Appendix C

Biological Assessment

BIOLOGICAL ASSESSMENT

I-5/4th Street and 88th Street NE Corridor Improvements

Prepared for
Bureau of Indian Affairs

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Contents

Tables

Figures

Appendices

Acronyms and Abbreviations

BA	biological assessment
BIA	Bureau of Indian Affairs
BMP	best management practice
CABS	compost-amended biofiltration swale
CAVFS	compost-amended vegetated filter strip
City	City of Marysville
DPS	distinct population segment
Ecology	Washington Department of Ecology
EFH	essential fish habitat
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FR	Federal Register
I-5	Interstate 5
NMFS	National Marine Fisheries Service
NWIFC	Northwest Indian Fisheries Commission
PBF	physical and biological feature
PGIS	pollution-generating impervious surface
Reservation	Reservation of the Tulalip Tribes
SPCC	Spill prevention, control, and countermeasures
SRKW	Southern resident killer whale
SWPPP	stormwater pollution prevention plan
TDA	threshold discharge area
TESC	temporary erosion and sediment control
Tribes	The Tulalip Tribes
TTED	Tulalip Tribes Environmental Department
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WSDOT	Washington Department of Transportation

Executive Summary

The Tulalip Tribes (Tribes), in partnership with the Washington State Department of Transportation (WSDOT), Snohomish County, and the City of Marysville, propose to develop and implement access improvements to two interchanges on the Interstate 5 (I-5) corridor within the boundary of the Tulalip Reservation in Snohomish County, Washington. The two interchanges are at 4th Street (also known as State Route 528 and Marine Drive) and 88th Street NE.

The purpose of the I-5/4th Street and 88th Street Corridor Improvements Project is to support community and economic vitality by reducing congestion and improving mobility for cars, trucks, emergency services, pedestrians, and transit users traveling to, from, and across I-5 on 4th Street and 88th Street NE and within the Tribes' Reservation while enhancing safety and protecting the integrity of the interstate system.

The federal nexus for this project is approvals by the Bureau of Indian Affairs (BIA) for expansion of existing road rights of way on tribal lands.

Project construction is expected to require two (2) years, with an anticipated start date of January 2024. All construction activities below the ordinary high-water lines of streams will occur during the in-water work window established by the Tribes (July 15 through September 30).

The project includes the following elements:

- Construction of seven roundabouts to replace existing signaled intersections
- Channelization improvements entering and exiting the roundabouts
- Reconfigured pedestrian and bicycle access along the alignment
- Construction of new flow control and water quality treatment facilities for runoff from new and replaced impervious surfaces
- Construction of a bridge to replace the existing road fill prism and an undersized culvert on Coho Creek at 88th Street NE
- Habitat improvements (including placement of new streambed substrates and large woody material) in Coho Creek near the new bridge crossing

ESA-listed species and critical habitats addressed in this analysis are identified in Table ES-1. Project activities with the greatest potential to affect those species and habitats include construction activities in and near habitats where ESA-listed species may be present and the creation or replacement of impervious surfaces from which contaminants in stormwater may run off to waters where ESA-listed species are present. No ESA-listed wildlife species are expected to be present in the action area while construction activities are underway, so the project is unlikely to affect those species. By limiting in-water work to the work window established by the Tribes, the project will minimize the potential for construction-related impacts on ESA-listed fish. Although runoff from all new or replaced impervious surfaces will be directed to facilities in which stormwater runoff will be treated and/or infiltrated, some residual contaminants may be present in runoff that leaves the project area. These contaminants may be toxic to ESA-listed fish, potentially resulting in adverse effects on those species and the critical habitat that has been designated for them (Table ES-1).

Table ES-1. ESA-Listed Species and Critical Habitat Addressed in this BA

Species	Status	Species Effect Determination	Critical Habitat Status	Critical Habitat Effect Determination
Chinook salmon (*Oncorhynchus tshawytscha*) (Puget Sound ESU)	Threatened	Likely to Adversely Affect	Designated within the action area	Likely to Adversely Affect
Steelhead (*Oncorhynchus mykiss*) (Puget Sound DPS)	Threatened	Likely to Adversely Affect	Designated within the action area	Likely to Adversely Affect
Bull trout (*Salvelinus confluentus*)	Threatened	Not Likely to Adversely Affect	Designated within the action area	Not Likely to Adversely Affect
Southern Resident killer whale (*Orcinus orca*)	Endangered	Not Likely to Adversely Affect	Designated; none in action area	N/A
Marbled murrelet (*Brachyramphus marmoratus*)	Threatened	Not Likely to Adversely Affect	Designated; none in action area	N/A
Streaked horned lark (*Eremophila alpestris strigata*)	Threatened	No Effect	Designated; none in action area	N/A
Yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	No Effect	Designated; none in action area	N/A
Gray wolf (*Canis lupus*)	Endangered	No Effect	None designated	N/A
Oregon spotted frog (*Rana pretiosa*)	Threatened	Not Likely to Adversely Affect	Designated; none in action area	N/A

DPS = Distinct Population Segment; ESU = Evolutionarily Significant Unit

1. Introduction

The Tulalip Tribes (Tribes), in partnership with the Washington State Department of Transportation (WSDOT), Snohomish County and the City of Marysville (City), propose to develop and implement access improvements to two interchanges on the Interstate 5 (I-5) corridor within the boundary of the Tulalip Reservation. The two interchanges are at 4th Street (also known as State Route 528 and Marine Drive) and 88th Street NE.

Biologists from Parametrix, Inc., have prepared this biological assessment (BA) in accordance with Section 7(c) of the Endangered Species Act (ESA), to determine the project's potential impacts on listed species and their designated critical habitats and to support consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). This BA also includes an analysis of essential fish habitat (EFH) for the Pacific Salmon Fishery in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (Appendix A).

1.1 Background and Consultation History

The Reservation of the Tulalip Tribes (Reservation) is accessed via three interchanges with I-5 along the eastern boundary of the Reservation. These interchanges are critically important to the Tribes for access to and from the Reservation. The only other access to the Reservation is via a single county road, 140th Street NE, at the northern boundary and via the waters of the Puget Sound and the Snohomish River. Goods, services, higher education, healthcare, jobs, and economic development depend on safe, efficient access to and from the Reservation.

Over the past several years, the Tribes have led substantial improvements at the 116th Street NE interchange at the northeast end of the Reservation. That project addressed capacity needs, congestion relief, and safety improvements for drivers, freight, nonmotorized users, and transit. The Tribes led and funded nearly all the planning, environmental documentation, design, permitting, and construction of these improvements through several phases of construction. The construction of the final phase of improvements at the interchange was completed in 2020.

The Tribes are now planning to develop and implement access improvements to the remaining two interchanges on the Reservation. These two interchanges, at 4th Street and 88th Street NE, experience congestion and cause mobility challenges for cars, trucks, pedestrians, and transit users. Frequently, traffic exiting I-5 to enter the Reservation or Marysville backs up onto the off-ramps and even onto traffic lanes on the I-5 mainline. These traffic impacts affect the Tribes and the City as well as the greater Snohomish County area, interstate travel and commerce, and even international trade with Canada. The configuration of the local road connections at the interchanges also impedes connections between the Tribes and the City for commuters, residents, visitors, freight, transit, and nonmotorized traffic. Backups cause lengthy delays at the signals crossing I-5 between these two communities, adversely affecting both commerce and emergency services.

The purpose of the I-5/4th Street and 88th Street Corridor Improvements Project is to support community and economic vitality by reducing congestion and improving mobility for cars, trucks, emergency services, pedestrians, and transit users traveling to, from, and across I-5 on 4th Street and 88th Street NE and within the Tribes' Reservation while enhancing safety and protecting the integrity of the interstate system.

The federal nexus for this project is necessary approvals by the Bureau of Indian Affairs (BIA) for expansion of existing road rights of way on tribal lands. This nexus triggers requirements for consultation with USFWS and NMFS under Section 7(c) of the ESA.

1.2 Project Location

The project involves improvements at the I-5 interchanges with 4th Street (exit 199) and 88th Street NE (exit 200). The project corridor straddles the boundary between the Tulalip Reservation and Marysville in Snohomish County, Washington (Figure 1). The project area lies within Water Resource Inventory Area (WRIA) 7 (Snohomish) and hydrologic units 171100110204 (Quilceda Creek) and 171100110203 (Frontal Possession Sound).

The project area is in Sections 20, 21, 28, 29, 32, and 33 of Township 30 North, Range 5 East, Willamette Meridian. The approximate latitude/longitude coordinates of the northern and southern project limits are 48.077° N/122.1848° W and 48.0480° N/122.1839° W, respectively.

1.3 Project Description

The project will include corridor improvements along 4th Street and 88th Street NE, as well as fish passage enhancements and stream habitat improvements at the 88th Street NE crossing of Coho Creek. Additional details about these project elements follow. See Appendix B for project design sheets that show areas of new and replaced impervious surfaces, conceptual plans for the new bridge and realigned stream channel at 88th Street NE, a conceptual layout for large woody material placement, and areas of anticipated impacts in and near Coho Creek.

Corridor improvements along 4th Street, from west to east, will include the following (Figure 2):

- Replacement of the signaled intersection of 4th Street and 33rd Avenue NE with a new roundabout
- Replacement of the signaled intersection of 4th Street and the I-5 southbound on-/off-ramps with a new roundabout
- Replacement of the signaled intersection of 4th Street and the I-5 northbound on-/off-ramps with a new roundabout
- Channelization improvements entering and exiting the roundabouts
- Reconfigured pedestrian and bicycle access along the alignment

Corridor Improvements along 88th Street NE, from west to east, will include the following (Figure 3):

- Replacement of the signaled intersection of 88th Street and 34th Avenue NE (Quil Ceda Blvd) with a new roundabout
- Replacement of the signaled intersection of 88th Street NE and the I-5 southbound on-/off-ramps with a new roundabout
- Replacement of the signaled intersection of 88th Street NE and the I-5 northbound on-/off-ramps with a new roundabout
- Replacement of the signaled intersection of 88th Street and 36th Avenue NE with a new roundabout
- Channelization improvements entering and exiting the roundabouts
- Reconfigured pedestrian and bicycle access along the alignment

Figure 1.
Vicinity Map
I-5/4th Street and 88th Street NE Corridor Improvements
Snohomish County, WA

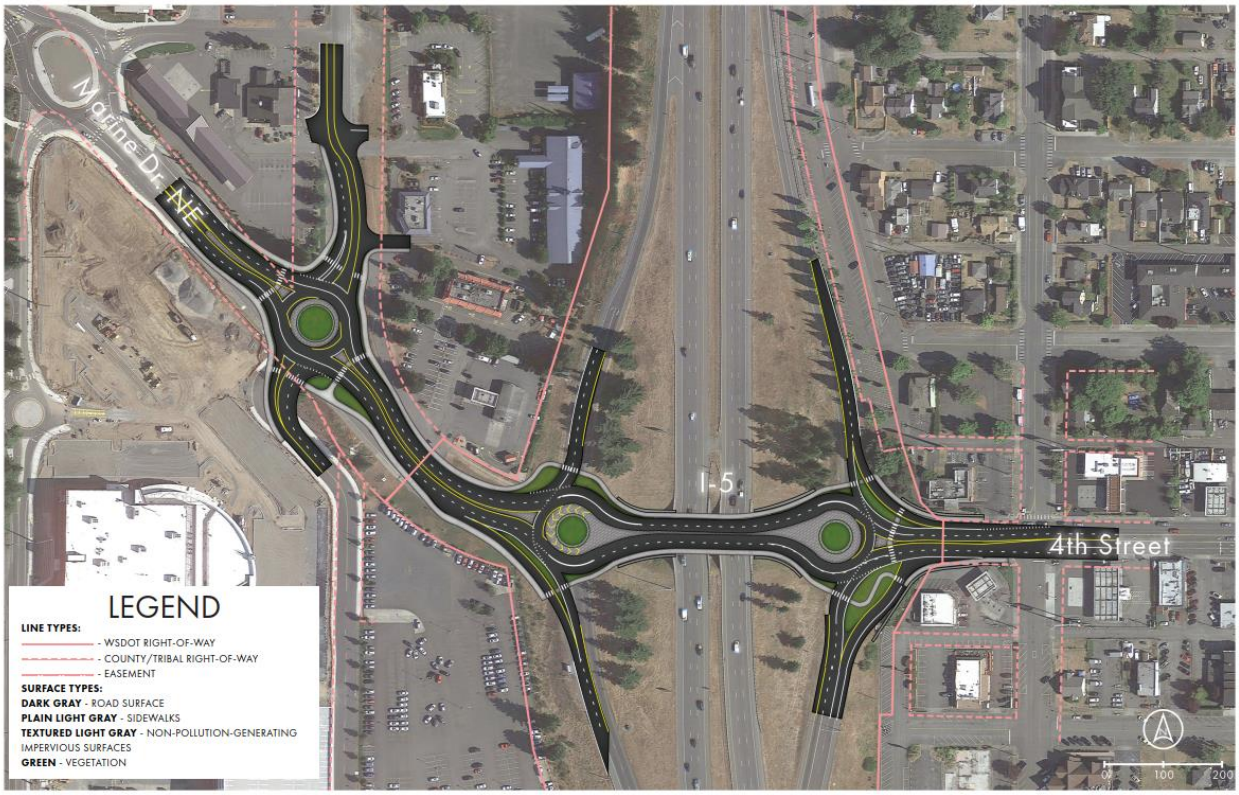


Figure 2. Proposed Improvements at 4th Street

Figure 3. Proposed Improvements at 88th Street NE

Approximately 750 feet west of the I-5 interchange, 88th Street NE crosses Coho Creek, a tributary to Quilceda Creek. Currently, the stream is conveyed under the roadway in an undersized, 54-inch-diameter concrete culvert. The project will replace the culvert and associated gabion-supported road fill prism with a 100-foot, single-span bridge. The new bridge will have a minimum hydraulic opening of 30 feet and a vertical clearance exceeding the desired wildlife clearance height of 8 feet.

To maintain traffic on 88th Street NE, bridge construction will occur in two stages. During the first stage, traffic will remain on the existing roadway while the first half the bridge is constructed. Traffic will then be shifted to the newly constructed portion of the bridge for the second stage while the remainder of the bridge is completed. The bridge structure will be supported on deep-drilled shafts. Mechanically stabilized earth walls will be constructed behind the bridge piers to support the roadway embankment. No impact or vibratory pile driving is anticipated. Roadway excavation will be limited to the amount necessary to provide sufficient clearance to construct the piers and place the bridge girders.

Once the bridge structure has been constructed, Coho Creek will be diverted into a new channel under the bridge. Flow will be introduced to the new channel gradually to minimize sediment delivery in downstream reaches. The remainder of the road fill will then be excavated, and the existing culvert will be removed. Utilities that are currently buried in the roadway will be attached to the underside of the new bridge, and a sanitary sewer line will be suspended between the bottom of the bridge structure and the creek.

The bridge will be designed consistent with criteria in WSDOT's Bridge Design Manual and WDFW's 2013 Water Crossing Design Guidelines. All construction activities within the ordinary high water line, including fish exclusion, will occur during the in-water work window established by the Tribes, which extends from July 15 through September 30.

The proposed stream alignment will move Coho Creek approximately 30 feet west of the existing culvert. Flows will be maintained in the existing channel and culvert while the new channel is being built. Under current conditions, as a result of backwater effects caused by the undersized culvert, the stream has a 90-degree turn and scour hole upstream of the road crossing. Approximately 90 linear feet of stream channel upstream of the new bridge will be realigned to provide a smooth bend at the road crossing. The new channel will tie back into the existing stream approximately 75 feet downstream of the new bridge to maintain the existing braided channel system. The new channel will match the hydraulic characteristics in the unaffected portions of the stream.

Design and implementation of the stream channel realignment will conform to the requirements set forth in WSDOT's 2019 Hydraulics Manual. The project will improve approximately 220 feet of the Coho Creek stream channel. Streambed substrates in the new channel will meet WSDOT standards for materials and size. Approximately 62 pieces of large woody material (including 20 key pieces), with a total wood volume of more than 85 cubic yards, will be placed in the stream.

Additional major items of work will include paving, grading, retaining walls, stormwater conveyance and treatment, sidewalks, lighting, utilities, turbid water management, temporary erosion control, clearing and grubbing, vegetation removal, vegetation management (e.g., planting native species in place of non-native species), pavement marking, traffic control, and signing. Bare soils will be revegetated and hydroseeded after construction. Suitable areas within wetland boundaries and wetland and stream buffers will be replanted with native species that support the ecological functions of those areas.

Work will take place primarily during daylight hours on weekdays. However, lane restriction requirements will necessitate nighttime operations for some activities, including excavation and haul

operations, setting girders, temporary soldier pile wall/shoring installation and removal, and temporary widening of existing roadways (if needed to minimize traffic impacts during construction).

Equipment required for project construction is expected to include the following:

- **General Roadway Construction Equipment**
  - Ground improvement equipment – cranes, loaders, dump trucks, and vibratory equipment
  - Heavy construction equipment – cranes, dozers, loaders, forklifts, excavators, graders, dump and haul trucks, air compressors, generators, and concrete trucks
  - Paving equipment – paving machines, rollers, and backhoes
  - Landscaping equipment – truck-mounted blowers and conveyors and hydro-seeding machines
- **Culvert Removal/Bridge Construction Equipment**
  - Bridge construction – drilled shaft equipment, such as oscillating drill rigs, cranes, and forklifts
  - Culvert removal – cranes, dozers, loaders, excavators, dump and haul trucks

1.3.1 Stormwater Management

The project is being designed in accordance with the following design guidance and criteria:

- WSDOT Highway Runoff Manual (M31-16.05), April 2019
- WSDOT Hydraulics Manual (M23-03.06), April 2019
- Washington State Department of Ecology (Ecology) Stormwater Management Manual for Western Washington, July 2019

A project-specific Stormwater Pollution Prevention Plan (SWPPP) and Temporary Erosion and Sediment Control (TESC) plan will be prepared and implemented before beginning earthwork under the project's National Pollutant Discharge Elimination System Construction Stormwater General Permit. It is anticipated that the sediment and flow-control BMPs described in the TESC and SWPPP will minimize the potential for water quality impacts to wetland and stream resources in the project area.

The project lies within nine threshold discharge areas (TDAs), based on downstream flow paths. The receiving waters are Ebey Slough, Quilceda Creek, and Coho Creek. Table 1 summarizes the current and anticipated post-construction acreage of impervious area and area directed to water quality treatment and/or infiltration facilities in each TDA.

The project will decrease the total area of pollution-generating impervious surfaces (PGIS) in all TDAs, combined, by approximately 0.24 acre, while the amount of runoff being treated and/or infiltrated will increase by nearly 6 acres (Table 1). New stormwater treatment facilities will provide enhanced treatment in all TDAs except TDA 2 and TDA 4; the level of treatment to be provided in those two TDAs is still under review.

For this analysis, it is assumed that runoff from the equivalent of 90 percent of all impervious surfaces (pollution-generating or non-pollution-generating) created or replaced in TDAs 1, 5, 6, 7, 8, and 9 will be routed to infiltration facilities. Construction work in TDA 2 will affect only a small amount of impervious surfaces and will result in a net reduction in impervious surface area; no modifications to existing drainage patterns or water quality treatment are proposed in this TDA. In TDAs 3 and 4, consistent with Highway Runoff Manual requirements, runoff from the equivalent of all new impervious surfaces will be treated. In

both TDAs, the increase in the amount of impervious area receiving stormwater treatment will be similar to the total increase in PGIS.

