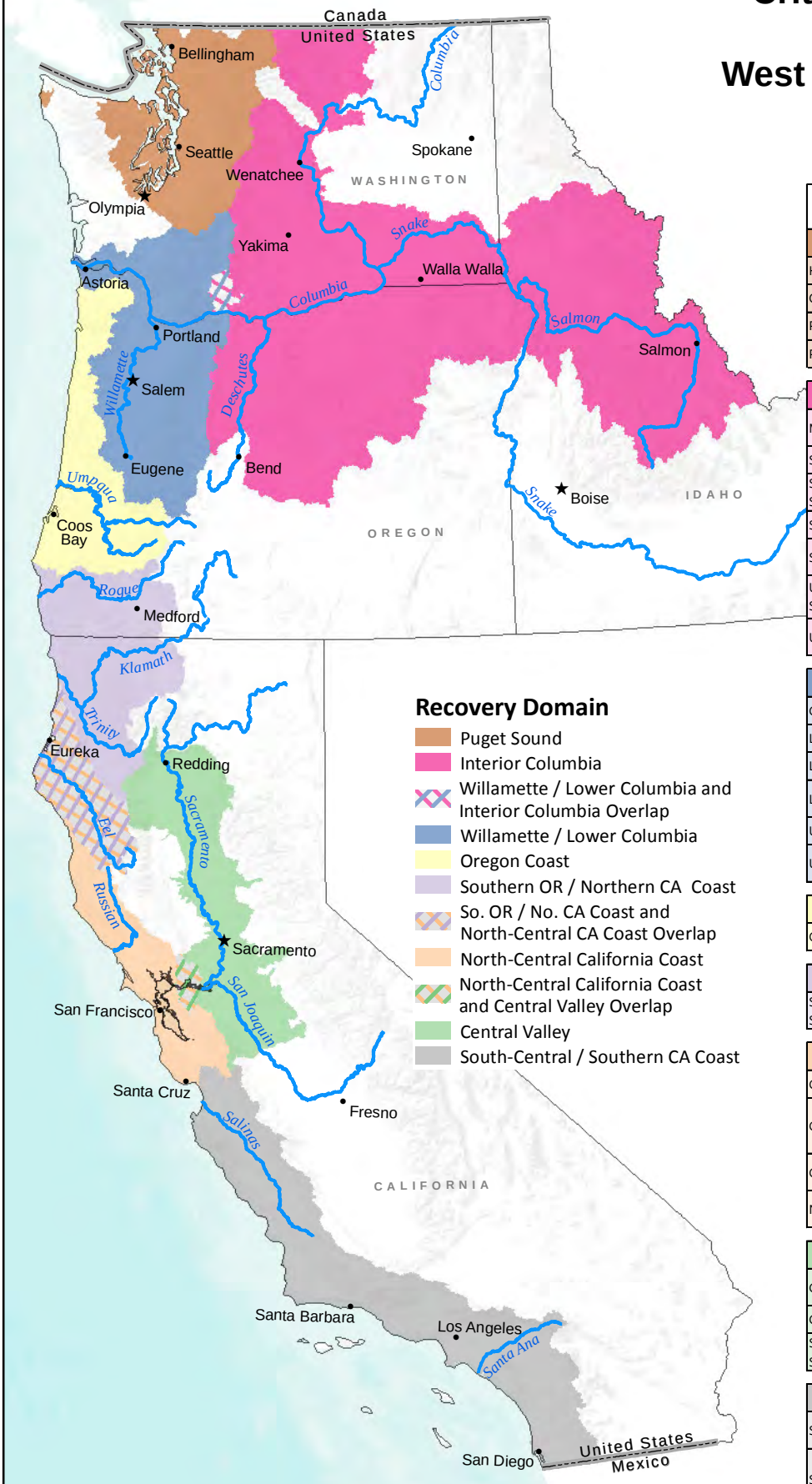
Fishes

NAME	STATUS
Bull Trout *Salvelinus confluentus* Population: U.S.A., conterminous, lower 48 states There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead



Updated July 2016

Evolutionarily Significant Unit / Distinct Population Segment	ESA Status	Date of ESA Listing	Date of CH Designation
Puget Sound Recovery Domain			
Hood Canal Summer-run Chum Salmon	T	3/25/1999	9/2/2005
Ozette Lake Sockeye Salmon	T	3/25/1999	9/2/2005
Puget Sound Chinook Salmon	T	3/24/1999	9/2/2005
Puget Sound Steelhead	T	5/11/2007	2/24/2016
Interior Columbia Recovery Domain			
Middle Columbia River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Snake River Fall-run Chinook Salmon	T	4/22/1992	12/28/1993
Snake River Spring / Summer-run Chinook Salmon	T	4/22/1992	10/25/1999
Snake River Sockeye Salmon	E	11/20/1991	12/28/1993
Snake River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Upper Columbia River Spring-run Chinook Salmon	E	3/24/1999	9/2/2005
Upper Columbia River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Willamette / Lower Columbia Recovery Domain			
Columbia River Chum Salmon	T	3/25/1999	9/2/2005
Lower Columbia River Chinook Salmon	T	3/24/1999	9/2/2005
Lower Columbia River Coho Salmon	T	6/28/2005	2/24/2016
Lower Columbia River Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Upper Willamette River Chinook Salmon	T	3/24/1999	9/2/2005
Upper Willamette River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Oregon Coast Recovery Domain			
Oregon Coast Coho Salmon	T	2/11/2008	2/11/2008
Southern Oregon / Northern California Coast Recovery Domain			
Southern OR / Northern CA Coasts Coho Salmon	T	5/6/1997	5/5/1999
North-Central California Coast Recovery Domain			
California Coastal Chinook Salmon	T	9/16/1999	9/2/2005
Central California Coast Coho Salmon	E	10/31/1996 (T) 6/28/2005 (E) 4/2/2012 (RE)	5/5/1999
Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Northern California Steelhead	T	6/7/2000 1/5/2006	9/2/2005
Central Valley Recovery Domain			
California Central Valley Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Central Valley Spring-run Chinook Salmon	T	9/16/1999	9/2/2005
Sacramento River Winter-run Chinook Salmon	E	11/5/1990 (T) 1/4/1994 (E)	6/16/1993
South-Central / Southern California Coast Recovery Domain			
South-Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Southern California Steelhead	E	8/18/1997 5/1/2002 (RE) 1/5/2006	9/2/2005

ESA = Endangered Species Act, CH = Critical Habitat, RE = Range Extension
E = Endangered, T = Threatened,

Critical Habitat Rules Cited

- 2/24/2016 (81 FR 9252) Final Critical Habitat Designation for Puget Sound Steelhead and Lower Columbia River Coho Salmon
- 2/11/2008 (73 FR 7816) Final Critical Habitat Designation for Oregon Coast Coho Salmon
- 9/2/2005 (70 FR 52630) Final Critical Habitat Designation for 12 ESU's of Salmon and Steelhead in WA, OR, and ID
- 9/2/2005 (70 FR 52488) Final Critical Habitat Designation for 7 ESU's of Salmon and Steelhead in CA
- 10/25/1999 (64 FR 57399) Revised Critical Habitat Designation for Snake River Spring/Summer-run Chinook Salmon
- 5/5/1999 (64 FR 24049) Final Critical Habitat Designation for Central CA Coast and Southern OR/Northern CA Coast Coho Salmon
- 12/28/1993 (58 FR 68543) Final Critical Habitat Designation for Snake River Chinook and Sockeye Salmon
- 6/16/1993 (58 FR 33212) Final Critical Habitat Designation for Sacramento River Winter-run Chinook Salmon

ESA Listing Rules Cited

- 4/2/2012 (77 FR 19552) Final Range Extension for Endangered Central California Coast Coho Salmon
- 2/11/2008 (73 FR 7816) Final ESA Listing for Oregon Coast Coho Salmon
- 5/11/2007 (72 FR 26722) Final ESA Listing for Puget Sound Steelhead
- 1/5/2006 (71 FR 5248) Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead
- 6/28/2005 (70 FR 37160) Final ESA Listing for 16 ESU's of West Coast Salmon
- 5/1/2002 (67 FR 21586) Range Extension for Endangered Steelhead in Southern California
- 6/7/2000 (65 FR 36074) Final ESA Listing for Northern California Steelhead
- 9/16/1999 (64 FR 50394) Final ESA Listing for Two Chinook Salmon ESUs in California
- 3/25/1999 (64 FR 14508) Final ESA Listing for Hood River Canal Summer-run and Columbia River Chum Salmon
- 3/25/1999 (64 FR 14517) Final ESA Listing for Middle Columbia River and Upper Willamette River Steelhead
- 3/25/1999 (64 FR 14528) Final ESA Listing for Ozette Lake Sockeye Salmon
- 3/24/1999 (64 FR 14308) Final ESA Listing for 4 ESU's of Chinook Salmon
- 3/19/1998 (63 FR 13347) Final ESA Listing for Lower Columbia River and Central Valley Steelhead
- 8/18/1997 (62 FR 43937) Final ESA Listing for 5 ESU's of Steelhead
- 5/6/1997 (62 FR 24588) Final ESA Listing for Southern Oregon / Northern California Coast Coho Salmon
- 10/31/1996 (61 FR 56138) Final ESA Listing for Central California Coast Coho Salmon
- 1/4/1994 (59 FR 222) Final ESA Listing for Sacramento River Winter-run Chinook Salmon
- 4/22/1992 (57 FR 14653) Final ESA Listing for Snake River Spring/summer-run and Snake River Fall Chinook Salmon
- 11/20/1991 (56 FR 58619) Final ESA Listing for Snake River Sockeye Salmon
- 11/5/1990 (55 FR 46515) Final ESA Listing for Sacramento River Winter-run Chinook Salmon

