Appendix B

Ecosystem Discipline Report

I-5/4th Street and 88th Street NE Corridor Improvements Project Ecosystems Discipline Report

Prepared for

TULALIP TRIBES

February 2023

Prepared by

Parametrix

I-5/4th Street and 88th Street NE Corridor Improvements Project Ecosystems Discipline Report

Prepared for

Tulalip Tribes

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ACRONYMS AND ABBREVIATIONS

ACIS	Applied Climate Information System
BIA	Bureau of Indian Affairs
BMP	best management practice
CAO	Critical Area Ordinance
DPS	distinct population segment
EFH	essential fish habitat
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FHWC	Fish and Wildlife Habitat Conservation Area
FR	Federal Register
HUC	hydrologic unit code
I-5	Interstate 5
LRR	Land Resource Region
MLRA	Major Land Resource Area
MMC	Marysville Municipal Code
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NWIFC	Northwest Indian Fisheries Commission
OHWL	ordinary high water line
PGIS	pollution-generating impervious surfaces
PHS	Priority Habitat and Species
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
Tribes	The Tulalip Tribes
TTC	Tulalip Tribal Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WETS Tables	climate analysis for wetland tables
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

1. INTRODUCTION

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 in the vicinity of two interchanges on the Interstate 5 (I-5) corridor within the boundary of the Tulalip Reservation in Snohomish County, Washington. The two interchanges (hereafter referred to as "the project") are at 4th Street (also known as State Route 528 and Marine Drive) and 88th Street NE. The federal nexus for this project is approval by the Bureau of Indian Affairs (BIA) for expansion of existing road right-of-way on tribal lands.

The project also includes a fish passage enhancement element. The project would remove an existing fish barrier at the culvert crossing of Coho Creek under 88th Street and replace it with a 100-foot-long, single-span bridge. As determined through preliminary hydraulic design, the new bridge would have a minimum hydraulic opening of 30 feet and a vertical clearance exceeding the desired wildlife clearance height of 8 feet (Parametrix 2022a).

Consistent with the requirements of the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA), this report provides information about existing conditions and evaluates the effects of the I-5/4th Street and 88th Street NE Corridor Improvements project on aquatic resources, vegetation and wildlife resources, and wetland resources. In addition, this report presents mitigation options for avoiding, minimizing, and compensating for potential impacts.

1.1 Project Location

The project involves improvements at the I-5 interchanges along 4th Street (exit 199) and 88th Street NE (exit 200). The project area straddles the boundary between Tulalip Tribal land and Marysville in Snohomish County, Washington (see Figure 1 in Appendix A). The project area comprises the extent of ground disturbance for each interchange. The approximate latitude/longitude coordinates of the northern and southern project area limits are 48.077° N/122.1848° W and 48.0480° N/122.1839° W, respectively. The project area is within Water Resource Inventory Area (WRIA) 7 (Snohomish) and hydrologic unit codes (HUCs) 171100110204 (Quilceda Creek) and 171100110203 (Frontal Possession Sound).

The unique study areas for the aquatic resources, vegetation and wildlife resources, and wetland resources described in this report are defined in Section 1.6.

1.2 Project Purpose

The Reservation of the Tulalip Tribes is accessed via three interchanges off 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 of the Reservation or via the waters of the Puget Sound and Snohomish River.

Improvements to the 116th Street NE interchange were completed in 2020. These improvements were entirely led and funded by the Tribes. Now the Tribes are planning to develop and implement access improvements to the remaining two interchanges on their Reservation. These two interchanges are at 4th Street and 88th Street NE. They 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. This impacts the

Tribes and the City as well as the greater Snohomish County area by impeding 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 and enhancing fish habitat and passage.

1.3 Project Design

The project would 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 (see Figure 1 in Appendix A). Major items of work would 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).

Corridor improvements along 4th Street, from west to east, would include the following:

- 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 southbound I-5 on-/off-ramps with a new roundabout
- Replacement of the signaled intersection of 4th Street and the northbound I-5 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, would include the following:

- 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 southbound I-5 on-/off-ramps with a new roundabout
- Replacement of the signaled intersection of 88th Street NE and the northbound I-5 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

The project includes stormwater treatment facilities designed to accommodate runoff from new and replaced impervious surfaces during a 100-year storm event. Runoff from a substantial proportion of the project area would be routed to infiltration facilities, minimizing the potential of contaminants in

stormwater runoff to degrade water quality or harm aquatic species (Parametrix 2022). In addition, the project would decrease the total area of pollution-generating impervious surfaces (PGIS) in the project area by approximately 0.24 acre, while the amount of runoff being treated and/or infiltrated would increase by nearly 6 acres.