Table 1. Existing and Post-project Pollution-Generating Impervious Surface (PGIS) Area and Area Receiving Stormwater Treatment (Acres)

		Current		Proposed		Change	
TDA	Receiving Water	PGIS Area	Treated Area[1]	PGIS Area	Treated Area[2]	PGIS Area	Treated Area
1	Ebey Slough	2.55	0.00	2.27	1.89	- 0.28	+ 1.89
2	Quilceda Creek	0.59	0.00	0.50	0.00	- 0.09	0.00
3	Ebey Slough	3.29	0.00	3.72	0.41[3]	+ 0.43	+ 0.41
4	Ebey Slough	1.37	0.00	1.38	0.01[3]	+ 0.01	+ 0.01
5	Coho Creek	3.57	1.54	3.16	2.98	- 0.41	+ 1.44
6	Quilceda Creek	1.29	0.00	1.30	0.62	+ 0.01	+ 0.62
7	Quilceda Creek	1.61	0.62	1.71	1.93	+ 0.10	+ 1.31
8	Quilceda Creek	1.71	1.28	1.67	1.43	- 0.04	+ 0.15
9	Quilceda Creek	0.15	0.13	0.18	0.20	+ 0.03	+ 0.07
	TOTALS	***16.13***	***3.57***	***15.89***	***9.47***	***- 0.24***	***+ 5.90***

[1] Under current conditions, "Treated Area" consists of areas directed to water quality treatment facilities.
[2] Under proposed conditions, "Treated Area" includes areas directed to existing treatment facilities, along with new or replaced impervious surfaces from which runoff will be treated or infiltrated.
[3] Runoff from TDAs 3 and 4 will be directed to treatment facilities where infiltration is not expected to occur.

New stormwater treatment facilities in TDAs 1, 5, 6, 7, 8, and 9 will be designed to accommodate runoff from new and replaced impervious surfaces during a 100-year storm event. Although a direct comparison is not possible at this time, this design standard is likely comparable to treating the volume of water equal to 50 percent of the cumulative rainfall from existing, new, and replaced impervious surfaces during a 2-year, 24-hour storm. Infiltration BMPs built to meet minimum flow control requirements in TDAs 1, 5, 6, 7, 8, and 9 will further reduce the amount of untreated stormwater that reaches surface waters. In most TDAs, treated stormwater that cannot be infiltrated will be directed to existing outfalls for stormwater facilities. The exception is TDA 5, where runoff currently enters Coho Creek through multiple, uncontrolled pathways; a new outfall, with scour protection, will be established for runoff from project-created or -replaced impervious surfaces in that TDA.

Following are brief overviews of the nine TDAs. The overviews identify the catchment area, existing conveyance network, and receiving water for each one. The locations of the TDAs are shown in Figure 4 on page 12 of this document.

TDA 1 drains the western portion of the project area near the I-5/4th Street interchange. Runoff is conveyed south through a system of pipes along 33rd Ave NE, outfalling to a wetland just south of 60th Pl NE, approximately 1,200 feet from Ebey Slough. The project will provide enhanced treatment for runoff from this TDA, via a bioretention facility, an infiltration trench or gallery, or a proprietary BMP.

TDA 2 drains a small area in the northwestern the project area near the 4th Street interchange. Runoff is conveyed north and west in pipes and ditches, outfalling to Quilceda Creek near Marine Drive, approximately 1.25 miles upstream of the stream's confluence with Ebey Slough. Based on the small area of new impervious surface being created in this TDA, it is exempt from runoff treatment and flow control requirements, per the Highway Runoff Manual. Analyses in this document are based on the assumption that no water quality treatment will be provided for runoff from this TDA. It is possible, however, that a portion of the existing ditch conveyance system may be converted to a treatment swale that would provide either basic or enhanced treatment.

TDA 3 drains 4th Street at the I-5 interchange, including on- and off-ramps. Runoff is conveyed south in pipes that discharge to Ebey Slough immediately west of I-5, near Log Dump Road/60th Place NE. Due to the proximity of runoff to Ebey Slough, this TDA is exempt from flow control requirements per the Highway Runoff Manual. However, runoff from an area equivalent to the area of all new impervious surfaces (pollution-generating and non-pollution-generating) will be directed to a stormwater treatment facility. Based on the limited amount of space available, it is likely that this will be a proprietary BMP that does not allow for substantial infiltration but that provides enhanced treatment.

TDA 4 drains 4th Street east of the I-5 interchange. Runoff is conveyed via pipes to the site of the former Geddes Marina boat basin adjacent to Ebey Slough. The City is developing a regional stormwater treatment facility on this site; the new regional facility is expected to be complete before this project is built. The proposed facility will treat stormwater runoff from existing impervious surfaces in an approximately 480-acre area that drains to Ebey Slough. Because TDA 4 lies entirely within the drainage basin being treated by the regional stormwater facility, the project will not have to provide treatment from runoff from existing or replaced impervious surfaces in TDA 4. As with TDA 2, TDA 4 is exempt from Runoff Manual-based runoff treatment and flow control requirements because of the small area of new impervious surface. Analyses in this document are based on the assumption that no water quality treatment will be provided for runoff from this TDA. The need for treatment prior to discharge to the regional facility is under review.

TDA 5 drains 88th Street NE, Quil Ceda Blvd, and part of the southbound on- and off-ramps west of the I-5/88th Street NE interchange. Runoff is conveyed to Wetland A adjacent to the project site via pipes and ditches. Currently, runoff outfalls to the wetland at several locations at or a few feet above the ordinary high water line. Under current conditions, runoff from some impervious surfaces in this TDA is directed to a bioswale; runoff from some additional areas passes through oil/grit separators. The project will provide enhanced treatment for runoff from this TDA, via a bioretention facility, an infiltration trench or gallery, a proprietary BMP, and/or a bioswale.

TDA 6 drains the west side of the 88th Street NE bridge where it crosses over I-5, along with a portion of the southbound on- and off-ramps west of the interchange. Runoff is conveyed south along the west side of I-5, primarily in ditches, outfalling to Quilceda Creek approximately 3,000 feet south of the project area, immediately downstream of the I-5 bridge over the stream. Much of the runoff from this TDA infiltrates in the conveyance ditches and never enters Quilceda Creek. The project will provide enhanced treatment for runoff from this TDA, via a bioretention facility or a bioswale.

TDA 7 drains the east side of the 88th Street NE bridge where it crosses over I-5, along with the northbound on- and off-ramps east of the interchange. This TDA also includes a small area south of 88th Street NE east of the I-5 interchange, as well as a portion of a private parcel from which runoff receives partial treatment in a bioswale before joining the TDA's conveyance system. Runoff is conveyed south in ditches along the east side of I-5, outfalling to a wetland adjacent to Quilceda Creek approximately 2,500 feet south of the project area. As with TDA 6, much of the runoff from this TDA

infiltrates in the conveyance ditches and never enters Quilceda Creek. The project will provide enhanced treatment for runoff from this TDA, via a bioretention facility, an infiltration trench or gallery, and/or a bioswale.

TDA 8 drains the north side of 88th Street NE east of the I-5 interchange. Runoff is conveyed via pipes to a stormwater treatment pond that is assumed to outfall to Quilceda Creek north of 88th Street NE. City staff have expressed concern that the capacity of this pond may be exceeded during major storm events, spilling untreated stormwater to the stream. The project will provide enhanced treatment for runoff from this TDA, via an infiltration trench or gallery and/or a proprietary BMP.

TDA 9 drains a very small area south of 88th Street NE, east of 36th Ave NE. This TDA does not appear to connect to any public systems, but runoff from part of the TDA flows to a bioswale on private property. Runoff from the TDA is presumed to discharge to Quilceda Creek. The project will provide enhanced treatment for runoff from this TDA, via a proprietary BMP.

1.3.2 Interrelated and Interdependent Activities

An interrelated activity is part of the proposed action and depends on the proposed action for its justification. An interdependent activity has no independent utility apart from the action under consultation.

Activities associated with mitigation for impacts to streams, wetlands, and wetland buffers can be considered interrelated and interdependent actions for this project. The need for mitigation for such impacts is yet to be determined. If mitigation is required, options may include on-site restoration or enhancement or identification of a suitable site for in-kind mitigation nearby. Impacts to wetlands, streams, and their regulatory buffers will be mitigated in accordance with applicable tribal, federal, state, and local requirements. If mitigation for project-related impacts to wetlands and wetland buffers may result in impacts to ESA-listed species and habitats not considered in this analysis, those impacts will be addressed through future consultation.

Detour routes are a potentially interrelated activity, but they are not expected to be required for the project, although closures of I-5 on- and off-ramps may affect travel patterns. They would be short-term (weekend) closures. No long-term closures are anticipated.

1.3.3 Project Sequencing and Timeline

Project construction is expected to require a minimum of two (2) years, with an anticipated construction start in Spring 2024. It is anticipated that construction at the interchanges for both 4th Street and 88th Street NE will be occurring at the same time. It is anticipated that one-half of each roadway will be under construction at a time, keeping traffic flow continuous throughout construction, but with potential temporary reduction in lanes. Bridge construction at the Coho Creek crossing will also be performed in stages, allowing traffic on 88th Street NE to be maintained during construction. As noted above, all construction activities below the ordinary high water line will occur during the in-water work window established by the Tribes (July 15 through September 30).

1.4 Performance Standards and Impact Avoidance, Minimization, and Mitigation Measures

Conservation measures and best management practices (BMPs) have been incorporated into the proposed project to avoid and minimize short-term and long-term impacts to ESA listed fish and wildlife species

and their habitats in the project vicinity. Significant short-term effects on water quality are not expected if erosion control and spill containment BMPs are properly implemented, monitored, and maintained during construction. A TESC plan will be prepared and implemented to minimize sedimentation into Coho Creek and to minimize erosion to surrounding areas.

Following are BMPs and conservation measures that will be incorporated into the design and implementation of the project, to avoid and minimize impacts to the species and critical habitats addressed in this BA.

Erosion and Sediment Control

- Implement construction phasing that minimizes the amount of earthwork that exposes the ground surface to erosion.
- Implement a TESC plan, including sediment-control BMPs such as silt fences, check dams, sediment traps, sedimentation basins, and flocculation methods.
- Use erosion-control practices (seeding, mulching, soil conditioning with polymers, use of geo synthetics, sod stabilization, erosion-control blankets, vegetative buffer strips, and preservation of trees with construction fences).
- Use construction entrances, exits, and parking areas that reduce sediment tracking onto public roads.
- Perform routine inspections of erosion-control and sediment-control BMPs and subsequent BMP maintenance.
- Erosion of stockpiled materials will be controlled per City of Marysville Engineering Drainage and Erosion Control Design Standards (City of Marysville 2016).

In-Water Work

- In-water work will occur only within the in-water work window (July 15 to September 30) as specified by Tulalip tribal biologists (Nelson, personal communication, 2021).
- Fish exclusion work will follow the guidance outlined within the Recommended Fish Exclusion, Capture, Handling, and Electroshocking Protocols and Standards document (USFWS 2012).
- Flow will be introduced to the new channel gradually to minimize sediment delivery in downstream reaches.
- Biologists will perform pre-construction surveys for Oregon spotted frog egg masses. Surveys will be performed in spring in potentially suitable habitat associated with Coho Creek near the 88th Street NE bridge construction site. If Oregon spotted frog egg masses are discovered, BIA and WSDOT will coordinate with USFWS on implementation of additional conservation measures.

Clearing and Vegetation Removal

- High-visibility construction fencing will be installed around the work area to protect sensitive areas such as wetlands and streams from construction-related impacts.
- Exposed slopes and disturbed areas around the construction area will be replanted.
- Wetlands, wetland buffers, and stream buffers temporarily affected by construction activities will be restored in accordance with Tulalip Tribes regulations and guidance from Tribal Natural Resources staff.

Stormwater Pollution/Spill Prevention

- A spill prevention, control, and countermeasures (SPCC) plan will be implemented. Elements of this plan will satisfy all pertinent requirements set forth by tribal, federal, state, and local laws and regulations.
- All construction vehicles operated within 150 feet of any stream or waterbody will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation. When not in use, all vehicles will be stored in designated staging areas outside of wetlands, streams, and associated buffers. Other vehicles that may be stored in place will be inspected daily for fluid leaks.
- Staging areas will be located in areas that will prevent the potential for contamination of any wetland or water body.
- All mechanical equipment will be fueled and serviced at least 150 feet from surface-flowing streams.
- Spill response equipment will be kept on-site for potential fluid leakage.
- Additionally, drip pans will be fitted with absorbent pads and placed under all equipment being fueled.

Construction Activities

- Concrete truck chute cleanout areas will be established to properly contain wet concrete and wash water and to prevent it from entering wetlands and other waterbodies.
- All concrete will be poured in the dry (or within confined waters not being dewatered to surface waters) and will be allowed to cure a minimum of 7 days before contact with surface water.

Lighting

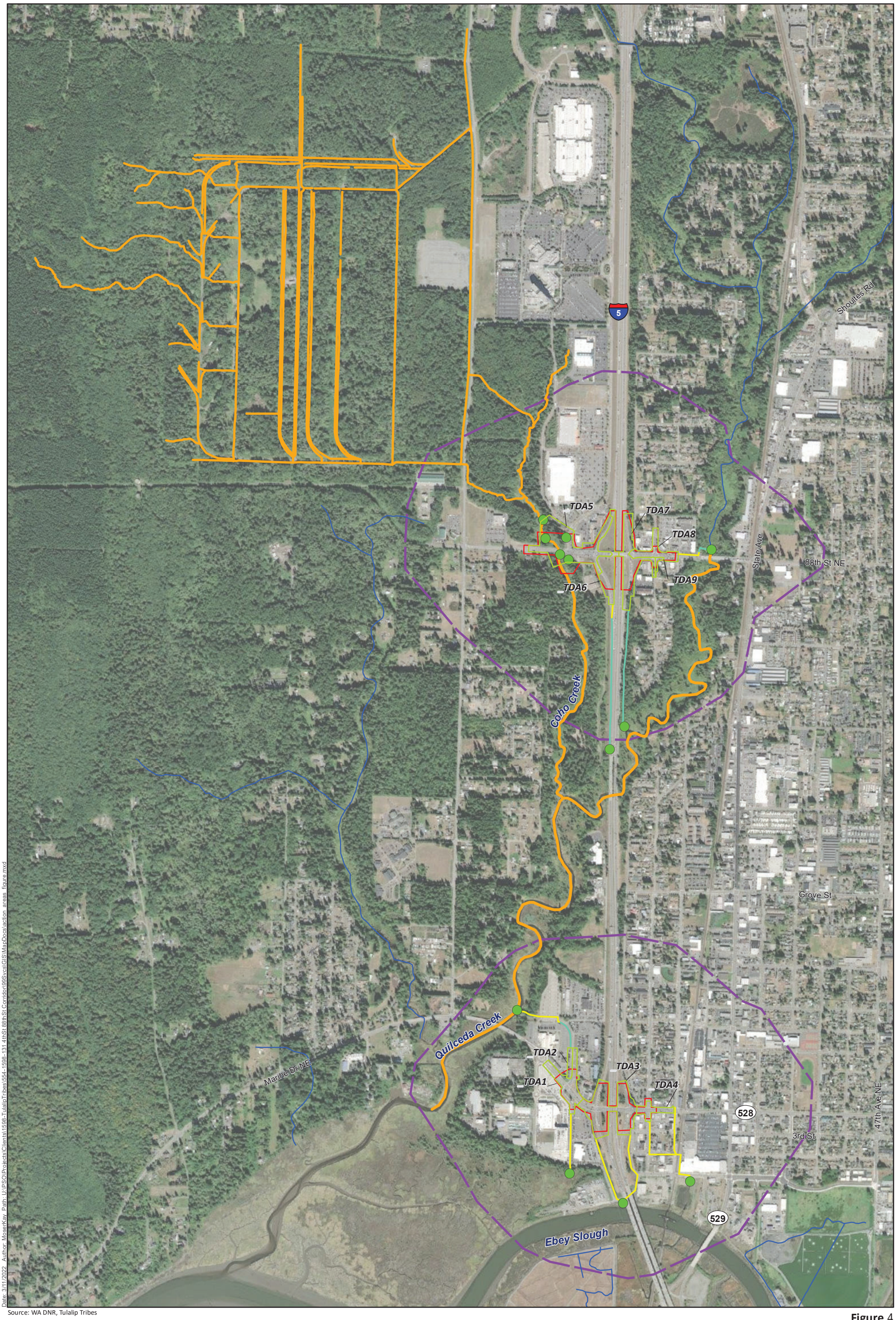
- No permanent lighting will be directed downward toward fish-bearing waters.
- Temporary lights for night work will be directed away from waters with listed fish species to the greatest extent possible, with the intent to prevent light from shining on surface waters.

1.5 Action Area

In this document, the term *action area* has a specific meaning, defined below. The action area is different from the *project site* (which encompasses the limits of construction and which is also referred to as the project footprint) and from the *project area* (a more general term for the vicinity of the project site).

The action area is defined as the area that may be affected directly or indirectly by the project action. For this assessment, the action area includes the project footprint, terrestrial areas where construction noise will be audible, aquatic areas where the project may result in short-term or long-term impacts on water quality, and aquatic habitats to which fish access will be improved through the replacement of the Coho Creek culvert with a new bridge (Figure 4). The action area also includes areas where project construction may influence the conversion of currently undeveloped or underdeveloped parcels to a more developed state.

The project footprint includes the portions of 4th Street, 88th Street NE, and associated I-5 on- and off-ramps where corridor improvements will be implemented, as well as the areas that will be disturbed for bridge construction and culvert removal. Additional wetland buffer off-site mitigation may be required for the project, but this has not yet been identified. The buffer mitigation would likely be located within the Coho Creek complex north of the 88th Street NE.



Date: 3/11/2022 Author: MoserKav Path: U:\PSO\Projects\Clients\1598-TulalipTribes\554-1598-131 4thSt 88thSt Corridor\99Svcs\GIS\MapDocs\action_areas_figure.mxd

Source: WA DNR, Tulalip Tribes

WA DNR Streams
Extent of Ground-Disturbing Work
Extent of Construction Related Noise
Aquatic Portion of the Action Area
TDA Boundaries
Flow Path- Ditch/BMP
Flow Path- Pipe
Outfalls from Stormwater Facilities

0 500 1,000 2,000 Feet

Figure 4
Action Area
I-5/4th and 88th Street NE
Corridor Improvements
Snohomish County, WA

The distance at which construction noise will be audible is based on the distance at which noise will attenuate to background levels. That distance depends on (1) the sound intensity level of the equipment being used, (2) the background noise levels, and (3) the capacity of the landscape to absorb sound energy (noise attenuates more rapidly in forested areas, compared to hard landscapes such as parking lots, for example). Based on these considerations, the terrestrial portion of the action area encompasses the following areas, based on the distance at which construction noise is expected to be audible:

- Areas approximately 2,300 feet in all directions from the 4th Street interchange
- Areas approximately 2,300 feet east from the 88th Street NE interchange
- Areas approximately 1,900 feet west from the 88th Street NE interchange

The aquatic portion of the action area includes the following portions of Ebey Slough, Quilceda Creek, and Coho Creek:

- Areas of Ebey Slough immediately adjacent to the outfalls from stormwater facilities that receive and treat runoff from the project site
- The main stem of Quilceda Creek, extending upstream from Ebey Slough to the outfalls from stormwater facilities that receive and treat runoff from the project site
- Coho Creek, including aquatic habitats upstream of the 88th Street NE crossing

The extent of the action area in Ebey Slough and in the two streams downstream of the stormwater facility outfalls reflects the area in which contaminants in stormwater runoff may be expected to exceed background levels. The volume of water in Ebey Slough will dilute contaminants in stormwater to negligible levels almost immediately after the treated stormwater enters the slough. Contaminant concentrations in the streams are expected to be diluted to negligible levels a short distance downstream of the stream's confluence with a larger water body. For Quilceda Creek, this is the stream's mouth in Ebey Slough; for Coho Creek, this is the stream's confluence with Quilceda Creek.

The extent of the action area in Coho Creek upstream of the 88th Street NE crossing consists of the aquatic habitats to which fish access will be improved through the replacement of the Coho Creek culvert with a new bridge.

The action area in Coho Creek also encompasses the area where in-stream work will occur for stream realignment, as well as the area that could be exposed to elevated sediment and turbidity levels during construction. Given that work over and near the stream will be performed during the period when stream flows are lowest, and based on anticipated stream flows between 10 and 100 cubic feet per second, any elevated turbidity resulting from an unanticipated release of sediment to Coho Creek would not be detectable more than 200 feet downstream of the project limits. This distance represents the maximum anticipated extent of any sediment plumes that may be generated by work over or near the stream. Any effects resulting from clearing of riparian vegetation will also be limited to this area.