Washington Department of FISH and WILDLIFE

STATE LISTED SPECIES

Revised June 2019

The Washington Fish and Wildlife Commission has classified the following 45 species as Endangered, Threatened, or Sensitive. The federal status of species under the Endangered Species Act differs in some cases from state status; federal status is indicated by: Federal Endangered (FE), Threatened (FT), Candidate (FC), or Species of Concern (FSC).

STATE ENDANGERED

A species native to the State of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state.

The 32 State Endangered species are designated in Washington Administrative Code 220-610-010

MAMMALS (14)

Pygmy Rabbit	FE
Fin Whale	FE
Sei Whale	FE
Blue Whale	FE
Humpback Whale	FT/FE[#]
[#]Mexico DPS=T; Central America DPS=E	
North Pacific Right Whale	FE
Sperm Whale	FE
Killer Whale	FE[#]
[#]Southern Residents only	
Gray Wolf	FE[#]
[#]Federally listed west of north-south line following Highways 97, 17, and 395.	
Grizzly Bear	FT
Lynx	FT
Fisher	FC
Columbian White-tailed Deer	FT
Woodland Caribou	FE

BIRDS (9)

Sandhill Crane	-
Snowy Plover	FT
Upland Sandpiper	-
Marbled Murrelet	FT
Tufted Puffin	-
Columbian Sharp-tailed Grouse	-
Northern Spotted Owl	FT
Yellow-billed Cuckoo	FT
Streaked Horned Lark	FT

REPTILES (3)

Western Pond Turtle	-
Leatherback Sea Turtle	FE
Loggerhead Sea Turtle	FE

AMPHIBIANS (2)

Oregon Spotted Frog	FT
Northern Leopard Frog	-

INVERTEBRATES (4)

Oregon Silverspot Butterfly	FT
Taylor's Checkerspot	FE
Mardon Skipper	-
Pinto Abalone	FSC

STATE THREATENED

A species native to the state of Washington that is likely to become endangered within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats.

The 7 State Threatened species are designated in Washington Administrative Code 220-200-100

MAMMALS (3)

Sea Otter	FSC
Western Gray Squirrel	-
Mazama Pocket Gopher	
subsp. *glacialis, pugetensis, tumuli, yelmensis*	FT
…subsp. *couchi, louiei, melanops*	-

BIRDS (3)

American White Pelican	-
Greater Sage-Grouse	FSC
Ferruginous Hawk	-

REPTILES (1)

Green Sea Turtle	FT

For more information, check our website:
http://wdfw.wa.gov/conservation/species/

Or contact us at:
Wildlife Program (360) 902-2515
Fish Program (360) 902-2700

For more information on federal status, check the US Fish and Wildlife Service or the National Marine Fisheries Service

STATE SENSITIVE

A species native to the state of Washington that is vulnerable or declining and is likely to become endangered or threatened in a significant portion of its range within the state without cooperative management or removal of threats.

The 6 State Sensitive species are designated in Washington Administrative Code 220-200-100

MAMMALS (1)

Gray Whale	FE[#]
[#]Western North Pacific Stock	

BIRDS (1)

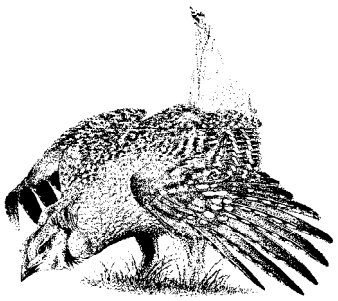
Common Loon	-

FISH (3)

Pygmy Whitefish	-
Margined Sculpin	-
Olympic Mudminnow	-

AMPHIBIAN (1)

Larch Mountain Salamander	-



STATE CANDIDATE SPECIES

Revised June 2019

Washington Department of FISH and WILDLIFE

The Washington Department of Fish and Wildlife has designated the following 102 species as Candidates for listing in Washington as State Endangered, Threatened, or Sensitive. The Department reviews species for listing following procedures in Washington Administrative Code 220-610-110. The federal status of species under the Endangered Species Act differs in some cases from state status; federal status is indicated by: Federal Endangered (FE), Threatened (FT), Candidate (FC), or Species of Concern (FSC).