The fish passage and enhancement work on Coho Creek at the 88th Street NE crossing would replace the undersized 54-inch-diameter concrete culvert and associated gabion-supported road fill prism with a 100-foot, single-span bridge. The new bridge would have a minimum hydraulic opening of 30 feet and a vertical clearance exceeding the desired wildlife clearance height of 8 feet (Parametrix 2022a).

Bridge construction would occur in two stages. First, road fill west of the existing culvert would be excavated sufficiently to construct piers and place girders for the bridge span. The bridge structure would be supported on deep-drilled shafts or soldier pile walls, but wall types and sizes have not yet been determined. No impact or vibratory pile driving is anticipated. Once the bridge structure has been built, Coho Creek would be diverted into a new channel under the bridge. Flow would be introduced to the new channel gradually, to minimize sediment delivery to downstream reaches. The remainder of the road fill would then be excavated, and the existing culvert would be removed. Utilities that are currently buried in the roadway would be attached to the underside of the new bridge.

The proposed stream alignment would move Coho Creek approximately 30 feet west of the existing culvert. Flows would 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 a scour hole upstream of the road crossing. Approximately 90 linear feet of stream channel upstream of the new bridge would be realigned to provide a smooth bend at the road crossing. The new channel would tie back into the existing stream approximately 75 feet downstream of the new bridge to maintain the existing braided channel system. The new channel would match the hydraulic characteristics in the unaffected portions of the stream. Streambed substrates in the new channel would meet WSDOT standards for materials and size. More than 60 pieces of large woody material (including 20 key pieces) would be placed in the stream.

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

1.4 Data Gathered

Resource analysts performed literature and data reviews to identify and characterize potentially affected ecosystem resources in and near the project areas. Existing information was compiled and reviewed first so as to focus field survey efforts for verifying data and filling information gaps. Maps and other existing documents were an important resource for identifying ecosystem features in the project study area. The following resources were reviewed:

- Aerial photography of the project corridor (including the Snohomish County aerial photography [Snohomish County 2022] database and Google Earth database [Google Earth 2022])
- Information from websites and agency interviews about sensitive and protected species and habitat from the Washington Department of Fish and Wildlife (WDFW) and the Tulalip Tribes
- Tulalip Tribes Smolt Trap data (TTED 2012)
- Tulalip Tribes Wetland and Stream GIS data (TTED 2021)

- City of Marysville critical area mapping (2019)
- Endangered Species Act (ESA) listing information from the U.S. Fish and Wildlife Service (USFWS 2023) and the National Marine Fisheries Service (NMFS 2023)
- Snohomish County Area Washington Soil Survey (NRCS, USDA 2021a)
- National Wetlands Inventory data (USFWS 2021)
- Priority Habitats and Species (PHS) data (WDFW 2022)
- Statewide Washington Integrated Fish Distribution mapper (NWIFC 2022)
- Fish passage barrier maps from WDFW (WDFW 2021 and WSDOT 2021b)
- USFWS Critical Habitat Maps for Threatened and Endangered Species (USFWS 2022)
- Water Quality Assessment and Clean Water Act Section 303(d) list prepared by the Washington State Department of Ecology (Ecology 2021)
- Washington State Department of Natural Resources (WDNR) Natural Heritage Program database (WDNR 2022)
- Studies of fish and wildlife use of habitats in the project area (e.g., Haring 2002; Pearl 2004; Goetz et al. 2021; Pentec 1992; and others)

1.5 Related Regulations, Plans, and Policies

Project activities that may affect wetlands, aquatic species, and habitat; vegetation, wildlife species, and habitat; or threatened and endangered species in the project areas are subject to the following regulations, plans, and policies:

Tribal

- Tulalip Tribal Code (TTC) Chapter 7.110: Environmentally Sensitive Lands

Federal

- Treaty of Point Elliott of 1855
- NEPA
- Sections 404, 402, and 401 of the Clean Water Act
- Section 7 of the ESA
- Magnuson-Stevens Fishery Conservation and Management Act
- Bald and Golden Eagle Protection Act
- Migratory Bird Treaty Act
- Protection of Wetlands, Presidential Executive Order 11990
- Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (2008)
- U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987)
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE 2010)

- Coastal Zone Management Act

State

- Washington SEPA
- Hydraulic code (Washington Administrative Code [WAC] Chapter 220-110)
- Growth Management Act (Revised Code of Washington [RCW] 36.70A)
- Protection of Wetlands, Governor's Executive Order EO 89-10
- Protection of Wetlands, Governor's Executive Order EO 90-04
- Washington Water Pollution Control Act (RCW 90.48)
- Wetland Mitigation in Washington State (Ecology et al. 2021)
- WDFW PHS Management Recommendations

Local

- Critical Area Ordinance (CAO) for City of Marysville
- Comprehensive Plan for the City of Marysville

1.6 Study Areas

The project footprint consists of the construction limits (i.e., the maximum extents within which clearing, grading, and the operation of construction machinery would occur) for the 4th Street and 88th Street NE interchange improvement areas.