In addition to the areas described above, the action area includes all parcels within 0.25 mile of the project footprint. As such, it encompasses the areas where project construction could reasonably be expected to influence the conversion of currently undeveloped or underdeveloped parcels to a more developed state. The project is not dependent on any land-use development or changes in land use or zoning, and no land-use development projects depend directly on completion of this project.

2. Status and Presence of Listed Species and Designated Critical Habitat in the Project Action Area

Biologists consulted the following resources to develop and refine the list of species that might be affected by the proposed project:

- The USFWS Information for Planning and Consultation (IPaC) website (USFWS 2021a; see Appendix C)
- The WDFW SalmonScape mapping system (WDFW 2021a)
- The Northwest Indian Fisheries Commission Statewide Integrated Fish Distribution webmap (NWIFC 2022).
- Maps depicting the distribution of ESA-listed Pacific salmon and steelhead under the jurisdiction of NMFS)
- WDFW Priority Habitats and Species data (WDFW 2021b)
- USFWS critical habitat online mapper (2021b)
- Bird species maps and sighting data (eBird 2021)
- Washington Department of Natural Resources (WDNR) Washington Natural Heritage Program data (WDNR 2021)
- Tulalip Tribes natural resources GIS mapping
- The Quil Ceda Village Compensation Planning Framework for the Quilceda watershed (Quil Ceda Village 2009).

2.1 Species and Critical Habitat Lists and Listing Status

USFWS and NMFS indicate that the project will occur within the general range of the ESA-listed species and designated critical habitat shown in Table 2 on the next page. No species proposed for listing have been observed or are expected to use habitats in the action area, and no areas proposed for designation as critical habitat are present.

The IPaC list for the project does not identify the gray wolf as an ESA-listed species potentially present in the action area (Appendix C). This may be a product of the rule issued by USFWS on November 3, 2020 (85 Federal Register [FR] 69778), removing gray wolves from the list of species protected under the ESA. However, on February 10, 2022, the U.S. District Court for the Northern District of California vacated and remanded USFWS' delisting rule. The court's decision effectively reinstated the listing status the species had before USFWS issued the delisting rule. As a result, gray wolves in western Washington have a listing status of endangered.

Table 2. ESA-listed Species and Critical Habitat Considered for This BA

Species	Status	Federal Jurisdiction	Critical Habitat in Action Area
Chinook salmon (*Oncorhynchus tshawytscha*) (Puget Sound ESU)	Threatened	NMFS	Yes
Steelhead (*Oncorhynchus mykiss*) (Puget Sound DPS)	Threatened	NMFS	Yes
Bull trout (*Salvelinus confluentus*)	Threatened	USFWS	Yes
Southern Resident killer whale (*Orcinus orca*)	Endangered	NMFS	No
Marbled murrelet (*Brachyramphus marmoratus*)	Threatened	USFWS	No
Streaked horned lark (*Eremophila alpestris strigata*)	Threatened	USFWS	No
Yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	USFWS	No
Oregon spotted frog (*Rana pretiosa*)	Threatened	USFWS	No
Gray wolf (*Canis lupus*)	Endangered	USFWS	No

Three of the species identified in Table 2 are not expected to occur in the action area for the following reasons:

- **Streaked horned larks** are not expected to use habitats in the action area. This species is known to occur in portions of southern Puget Sound, along the Washington Coast, and at lower Columbia River islands (78 FR 61451, October 3, 2013). Breeding habitat for streaked horned larks in Washington consists of grasslands and sparsely vegetated areas at airports, sandy islands, and coastal spits. No such habitat is present in the action area. The nearest known breeding area is more than 60 miles from the action area. The nearest location where critical habitat has been designated for the streaked horned lark is more than 100 miles from the action area.
- **Yellow-billed cuckoos** nest almost exclusively in low- to mid-elevation riparian woodlands that cover 50 acres or more within arid to semiarid landscapes (Hughes 1999). Most breeding sites have been found in patches larger than 200 acres. Historical records indicate that breeding habitat for yellow-billed cuckoos in Washington consisted primarily of cottonwood and willow bottoms along the lower Columbia River and in the Puget Sound lowlands. The last confirmed breeding records of yellow-billed cuckoos in Washington are from the 1930s. Currently, the species no longer breeds in western Canada and the northwestern continental United States (Washington, Oregon, and Montana) (79 FR 59991, October 3, 2014). No observations of this species have been documented within 10 miles of the action area (WDFW 2021a; eBird 2021). No blocks of suitable forested riparian habitat larger than 5 acres are present in the action area.

- **Gray wolves** require areas with abundant prey and low levels of human disturbance. Based on the location of the project area in a lowland urban setting with high levels of human activity and no nearby roadless areas, no suitable habitat for this species is present in the action area.

Based on the above, the project has no potential to affect streaked horned larks, yellow-billed cuckoos, or gray wolves. Therefore, these species will not be addressed further in this analysis.

Information from the Washington Department of Natural Resources (WDNR) Natural Heritage database indicates that no ESA-listed plant species are known to occur within several miles of the project area (WDNR 2021).

The following section provides information about the status of Puget Sound Chinook salmon, Puget Sound steelhead, bull trout, Oregon spotted frog, marbled murrelet, and southern resident killer whale), as well as the timing and nature of their habitat use in the action area. Information about critical habitat in the action area is presented in Section 2.3.

2.2 Presence of Federally Listed and Proposed Species in the Project Action Area

Biologists from the Tulalip Tribes and Parametrix have conducted field investigations in the action area on several occasions, summarized below. Before conducting fieldwork, the biologists reviewed maps and materials on the soils, hydrology, topography, land use, floodplains, wetlands, streams, and wildlife habitat in the action area.

2.2.1 Marbled Murrelet

USFWS listed marbled murrelets as threatened under the ESA in 1992 due to a decline in abundance and habitat degradation in the southern portion of their range (57 FR 45328, October 1, 1992). Marbled murrelets nest in mature and old-growth conifer-dominated forest, and they forage in nearshore marine waters. Marbled murrelet population declines have been attributed primarily to the loss and fragmentation of old-growth nesting habitat caused by logging and development (Ralph and Miller 1995). In addition, this species is vulnerable to fishing nets and oil spills (Marshall 1988).

WDFW (2021b) does not report any observations of marbled murrelets in the action area. The closest suitable nesting habitat is located 15 miles east of the action area in the Cascade Mountains of eastern Snohomish County. The terrestrial portion of the action area (i.e., the area in which construction noise will be audible) overlaps some nearshore marine habitats in Ebey Slough. Additionally, outfalls from stormwater facilities associated with the project discharge into nearshore marine habitats. Therefore, the action area includes some potential foraging habitat.

A 10-acre stand of mature conifer trees (older than 70 years) is adjacent to Coho Creek and directly south of 88th Street NE. A biologist searched portions of the stand for potential nest platforms and found none. It is impossible to state with certainty that no platforms are present within that stand. The probability is low, however. Habitat modeling performed for the 20-year review of the Northwest Forest Plan classified the stand as marginal habitat. Stands classified as marginal are considered unsuitable habitat for old-growth-associated species such as marbled murrelets (Davis et al. 2011). All forested areas near the project site have been logged multiple times in the past century and a half. Furthermore, the stand is dense, isolated, and surrounded by residential and commercial uses.

2.2.2 Puget Sound Chinook Salmon

Chinook salmon in the Puget Sound evolutionarily significant unit (ESU) are listed as threatened under the ESA (64 FR 14308, March 24, 1999). The ESU includes naturally spawned Chinook salmon originating from rivers flowing into Puget Sound, along with Chinook salmon from 26 artificial propagation programs. Primary factors contributing to declines in Chinook salmon in the Puget Sound ESU include habitat blockages, genetic modification of wild fish through interbreeding with hatchery fish, urbanization, logging, hydropower development, harvests, and flood control and flood effects (NMFS 1998).

The action area includes portions of three streams where Chinook salmon may be present. Stormwater detention and treatment facilities will discharge to Ebey Slough (an estuarine waterway at the mouth of the Snohomish River) via two existing outfalls. Quilceda Creek, a tributary to Ebey Slough, will also receive treated and untreated stormwater runoff from the project site (TDAs 2, 6, 7, 8, and 9). Finally, project construction will entail ground-disturbing work in Coho Creek, a tributary to Quilceda Creek. In addition, one outfall for stormwater from TDA 5 discharges to Coho Creek directly upstream of the 88th Street NE crossing.

The Snohomish River basin supports both summer-run and fall-run Chinook stocks, which enter the system between June and September and then spawn from early fall through late November (Northwest Indian Fisheries Commission [NWIFC] 2022; WDFW 2021a; Haring 2002). Adult summer-run and fall-run Chinook are expected to be in Ebey Slough from June to September, migrating through the estuary on their way to spawning habitat in the Snohomish River system. Juvenile Chinook salmon have been captured in Ebey Slough during all months (Rice et al. 2014). Densities are highest during May and June, corresponding to the peak of the estuary residence time for juvenile Chinook from the Snohomish River system (Rice et al. 2014; Haring 2002). During beach seine surveys conducted in the Snohomish River estuary in 2013, Rice et al. (2014) found juvenile Chinook salmon at densities of 700 to 900 fish per hectare during May and June. Densities fell off rapidly in August (approximately 200 fish per hectare) and September (less than 100 fish per hectare) and began increasing again in March (approximately 160 fish per hectare) and April (approximately 240 fish per hectare).

According to NWIFC (2022), summer-run Chinook salmon have been documented in Quilceda Creek, and fall-run Chinook spawn in Quilceda Creek. Chinook use of Quilceda Creek is characterized as "relatively minimal," compared to Chinook use of the Snohomish River system (Quil Ceda Village 2009). This is likely attributable to the limited availability of suitable spawning substrates in the Quilceda Creek watershed. Only a few spawning areas have been identified along the main stem of Quilceda Creek, approximately 3 miles upstream from the action area (NWIFC 2022). Juvenile Chinook salmon from the Quilceda Creek system are predominantly ocean-type—that is, they migrate downstream from April to early June and are largely absent from fresh waters by mid-July (Quil Ceda Village 2009).

Neither NWIFC (2022) nor WDFW (2021a, b) reports the documented or expected presence of Chinook salmon in Coho Creek. The stream is characterized as gradient-accessible, meaning no natural barriers preclude access to habitats in the action area. However, low flows, high water temperatures, and a preponderance of fine sediments render the stream unsuitable for spawning (Nelson, personal communication, 2022a). It is possible that rearing juveniles may enter Coho Creek, although no Chinook salmon were documented at the smolt trap that was in place between 2002 and 2011 at 27th Ave NE, approximately 0.4 mile upstream of 88th Street NE (Tulalip Tribes Environmental Department [TTED] 2012). Juvenile and adult Chinook salmon are unlikely to be present in Coho Creek during the in-water work window (Nelson, personal communication, 2022a).

2.2.3 Puget Sound Steelhead

The Puget Sound steelhead distinct population segment (DPS) is listed as a threatened species (72 FR 26722, May 11, 2007). The DPS includes all naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from rivers flowing into Puget Sound (79 FR 20802, April 14, 2014). The DPS also includes steelhead from six artificial propagation programs.

As described above for Chinook salmon, the action area includes portions of three streams where steelhead may be present. The presence of steelhead in these streams is described below.

The Snohomish River basin supports both summer-run and winter-run steelhead (NWIFC 2022; WDFW 2021a). Summer-run steelhead pass through the lower estuary, including Ebey Slough, and return to freshwater systems between May and October (Haring 2002). Winter-run steelhead pass through the lower estuary and return to freshwater systems between November and April. For both runs, spawning takes place in freshwater habitats from January through June (Haring 2002). Steelhead smolts, because of their larger size and age compared to other species of outmigrating juvenile salmonids, typically do not linger in the estuarine environment before moving into the marine environment. Limited numbers of steelhead smolts have been sampled in estuary marshes, including Ebey Slough, primarily from mid-April though early July, although some steelhead smolts have been sampled through August (Pentec 1992).

According to NWIFC (2022), summer-run steelhead have been documented in Quilceda Creek, and juvenile winter-run steelhead rear in Quilceda Creek. Summer-run steelhead are typically found only where habitat is not fully utilized by winter-run populations; therefore, it is unlikely that many summer-run steelhead are present in Quilceda Creek (Quil Ceda Village 2009). Spawning activity within Quilceda Creek is limited to small areas with suitable substrate. Based on the preponderance of fine sediments, reaches of Quilceda Creek in the action area are extremely unlikely to support steelhead spawning (Nelson, personal communication, 2022b). Based on the freshwater residence time of juvenile steelhead (typically 2 to 3 years), rearing juveniles that originate from spawning grounds farther upstream in the system may be present in the action area at any time of year.

Neither NWIFC (2022) nor WDFW (2021a, b) reports the documented or expected presence of steelhead in Coho Creek. The stream is characterized as gradient-accessible, meaning no natural barriers preclude access to habitats in the action area. However, low flows, high water temperatures, and a preponderance of fine sediments render the stream unsuitable for spawning (Nelson, personal communication, 2022a). It is possible that rearing juveniles may enter Coho Creek, although no steelhead were documented at the smolt trap that was in place between 2002 and 2011 at 27th Ave NE, approximately 0.4 mile upstream of 88th Street NE (TTED 2012). Juvenile and adult steelhead are unlikely to be present in Coho Creek during the in-water work window (Nelson, personal communication, 2022a).

2.2.4 Bull Trout

USFWS listed bull trout as threatened under the ESA on November 1, 1999 (64 FR 58910). Similarly, USFWS proposed Dolly Varden (*Salvelinus malma*) for listing as endangered on January 9, 2001 (66 FR 1628) due to similarity of appearance with bull trout and because they overlap with bull trout in the coastal and Puget Sound region. A designation of threatened or endangered under the similarity of appearance provisions of the ESA extends the take prohibitions of Section 9 to cover the species. However, under section 4(e) of the ESA, a designation of threatened or endangered due to similarity of appearance does not extend other protections of the ESA, such as the consultation requirements for federal agencies under Section 7. Although not formally discussed in this document, the effects of the action on Dolly Varden are anticipated to be similar to those discussed for bull trout.

As described above for Chinook salmon, the action area includes portions of three streams where bull trout may be present. The presence of bull trout in these streams is described below.

The Snohomish River supports one of eight core populations of bull trout in the Puget Sound Management Unit (USFWS 2004). Fluvial and anadromous bull trout adults, sub-adults, and juveniles use habitats in estuarine habitats near the river's mouth, including Ebey Slough, primarily during spring and summer. Goetz et al. (2021) found the residence time of bull trout in marine waters to be fairly brief; most bull trout adults and subadults entered marine waters from April to June and migrated back into rivers by July and August as temperatures rose. Bull trout were not detected in the Snohomish River delta from October through December (Goetz et al. 2021) Spawning adults head upstream to headwater tributaries; anadromous subadults overwinter in the mainstem Snohomish River, generally upstream of the head of Ebey Slough, outside the action area (USFWS 2004; Goetz 2016; Pentec 2002; Snohomish Basin Salmon Recovery Forum 2005). Juvenile bull trout move through the estuary as they migrate out of the Snohomish River system during spring and summer (primarily mid-April through mid-July) (Goetz et al. 2004).

According to NWIFC (2022), bull trout may rear in the main stem of Quilceda Creek in the action area. On the other hand, USFWS found no clear documentation of bull trout us in this system, although they acknowledged the possibility that bull trout may enter the stream on occasion to forage (70 FR 56211, September 26, 2005). Based on the stream's distance from known spawning areas, elevated water temperatures in the stream, and the lack of suitable substrates, bull trout are not expected to spawn in the Quilceda Creek system. WDFW (1999) determined that successful spawning by bull trout occurs only upstream of the winter snow line (i.e., the elevation at which snow is present on the ground for much of the winter); no portions of the Quilceda Creek watershed are upstream of this line. If any bull trout are present in Quilceda Creek, they would likely be rearing juveniles or overwintering adults or subadults (Quil Ceda Village 2009; Marks, personal communication, 2021).

Neither NWIFC (2022) nor WDFW (2021a, b) reports the documented or expected presence of bull trout in Coho Creek. The stream is characterized as gradient-accessible, meaning no natural barriers preclude access to habitats in the action area. However, low flows, high water temperatures, and a preponderance of fine sediments render the stream unsuitable for spawning (Nelson, personal communication, 2022a). In addition, as noted above, bull trout are not expected to spawn in the Quilceda Creek system. It is possible that adults or subadults may enter Coho Creek to forage, although no bull trout were documented at the smolt trap located on 27th Ave NE (TTED 2012). Bull trout are unlikely to be present in Coho Creek during the in-water work window (Nelson, personal communication, 2022a).

2.2.5 Oregon Spotted Frog

USFWS listed Oregon spotted frogs as threatened under the ESA on August 29, 2014 (79 FR 51658). Oregon spotted frogs are associated with large, emergent freshwater wetlands, typically larger than 10 acres (Pearl and Hayes 2004). Breeding occurs in February or March at lower elevations. Females deposit egg masses in shallow, often temporary, pools generally no more than 6 inches deep. Eggs usually hatch within 3 weeks, and the tadpoles metamorphose into froglets during their first summer (Leonard et al. 1993).

The closest known extant population of Oregon spotted frogs is along the Samish River in Skagit and Whatcom Counties, approximately 30 miles north of the action area. In addition, Tulalip tribal biologists have conducted field work in wetlands throughout the watershed, but they have not observed any Oregon spotted frogs during that work (Warner, personal communication, 2022; Nelson, personal communication, 2022a). Nevertheless, guidance developed by WSDOT (2015) indicates that potentially suitable habitats

in the Quilceda Creek-Frontal Possession Sound watershed have the potential to support populations of Oregon spotted frogs.

The Coho Creek wetland complex near the 88th Street NE crossing contains potentially suitable breeding, rearing, and overwintering habitat for Oregon spotted frogs (Appendix D). Habitat features that provide potentially suitable habitat for breeding and rearing include inundation for at least 4 months per year, shallow water areas (less than 12 inches deep) with sun exposure, gradual topographic gradient from shallow water toward deeper, permanent water, and predominantly herbaceous wetland vegetation (WSDOT 2015). Given the proximity of forest cover and the predominance of dense, monocultural stands of reed canarygrass, habitats near the project site are unlikely to provide suitable oviposition sites for Oregon spotted frogs. Inundation of the Coho Creek wetland complex between October and March indicates the presence of potentially suitable overwintering habitat (WSDOT 2015).

2.2.6 Southern Resident Killer Whale

The southern resident DPS of killer whales was listed as endangered on February 16, 2006 (70 FR 69903), and a recovery plan was completed in 2008. In 2016, NMFS completed a 5-year review and concluded that southern resident killer whales (SRKWs) should remain listed as endangered (NMFS 2021).

The recovery plan identified several factors that may be limiting SRKW recovery. These include quantity and quality of prey, toxic chemicals that accumulate in top predators, and disturbance from sound and vessels (NMFS 2008). Oil spills are also a risk factor. It is likely that multiple threats are acting together to impact the whales. Although it is not clear which threat or threats are most significant to the survival and recovery of SRKWs, all the threats identified are potential limiting factors in the population dynamics of the DPS (NMFS 2008).

Chinook salmon make up a significant proportion of SRKW diets. Estimates range from approximately 70 percent during winter and spring to more than 90 percent during summer and fall (NMFS 2021).

Aquatic habitats in the action area consist of shallow, confined, estuarine areas that SRKWs are not expected to enter. There have been no documented observations of SRKWs in the action area. For these reasons, the project has no potential to directly affect SRKWs or their habitat. However, based on the potential for adverse impacts on Chinook salmon—a primary prey species for SRKWs—analyses in this BA consider potential indirect impacts on this species.

2.3 Presence of Federally Designated or Proposed Critical Habitat in the Project Action Area

2.3.1 Puget Sound Chinook Salmon Critical Habitat

Portions of Ebey Slough and Quilceda Creek in the action area have been designated as critical habitat for Puget Sound Chinook salmon (70 FR 52629, September 2, 2005). Coho Creek was not included in the designation.