MAMMALS (10)

Townsend's Big-eared Bat	-
Keen's Myotis Bat	-
White-tailed Jackrabbit	-
Black-tailed Jackrabbit	-
Washington Ground Squirrel	-
Townsend's Ground Squirrel	
South of the Yakima River	-
Olympic Marmot	-
Cascade Red Fox	-
Wolverine	FC
Pacific Harbor Porpoise	-

BIRDS (17)

Western Grebe	-
Clark's Grebe	-
Short-tailed Albatross	FE
Northern Goshawk	-
Golden Eagle	-
Cassin's Auklet	-
Flammulated Owl	-
Burrowing Owl	-
Vaux's Swift	-
White-headed Woodpecker	-
Black-backed Woodpecker	-
Pileated Woodpecker	-
Loggerhead Shrike	-
Slender-billed White-breasted Nuthatch	-
Sage Thrasher	-
Oregon Vesper Sparrow	-
Sagebrush Sparrow	-

REPTILES and AMPHIBIANS (10)

Sagebrush Lizard	-
Common Sharp-tailed Snake	-
California Mountain Kingsnake	-
Striped Whipsnake	-
Dunn's Salamander	-
Van Dyke's Salamander	-
Cascade Torrent Salamander	-
Western Toad	-
Columbia Spotted Frog	-
Rocky Mountain Tailed Frog	-

FISH (37)

Mountain Sucker	-
Lake Chub	-
Leopard Dace	-
Umatilla Dace	-
River Lamprey	-
Pacific Herring	-
Eulachon –Southern DPS	FT
Pacific Cod	
South and Central Puget Sound	FSC
Walleye Pollock	
South Puget Sound	-
Pacific Hake (Whiting) Georgia Basin	FSC
Black Rockfish[#]	-
Brown Rockfish[#]	-
Copper Rockfish[#]	-
Quillback Rockfish[#]	-
Tiger Rockfish#	-
Bocaccio Rockfish[#]	FE
Canary Rockfish	-
Yelloweye Rockfish[#]	FT
Yellowtail Rockfish[#]	-
Greenstriped Rockfish[#]	-
Widow Rockfish[#]	-
Redstripe Rockfish[#]	-
China Rockfish[#]	-

[#]*Puget Sound, the San Juan Islands, and the Strait of Juan de Fuca east of the Sekiu R.*

Chinook Salmon	
Snake River Fall	FT
Snake River Spring/Summer	FT
Puget Sound	FT
Upper Columbia Spring	FE
Lower Columbia	FT
Chum Salmon	
Hood Canal Summer (includes Strait of Juan de Fuca, not Puget Sound)	FT
Columbia River	FT
Sockeye Salmon	
Snake River	FE
Ozette Lake	FT
Steelhead	
Snake River	FT
Upper Columbia	FT
Middle Columbia	FT
Lower Columbia	FT
Bull Trout	FT

NOT STATE CANDIDATES

Fish stocks that have been the subjects of federal register notices, but have not yet been added to the state candidate list.

Coho Salmon	
Puget Sound/Strait of Georgia	FSC
Lower Columbia	FT
Steelhead, Puget Sound	FT
Green Sturgeon	FT

MOLLUSKS (9)

Shortface Lanx	-
Ashy (Columbia) Pebblesnail	-
California Floater	-
Olympia Oyster	-
Columbia Oregonian (snail)	-
Poplar Oregonian (snail)	-
Dalles Sideband (snail)	-
Blue-gray Taildropper (slug)	-

INSECTS (18)

Beller's Ground Beetle	-
Mann's Mollusk-eating Ground Beetle	-
Columbia River Tiger Beetle	-
Hatch's Click Beetle	-
Columbia Clubtail (dragonfly)	-
Pacific Clubtail	-
Sand-verbena Moth	-
Yuma Skipper	-
Shepard's Parnassian	-
Makah Copper	-
Chinquapin Hairstreak	-
Johnson's Hairstreak	-
Juniper Hairstreak	-
Puget Blue	-
Valley Silverspot	-
Silver-bordered Fritillary	-
Great Arctic	-
Island Marble	FC

OTHER INVERTEBRATES (2)

Giant Palouse Earthworm	-
Leschi's Millipede	-

Many species of uncertain conservation need are listed in our State Wildlife Action Plan:
https://wdfw.wa.gov/conservation/cwcs/

For more information, check our website:
http://wdfw.wa.gov/conservation/species/
Or contact us:
Wildlife Program (360) 902-2515
Fish Program (360) 902-2700

soundtransit.org/sr522brt

brt@soundtransit.org
206-398-5470

SOUNDTRANSIT

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