The study area for vegetation and wildlife habitat consists of the project footprint plus the areas within 200 feet of either side of the project footprint. For wildlife, the study area includes areas where project construction could affect habitat quality for wildlife species that may use habitats in the area. Habitat evaluations include the vegetation assessment data. Resource analysts also reviewed documented occurrences of sensitive wildlife species within 0.25 mile of the project footprint to study wildlife potentially affected by project-related airborne noise and human activity. The aquatic resources study area includes all waters within the project footprint and all waters that would receive project-related stormwater runoff.

Wetland and stream field studies were conducted up to 300 feet upstream and downstream from where the project footprint cross Coho Creek (in accordance with WAC 173-201A).

1.7 Impact Assessment Assumptions

The impact analysis describes the extent, magnitude, duration, and character of impacts of the two alternatives (No Action and Proposed Action) on ecosystem resources. Impacts are quantified where appropriate and possible (e.g., area of wetland or vegetation impacts).

Under the No Action alternative, fish passage improvements at Coho Creek would not be built. Improvements to in-stream and riparian habitats would not be implemented, and fish and wildlife would not realize the benefits of those improvements. Maintenance to bridges and roadways would continue, but the extent and potential for impacts related to these activities are not defined.

The process of analyzing and estimating project impacts requires a series of assumptions regarding the physical extent of impacts, the duration of impacts, site restoration following construction, and

measures that would be implemented to avoid or minimize potential impacts. This includes temporary (construction-related) impacts and permanent (operational) impacts.

For the analysis, the Tribes assumed that all lands within the construction limits would be disturbed during construction and that all vegetation would be removed. The area within the construction limits is referred to as the permanent impact area. A distance of 10 feet extending from the clearing and grubbing line was used to calculate temporary impacts; this area is referred to as the temporary impact area. These assumptions apply to the assessment, restoration, avoidance, and minimization of impacts to vegetation, wildlife habitat, wetlands, and streams.

2. STUDY OBJECTIVES AND METHODS

This document supports the NEPA and SEPA evaluation of impacts associated with the I-5/4th Street and 88th Street NE Corridor Improvements project. Resource analysts reviewed information about the affected environment for aquatic resources, vegetation and wildlife, and wetlands. Information that supported the assessments of the potential project-related impacts on ecosystem components included status of fish and wildlife species, information about habitat conditions for species of concern or their locations, and results of wetland and stream delineation studies. This discipline report identifies and evaluates the potential temporary and permanent impacts of the Proposed Action relative to No Action alternative.

This chapter describes the objectives and methods used to study the aquatic resources (Section 2.1), vegetation and wildlife resources (Section 2.2), and wetland resources (Section 2.3).

2.1 Aquatic Resources

2.1.1 Study Objectives

This section identifies aquatic species known or expected to occur in the study area, characterizes the existing conditions of aquatic habitats, and provides information about species with local, state, or federal regulatory status, including species listed as threatened or endangered under the ESA. The assessment of effects on aquatic species and habitats focuses on key habitats and stream features that may be affected by the project and that are directly related to ecological functions that support stream ecosystems. Resource analysts conducted research and field surveys to identify, map, and describe aquatic species and habitats within the study area. Information about aquatic habitat conditions is based on key aquatic habitat elements, including riparian vegetation, physical in-stream habitat, water quality and quantity, and fish habitat use.

2.1.2 Methods

Resource analysts reviewed background material, including fish distribution data (e.g., NWIFC 2022; WDFW 2022), aerial photographs (Snohomish County 2022; Google Earth 2022), water quality assessments (Ecology 2022), and data and mapping provided by the Tulalip Tribes (TTED 2021, 2021). In the field, biologists conducted aquatic habitat surveys 300 feet downstream and 300 feet upstream of the Coho Creek stream crossing. Biologists collected information about the condition of in-stream and riparian habitats and flagged the OHWL of Coho Creek. Professional land surveyors then surveyed the flagged points.

Streams were classified according to the interim water typing definitions in WAC 222-16-031 and the applicable stream classification systems in the Tulalip Tribal Code and City of Marysville code. Regulatory buffers were assigned based on the stream's classification. Biologists also performed a site evaluation for fish passage at the 88th Street NE culvert conveying Coho Creek.

Analyses of short-term (i.e., construction-related) effects on aquatic resources were based on the amounts of aquatic habitat and regulatory stream buffers within the portions of the project footprint that would be subject to temporary modification. Analyses of long-term effects on vegetation and wildlife resources were based on the amounts of aquatic habitat and regulatory stream buffers within the portions of the project footprint that would be subject to permanent modification. Effects of stormwater inputs into aquatic resources were also analyzed for the impact assessment.

2.2 Vegetation and Wildlife Resources

2.2.1 Study Objectives

Resource analysts reviewed the existing condition and regulatory status of plants and animals that could be affected by construction and operation of the project.