Specific physical and biological features (PBFs) for Chinook salmon in freshwater and marine/estuarine areas, as defined by NMFS, include the following:

1. Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development

2. Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks
3. Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival
4. Estuarine areas free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between freshwater and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation
5. Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes supporting growth and maturation; and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels
6. Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation

Freshwater and estuarine habitats in Quilceda Creek and Ebey Slough in the action area are expected to support PBFs 2, 3, and 4. Based on the lack of potentially suitable spawning substrates, Quilceda Creek in the action area is not expected to support PBF 1 for Chinook salmon.

2.3.2 Puget Sound Steelhead Critical Habitat

Portions of Ebey Slough and Quilceda Creek in the action area have been designated as critical habitat for Puget Sound steelhead (81 FR 9251, February 24, 2016). Coho Creek was not included in the designation.

Critical habitat for Puget Sound steelhead is defined by the same PBFs as those identified above for Chinook salmon. Based on the lack of potentially suitable spawning substrates in the action area, freshwater and estuarine habitats in Quilceda Creek and Ebey Slough are expected to support PBFs 2, 3, and 4 of critical habitat for Puget Sound steelhead.

2.3.3 Bull Trout Critical Habitat

Critical habitat for bull trout was designated in September 2005 (70 FR 56211) and was revised on October 18, 2010 (75 FR 63897). Only Ebey Slough within the action area is designated as critical habitat. Quilceda Creek and Coho Creek are not mapped as critical habitat for bull trout. Therefore, only the applicable PBFs related to marine nearshore habitats are listed below.

Specific PBFs for bull trout in marine nearshore areas, as defined by USFWS, include the following:

2. Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers

3. An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish

5. Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.

8. Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited

All of these PBFs are present in Ebey Slough in the action area.

2.3.4 Southern Resident Killer Whale Critical Habitat

Designated critical habitat for SRKWs in Washington includes most of Puget Sound and the Strait of Juan de Fuca (71 FR 69054, November 29, 2006). Waters less than 20 feet deep relative to extreme high water are not considered to be within the geographical area occupied by SRKWs and are not included in the critical habitat designation. The outfalls in Ebey Slough that will receive discharges from project-related stormwater facilities are in waters less than 20 feet deep relative to extreme high water. Therefore, no SRKW critical habitat is present in the action area.

3. Environmental Setting

The action area is in a largely developed and rapidly urbanizing setting in the Puget Sound Lowlands. Portions of the project area west of I-5 are in the Tulalip Reservation. Reservation lands along 4th Street and 88th Street NE in the action area are zoned for commercial uses; some residential-zoned areas are nearby. Portions of the project area east of I-5 are in the Marysville city limits. Areas along 4th Street are in the densely developed Downtown Commercial zone, and areas along 88th Street NE are zoned as Community Business. Nearly all parcels within 0.25 mile of the two interchanges are developed to their maximum zoning potential.

According to the WSDOT Traffic GeoPortal, the average daily volume of traffic on I-5 at 4th Street (northbound and southbound combined) was 107,000 vehicles per day in 2020. The northbound and southbound on- and off-ramps at that interchange carried between 6,400 and 15,000 vehicles per day. The average volume on 4th Street was approximately 29,000 vehicles per day. The corresponding values at the 88th Street NE interchange were 98,000 vehicles per day (I-5 mainline) and 4,500 to 11,000 vehicles per day (on- and off-ramps). The WSDOT Traffic GeoPortal does not calculate traffic volumes on 88th Street NE. However, traffic data collected in 2019 to support modeling of future scenarios showed volumes of approximately 1,900 to 2,900 vehicles per hour on 88th Street NE at the I-5 interchange, which equates to approximately 19,000 to 29,000 vehicles per day.

3.1 Terrestrial Species and Habitat

The Coho Creek corridor within the Tulalip Reservation is surrounded by a wide forested buffer and is less confined. The Quil Ceda Village Business Park is directly east of Coho Creek and north of 88th Street NE. The area west of Coho Creek in this area is largely undeveloped forest. South of 88th Street NE, Coho Creek is bordered to the east by I-5 and rural residential development to the west. The Quilceda Creek riparian corridor in the Marysville city limits is surrounded by residential and industrial land use.

At the south end of the action area there is industrial and commercial activity situated between busy transportation corridors. The Ebey Slough waterfront contains Ebey Waterfront Park, stormwater conveyance features, asphalt parking areas, boat launch facilities and associated docks, and shoreline areas.

There are no documented occurrences of rare plants or priority ecosystems within the immediate project area (WDNR 2021). However, several rare plants and rare plant communities mapped west of I 5, approximately 1,000 feet west of the project action area, are associated with the salt marsh habitat at the mouth of Quilceda Creek.

Ebey Slough and the Quilceda Creek/Coho Creek wetland and stream complex provide foraging, breeding, nesting, and overwintering habitat to a wide variety of terrestrial and aquatic species.

3.2 Aquatic Species and Habitats

The action area includes portions of three streams: Ebey Slough (an estuarine waterway at the mouth of the Snohomish River), Quilceda Creek (a tributary to Ebey Slough), and Coho Creek (a tributary to Quilceda Creek). The known or expected use of these streams by ESA-listed fish is described in Section 2.2. The

following subsections provide additional information about habitat conditions pertinent to this analysis. Information about the wetland associated with Coho Creek is also provided.

Ebey Slough

Ebey Slough is a right-bank slough channel and tidally influenced distributary of the Snohomish River. The slough diverges from the main stem of the Snohomish River approximately 8 miles upstream from the river's mouth. Ebey Slough then flows north-northwest before discharging to Possession Sound approximately 2 miles north of the Snohomish River.

The north (right) bank of Ebey Slough in the action area has been highly modified by historic and current land use practices. Riparian vegetation is limited to a narrow band, only a few feet wide, vegetated mostly with weedy herbaceous species. Bottom substrates in the action area are dominated by fines, primarily sand and silt. Maximum depths at slack tide range from 8 to 12 feet (Laughlin 2011). A total maximum daily load allocation has been established for Ebey Slough to address low concentrations of dissolved oxygen downstream of I-5 (Ecology 2021).

Adult salmonids use the lower Snohomish River estuary, including Ebey Slough, primarily as a migration corridor and as a physiologic transition zone between salt and freshwater environments. Ebey Slough also provides rearing habitat and serves as a migratory corridor for juvenile salmonids. Spawning for all salmonid species occurs farther upstream in the mainstem Snohomish, Snoqualmie, and Skykomish Rivers and their tributaries.

Quilceda Creek

Quilceda Creek is a low-gradient channel within a broad valley known as the Marysville Trough. A high groundwater table supports stream flows, and the water table fluctuates rapidly in response to precipitation (Quil Ceda Village 2009). Tidal influence in the main stem extends to a point just upstream of I-5.

Based on the high proportion of fine substrates, Quilceda Creek is considered "not properly functioning" for substrate conditions (Snohomish County 2002). Potentially suitable spawning gravels are present in some sections of the stream upstream of the action area, however. The mainstem section of Quilceda Creek east of I-5 is listed on the 303(d) list for failure to meet dissolved oxygen standards (Ecology 2021).

The known or expected use of Quilceda Creek by ESA-listed fish species is discussed in Section 2.2 of this BA. NWIFC (2022) characterizes other salmonids' use of Quilceda Creek in the action area as follows:

- Coho salmon—rearing, documented
- Cutthroat trout—rearing[1], documented
- Chum salmon—present, documented
- Pink salmon—not documented, gradient-accessible

Coho Creek

The headwaters of Coho Creek are in Quil Ceda Village on the Tulalip Reservation (Quil Ceda Village 2009). In the action area, the stream has an unconfined, low-gradient channel. Stream flows remain within

[1] Nelson, personal communication, 2022b

the moderately incised channels under normal flow conditions but quickly jump the banks into a wide floodplain during periods of higher flow. Emergent and scrub/shrub-dominated wetlands occupy the floodplain and riparian habitats. Riparian vegetation is dominated by dense reed canarygrass and common cattail, with lesser amounts of shrubs, including red-twig dogwood, black twinberry, willow, and immature red alder. Large woody material is recruited, in small amounts, where the channel is close to the interphase between wetland and upland habitats. Beaver activity is significant in the Coho Creek drainage basin. Beaver dams are present both upstream and downstream of the 88th Street NE crossing, but not within 200 feet of the road.

Substrates in the action area are dominated by fine-grained materials, primarily sand with areas of patchy gravel where conditions allow. The dominant habitat is mid-channel scour pools with depths averaging between 2 and 3 feet. Instream cover is relatively low due to the lack of large woody material. However, dense overhanging vegetation likely provides some measure of cover and refuge.

Areas of significant erosion and channel incision (exceeding 10 feet) are located approximately 0.2 mile upstream of the crossing, which has contributed to the fine sediment bedload observed in the lower reaches of the stream, including the action area. As the project reach is largely depositional, the buildup of the fine sediments limits the suitability of the project area for spawning. Overall, fine sediment deposition is a limiting factor for all salmonids in the Coho Creek system.

Coho Creek is conveyed under 88th Street NE in a 54-inch concrete pipe. WDFW biologists visited the culvert in 1999, but they were unable to evaluate its status as a fish passage barrier. Based on evidence of backwater effects (90-degree turn and scour hole upstream of the road crossing), it is likely that the culvert is undersized and presents a velocity barrier to fish under high-flow conditions.

The Tulalip Tribes have undertaken extensive habitat restoration projects in and along Coho Creek upstream of 88th Street NE. Projects have included barrier removal (18 culverts removed or replaced), spawning gravel placement, channel reconstruction, riparian planting, and placement of log habitat structures. Before these efforts began in 2001, salmonids were not known or expected to use habitats in Coho Creek. Between 2002 and 2011, Tulalip tribal biologists monitored fish use of the stream and found evidence that coho salmon, chum salmon, and cutthroat trout spawn in Coho Creek (TTED 2012; Nelson, personal communication, 2021).

Wetlands

A large wetland complex (Wetland A) is associated with Coho Creek. The wetland has emergent and scrub-shrub vegetation classes and both riverine and slope hydrogeomorphic regimes. Hydroperiods within the wetland include permanently flowing stream, seasonal ponding, and saturation. The wetland boundary extends up into the hillslope at the start of the tree line on both sides of the stream corridor. The dominant plant species in the wetland is reed canarygrass (*Phalaris arundinacea*). Additional vegetation includes common cattail (*Typha latifolia*), hardhack (*Spiraea douglasii*), redtwig dogwood (*Cornus sericea*), Himalayan blackberry (*Rubus armeniacus*), black twinberry (*Lonicera involucrata*), red alder (*Alnus rubra*), and various willows (*Salix* spp.).

4. Effects of the Action

The following subsections describe potential direct effects on ESA-listed species and critical habitat, as well as identifying delayed consequences (indirect effects) of project actions. Effects of interrelated and interdependent activities are also addressed. Direct effects include all immediate impacts from project-related actions (e.g., construction-related impacts such as noise disturbance or loss of habitat), as well as impacts stemming from actions or activities that are interrelated or interdependent to the proposed action. Delayed consequences include effects that are reasonably certain to occur as a result of the proposed action, but later in time (generally after construction is complete). Delayed consequences may result from the operation of the project (e.g., long-term reductions in the quality or extent of riparian vegetation) or from future activities related to the project (e.g., induced land use change or growth).

4.1 Direct Effects

The proposed action includes the following activities with the potential for direct effects on ESA-listed species and critical habitat in the action area:

- Construction noise and increased human activity
- Ground-disturbing work in and near streams
- Fish exclusion during stream channel realignment
- Habitat loss
- Stream habitat enhancement

The following subsections identify the potential effects of these activities on ESA-listed species and critical habitat, as well as evaluating the potential for ESA-listed species to be exposed to each activity and its potential effects.

4.1.1 Construction Noise and Increased Human Activity

The terrestrial portion of the action area extends into some nearshore marine habitats (Ebey Slough) where marbled murrelets may potentially forage. Given the distance of the construction areas from potential foraging habitat, combined with the generally high level of noise and human activity in the potentially affected portion of Ebey Slough (at and near the I-5 crossing), construction noise is extremely unlikely to affect the behavior of any murrelets that may forage in Ebey Slough.

4.1.2 Ground-disturbing Work in and Near Streams

The potential for construction-related impacts to water quality will be addressed through the implementation of conservation measures and BMPs specified in the SWPPP and TESC plan that will be prepared and implemented before project construction begins. Additionally, the measures specified in Section 1.4 will be implemented, and they will reduce or eliminate the potential for water quality impacts during construction.

Construction will require the use of heavy machinery along the banks of Coho Creek both above and below the stream's ordinary high water line. Although unlikely, accidents such as spills of hazardous materials (typically green cement or grout, fuel, oils, and hydraulic fluids) or unanticipated construction mishaps could occur. Contaminants released through such accidents would degrade water quality and/or be toxic to fish and other aquatic organisms (including larval Oregon spotted frogs, if present). The

potential effect of accidental discharges, should they occur, will be mitigated in large part by implementation of the BMPs. Adherence to the site-specific SPCC plan will minimize the potential for direct effects associated with accidental spills to insignificant levels.

The proposed action will include the temporary disturbance of soils during grading and excavating activities. Site grading and excavation could result in erosion from disturbed upland soils, potentially increasing the sediment load in runoff entering Coho Creek. Stream reconstruction activities within Coho Creek may mobilize existing bottom sediments and sediments within the existing culvert, leading to short-term increases in turbidity and sedimentation of downstream areas. No ground-disturbing work will take place in or near Quilceda Creek or Ebey Slough, nor will equipment be operated in or near either of those streams.

Sedimentation is a concern because it can increase scour potential, degrade rearing habitat, and alter riparian vegetative structure. Increased turbidity can affect both primary food production and feeding efficiency by fish and other aquatic organisms. In addition, high turbidity can impair respiration and possibly hinder salmonid reproductive efforts.

Based on the implementation of site-specific BMPs, the effects of sedimentation and turbidity within Coho Creek are anticipated to be insignificant. In addition, the likelihood of any ESA-listed fish being present in Coho Creek during construction is extremely low. As discussed in Section 2, Chinook salmon, steelhead, and bull trout are not expected to spawn in Coho Creek. In the unlikely event that any of these species do spawn in Coho Creek, work in and near the water will take place during the in-water work window (July 15 to September 30), when migrating adults, incubating eggs, and outmigrating juveniles are least likely to be present. It is possible that rearing juvenile Chinook salmon or steelhead or foraging subadult bull trout could enter Coho Creek from Quilceda Creek. The probability of this occurring is very low, however, based on the following:

- During 10 years of monitoring at the smolt trap in Coho Creek approximately 0.4 mile upstream from the project site, none of these species was observed.
- The in-water work window corresponds to the period when low flows and elevated water temperatures are expected to discourage individuals of all three species (especially bull trout) from entering Coho Creek.
- Bull trout are not expected to spawn in the Quilceda Creek system, further reducing the likelihood that adults, subadults, or juveniles may venture into Coho Creek from Quilceda Creek.
- Juvenile Chinook salmon from the Quilceda Creek system are predominantly ocean-type—that is, they migrate downstream from April to early June and are largely absent from fresh waters by mid-July.
- Tulalip tribal biologists familiar with local conditions have determined that all three species are unlikely to be present in Coho Creek during the in-water work window (Nelson, personal communication, 2022a).

Similarly, the potential for Oregon spotted frogs to be exposed to construction-related turbidity or contaminants is discountable. This conclusion is based on (1) the low probability that Oregon spotted frogs are present in the action area, (2) the implementation of BMPs designed to minimize the risk of accidental releases, and (3) the low probability for areas near the project site to provide suitable breeding habitat for Oregon spotted frogs. If Oregon spotted frogs breed near the beaver ponds upstream of the project site, dispersing juveniles might venture into the project area. Given the area's isolation from

known populations, combined with the limited quality and extent of potentially suitable breeding habitat, this is a low-probability scenario.

4.1.3 Fish Exclusion

Most construction work for building the new bridge and reconstructing the Coho Creek stream channel will be performed in the dry, outside the active channel. In-water work will be limited to activities associated with diverting flow from the existing channel to the reconstructed channel under the new bridge. Before the existing channel is dewatered and flow is directed to the new channel, fish will be excluded from the affected areas. Fish exclusion will be performed in accordance with the standards and protocols established by USFWS (2012).

Fish exclusion will occur only during the in-water work window (July 15 to September 30). As noted above, in the unlikely event that Chinook salmon, steelhead, or bull trout spawn in Coho Creek, this work will take place when migrating adults, incubating eggs, and outmigrating juveniles are least likely to be present. Also, as discussed above, the probability that individuals of any of these species might venture into the construction area during the in-water work window is very low.

Oregon spotted frogs are not expected to use habitats in the actively flowing stream channel that will be dewatered when flow is directed to the new channel. As such, fish exclusion activities have no potential to affect Oregon spotted frogs.

4.1.4 Habitat Loss

Realigning the stream channel building bridge piers and retaining walls will entail the placement of fill below the ordinary high water line of Coho Creek (see Appendix B, sheets 9 and 10). The impacts of the loss of aquatic habitat in these areas will be offset by (1) the creation of new stream channel habitat, combined with (2) the removal of the gabion-supported road fill prism that currently occupies areas that would otherwise be within the ordinary high water line of Coho Creek and/or within associated wetland and riparian areas.

Approximately 160 linear feet of existing stream channel will be filled upstream and downstream of the culvert. In its place, approximately 220 linear feet of new stream channel will be created, for a net gain of about 60 linear feet. In addition, removal of the gabion-supported road fill prism at that location will create approximately 6,300 square feet of native soils and native vegetation that support riparian and wetland functions. The change in the amount of habitat within the ordinary high water line cannot be calculated because the ordinary high water line for the new stream channel will not be established until after the channel has carried flows for at least one winter.

Stream realignment will also result in the loss of some wetland areas that have the potential to provide suitable habitat for Oregon spotted frogs. As with stream channel habitat, these losses will be offset. As shown in Appendix B (sheets 9 and 10), approximately 6,100 square feet of Wetland A will be affected by structural fill (about 4,400 square feet) or stream channel creation (about 1,700 square feet). However, approximately 6,300 square feet of gabion-supported road fill prism will be removed, and approximately 1,400 square feet of stream channel will be filled. These areas, totaling about 7,700 square feet, will be planted with native species. Over time, these areas are expected to support wetland functions, potentially resulting in a net increase of approximately 1,600 square feet of wetland area at the project site. In addition, all impacts to wetlands, streams, and their regulatory buffers will be mitigated in accordance

with applicable tribal, federal, state, and local requirements. There will be no net loss of wetland area or ecological functions. The project is expected to result in a significant improvement in system processes and ecological functions of wetlands and streams after fill removal associated with the bridge construction.

Removal of the undersized culvert may reduce the amount of area affected by backwatering during high-flow events in Coho Creek. Based on low gradients, abundant beaver activity, and groundwater availability in Wetland A upstream of 88th Street NE, this change will not be expected to affect the hydrology of Wetland A. Modeling indicates that the project will not affect the water surface elevation in Coho Creek during a 2-year storm event. Measurable changes in water surface elevations would occur only during significantly larger storm events, which do not play a major role in determining wetland hydrology. For these reasons, the total area of Wetland A is not expected to change.

4.1.5 Stream Habitat Enhancement

Culvert removal, bridge construction, and stream channel realignment will have the following beneficial effects in the action area:

- A net increase of approximately 60 linear feet of surface-flowing stream habitat
- The replacement of approximately 6,300 square feet of gabion-supported road fill prism with native soils and native vegetation that support riparian functions
- Improved habitat conditions due to the placement of large woody material in and near the stream channel
- Increased availability of potentially suitable spawning substrates in the newly constructed channel
- Improved connectivity between the stream and its floodplain where the existing gabion-supported road fill prism is removed
- Improved movement of sediments through the system due to stream channel realignment and removal of the undersized culvert
- A potential net increase of approximately 1,600 square feet of wetland habitat that has the potential to support breeding, rearing, and overwintering by Oregon spotted frogs
- Improved access to approximately 65,000 linear feet (12.3 miles) of stream habitat in the Coho Creek system upstream of 88th Street NE (Shattuck, personal communication, 2021)

As discussed in Section 3.2 of this BA, the Tulalip Tribes have implemented extensive habitat improvement projects in Coho Creek, and the Tribes are developing plans for additional restoration. Removal of the undersized culvert at 88th Street NE will render those areas more accessible to anadromous salmonids, including ESA-listed species.