2.2.2 Methods

Based on literature review and field observations, resource analysts identified vegetation types and wildlife habitat features in the study area and evaluated the potential for wildlife species to use those habitats. The wildlife species assessed included ESA-listed species and other species with regulatory status under local CAOs. Resource analysts reviewed data from the WDFW PHS program, data from the WDNR Natural Heritage Program, the USFWS Information for Planning and Consultation website, local critical area maps and Tribal mapping layers, aerial photographs, and more.

Resource analysts delineated and classified cover types (land cover) using aerial photographs and visited these areas during field surveys. Vegetation types were identified within 200 feet of the project footprint. The eleven mapped cover types include:

- Emergent Wetlands
- Scrub-Shrub Wetland
- Stream Channels
- Riparian Forest
- Upland Forest
- Shrublands
- Mown Grass and Landscaping
- Roadside Right-of-Way
- Stormwater Facilities
- Residential
- Developed Unvegetated Surfaces

Habitats are described in Table 2-1 along with a qualitative assessment of relative habitat value. Relative habitat value is based on habitat structure, disturbance types and frequency, and time required to recover habitats following clearing.

Wildlife habitat values were not attributed to each occurrence of a cover type along the project corridor but instead were assigned to the cover type as a whole. Habitat value within a cover type at a specific location can vary and depends on several factors, such as size of the area; presence of (or proximity to) other valuable habitat; level and type of human disturbance; diversity of plant species; presence of multiple cover layers (i.e., tree, shrub, forb, and emergent layers); presence of threatened, endangered, or sensitive species; and extent of invasive weeds.

The City of Marysville defines significant trees as evergreen trees with a diameter of 8 inches, as measured 4 feet above grade, and deciduous trees with a 12-inch diameter (MMC 22A.020.200). The Tulalip Tribal Code does not include definitions for significant trees. Therefore, all trees greater than

8 inches as measured 4 feet above grade were identified as significant trees within the study area. The Tulalip Tribal Code does define "environmentally sensitive lands" to include essential habitat for animals and/or plants considered culturally important to the Tribes (TTC 7.110.020).

Table 2-1. Cover Types and Associated Wildlife Habitat Value for I-5/4th Street and 88th Street NE Corridor Improvements Project

Cover/Habitat Type	Description	Habitat Value in the Study Area
Emergent Wetlands	Wetland areas dominated by rushes, sedges, and grasses.	High. Moderate structural complexity. The riparian wetland functions further elevate the value of this habitat to wildlife and aquatic processes. It would take months to years to recover this habitat following disturbance.
Scrub-Shrub Wetland	Wetland areas dominated by shrub species such as willow and red-osier dogwood.	High. Moderate structural complexity. The riparian wetland functions further elevate the value of this habitat to wildlife and aquatic processes. It would take months to years to recover this habitat following disturbance.
Stream Channels	Relatively non-vegetated stream and river channels. Some submerged aquatic vegetation is present.	High. Many in-stream processes elevate the value of this habitat to terrestrial and aquatic wildlife. It would take months to years to recover this habitat following disturbance.
Riparian Forest	Areas dominated by trees within approximately 200 feet of the OHWL of streams and rivers.	High. Moderate structural complexity. The proximity to streams further elevates the value of this habitat to wildlife and aquatic processes. It would take months to years to recover this habitat following disturbance.
Upland Forest	This habitat type is represented by stands of mature trees in upland areas.	Medium. There is moderate structural complexity and disturbance level is moderate. Longer time to recover this habitat following disturbance. The small patches of forest and their proximity to roads and commercial areas increases disturbance for wildlife and decreases habitat quality. It would take a longer time (years to decades) to recover this habitat following disturbance.
Shrubland	This habitat type includes patches of Himalayan blackberry along with areas of horticultural varieties and native shrubs.	Medium. Areas include native and non-native shrubs. Native shrubs support native wildlife species throughout their life histories. Although invasive species limit habitat diversity, thickets of blackberry and other invasive shrubs provide perching, nesting, and hiding habitat for small birds, reptiles, and mammals, including foraging habitat for some species. The small and/or narrow patches of shrubland and their proximity to roads and commercial areas increases disturbance for wildlife and decreases habitat quality. It would take months to years to recover this habitat following disturbance.
Mown Grass and Landscaping	This cover type includes regularly mown grass and sparse horticultural trees and shrubs.	Medium. There is moderate habitat structure and the disturbance is high. These areas may provide some browsing habitat for herbivores, such as deer, rabbits, and rodents, and some limited foraging and nesting habitat for birds. This habitat type would be quick to reestablish

Table 2-1. Cover Types and Associated Wildlife Habitat Value for I-5/4th Street and 88th Street NE Corridor Improvements Project (continued)