4.2 Delayed Consequences

Analyses in this section address the potential for effects resulting from long-term reductions in the quality or extent of riparian vegetation, changes in the amount of impervious surface in the action area, and potential changes in land use. Also addressed are potential impacts on prey species for SRKWs.

4.2.1 Riparian Habitat Modification

Bridge construction and stream channel realignment will entail clearing vegetation in the riparian zone along Coho Creek. Temporarily disturbed areas within the riparian zone will be replanted with native species that support riparian ecological functions. Currently, the predominant vegetation cover in the affected areas is Himalayan blackberry. Removal of this invasive species and planting native species will likely contribute to improved riparian habitat quality over time. In addition, approximately 6,300 square feet of gabion-supported road fill prism will be replaced with native soils and native vegetation, increasing the amount of area that provides riparian ecological functions.

Safety standards require that only low-stature species will be allowed to grow within 10 feet of the new bridge. Mature forest habitat will not develop in those areas, reducing the potential for recruitment of large woody material to the stream over the long term. This reduction will be offset by the placement of more than 60 pieces of large woody material in and near the stream as part of the project design.

4.2.2 Stormwater

Project construction will decrease the amount of PGIS in the action area by 0.24 acre while increasing the amount being treated and/or infiltrated by 5.90 acres (Table 1). Given the marked increase in the amount of PGIS receiving water quality treatment, combined with the overall reduction in PGIS area, the project is expected to decrease the pollutant loading in runoff to waters that support ESA-listed fish. The amounts of net change in PGIS and area being treated and/or infiltrated vary from TDA to TDA. Currently, runoff from 12.57 acres of PGIS in the nine TDAs does not receive treatment; the project will decrease that amount to 6.42 acres (Table 1). In eight of the nine TDAs, the amount of PGIS being treated or infiltrated will increase. The one exception is TDA 2, which is discussed in the evaluation of the potential delivery of stormwater to Quilceda Creek (see below).

In contrast to PGIS, the total area impervious surfaces will increase overall, by 1.27 acre. Flow control will be provided in compliance with the requirements of the Highway Runoff Manual.

Runoff from PGIS created or replaced by the project will be treated in accordance with the guidelines in the current Stormwater Management Manual for Western Washington, which represents the best available science for stormwater treatment and flow control. As discussed in Section 1.3.1, runoff from 90 percent of impervious surfaces (pollution-generating or non-pollution-generating) created or replaced in most TDAs will be routed to infiltration facilities. Implementation of these practices, combined with an overall reduction in the amount of PGIS, is expected to reduce the potential for ESA-listed species to be exposed to elevated concentrations of pollutants (including dissolved metals and other chemical contaminants) in runoff from impervious surfaces created or replaced by the project.

Nevertheless, residual contaminants in stormwater runoff from PGIS can harm ESA-listed fish, even after the water has been treated to reduce pollutant loads. ESA-listed fish in receiving waters may be exposed to contaminants in stormwater that is discharged to the receiving waters, or they may be exposed by consuming contaminated prey. The likelihood and magnitude of the effect are related to the length of time fish spend in the action area.

Recent research has found 6PPD-quinone, a contaminant found in runoff from roadways, to be a major contributor to pre spawning mortality in coho salmon (Tian et al. 2021). The effects of this contaminant on other salmonids (including ESA-listed Chinook salmon, steelhead, and bull trout) have not been studied in depth. The concentration at which 6PPD-quinone may have toxic effects on those species is

unknown, as is the effectiveness of stormwater treatment facilities in reducing its concentration in stormwater runoff. However, the use of bioretention facilities, such as those proposed for this project, has been found to prevent the acute lethal effects of stormwater on salmonids (Spromberg et al. 2015).

The concentrations of contaminants that remain in stormwater discharged to receiving waters are unknown, and they are expected to be highly variable. Similarly, the distance from the outfall to the point where the contaminants dilute to levels too low to cause detectable effects is also unknown and expected to be highly variable. Runoff volumes vary and depend on the timing, intensity, and duration of individual storm events. Contaminant concentrations are likely to be greatest during first-flush events, after contaminants have accumulated on roadways during long periods of dry weather. Such events are most common in early and mid-autumn.

Another significant factor is the system that conveys the stormwater to receiving waters. Where water is conveyed in open, vegetated ditches, contaminant concentrations are reduced through infiltration and adsorption to organic matter. Fewer opportunities for such reductions occur in conveyance systems that consist primarily of pipes.

The following subsections analyze the potential impacts of stormwater on ESA-listed fish in each of the three receiving waters (Ebey Slough, Quilceda Creek, and Coho Creek).

Ebey Slough

Ebey Slough receives stormwater runoff directly from TDAs 3 and 4 and indirectly from TDA 1.

Runoff from TDA 1 is discharged to a wetland that borders Ebey Slough; the discharge point is approximately 1,200 feet from the water's edge. In addition, the project will result in a net decrease in the PGIS in the TDA, as well as increasing the amount of impervious surface receiving water quality treatment (Table 1). Based on the distance from the discharge point to Ebey Slough, the potential for ESA-listed fish to be exposed to residual contaminants in treated runoff from TDA 1 is negligible.

Stormwater runoff from TDA 3 will be treated and discharged to an outfall in Ebey Slough immediately west of I-5. Under current conditions, runoff from TDA 3 does not receive any treatment before it is discharged to Ebey Slough. The project will result in a net increase of 0.43 acre of PGIS in TDA 3, and it will provide treatment for 0.41 acre (Table 1). Based on these factors, the project may not result in an appreciable reduction in contaminant levels in runoff from TDA 3. However, any residual contaminants that may remain in treated runoff from this TDA will be diluted almost immediately upon entering Ebey Slough.

Stormwater runoff from TDA 4 will be directed to the new regional stormwater treatment facility being developed by the City. Under current conditions, runoff from TDA 4 does not receive any treatment. The project will result in a minuscule net increase in the amount of PGIS in TDA 4 (0.01 acre), and it will provide treatment for an approximately equal area (Table 1). Although this change does not have a high likelihood of reducing the contaminant levels in runoff from TDA 4, the areas involved are minuscule relative to the total area that will be directed to the regional stormwater facility.

Infiltration and treatment that occur in these facilities and conveyance systems are expected to reduce the loadings of contaminants in stormwater that is discharged from the project site to Ebey Slough, compared to current conditions. Residual contaminants in treated stormwater, as well as contaminants in untreated runoff from existing PGIS in these TDAs, will be diluted almost immediately upon entering

Ebey Slough. Runoff from the approximately 7 acres of PGIS in these three TDAs represents a tiny proportion of the flow that enters Ebey Slough from the Snohomish River basin.

ESA-listed fish are likely to be exposed to contaminants in stormwater runoff from the project area only if they are present near the discharge points during or shortly after a storm event. Following are evaluations of the exposure potential for the various life stages of ESA-listed fish that may be present in Ebey Slough.

- Adult Chinook salmon may encounter stormwater discharges while they are passing through Ebey Slough en route to spawning grounds in the Snohomish River system from June through September. Given the small area where elevated contaminant concentrations occur (in the immediate vicinity of the discharge points), the infrequent occurrence of storm events during that period, and the brief duration of their presence (adults are not expected to linger in the estuary before heading upstream), the potential for exposure is very low.
- Juvenile Chinook salmon may be present in Ebey Slough in low densities at most times of the year, with higher densities in May and June. As with adults, only the individuals that venture close to the discharge points will be at risk of exposure. The overwhelming majority of storm events, including first-flush events, occur when densities are relatively low, minimizing the potential for exposure.
- Adult steelhead may encounter stormwater discharges while they are passing through Ebey Slough en route to spawning grounds in the Snohomish River system. Given the presence of both summer-run and winter-run steelhead in the system, migrating adults may be present in the slough at almost any time of year. Only the individuals that venture close to the discharge points will be at risk of exposure.
- Juvenile steelhead typically do not linger in the estuarine environment. Outmigrating smolts may be present from mid-April through August, but their presence is expected to be brief and transitory. Given the small area where elevated contaminant concentrations occur (in the immediate vicinity of the discharge points), the infrequent occurrence of storm events during that period, and the brief duration of the juveniles' presence, the potential for exposure is very low.
- Adult bull trout are most likely to be present in Ebey Slough from April through July or August. Given the small area where elevated contaminant concentrations occur (in the immediate vicinity of the discharge points) and the infrequent occurrence of storm events during this period, the potential for exposure is very low. In addition, the anadromous life history form makes up a limited proportion of the bull trout population in the Snohomish River system; the number of adults that may enter Ebey Slough is comparatively small.
- Subadult bull trout typically overwinter in reaches of the Snohomish River upstream of Ebey Slough. They are not expected to be exposed to discharges from stormwater facilities.
- Juvenile bull trout may be present between mid-April and mid-July. Similar to steelhead, their presence is expected to be brief, transitory, and at low densities. Given the small area where elevated contaminant concentrations occur (in the immediate vicinity of the discharge points), the infrequent occurrence of storm events during that period, and the brief duration of the juveniles' presence, the potential for exposure is very low.

Quilceda Creek

Quilceda Creek receives stormwater runoff from TDAs 2, 6, 7, 8 and 9. The following paragraphs evaluate the project's effects on contaminant levels in runoff that enters Quilceda Creek from those TDAs. Notably, runoff from the equivalent of 90 percent of all impervious surfaces (pollution-generating or non-pollution-generating) created or replaced in four of these five TDAs (6, 7, 8, and 9) will be routed to infiltration facilities.

Under current conditions, runoff from TDA 2 does not receive any treatment before it is discharged to Quilceda Creek. By reducing the area of PGIS in the TDA by 0.09 acre, the project is expected to reduce contaminant levels in runoff from TDA 2, compared to current conditions. Additional reduction of contaminant levels will occur through adsorption to soils and vegetation in conveyance ditches between the project site and the stream. Based on the small area of impervious surfaces in this TDA, project-driven changes in contaminant levels are not expected to have a detectable effect on water quality in Quilceda Creek.

Under current conditions, runoff from TDA 6 does not receive any treatment before it is discharged to Quilceda Creek. The project will result in a net increase of 0.01 acre of PGIS in TDA 6, an amount that is dwarfed by the amount of impervious surfaces that will receive treatment in the TDA (0.62 acre). As discussed in Section 1.3.1, much of the runoff from TDA 6 infiltrates in conveyance ditches and never enters Quilceda Creek. Contaminant levels in any water that reaches the stream are further reduced through adsorption to soils and vegetation in the ditches. Based on these factors, contaminant levels in runoff that reaches Quilceda Creek from TDA 6 are very low under current conditions and will decrease substantially after the project is complete.

Under current conditions, runoff from 0.62 acre of impervious surfaces in TDA 7 receives partial treatment in a bioswale. The project will result in a net increase of 0.10 acre of PGIS and a net increase of 1.31 acres receiving treatment. As discussed in Section 1.3.1, much of the runoff from this TDA infiltrates in conveyance ditches and never enters Quilceda Creek. Contaminant levels in any water that reaches the stream are further reduced through adsorption to soils and vegetation in the ditches. Based on these factors, contaminant levels in runoff that reaches Quilceda Creek from TDA 7 are very low under current conditions and will decrease substantially after the project is complete.

Under current conditions, runoff from 1.28 acres of impervious surfaces in TDA 8 drains to a stormwater treatment pond that is believed to outfall to Quilceda Creek north of 88th Street NE. Currently, the stormwater pond occasionally experiences flooding. The project will result in a net decrease of 0.04 acre of PGIS and a net increase of 0.15 acre receiving treatment. By creating a new infiltration facility, the project will reduce the amount of runoff directed to the stormwater pond, reducing the risk of the pond's capacity being exceeded during major storm events. As a result, contaminant levels in runoff that reaches Quilceda Creek from TDA 8 are expected to decrease after project completion.

Under current conditions, runoff from 0.13 acre of impervious surfaces in TDA 9 flows to a bioswale—approximately two-thirds of the total impervious surface area in the TDA. The project will result in a net increase of 0.03 acre of PGIS and a net increase of 0.07 acre receiving treatment. Based on these factors, contaminant levels in runoff that reaches Quilceda Creek from TDA 9 are very low under current conditions and will decrease after the project is complete.

Infiltration and treatment that occur in these facilities and conveyance systems are expected to reduce the loadings of contaminants in stormwater that is discharged from the project site to Quilceda Creek,

compared to current conditions. Although the volume of flow in Quilceda Creek is not as great as that in Ebey Slough, the combined area of the PGIS in these five TDAs (approximately 5 acres) is extremely small compared to the contributing watershed area upstream of their discharge points (approximately 20,000 acres).

To be cautious, it is assumed for this analysis that runoff from project-related impervious surfaces may contain elevated levels of contaminants from the upstream-most discharge point (that of TDA 8) all the way down to the mouth of the stream in Ebey Slough, a distance of approximately 3.7 miles. It is quite likely, however, that residual contaminants in treated stormwater, as well as contaminants in untreated runoff from impervious surfaces in these TDAs, will be diluted to insignificant levels a short distance downstream of each discharge point. Moreover, TDAs 6 and 7 encompass more than half of the impervious surface area that drains to Quilceda Creek. Most runoff from these two TDAs infiltrates in conveyance ditches and does not enter the stream. These factors, combined with the high proportion of runoff from PGIS in these TDAs that will receive treatment after the project is complete (4.18 of 5.36 acres—nearly 80 percent), indicate a low likelihood that harmful levels of contaminants will enter Quilceda Creek from these five TDAs.

Following are evaluations of the exposure potential for the various life stages of ESA-listed fish that may be present in Quilceda Creek.

- Small numbers of adult Chinook salmon are expected to pass through the action area en route to spawning grounds upstream. They may enter the stream as early as June and be present until spawning is complete in late November. Migrating adults are likely to encounter runoff from project-related impervious surfaces as they pass through the action area during this period, which includes the early and mid-autumn period when first-flush events are most likely to occur. Exposure to elevated levels of contaminants will be relatively brief, as the fish are expected to keep moving upstream until they encounter suitable spawning habitat.
- Juvenile Chinook salmon may rear in the action area, but they are more likely to use Quilceda Creek in the action area as a migratory corridor as they move to marine habitats from spawning and rearing areas upstream. Juvenile Chinook salmon from the Quilceda Creek system are predominantly ocean-type—that is, they rear in freshwater habitats for a relatively brief period before migrating downstream. Juvenile Chinook salmon are largely absent from Quilceda Creek by mid-July each year.
- Adult steelhead are expected to pass through the action area en route to spawning grounds upstream. Winter-run steelhead may pass through reaches of Quilceda Creek in the action area between November and April. If summer-run steelhead spawn in the system, they may pass through the action area May and October (as noted in Section 2.2.3, it is unlikely that many summer-run steelhead are present in Quilceda Creek).
- Juvenile steelhead may rear in the action area. Because rearing juveniles may rear in freshwater systems for several years, juvenile steelhead could be present in Quilceda Creek in the action area at any time of year and could, thus, be exposed to contaminants in runoff from project-related impervious surfaces.
- Bull trout are not expected to spawn in the Quilceda Creek system. For this reason, exposure to runoff from project-related impervious surfaces would occur only if individual bull adults or

subadults from other systems were to venture into the stream. Any such expeditions would likely involve individual fish and would occur only infrequently.

Coho Creek

Coho Creek receives stormwater runoff from TDA 5. Under current conditions, runoff from 1.54 acres of impervious surfaces in this TDA flows to a bioswale. The project will result in a net decrease of 0.41 acre of PGIS, and it will nearly double the area receiving treatment (increasing to 2.98 acres). As a result, contaminant levels in runoff from TDA 5 are expected to decrease, compared to current conditions. In addition, the discharge point for the new facility will be in Wetland A. Under most conditions, additional contaminant removal will occur via infiltration and adsorption in the soils and vegetation of the wetland before entering the stream. During major storm events, the water level in the stream may be high enough to reach the end of the discharge pipe.

No ESA-listed fish have been documented in Coho Creek, even during 10 years of monitoring of the smolt trap approximately 0.4 mile upstream of 88th Street NE. Nevertheless, it is possible that individuals of any of these species may enter the stream on occasion. The likelihood of presence is greatest near the confluence of Coho Creek with Quilceda Creek, approximately 0.8 mile downstream from the TDA 5 discharge point. Over that distance, contaminant levels will be reduced as substances in the stormwater interact with soils and vegetation and are diluted by flow entering the stream from adjacent wetlands. The probability that any ESA-listed fish may be exposed directly to effluent discharged from TDA 5 is extremely low. The risks of exposure for the various life stages of each species are evaluated below.

- Adult Chinook salmon migrating upstream in Quilceda Creek could stray into Coho Creek. Based on the absence of a spawning population in Coho Creek, combined with poor habitat conditions (low flows, high temperatures, and a preponderance of fine substrates), any such occurrences would likely be temporary and brief.
- If any juvenile Chinook salmon rear in the lower reaches of Quilceda Creek, they, too, could stray into Coho Creek. As discussed above, the action area is in the lower reaches of Quilceda Creek, downstream of known spawning areas. Juvenile Chinook salmon are not expected to remain in those reaches for extended periods. In addition, to be exposed to undiluted effluent from TDA 5, juveniles from Quilceda Creek would have to swim upstream in Coho Creek for approximately 0.8 mile. Taken together, these factors suggest the likelihood of exposure is discountable.
- Similar to adult Chinook salmon, spawning and migrating adult steelhead may stray into Coho Creek. Based on the absence of a spawning population of steelhead in Coho Creek, combined with poor habitat conditions (the preponderance of fine substrates, in particular), any such occurrences would likely be temporary and brief.
- Juvenile steelhead that rear in Quilceda Creek could stray into Coho Creek. The potential for this to occur is greater than for Chinook salmon because juvenile steelhead tend to remain in freshwater systems for several years. In addition, as they age and become stronger swimmers, juvenile steelhead will have a greater ability to venture into the reaches of Coho Creek near the TDA 5 discharge point. However, the lack of detections during 10 years of smolt trap monitoring at 27th Avenue NE suggests a low probability that juvenile steelhead may venture that far upstream in Coho Creek.

- As noted above, bull trout are not expected to spawn in the Quilceda Creek system, which includes Coho Creek. For this reason, exposure to runoff from project-related impervious surfaces would occur only if individual bull trout (adults, subadults, or juveniles) from other systems were to venture into the stream. Any such expeditions would likely involve individual fish and would occur only infrequently.

4.2.3 Changes in Land Use

As required by WSDOT (2020), the May 2009 interagency guidance for addressing delayed consequences was employed to determine whether the proposed project has the potential for delayed consequences resulting from changes in land use. Responses to applicable questions in the guidance document are provided below.

Question 1: Will the project create a new facility (e.g., new road, new interchange, etc.)?

Response: No.

Question 2: Will the project improve a level of service of an existing facility as established in local plans?

Response: Yes, probably. *The purpose of the project includes improving mobility for cars, trucks, emergency services, pedestrians, and transit users traveling to, from, and across I-5 on 4th Street and 88th Street NE and within the Tulalip Reservation. The project is consistent with the City of Marysville's 88th Street Master Plan (Ordinance No. 2865, June 13, 2011). That plan includes requirements for roadway and intersection improvements to accommodate ingress and egress for the 88th Street Master Plan area. The plan states that ingress and egress shall be located as far from the State Avenue//88th Street NE intersection as possible and shall be restricted to right-in/right-out only. The plan also includes a requirement for additional right-of-way along 88th Street NE to accommodate an eastbound through lane for the 88th Street NE/State Avenue intersection. That intersection is approximately 0.25 mile east of the project footprint. Nevertheless, to be cautious, this analysis assumes the project will improve level of service at both the 4th Street and the 88th Street NE interchanges as established in local plans.*

Based on these responses, the delayed consequences analysis guidelines require responses to the five questions (a through e) below.

a) Is there a building moratorium in place that is contingent on the proposed road improvements?

Response: No. *Analysts found no evidence that a building moratorium is in place near either interchange or that the project has been identified as a requirement for development of any proposed or permitted developments.*

b) Are there any land use changes tied by permit condition to the proposed project?

Response: No. *Analysts have not identified any developments tied to the project by permit condition.*

c) Do the project's National Environmental Policy Act documents identify other actions or land use changes caused by or resulting from the project that are reasonably certain to occur?

Response: No. *National Environmental Policy Act documentation has not yet been prepared for this project.*

d) Do development plans include scenarios for the planning area where land use differs based on a "build" and "no-build" outcome related to the proposed project?

Response: No. *Tribal and City development plans do not include scenarios based on different outcomes for this project.*

e) Is there land use change that is likely to occur at a different rate as a result of the project?

Response*:* ***No.*** *Based on the plan area's distance from the project site, the proposed improvements are not expected to accelerate the implementation of the City of Marysville's 88th Street Master Plan. In addition, there is no evidence that the Tulalip Tribes or the City have any plans to change existing Comprehensive Plan designations or zoning in response to this project. The increased efficiency of the intersections is expected to reduce congestion, but it is not expected to influence the rate of development in the area. Growth and development in the area are ongoing and expected to continue at approximately the same rate with or without the I-5/4th Street and 88th Street NE Corridor Improvements project.*

Based on the above responses, the I-5/4th Street and 88th Street NE Corridor Improvements Project is not expected to contribute to the conversion of currently undeveloped or underdeveloped parcels in the action area to a more developed condition. Even if that were to occur, however, such projects would not be expected to result in substantial increases in runoff from pollution-generated impervious surfaces associated with new development. First, the project area is in a densely developed urban setting with a fully developed road network. In addition, any future development projects in and near the action area will be subject to independent environmental review and permitting by various tribal, federal, state, and local agencies, limiting the potential for adverse effects on ESA-listed species. For example, regulations at both the state and the local level require the inclusion of stormwater treatment facilities in most projects that create new or expand existing impervious surface area (e.g., WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington). They require that stormwater be treated or detained before it is released to local streams to minimize its detrimental effects on aquatic species and their habitats. In addition, point source stormwater discharges to surface waters from construction sites of 1 acre or larger are required to obtain a National Pollutant Discharge Elimination System permit from Ecology. Compliance with these and other requirements will minimize the potential for adverse effects on ESA-listed species and habitat from future development projects.

Based on the above, it is possible, but unlikely, that completion of the I-5/4th Street and 88th Street NE Corridor Improvements project could contribute to delayed consequences related to increased pollutant loadings in runoff from future development projects. The likelihood of any such effects will be minimized, if not entirely avoided, through implementation of measures aimed at minimizing adverse effects on fish and wildlife species and habitat.

4.2.4 Impacts on Prey Species

Impacts to SRKWs as a result of impacts on prey species will be generally beneficial. Overall, the stream enhancement component of the project will provide access to additional upstream habitat potentially suitable to spawning. Any negative effects on SRKW prey species during fish-exclusion activities will be

minimal and short-lived. Potential stormwater-related impacts on Chinook salmon will be limited to the Quilceda Creek population, which is dwarfed by populations in the nearby Snohomish River system. These effects will not translate into population-level effects that would measurably reduce the availability of prey species for SRKWs. As such, the potential for adverse impacts on the availability of food resources for SRKWs is discountable, and the outcome of any such impacts would be insignificant.

In-water work has the potential to displace prey species for both Chinook salmon and steelhead. The effects of any such displacement would be localized and temporary, and prey species would be expected to return following construction. Given the availability of prey in adjacent habitats, the proposed action is anticipated to have an insignificant effect on the availability of prey for Chinook salmon and steelhead.

4.3 Effects on the Physical and Biological Features of Critical Habitat

4.3.1 PBFs for Puget Sound ESU Chinook Salmon and Puget Sound DPS Steelhead

PBFs essential to the conservation of the Puget Sound ESU Chinook salmon and Puget Sound DPS steelhead in freshwater and estuarine habitats are present in the action area, as identified in Section 2.3.1 and Section 2.3.2. Potential project-related effects on each of those PBFs are discussed below.

PBF 2 (freshwater rearing sites)

The only designated critical habitat in freshwater habitats in the action area is in Quilceda Creek. The project will not entail any work in or near Quilceda Creek. However, contaminants in runoff from impervious surfaces may degrade water quality for juvenile Chinook salmon and juvenile steelhead that rear in Quilceda Creek in the action area.

PBF 3 (freshwater migration corridors)

The only designated critical habitat in freshwater habitats in the action area is in Quilceda Creek. The project will not entail any work in or near Quilceda Creek. However, contaminants in runoff from impervious surfaces may degrade water quality for adult Chinook salmon and steelhead that migrate through Quilceda Creek in the action area to spawning areas upstream. Contaminants may also degrade water quality for outmigrating juveniles.

PBF 4 (estuarine habitats)

The project will have no direct effects on physical or biological components of estuarine habitats. No project work will take place within Ebey Slough. As discussed in Section 4.2.2, any residual contaminants in runoff from project-related impervious surfaces will be diluted to levels too low to detectably degrade water quality almost immediately upon entering Ebey Slough.

4.3.2 PBFs for Bull Trout

PBFs essential to the conservation of bull trout in marine nearshore areas are present in the action area, as identified in Section 2.3.1. Potential project-related effects on each of those PBFs are discussed below.

PBF 2 (migration habitats)

Under current conditions, the project area contains no permanent, partial, or seasonal physical, biological, or water quality impediments that prevent migration between spawning, rearing, overwintering, and freshwater and marine foraging habitats.

The project will not entail any work in or near Ebey Slough and, as such, will have no direct effects on physical or biological components of estuarine habitats. As discussed in Section 4.2.2, any residual contaminants in runoff from project-related impervious surfaces will be diluted to levels too low to detectably degrade water quality almost immediately upon entering Ebey Slough.

PBF 3 (food base)

The project is not expected to have any detectable direct or indirect effects on the availability of prey for bull trout in Ebey Slough.

PBF 5 (water temperatures)

The project will not modify any riparian vegetation near Ebey Slough, nor will it affect the temperature of any waters being discharged to Ebey Slough. As such, the project will have no effect on water temperatures in Ebey Slough.

PBF 5 (water quality and quantity)

As discussed in Section 4.2.2, any residual contaminants in runoff from project-related impervious surfaces will be diluted to levels too low to detectably degrade water quality almost immediately upon entering Ebey Slough. Given the small area of impervious surfaces contributing runoff to Ebey Slough, relative to the flow of the Snohomish River basin, the project has no potential for any detectable effects on water quantity in Ebey Slough.

4.4 Effects of Interrelated and Interdependent Actions

Compensatory mitigation, if required, will likely be accomplished by using hand tools to plant native trees and shrubs in areas near the project alignment. As such, compensatory mitigation will have little or no potential for adverse effects on ESA-listed species. If mitigation for project-related impacts to wetlands and wetland buffers may result in impacts to ESA-listed species and habitats not considered in this analysis, those impacts will be addressed through future consultation.

4.5 Cumulative Impacts

Consistent with the requirements specified in 50 CFR 402.02, the analysis of cumulative effects is based on future actions that are (1) reasonably certain to occur in the action area, and (2) not expected to include a federal nexus that would trigger ESA Section 7 compliance requirements.

Development projects may also contribute to increased pollutant loading in waters that support ESA-listed fish. No planned projects with that potential have been identified in the action area. Any future projects will have to comply with state and local regulations that protect wetlands, streams, and other critical areas. Such reviews will trigger the implementation of mitigation measures and practices aimed at avoiding or minimizing the potential for adverse effects on wetlands, aquatic species and habitat, and other natural resources such as fish and wildlife habitat conservation areas. Compliance with those requirements will

ensure that any future development projects in the action area are unlikely to result in adverse impacts to water quality in waterbodies that support ESA-listed fish.

Based on the above, the I-5/4th Street and 88th Street NE Corridor Improvements Project is not expected to contribute to adverse cumulative effects on ESA-listed species when considered in conjunction with other reasonably foreseeable future projects.

5. Conclusions and Effect Determinations

The following subsections present effect determinations and rationales for the ESA-listed species and designated critical habitat not addressed in previous consultations. See Section 2.2 for no-effect determinations for species identified by USFWS as potentially having to be considered in the effects analysis for this project.

5.1 Marbled Murrelet

The project **may affect** marbled murrelets for the following reasons:

- Marbled murrelets may forage in the estuarine habitats in Ebey Slough in the action area.
- A 10-acre stand of mature conifer trees is present in the action area.

The project is **not likely to adversely affect** marbled murrelets for the following reasons:

- Given the distance of the construction areas from potential foraging habitat, combined with the generally high level of noise and human activity in the potentially affected portion of Ebey Slough (at and near the I-5 crossing), construction noise is extremely unlikely to affect the behavior of any murrelets that may forage in the action area.
- No suitable nesting habitat is located within 15 miles of the project area.
- The 10-acre stand of mature conifer trees is dense, isolated, and extremely unlikely to support nesting by marbled murrelets (see Section 2.2.1 for additional details).

5.2 Puget Sound Chinook Salmon

The project **may affect** Puget Sound Chinook salmon for the following reasons:

- Stormwater detention and treatment facilities that receive runoff from impervious surfaces created or replaced by the project will discharge to waters where Chinook salmon adults and juveniles may be present.
- In-water work, including fish exclusion, will take place in waters that are accessible to Chinook salmon.

The project is **likely to adversely affect** Puget Sound Chinook salmon for the following reasons:

- Water discharged from detention and treatment facilities may contain residual concentrations of contaminants that may be toxic to Chinook salmon.

The project is not likely to appreciably reduce the survival and recovery of Puget Sound Chinook salmon for the following reasons:

- The treatment of stormwater will reduce contaminant levels in runoff from the project area, compared to current conditions.
- Residual contaminant levels will be further reduced by dilution, infiltration, and adsorption to organic materials as water travels in ditches between stormwater facilities and fish-bearing waters.
- Any residual contaminants in water from stormwater facilities that discharge into Ebey Slough will be diluted to negligible levels almost immediately after the water enters the estuarine environment.

- Chinook salmon are unlikely to be present in the portion of Coho Creek that will receive discharge from stormwater facilities.
- Work in Coho Creek will be restricted to the in-water work window, when neither adult nor juvenile Chinook salmon are expected to be present.
- The potential for delivery of sediment or contaminants during construction will be minimized through implementation of the measures specified in Section 1.4.
- The project will enhance stream habitat in Coho Creek and will allow improved access to more than 65,000 linear feet of upstream habitat.

5.3 Critical Habitat for Puget Sound Chinook Salmon

The project **may affect** critical habitat for Puget Sound Chinook salmon for the following reasons:

- Stormwater detention and treatment facilities that receive runoff from impervious surfaces created or replaced by the project will discharge to waters where critical habitat has been designated for Puget Sound Chinook salmon.

The project is **likely to adversely affect** critical habitat for Puget Sound Chinook salmon for the following reasons:

- Contaminants in runoff from impervious surfaces may degrade water quality in reaches of Quilceda Creek that are designated as critical habitat and that support the rearing and migration PBFs.

5.4 Puget Sound Steelhead

The project **may affect** Puget Sound steelhead for the following reasons:

- Stormwater detention and treatment facilities that receive runoff from impervious surfaces created or replaced by the project will discharge to waters where steelhead adults and juveniles may be present.
- In-water work, including fish exclusion, will take place in waters that are accessible to steelhead.

The project is **likely to adversely affect** Puget Sound steelhead for the following reasons:

- Water discharged from detention and treatment facilities may contain residual concentrations of contaminants that may be toxic to steelhead.

The project is not likely to appreciably reduce the survival and recovery of Puget Sound steelhead for the following reasons:

- The treatment of stormwater will reduce contaminant levels in runoff from the project area, compared to current conditions.
- Residual contaminant levels will be further reduced by dilution, infiltration, and adsorption to organic materials as water travels in ditches between stormwater facilities and fish-bearing waters.
- Any residual contaminants in water from stormwater facilities that discharge into Ebey Slough will be diluted to negligible levels almost immediately after the water enters the estuarine environment.

- Steelhead are unlikely to be present in the portion of Coho Creek that will receive discharge from stormwater facilities.
- Work in Coho Creek will be restricted to the in-water work window, when neither adult nor juvenile steelhead are expected to be present.
- The potential for delivery of sediment or contaminants during construction will be minimized through implementation of the measures specified in Section 1.4.
- The project will enhance stream habitat in Coho Creek and will allow improved access to more than 65,000 linear feet of upstream habitat.

5.5 Critical Habitat for Puget Sound Steelhead

The project **may affect** critical habitat for Puget Sound steelhead for the following reasons:

- Stormwater detention and treatment facilities that receive runoff from impervious surfaces created or replaced by the project will discharge to waters where critical habitat has been designated for Puget Sound steelhead.

The project is **likely to adversely affect** critical habitat for Puget Sound steelhead for the following reasons:

- Contaminants in runoff from impervious surfaces may degrade water quality in reaches of Quilceda Creek that are designated as critical habitat and that support the rearing and migration PBFs of critical habitat for Puget Sound steelhead.

5.6 Bull Trout

The project **may affect** bull trout for the following reasons:

- Stormwater detention and treatment facilities that receive runoff from impervious surfaces created or replaced by the project will discharge to waters where bull trout adults, subadults, and juveniles may be present.
- In-water work, including fish exclusion, will take place in waters that are accessible to bull trout.

The project is **not likely to adversely affect** bull trout for the following reasons:

- Bull trout are not expected to spawn in the Quilceda Creek system. Exposure to runoff from project-related impervious surfaces would occur only if individual bull adults or subadults from other systems were to venture into Quilceda Creek. The potential for such a visit to correspond with a storm event that discharges large amounts of contaminants to the stream is discountable. In addition, the impacts of any such exposure would likely be insignificant because the visit would be brief and transitory.
- The potential for exposure to project-related runoff to Ebey Slough is discountable, based on (1) the small area where elevated contaminant concentrations may occur, (2) the infrequent occurrence of storm events during the periods when adult or juvenile bull trout may be present in Ebey Slough, and (3) the small numbers of bull trout that are likely to be present.

5.7 Critical Habitat for Bull Trout

The project **may affect** critical habitat for bull trout for the following reasons:

- Stormwater detention and treatment facilities that receive runoff from impervious surfaces created or replaced by the project will discharge to marine nearshore waters where critical habitat has been designated for bull trout.

The project is **not likely to adversely affect** critical habitat for bull trout for the following reasons:

- The project will not entail any work in or near Ebey Slough and, as such, will have no direct effects on physical or biological components of marine nearshore habitats.
- Any residual contaminants in runoff from project-related impervious surfaces will be diluted to levels too low to detectably degrade water quality almost immediately upon entering Ebey Slough.

5.8 Oregon Spotted Frog

The project **may affect** Oregon spotted frogs for the following reasons:

- The project site is in a watershed where potentially suitable habitats have the potential to support populations of Oregon spotted frogs.
- Project construction will entail clearing and ground-disturbing work in a wetland complex (Wetland A) that contains potentially suitable breeding, rearing, and overwintering habitat for Oregon spotted frogs.

The project is **not likely to adversely affect** Oregon spotted frogs for the following reasons:

- The closest known extant population of Oregon spotted frogs is approximately 30 miles north of the action area.
- Tulalip tribal biologists have not observed any Oregon spotted frogs while performing field work in wetlands throughout the watershed.
- Given the proximity of forest cover and the predominance of dense, monocultural stands of reed canarygrass, habitats near the project site are unlikely to provide suitable oviposition sites for Oregon spotted frogs.
- Large areas of suitable wetland habitat will remain undisturbed in areas of the Wetland A complex upstream and downstream of the project site.
- Biologists will perform pre-construction surveys for Oregon spotted frog egg masses in potentially suitable habitat associated with Coho Creek near the 88th Street NE bridge construction site. If Oregon spotted frog egg masses are discovered, BIA and WSDOT will coordinate with USFWS on the implementation of additional conservation measures.
- Removal of the undersized culvert is not expected to affect the hydrology or extent of Wetland A.

5.9 Southern Resident Killer Whale

The project **may affect** southern resident killer whales for the following reason:

- The project may adversely affect Chinook salmon, a primary prey source for this species.

The project is **not likely to adversely affect** southern resident killer whales for the following reasons:

- The project will not appreciably reduce the survival and recovery of Chinook salmon and will not, therefore, result in any population-scale reductions in the availability of this prey resource for southern resident killer whales.
- Southern resident killer whales are not known or expected to use habitats in the action area and will not be exposed to any other potential project-related impacts.

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APPENDIX A

ESSENTIAL FISH HABITAT ASSESSMENT

Essential Fish Habitat Background

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies to consult with NMFS on activities that may adversely affect EFH.

The EFH designation for the Pacific salmon fishery includes all streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above the impassable barriers identified by the Pacific Fishery Management Council (PFMC 1999). In estuarine and marine environments, proposed designated EFH extends from near-shore and tidal submerged environments within state territorial waters to the full extent of the exclusive economic zone offshore of Washington, Oregon, and California north of Point Conception (PFMC 1999).

The Pacific salmon management unit includes Chinook, coho, and pink salmon. Of the managed Pacific salmon species, all three species have been identified as having EFH within the project area. Quilceda Creek and Coho Creek within the project area provide potential foraging, rearing, and spawning habitat. Ebey Slough serves as migration corridor for all three species and provides important rearing habitat for both juvenile Chinook and juvenile coho salmon.

In addition to Pacific salmon, EFH has been designated for groundfish and coastal pelagic species. EFH for Pacific coast groundfish is generally defined as the aquatic habitat from the mean higher high water line, and the upriver extent of saltwater intrusion in river mouths seaward. Pacific coast groundfish that may potentially occur within the action area during some life history phase include spiny dogfish, California skate, ratfish, lingcod cabezon, kelp greenling, Pacific cod, Pacific whiting (hake), sablefish, bocaccio, brown rockfish, copper rockfish, quillback rockfish, English sole Pacific sanddab, rex sole, and starry flounder. The Coastal Pelagic Species Fishery Management Plan describes the habitat requirements of five pelagic species: northern anchovy, Pacific sardine, Pacific (chub) mackerel, jack mackerel, and market squid (PFMC 1998). These four finfish and market squid are treated as a single species complex because of similarities in their life histories and habitat requirements. EFH for coastal pelagic species is generally defined as all marine and estuarine waters from the shoreline offshore above the thermocline.

The objective of this EFH assessment is to determine whether the proposed action "may adversely affect" designated EFH for relevant commercially, federally managed fisheries species within the proposed action area. It also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects on designated EFH resulting from the proposed action.

Description of the Proposed Action

The proposed project is described in detail in Section 1.3 of this BA.

Potential Adverse Effects of the Proposed Project

Potential impacts of the proposed action to ESA-listed fish species and habitats are discussed in Section 4 of this BA and are expected to be similar for all federally managed fish species that occur in the action area.

Adverse Effects on Essential Fish Habitat for Salmonids

Potential adverse effects on EFH for salmonids will be associated with reduced water quality (sedimentation and turbidity) resulting from realignment of the Coho Creek channel. In addition, contaminants in stormwater runoff discharged to Ebey Slough, Quilceda Creek, and Coho Creek could adversely affect EFH for salmonids.

Construction-related disturbance of sediments will be minimized by adherence to a TESC plan and installation and monitoring of appropriate erosion control BMPs during construction, limiting earthwork to only those areas necessary to complete that phase of construction, stabilization of disturbed soils shortly after work is completed, and adhering to approved in-water work windows. These effects are anticipated to be short in duration and are not expected to persist following construction.

Potential adverse effects associated with contaminants in stormwater runoff will be minimized by directing runoff to treatment and infiltration facilities.