Cover/Habitat Type	Description	Habitat Value in the Study Area
		(days to weeks) to current conditions after disturbance.
Roadside Right-of-Way	Areas along roadways that are maintained for vehicular safety with mowing and herbicide application. These areas are disturbed regularly with maintenance actions, roadway noise, and pollution. These areas are dominated by non-native grasses and forbs and invasive species.	Low. There is limited habitat structure and the periodic maintenance disturbance is high. These areas may provide some browsing habitat for herbivores such as deer, rabbits, and rodents, and some limited foraging habitat for birds. This habitat type would be quick to reestablish (days to weeks) to current conditions after disturbance.
Stormwater Facilities	Areas excavated specifically to detain and manage stormwater from impervious areas. Most areas are dominated by non-native grass species and are typically maintained through mowing and dredging.	Low. The limited structural diversity and periodic disturbance regime limits the value to wildlife. The ponded habitat tends to have a highly variable water table and polluted water source, severely limiting the value of the habitat to aquatic species. This habitat type would be quick to reestablish (days to weeks) to current conditions after disturbance
Residential	Areas dominated by single family homes and ancillary buildings. Some trees and patches of understory occur.	Medium. Moderate structural complexity with mature trees and understory species. These areas receive a moderate level of disturbance. It would take months to years to recover this habitat following disturbance.
Developed Unvegetated Surfaces	Paved roadways and other impervious and artificial surfaces. Also includes parking lots and artificially surfaced playfields, commercial, and industrial areas.	Low. There is minimal structural complexity. These areas generally lack wildlife habitat features and are a risk to wildlife. Developed unvegetated surfaces may have some habitat value because structures may provide cover, perch, and even nesting opportunities.

Using field observation, aerial photographs, and pertinent literature, project resource analysts gathered and classified vegetation data, including dominant plant species composition and relative abundance by habitat type. Figures were developed showing the delineated vegetation communities and habitat types and other key ecological features needed to analyze impacts of the project. Sensitive information regarding the locations of proposed, candidate, and listed species and habitats are described in this report but not mapped to protect the integrity of this information.

To support the analysis of effects on wildlife, resource analysts identified wildlife species that are associated with the land cover types in the study area and with specific habitat elements within each cover type. Resource analysts identified the relative function of each plant community in providing habitat for wildlife, based on field observations, literature review, professional opinion, and agency consultation. Resource analysts also assessed locations of known ecologically sensitive areas and important wildlife occurrences that may be sensitive to disturbance from noise or human presence. The assessment included a review of site-specific wildlife data, including bird surveys (e.g., eBird 2022), supplemented with data gathered during field visits.

Analyses of short-term (i.e., construction-related) effects on vegetation and wildlife resources were based on the amounts of different land cover types within the portions of the project footprint that would be subject to temporary modification as well as the potential for construction-related noise and human

activity to disturb wildlife species of concern at breeding sites and other sensitive areas. Analyses of long-term effects on vegetation and wildlife resources were based on the amounts of different land cover types within the portions of the project footprint that would be subject to permanent modification.

In June 2022, in accordance with the requirements of Section 7 of the ESA, BIA initiated consultation with USFWS and NMFS concerning the potential effects of the I-5/4th Street and 88th Street NE Corridor Improvements project on ESA-listed species and critical habitat. The biological assessment prepared to support consultation provides additional information on ESA-listed species and designated critical habitat and any potential direct and indirect impacts of the project (Parametrix 2022b).

2.3 Wetland Resources

2.3.1 Wetland Resources Study Objectives

Wetland resources were mapped and characterized to accurately provide the following information:

- An inventory of wetlands, buffers, and their conditions in the study area
- The project's temporary and permanent impacts on wetlands
- Methods to avoid, minimize, or compensate for impacts

2.3.2 Wetland Resources Methods

Wetlands were evaluated using background information and data collected during field surveys. Background information on soils, hydrology, previously mapped wetlands, and aerial photography was used to assess site conditions and strategize field surveys. A field survey was conducted to identify, map, and describe wetlands within the study area.

Vegetation, soil, and hydrology conditions were documented at representative locations (sample plots) using methods outlined in the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987) and indicators described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE 2010). These sample plots were identified in the field with labeled flagging and documented by professional surveyors. Both wetland and upland sample plots were documented. If a wetland contained multiple vegetation types (e.g., forested and scrub/shrub), at least one wetland sample plot was located in each cover type. Wetland determination data forms were developed for all sample plots. Observations of existing conditions and characteristics were recorded for each wetland and associated buffer.

Wetlands were classified according to the USFWS system (Cowardin et al. 1979; FGDC 2013) and the hydrogeomorphic (Brinson 1993) classification systems. Wetland ratings and functions were assessed by applying the Washington State Wetland Rating System for Western Washington – 2014 Update (Hruby 2014). Wetlands were also classified and rated according to Tulalip Tribal Code and City of Marysville code.

2.3.3 Wetland Determination

Wetland determinations are based on an analysis of background data and the results of site investigations. Wetland delineations occurred on November 19 and 20, 2019, and November 23, 2020.

The Regional Delineation Supplement Version 2.0 (USACE 2010) recommends using methods described in Chapter 19 in Engineering Field Handbook (NRCS, USDA 2021b) to determine if precipitation occurring in the 3 full months prior to the site visit was normal, drier than normal, or wetter than normal. Actual rainfall is compared to the normal range of the 30-year average.

According to the Applied Climate Information System (ACIS) Climate Analysis for Wetlands Tables (WETS Tables) and climate data recorded at the Everett Weather Station, the period prior to the November 2019 field investigation (October, September, August) was normal. The 3-month period prior to the November 2020 field investigation was also normal (ACIS 2021).

3. AFFECTED ENVIRONMENT

The following sections describe the existing conditions of aquatic resources, vegetation, wildlife, and wetlands that may be affected by the construction of the I-5/4th Street and 88th Street NE Corridor Improvements project. Scientific names of species identified in this report are listed in Appendix B.

3.1 Aquatic Resources

This section identifies aquatic species and habitats that may be affected by the construction of the I-5/4th Street and 88th Street NE Corridor Improvements project. The project is located at two interchanges along the I-5 and at one culvert stream crossing under 88th Street NE. The project occurs within Land Resource Region (LRR) A and Major Land Resource Area (MLRA) 2 and spans through two watersheds: Quilceda Creek (HUC 171100110204) and Snohomish River-Frontal Possession Sound (HUC 171100110203), north to south, respectively.

3.1.1 Streams and Stream Habitat

The following section describes streams present within the study area and provides information about the aquatic habitat elements, such as riparian vegetation, physical in-stream habitat, water quality and quantity, fish presence, fish habitat use, and stream typing. Streams that may be affected by project-related stormwater inputs are included within the study area and are therefore included within this section.

Three streams (Coho Creek, Quilceda Creek, and Ebey Slough) were identified within the aquatic resources study area. Coho Creek flows into Quilceda Creek, which drains into the Ebey Slough within the Snohomish River estuary system. Construction of a replacement bridge at 88th Street NE would entail work within Coho Creek. Quilceda Creek and Ebey Slough are included in the study area because they would receive stormwater runoff from impervious surfaces created or replaced by the project. The extent of the aquatic resources study area reflects the area where potential contaminants from stormwater outfalls may be expected to exceed background levels. The volume of water in Ebey Slough will dilute contaminants in stormwater to negligible almost immediately after treated stormwater enters the slough. Therefore, the aquatic resource study area terminates at the confluence of Quilceda Creek and Ebey Slough.

Table 3-1 summarizes these streams. Figure 1 in Appendix A shows the location of these streams. The OHWL for Coho Creek was delineated 300 feet upstream and downstream of the 88th Street NE crossing. These boundaries are shown on Figure 2 in Appendix A.

Table 3-1. Summary of Streams in the Study Area

Stream Name	State Interim Water Type[a]	Local Jurisdiction	Local Jurisdiction Stream Classification[b]	Local Jurisdiction Buffer Width (feet)[c]
Coho Creek	Type 2	Tulalip Tribes	Class I	200
Quilceda Creek	Type 1	Tulalip Tribes	Class I	200
Ebey Slough	Type 1	Tulalip Tribes	Class I	200

[a] WAC 222-16-031

[b] TTC 7.110.060

[c] TTC 7.110.070

3.1.1.1 Coho Creek

The headwaters of Coho Creek are in Quil Ceda Village on the Tulalip Reservation (Quil Ceda Village 2009). Coho Creek runs south for approximately 1 kilometer before converging with Quilceda Creek. Quilceda Creek outlets into Ebey Slough, a tidal estuary that branches from the Snohomish River and flows into the Puget Sound.

In the 88th Street NE project area, the stream has an unconfined, low-gradient channel. Stream flows remain within incised channels (averaging 1 foot in depth) 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-osier dogwood, black twinberry, willow, and immature red alder. Coho Creek is considered a class 1 stream, as it is a perennial stream used by salmonids (TTC 7.110.060) and therefore has a buffer of 200 feet (TTC 7.110.070). This buffer is referred to as the riparian buffer within this report and includes the combined stream and wetland buffer.

Large woody material is recruited, in small amounts, where the channel is close to the interphase between wetland and upland habitats. Beaver activity is extensive 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. In-stream cover is relatively low due to the lack of large woody material. However, dense overhanging vegetation likely provides some measure of cover and refuge.

Substrates in the study area are dominated by fine-grained materials, primarily sand with areas of patchy gravel where conditions allow. Areas of increased 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 study 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. Additional factors that limit spawning within the project area include elevated water temperatures and low flows.