Adverse Effects on Essential Fish Habitat for Groundfish

Contaminants in the effluent from stormwater facilities that discharge to Ebey Slough may pose adverse effects on groundfish in the estuary. Sediment and turbidity disturbances related to construction activities in Coho Creek (approximately 2.5 miles upstream of Ebey Slough) are not expected to reduce water quality within the estuary.

Adverse Effects on Essential Fish Habitat for Coastal Pelagic Species

Potential adverse effects on EFH for coastal pelagic species are similar to those discussed above for groundfish.

Essential Fish Habitat Conservation Measures

Conservation measures and BMPs are included for project activities and are described in Section 1.4 (Performance Standards and Impact Avoidance and Minimization Measures) of this BA. In addition, the project includes habitat enhancement and access improvement measures that will have beneficial effects on EFH for Pacific salmon in freshwater habitats.

Conclusions

EFH for Pacific salmon, groundfish, and coastal pelagic species are present in the action area. Construction activities in and near Coho Creek may increase sediment loads and turbidity, potentially degrading water quality. These effects will be short-lived and will not persist beyond the construction period. Over the long term, contaminants in effluent from stormwater facilities that discharge to freshwater and estuarine environments in the action area may pose adverse effects to EFH for salmonids, groundfish, and coastal pelagic species.

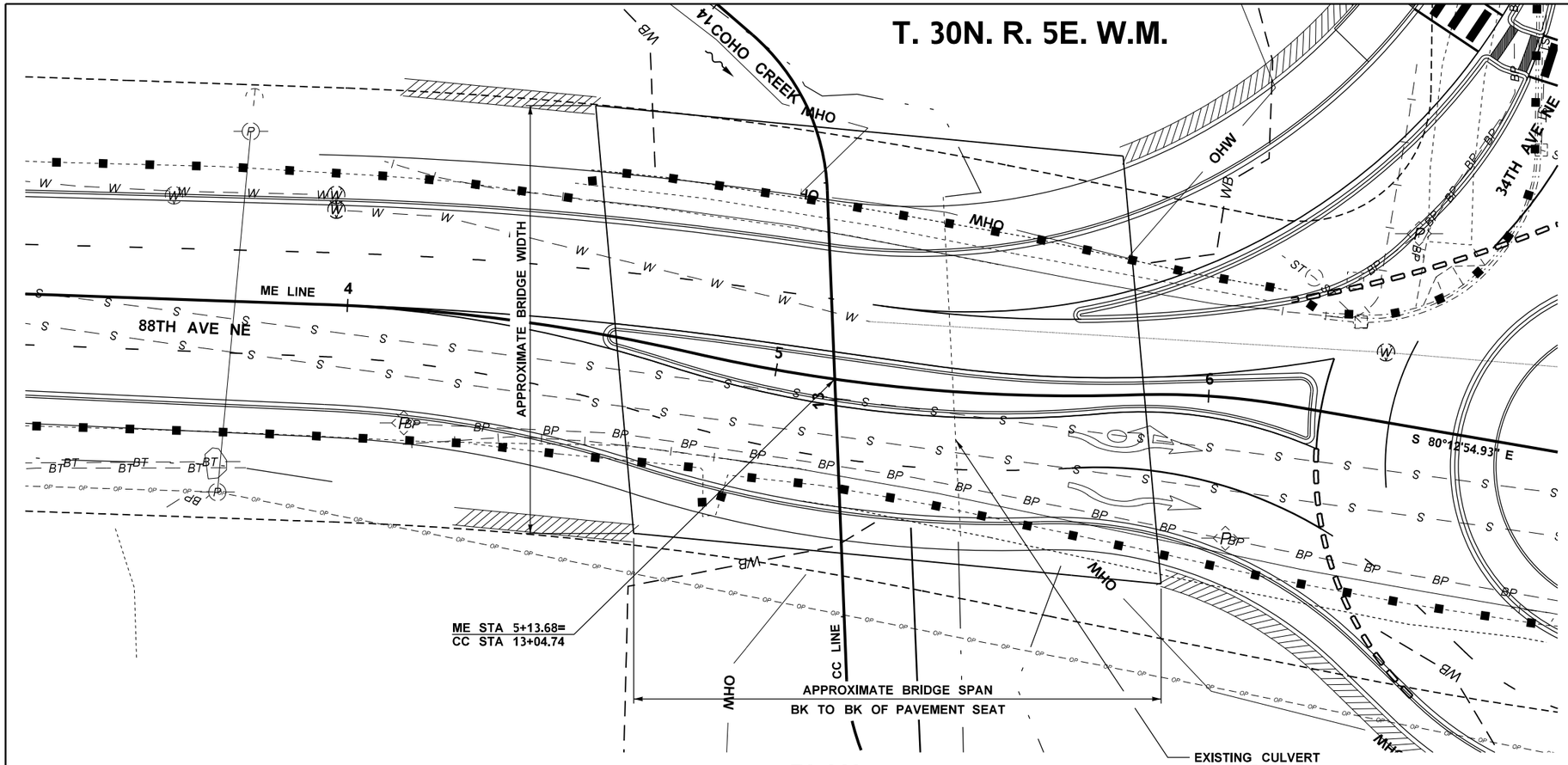
Based on the continued presence of contaminants in stormwater runoff discharged to Quilceda Creek and Coho Creek, the proposed action **may adversely affect** EFH for Pacific salmon.

Any residual contaminants in runoff from project-related impervious surfaces will be diluted to levels too low to detectably degrade water quality almost immediately upon entering Ebey Slough. For this reason, the project **will not adversely affect** EFH for groundfish or coastal pelagic species.

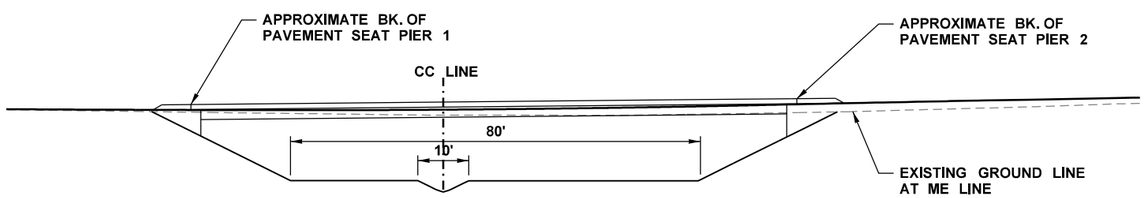
APPENDIX B

PROJECT FOOTPRINT

T. 30N. R. 5E. W.M.



PLAN



ELEVATION

0 15 30
SCALE IN FEET

LEGEND

- OHW — ORDINARY HIGH WATER
- WB — WETLAND BOUNDARY
- S — SEWER
- BP — BURIED POWER
- OP — OVERHEAD POWER

FILE NAME	\\parametrix.com\pmx\PSO\Projects\Clients\1598-TulalipTribes\554-1598-131 4thSt 88thSt Corridor\99Svcs\CADD\DGN\Figures\Bio Assessment\1598131_88TH_BG-3.dgn
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DATE	2/8/2022
PLOTTED BY	purgabut
DESIGNED BY	M. TSUN
ENTERED BY	B. MAY / B. PURGANAN
CHECKED BY	S. OLLING
PROJ. ENGR.	H. LONGFELLOW
REGIONAL ADM.	

REVISION	DATE	BY

REGION NO.	STATE
10	WASH

FED.AID PROJ.NO.

JOB NUMBER

CONTRACT NO. | LOCATION NO.

P.E. STAMP BOX — DATE

P.E. STAMP BOX — DATE

Parametrix

I-5 MP 200.42 TO MP 201.05

88TH STREET NE
CORRIDOR IMPROVEMENTS

MARYSVILLE/
SNOHOMISH COUNTY FEBRUARY 2022

CONCEPTUAL BRIDGE PLAN

PLAN REF NO

SHEET 3 OF 10 SHEETS

STREAM BUFFER

34th Ave NE

COHO CREEK

EXISTING 54" CONC. CULVERT

EXISTING CULVERT IE. 21.21'

88th St NE

EXISTING GABION WALL

EXISTING CULVERT IE. 20.83'

STREAM BUFFER

0 30 60
SCALE IN FEET

N

DATUM
(NAVD) 88

LEGEND

- EXISTING STREAM EDGE
- EXISTING STREAM BOTTOM
- WB WETLAND BOUNDARY
- 110 MAJOR CONTOUR INTERVAL
- MINOR CONTOUR INTERVAL
- RIGHT OF WAY
- EXISTING CULVERT
- EXISTING GABION WALL
- EDGE OF ROADWAY
- WHITE EDGE LINE
- LANE LINE
- EXISTING GUARDRAIL
- EXISTING FENCE
- OP EXISTING ABOVE GROUND POWER
- BP EXISTING BURIED POWER
- G EXISTING GAS LINE
- BT EXISTING BURIED TELEPHONE
- W EXISTING WATER LINE
- S EXISTING WATER LINE
- ST EXISTING STORM SEWER LINE
- FLOW DIRECTION

- EX CATCH BASIN
- EX STORM SEWER MANHOLE
- EX POWER POLE
- EX TREE
- EX SIGNS
- EX WATER VALVE BOX
- EX WATER METER BOX
- EX SAN. SEWER MANHOLE
- EX SAN. SEWER CLEANOUT
- EX IRRIGATION VALVE
- EX LIGHT POLE

PRELIMINARY - NOT FOR CONSTRUCTION

FILE NAME	\\parametrix.com\pmx\PSO\Projects\Clients\1598-TulalipTribes\554-1598-131 4thSt 88thSt Corridor\99Svcs\CADD\DGN\Figures\Bio Assessment\1598131-88th_Coho_PHD-4.dgn
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PLOTTED BY	purgabut
DESIGNED BY	S. RIFE
ENTERED BY	P. WILSON
CHECKED BY	C. BUITRAGO
PROJ. ENGR.	
REGIONAL ADM.	

REVISION	DATE	BY

REGION NO.	STATE	FED.AID PROJ.NO.
10	WASH	
JOB NUMBER		
CONTRACT NO.	LOCATION NO.	

P.E. STAMP BOX — DATE

P.E. STAMP BOX — DATE

TULALIP TRIBES © Parametrix

I-5 MP 200.42 TO MP 201.05

88TH STREET NE CORRIDOR IMPROVEMENTS

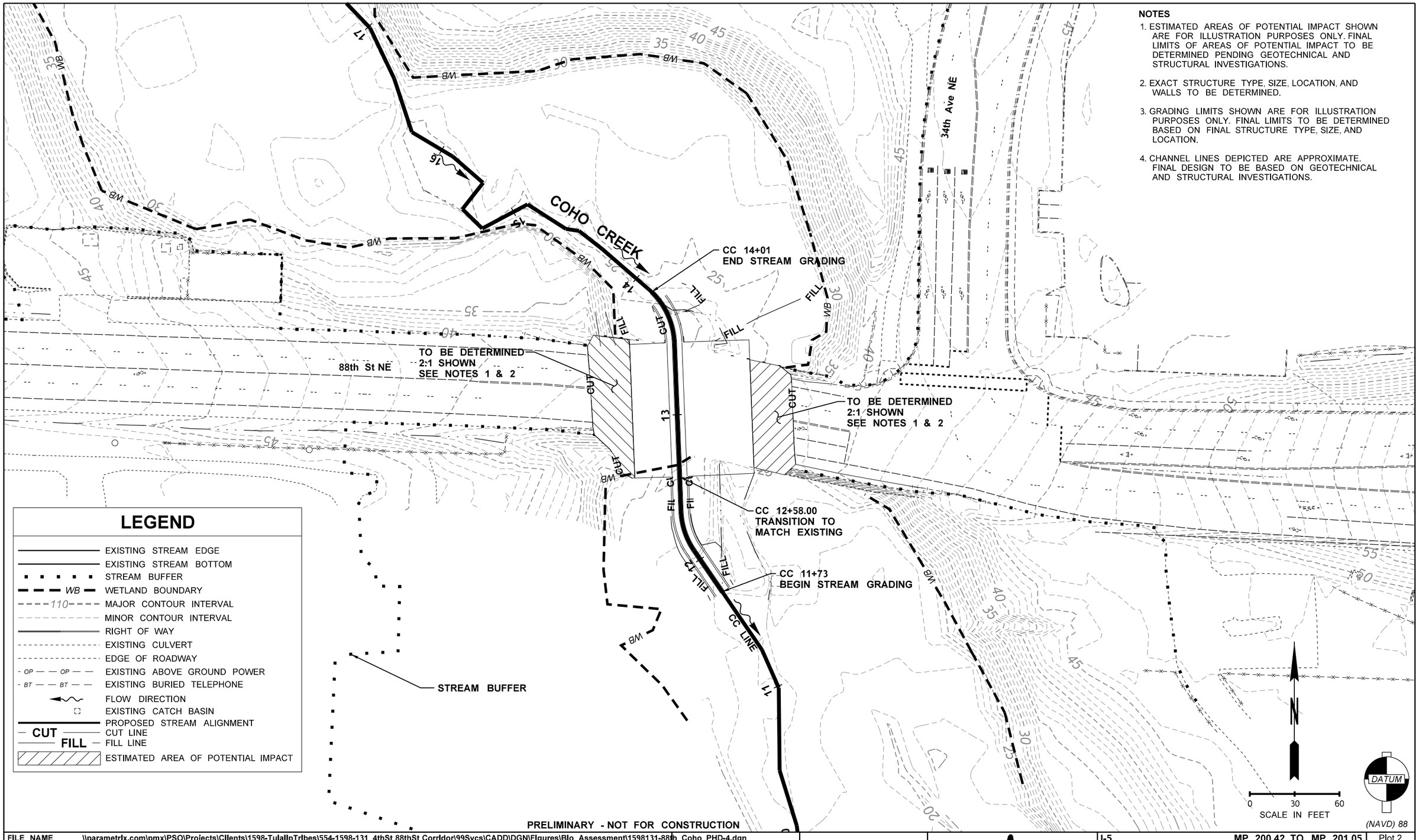
MARYSVILLE/ SNOHOMISH COUNTY FEBRUARY 2022

EXISTING STREAM

Plot 1

PLAN REF NO SE1

SHEET 4 OF 10 SHEETS



NOTES

1. ESTIMATED AREAS OF POTENTIAL IMPACT SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. FINAL LIMITS OF AREAS OF POTENTIAL IMPACT TO BE DETERMINED PENDING GEOTECHNICAL AND STRUCTURAL INVESTIGATIONS.
2. EXACT STRUCTURE TYPE, SIZE, LOCATION, AND WALLS TO BE DETERMINED.
3. GRADING LIMITS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. FINAL LIMITS TO BE DETERMINED BASED ON FINAL STRUCTURE TYPE, SIZE, AND LOCATION.
4. CHANNEL LINES DEPICTED ARE APPROXIMATE. FINAL DESIGN TO BE BASED ON GEOTECHNICAL AND STRUCTURAL INVESTIGATIONS.

LEGEND

- EXISTING STREAM EDGE
- EXISTING STREAM BOTTOM
- STREAM BUFFER
- WB — WETLAND BOUNDARY
- 110 — MAJOR CONTOUR INTERVAL
- MINOR CONTOUR INTERVAL
- RIGHT OF WAY
- EXISTING CULVERT
- EDGE OF ROADWAY
- OP — OP — EXISTING ABOVE GROUND POWER
- BT — BT — EXISTING BURIED TELEPHONE
- FLOW DIRECTION
- EXISTING CATCH BASIN
- PROPOSED STREAM ALIGNMENT
- CUT — CUT LINE
- FILL — FILL LINE
- ESTIMATED AREA OF POTENTIAL IMPACT

PRELIMINARY - NOT FOR CONSTRUCTION

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DESIGNED BY	S. RIFE							
ENTERED BY	P. WILSON							
CHECKED BY	C. BUITRAGO				CONTRACT NO.		LOCATION NO.	
PROJ. ENGR.								
REGIONAL ADM.		REVISION	DATE	BY				

DATE — P.E. STAMP BOX

DATE — P.E. STAMP BOX

Parametrix

I-5 MP 200.42 TO MP 201.05

88TH STREET NE
CORRIDOR IMPROVEMENTS

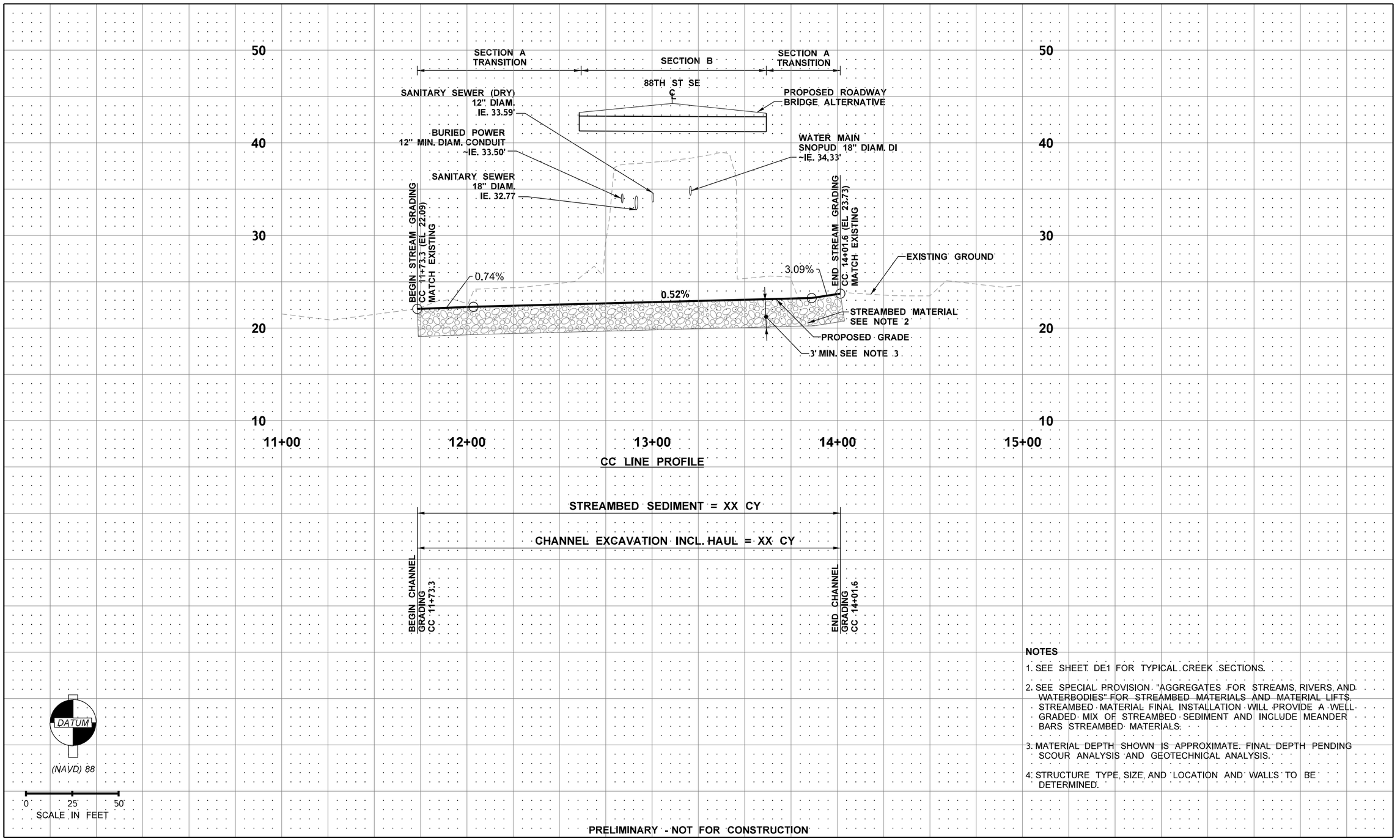
MARYSVILLE/
SNOHOMISH COUNTY FEBRUARY 2022

STREAM PLAN

Plot 2

PLAN REF NO
STR1

SHEET 5 OF 10 SHEETS



NOTES

1. SEE SHEET DE1 FOR TYPICAL CREEK SECTIONS.
2. SEE SPECIAL PROVISION "AGGREGATES FOR STREAMS, RIVERS, AND WATERBODIES" FOR STREAMBED MATERIALS AND MATERIAL LIFTS. STREAMBED MATERIAL FINAL INSTALLATION WILL PROVIDE A WELL GRADED MIX OF STREAMBED SEDIMENT AND INCLUDE MEANDER BARS STREAMBED MATERIALS.
3. MATERIAL DEPTH SHOWN IS APPROXIMATE. FINAL DEPTH PENDING SCOUR ANALYSIS AND GEOTECHNICAL ANALYSIS.
4. STRUCTURE TYPE, SIZE, AND LOCATION AND WALLS TO BE DETERMINED.