Coho Creek is conveyed under 88th Street NE in a 54-inch concrete pipe. It was identified by WDFW and WSDOT as a fish passage barrier (Site ID 102 Q034). WDFW biologists visited the culvert in 1999, but they were unable to evaluate its status as a fish passage barrier (WDFW 1999b). Based on evidence of backwater effects (a 90-degree turn and a 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 2021, personal communication).

3.1.1.2 Quilceda Creek

Coho Creek joins Quilceda Creek approximately 4,050 feet (0.9 mile) downstream of the 88th Street NE crossing. Quilceda Creek receives stormwater runoff from the 88th Street NE project area. 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. Emergent and scrub-shrub wetlands occupy the floodplain and include vegetation such as reed canarygrass, willow, alder, and red-osier dogwood. Mature trees line the riparian corridor of the stream.

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 study 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).

3.1.1.3 Ebey Slough

Quilceda Creek flows into Ebey Slough west of the 4th Street project area. Ebey Slough receives stormwater runoff from the 4th Street project area. 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 study area, in the vicinity of I-5, 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 study area are dominated by fines, primarily sand and silt. Maximum depths at slack tide range from 8 to 12 feet (Laughlin 2011). In contrast, the north bank of Ebey Slough transitions to a large, intact wetland complex, west of the study area. 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).

3.1.2 Fish and Other Aquatic Species

Fish species, including Chinook salmon, steelhead, bull trout, pink salmon, coho salmon, and chum salmon, use Ebey Slough primarily as a migration corridor and as a physiologic transition zone between marine and freshwater environments. Ebey Slough also provides rearing habitat and serves as a migratory corridor for juvenile salmonids. Quilceda Creek provides a migratory corridor and rearing habitat as well as limited-potential spawning habitat for Chinook salmon, steelhead, and other fish species.

Species of fish known to be present within the 88th Street NE project area along Coho Creek include coho salmon, chum salmon, and resident coastal cutthroat trout (NWIFC 2022; TTED 2012). The Tulalip Tribes operated a smolt trap upstream of the project area between 2002 and 2011 and documented resident coastal cutthroat trout, coho smolts, and coho and chum fry. The Tulalip Tribes also conduct annual spawner surveys in Coho Creek and have documented both coho and chum adults; however, while coho adult returns have remained fairly consistent, no chum adults have been observed over the last 2 years (Nelson 2021, personal communication). Species that have not been documented in the project area but have the potential to occur given suitable stream gradients include Chinook salmon, pink salmon, steelhead, and bull trout (NWIFC 2022).

3.1.2.1 Species of Concern

Species of concern, defined as those with a regulatory status that prompts individual attention through federal, state, and/or local permitting processes, include the following:

- Species listed or proposed for listing as threatened or endangered under the ESA
- Species that have established Fish and Wildlife Habitat Conservation Areas (FWHCAs) under local critical area rules
- Essential habitat for animals considered culturally important to the Tulalip Tribes as listed under TTC 7.110.020
- Species that have established FWHCAs under local critical area rules
  - In the City of Marysville, areas designated as FWHCAs include the following:
    - Areas where any of the following species have a primary association: species listed as state endangered, state threatened, state sensitive, or state candidate, as well as species listed or proposed for listing by USFWS or NMFS
    - State priority habitats and areas associated with state priority species
    - Habitats and species of local importance

Resource analysts reviewed WDFW's lists of state- and federally listed species, as well as the list of state priority species and culturally important species to the Tulalip Tribes and identified aquatic species of concern that may use habitats in the study area.

ESA-Listed Species

Discussions in this document pay particular attention to species with listing status under the ESA because such status triggers additional regulatory review. The ESA requires each federal agency (in this case, the BIA) to ensure that any actions it undertakes or approves do not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of their designated critical habitat. To meet this requirement, BIA initiated consultation with USFWS and NMFS concerning the potential effects of the I-5/4th Street and 88th Street NE Corridor Improvements project on ESA-listed species and critical habitat. The Tulalip Tribes prepared a biological assessment to serve as the basis for the consultation (Parametrix 2022b).

The biological assessment analyzes the potential for the project to result in adverse effects on ESA-listed species and critical habitat for those species. The biological assessment addresses the following species and critical habitats in aquatic areas:

- Puget Sound Chinook salmon
- Puget Sound steelhead,
- Bull trout
- Southern Resident killer whale
- Designated critical habitat for Puget Sound Chinook salmon
- Designated critical habitat for Puget Sound steelhead
- Designated critical habitat for bull trout

The following subsections summarize the status of these species as well as the timing and nature of their habitat use in the study area.