FILE NAME	\\parametrix.com\pmx\PSO\Projects\Clients\1598-TulalipTribes\554-1598-131 4thSt 88thSt Corridor\99Svcs\CADD\DGN\Figures\Bio Assessment\1598131-88th_Coho_PHD-4.dgn						
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DESIGNED BY	S. RIFE						
ENTERED BY	P. WILSON			CONTRACT NO.		LOCATION NO.	
CHECKED BY	C. BUITRAGO						
PROJ. ENGR.							
REGIONAL ADM.		REVISION	DATE	BY			

P.E. STAMP BOX — DATE

P.E. STAMP BOX — DATE

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I-5 MP 200.42 TO MP 201.05

88TH STREET NE
CORRIDOR IMPROVEMENTS

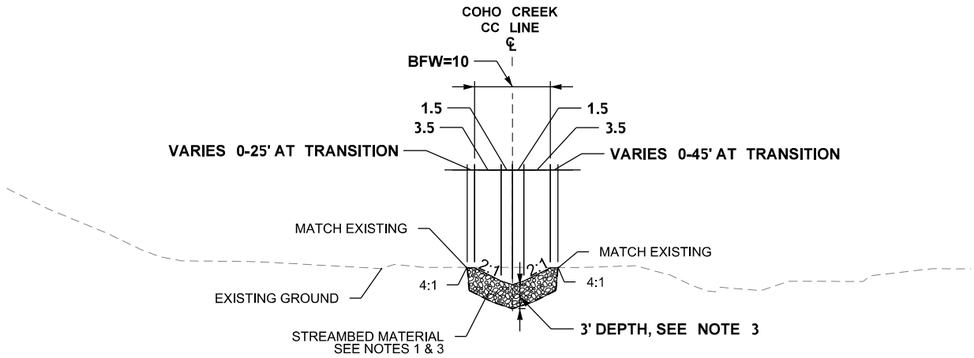
MARYSVILLE/
SNOHOMISH COUNTY FEBRUARY 2022

STREAM PROFILE

Plot 3

PLAN REF. NO. STP1

SHEET 6 OF 10 SHEETS



TYPICAL SECTION A

NOT TO SCALE
TRANSITION TO EXISTING
CC 11+73 TO CC 12+58
CC 13+48 TO CC 14+01

NOTES

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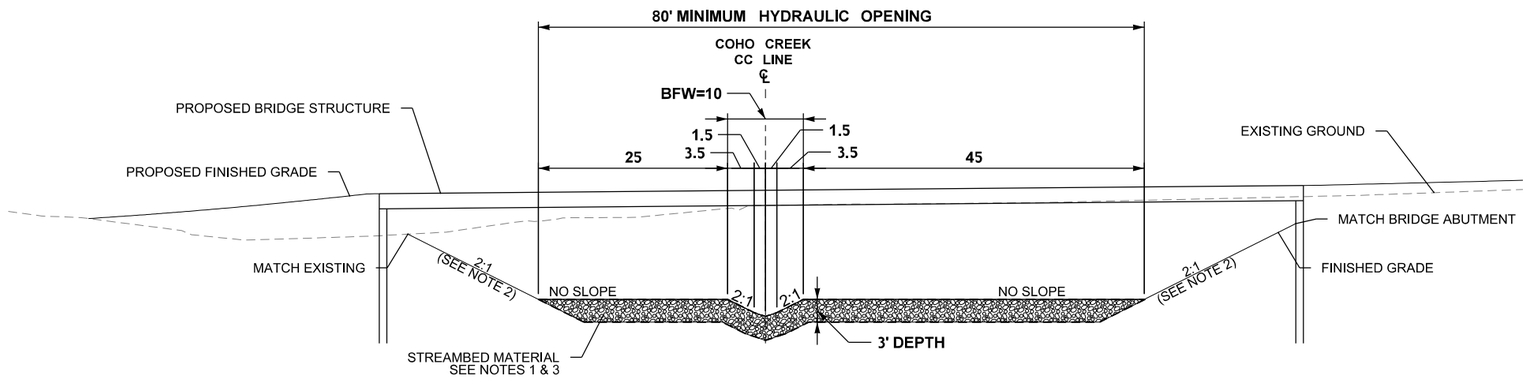
2. SLOPE SHOWN OUTSIDE OF MINIMUM CHANNEL SECTION ARE FOR ILLUSTRATION PURPOSES ONLY TO DEPICT ESTIMATED AREA OF POTENTIAL IMPACT. FINAL AREAS OF IMPACT TO BE DETERMINED PENDING GEOTECHNICAL AND STRUCTURAL INVESTIGATION, STRUCTURE TYPE, AND SIZE, AND STRUCTURE LOCATION.
3. MATERIAL DEPTH SHWON IS APPROXIMATE. FINAL DEPTH PENDING SCOUR ANALYSIS AND GEOTECHNICAL ANALYSIS.
4. STRUCTURE TYPE, SIZE, AND LOCATION AND WALLS TO BE DETERMINED.



TYPICAL SECTION B

NOT TO SCALE
THROUGH PROPOSED CROSSING
CC 12+58 TO CC 13+48

PRELIMINARY - NOT FOR CONSTRUCTION

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DESIGNED BY	S. RIFE				CONTRACT NO.	LOCATION NO.	
ENTERED BY	P. WILSON						
CHECKED BY	C. BUITRAGO						
PROJ. ENGR.							
REGIONAL ADM.		REVISION	DATE	BY			

P.E. STAMP BOX — DATE

P.E. STAMP BOX — DATE

Parametrix

I-5 MP 200.42 TO MP 201.05

88TH STREET NE
CORRIDOR IMPROVEMENTS

MARYSVILLE/
SNOHOMISH COUNTY FEBRUARY 2022

STREAM DETAILS

Plot 4

PLAN REF NO
DE1

SHEET 7 OF 10 SHEETS

0 20 40
SCALE IN FEET

N

11+73.47
END GRADING

13+86.42
BEGIN GRADING

CUT
FILL
FILL
FILL
CUT
CUT
FILL
FILL
CUT
FILL

12
13
14

80' HYDRAULIC OPENING

ESTIMATED AREA OF
POTENTIAL IMPACT

OHW
WB
MHO

LEGEND

- STREAM ALIGNMENT (13)
- CUT — CUT/FILL LINE
- FLOW DIRECTION
- EXISTING EDGE OF PAVEMENT
- EXISTING TOP OF CURB
- CHANNEL BANK LINES
- ROADWAY LINES
- OHW — ORDINARY HIGH WATER
- WB — WETLAND BOUNDARY
- EXISTING TREE
- LOG TYPE A - 2.5' DBH X 25' LONG
- LOG TYPE B - 2.0' DBH X 20' LONG

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DATE	2/8/2022						
PLOTTED BY	purgabut				JOB NUMBER		
DESIGNED BY	M. TSUN						
ENTERED BY	B. MAY / B. PURGANAN				CONTRACT NO.	LOCATION NO.	
CHECKED BY	S. OLLING						
PROJ. ENGR.	H. LONGFELLOW						
REGIONAL ADM.		REVISION	DATE	BY			

P.E. STAMP BOX DATE

P.E. STAMP BOX DATE

TULALIP TRIBES
Parametrix

I-5 MP 200.42 TO MP 201.05

88TH STREET NE
CORRIDOR IMPROVEMENTS

MARYSVILLE/
SNOHOMISH COUNTY FEBRUARY 2022

STREAM LARGE WOOD DEBRIS

PLAN REF NO

SHEET 8 OF 10 SHEETS

T. 30N. R. 5E. W.M.

CHANGES TO WETLANDS AND STREAMS

	WETLAND CONVERTED TO STREAM HABITAT - 1680 SF
	POTENTIAL WETLAND GAIN - 6252 SF
	STREAM CHANNEL GAIN - 1080 SF
	WETLAND FILL - 4383 SF
	STREAM CONVERTED TO POTENTIAL WETLAND - 1377 SF

N

88TH ST NE

COHO CREEK

CC LINE

CUT

FILL

OHW

MHO

WB

SM

S 80°44'54.39" E

N 8°40'28.23" E

S 26°47'19.47" E

N 23°17'26.93" E

0 25 50

SCALE IN FEET

FILE NAME	\\parametrix.com\pmx\PSO\Projects\Clients\1598-TulalipTribes\554-1598-131 4thSt 88thSt Corridor\99Svcs\CADD\DGN\Figures\Bio Assessment\1598131_88TH_CR-9.dgn				REGION NO.	STATE	FED.AID PROJ.NO.	I-5 MP 200.42 TO MP 201.05
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DATE	2022-02-14				JOB NUMBER			88TH STREET NE CORRIDOR IMPROVEMENTS
PLOTTED BY	tsunmic							MARYSVILLE/ SNOHOMISH COUNTY FEBRUARY 2022
DESIGNED BY	M. TSUN				CONTRACT NO.		LOCATION NO.	STREAM PLAN
ENTERED BY	B. PURGANAN							SHEET 9 OF 10 SHEETS
CHECKED BY								
PROJ. ENGR.	H. LONGFELLOW				P.E. STAMP BOX DATE		P.E. STAMP BOX DATE	
REGIONAL ADM.		REVISION	DATE	BY				

TULALIP TRIBES © Parametrix

CUT/FILL LEGEND	
CUT BELOW OHWM	
FILL ABOVE OHWM	
FILL BELOW OHWM	

TYPE	AREA (SF)
CUT BELOW OHWM	1035 SF
FILL BELOW OHWM	3691 SF

FILE NAME	\\parametrix.com\pmx\PSO\Projects\Clients\1598-TulalipTribes\554-1598-131 4thSt 88thSt Corridor\99Svcs\CADD\DGN\Figures\Bio Assessment\1598131_88TH_ESA-10.dgn				REGION NO.	STATE	FED.AID PROJ.NO.
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CHECKED BY							
PROJ. ENGR.	H. LONGFELLOW						
REGIONAL ADM.		REVISION	DATE	BY			

P.E. STAMP BOX — DATE

P.E. STAMP BOX — DATE

Parametrix

I-5 MP 200.42 TO MP 201.05

88TH STREET NE CORRIDOR IMPROVEMENTS

MARYSVILLE/ SNOHOMISH COUNTY FEBRUARY 2022

ESA DOCUMENTATION - OHWL CUT/FILL

PLAN REF NO

SHEET 10 OF 10 SHEETS

APPENDIX C

U.S. FISH AND WILDLIFE SERVICE OFFICIAL SPECIES LIST

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: March 18, 2022
Project Code: 2022-0021758
Project Name: I-5/4th Street and 88th Street NE Corridor Improvements

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, 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. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. 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 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

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

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 Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

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

Project Code: 2022-0021758
Event Code: None
Project Name: I-5/4th Street and 88th Street NE Corridor Improvements
Project Type: Road/Hwy - Maintenance/Modification
Project Description: The Tulalip Tribes, in partnership with the Washington State Department of Transportation and the City of Marysville, propose to develop and implement access improvements to two interchanges on the Interstate 5 (I-5) corridor within the boundary of the Tulalip Reservation in Snohomish County, Washington. The two interchanges are at 4th Street (also known as State Route 528 and Marine Drive) and 88th Street NE. The purpose of the I-5/4th Street and 88th Street Corridor Improvements project is to support community and economic vitality by reducing congestion and improving mobility for cars, trucks, emergency services, pedestrians, and transit users traveling to, from, and across I-5 on 4th Street and 88th Street NE and within the Tribes' Reservation while enhancing safety and protecting the integrity of the interstate system. The federal nexus for this project is approvals by the Bureau of Indian Affairs for expansion of existing road rights of way on tribal lands. Project construction is expected to require 2 years, with an anticipated start date of January 2024. All construction activities below the ordinary high water lines of streams will occur during the in-water work window established by the Tribes (July 15 through September 30).

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@48.06377355,-122.1846441,14z

Counties: Snohomish County, Washington

Endangered Species Act Species

There is a total of 5 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.

Birds

NAME	STATUS
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Streaked Horned Lark *Eremophila alpestris strigata* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7268	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. 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 overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Bull Trout *Salvelinus confluentus*	Final

https://ecos.fws.gov/ecp/species/8212#crithab

IPaC User Contact Information

Agency: Parametrix, Inc.
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Lead Agency Contact Information

Lead Agency: Bureau of Indian Affairs

APPENDIX D

OREGON SPOTTED FROG HABITAT ASSESSMENT

Oregon Spotted Frog Habitat Assessment

I-5/4th Street and 88th Street NE Corridor Improvements

Below are pertinent excerpts from WSDOT's February 17, 2015, guidance document for assessing the potential presence of and habitat use by Oregon spotted frogs in a project area. Excerpts from the guidance document are shown in Times New Roman typeface. Responses to questions in that document appear in Calibri typeface (*blue italics*).

1. Is the project in one of the following watersheds? Baker River, Black River- Chehalis River, Chambers Creek-Frontal Puget Sound, Chapman Creek, Finney Creek- Skagit River, Fraiser Creek, Green River Kent, Lacamas Creek, Lower Nisqually River- Frontal Puget Sound, Lower Snoqualmie River, Lower Trout Lake Creek, Outlet Creek, Quilceda Creek-Frontal Possession Sound, Samish River, Skagit River-Frontal Skagit Bay, South Fork Nooksack River, Sumas River, Wallace River-Skykomish River, Woods Creek-Skykomish River.
   The project site is in the Quilceda Creek-Frontal Possession Sound watershed.
2. Is the project in Oregon Spotted Frog Critical Habitat?
   No.
3. Is the project likely to impact any aquatic (pond, channel, ditch, river, stream, lake) or wetland (including seasonally flooded pastures, disturbed or farmed wetlands etc.) habitat?
   Yes. Construction of a bridge in place of the culvert that conveys Coho Creek under 88th Street NE will affect Coho Creek and associated wetlands.

Office Screening Model

a. Do the soils consist of loams (silt, clay, fine sandy gravelly, cobbly and stony), mucks (e.g., Semiahmoo, Mukilteo), loamy sands, or other poorly drained fibisols, mesisols, organic cryosols, gleysols, or umisols?
   Mapped soils include Norma loam, a poorly drained, hydric soil.
b. Does the action area lie between sea level and 1,100 feet in elevation?
   The action area is below 1,100 feet elevation.
c. Do any of the following types occur within the action area? [wetland types identified by the Washington Department of Ecology or the National Land Cover map; waterways identified in the National Hydrology Dataset]
   The Washington Department of Ecology modeled wetlands inventory shows Palustrine Scrub/Shrub Wetland and Palustrine Forested Wetland types in the project area.
   The National Land Cover map shows areas of herbaceous emergent wetlands and woody wetlands in the project area.
   The National Hydrology Dataset shows a permanent watercourse (Coho Creek) at the project site.

On-Site Screening Model

a. Evaluate the action area for Breeding habitat

i. Contains low-gradient shallows with extensive areas < 12 inches deep.
The floodplain along Coho Creek supports areas of low-gradient shallows less than 12 inches deep during the breeding season.

ii. Inundated for at least 5 weeks during late winter/early spring, starting as early as February.
Based on the low-gradient basin and high groundwater table in the action area, combined with observations of extensive inundation during wetland delineation and rating surveys in November 2020, it is probable that areas of shallow inundation are present in the wetlands associated with Coho Creek for at least 5 weeks during late winter and early spring.

iii. Dominated by (constituting > 50% of existing vegetative cover) emergent wetland vegetation. Ideal vegetation cover would be plants such as *Carex*, *Eleocharis*, *Juncus*, *Sparganium*, *Spiraea*, *Potamogeton*, *Scirpus*, *Utricularia*, *Ranunculus*, filamentous algae, and native grasses, but which may also contain subdominant vegetation of other plant species having an upright submergent or emergent growth form. However, most OSF occupied areas are dominated by reed canarygrass (*Phalaris*), therefore, do not discount this vegetation type as breeding habitat.
Floodplain habitat along Coho Creek near the project site consists of a relatively narrow corridor (approximately 100 feet wide) of reed canarygrass-dominated vegetation surrounded by conifer-dominated forest. About 1,000 feet upstream of the project site, the corridor of low-growing vegetation broadens to approximately 200 feet wide, where a series of beaver ponds is evident in aerial imagery. The total area of the non-forested corridor is approximately 6 acres.
Biologists performing wetland surveys in November 2020 did not record any observations of native grasses or other herbaceous plants from the genera listed above. The timing of those surveys likely hindered plant identification, however. Given the proximity of forest cover and the predominance of dense, monocultural stands of reed canarygrass, habitats near the project site are unlikely to provide suitable oviposition sites for Oregon spotted frogs.

iv. Have > 10% plant coverage of bottom substrate, primarily in submergent and emergent growth forms. Reed canarygrass may be managed to replicate short, emergent vegetation.
Vegetation cover exceeds 50%. As noted above, wetland vegetation near the project site consists predominantly of dense stands of unmanaged reed canarygrass.

v. Have low surface and above-water canopy closure in the form of woody-stemmed shrubs and trees, excepting the margins (within 50 ft of open expanses) of deciduous forest stands where leaf-out occurs after egg-laying.
Most areas of low-growing vegetation near the project site are less than 50 feet from conifer-dominated forest.

vi. Remain connected to summer-season habitat by still or slow-moving surface waters until post hatching in an average year. This period will be 5-8 weeks from the date of egg deposition and will usually occur by June 30 in an average year.
Areas of still or slow-moving surface water are expected to persist in the stream's floodplain through June in most years.

b. Evaluate the action area for suitable summer-season features.

i. Contains persistent (perennial) lentic pools, ditches, canals, or slow-moving rivers…
The Coho Creek basin in the action area has a high groundwater table and a low-gradient floodplain. Flows are expected to be perennial. Numerous slow-moving, braided channels that meander throughout the floodplain provide persistent lentic habitat.
…that:

- Have emergent, floating, or submergent wetland vegetation growth forms.
  Emergent vegetation, consisting of reed canarygrass and giant horsetail, is present.
- May have palustrine forested vegetation including *Spiraea*, *Salix* or *Alnus* in shrub or tree form or upland shrub-tree form vegetation present and within a distance that provides at least partial shading.
  Trees (red alder) and shrubs (willows, hardhack) are present nearby and provide ample shade.
- Are/become connected via suitable surface water to winter habitat during the fall.
  Based on the perennial flows, floodplain channels are expected to maintain a surface water connection to suitable winter habitat during the fall.

c. Evaluate the site for winter habitat.

i. Contains ponded, pooled or channeled areas of either lotic or lentic water that:

- Exceed 6" in depth.
  During a site visit on November 20, 2020, biologists noted multiple stream channels and ponding, with water depths ranging from 12 inches to 2.5 feet. Such habitat is likely to be present throughout a typical winter season.
- Have some combination of aquatic bed, emergent, and scrub-shrub vegetation present and intermixed with unconsolidated bottom habitat.
  Braided channels meander through emergent (reed canarygrass and cattail) and scrub-shrub (hardhack and willow) vegetation throughout the floodplain. Abundant fine sediments and organic material create unconsolidated bottom habitat throughout.
- Are not scoured (scoured = having flows capable of removing rooted vegetation or re-arranging distribution of large- grained sand and gravel substrates) by winter storm-related flows during an average year.
  The stream is in a relatively flat basin, with an approximately 1- to 2-percent gradient. During higher flows, the stream does not tend to rearrange or distribute larger substrates. Only one area of scour was observed during the field visit.
- Are inundated from at least October through March.
  The braided channels in the floodplain are expected to be perennially inundated.