Puget Sound Chinook Salmon

Chinook salmon in the Puget Sound evolutionarily significant unit (ESU) are listed as threatened under the ESA (64 Federal Register [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 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 (NWIFC 2022; WDFW 2021; 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 Northwest Indian Fisheries Commission (NWIFC 2022), summer-run Chinook salmon have been documented in Quilceda Creek, and fall-run Chinook spawn in Quilceda Creek. Although the number of Chinook salmon that spawn in Quilceda Creek is low compared to other systems, the population in that stream contributes to genetic diversity at a broader scale (Nelson 2022c, personal communication). Suitable spawning substrates are not widely available in the Quilceda Creek watershed (Quil Ceda Village 2009). Only a few spawning areas have been identified along the main stem of Quilceda Creek, approximately 3 miles upstream from the study 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 (2021, 2022) 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 study area. However, low flows, high water temperatures, and a preponderance of fine sediments render the stream unsuitable for spawning (Nelson 2022a, personal communication). 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 (TTED 2012). Juvenile and adult Chinook salmon are unlikely to be present in Coho Creek during the in-water work window (Nelson 2022a, personal communication).

Portions of Ebey Slough and Quilceda Creek in the action area established for ESA consultation 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 (Parametrix 2022b).

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 wildlife study 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 2021). 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 study area are extremely unlikely to support steelhead spawning (Nelson 2022b, personal communication). 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 study area at any time of year.

Neither NWIFC (2022) nor WDFW (2021, 2022) 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 study area. However, low flows, high water temperatures, and a preponderance of fine sediments render the stream unsuitable for spawning (Nelson 2022a, personal communication). 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 2022a, personal communication).

Portions of Ebey Slough and Quilceda Creek in the action area that was established for ESA consultation have been designated as critical habitat for Puget Sound steelhead (81 FR 9251, February 24, 2016). Coho Creek was not included in the designation (Parametrix 2022b).

Bull Trout

USFWS listed bull trout as threatened under the ESA on November 1, 1999 (64 FR 58910). USFWS proposed Dolly Varden 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 wildlife study 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, subadults, 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 study 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. On the other hand, USFWS found no clear documentation of bull trout use 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 (1999a) 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 2021, personal communication).

Neither NWIFC (2022) nor WDFW (2021, 2022) 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 study area. However, low flows, high water temperatures, and a preponderance of fine sediments render the stream unsuitable for spawning (Nelson 2022a, personal communication). 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 2022a, personal communication).

Portions of Ebey Slough in the action area that was established for ESA consultation have been designated as critical habitat for bull trout (Parametrix 2022b).

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 should remain listed as endangered.

The recovery plan identified several factors that may be limiting the recovery of Southern Resident killer whales. 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 the species, 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 Southern Resident killer whale diets. Estimates range from approximately 70 percent during winter and spring to more than 90 percent during summer and fall (NMFS 2021).

Southern Resident killer whales use marine and estuarine habitats. The study area for aquatic resources includes a very small area of marine/estuarine habitat in Ebey Slough. This habitat consists of shallow, confined areas that Southern Resident killer whales are not expected to enter. There have been no documented observations of Southern Resident killer whales in the study area. The study area does not include any areas that have been designated as critical habitat for Southern Resident killer whales. However, based on the project's potential to affect a primary prey source (Chinook salmon), Southern Resident killer whales are addressed in the biological assessment for this project (Parametrix 2022b).

Essential Fish Habitat

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 designated essential fish habitat (EFH) for federally managed commercial fisheries. The biological assessment that was prepared to support ESA consultation also addresses potential impacts on EFH. The action area established for EFH consultation includes waters designated as EFH for Pacific salmon (Chinook, coho, and pink), Pacific coast groundfish, and coastal pelagic species.

Other Aquatic Species of Concern

In addition to the ESA-listed species discussed above, several species that may use aquatic habitats in the study area have state listing status or are considered culturally important to the Tulalip Tribes. Species that may use habitats in the study area are identified in Table 3-2 along with each species' regulatory status and a description of habitat use in the study area.

Table 3-2. ESA and State-Listed Aquatic Species That May Use Habitats in the Study Area

Species	Status	Habitat Use in Study Area
Fish		
Puget Sound Chinook salmon	TCS, FT	Adult summer-run and fall-run Chinook are expected to be in Ebey Slough. Juvenile Chinook salmon have been captured in Ebey Slough during all months. Chinook use of Quilceda Creek is characterized as "relatively minimal." Coho Creek is gradient accessible to Chinook, and it is possible (although unlikely) that rearing juveniles may enter Coho Creek. No Chinook salmon were documented at the Tulalip Tribes smolt trap on Coho Creek.
Puget Sound steelhead	TCS, FT	Summer-run and winter-run steelhead are present in Ebey Slough. Quil Ceda Creek is unlikely to support spawning, but rearing juveniles may be present. Coho Creek is gradient accessible to steelhead, and it is possible (although unlikely) that rearing juveniles may enter Coho Creek. No steelhead were documented at the Tulalip Tribes smolt trap on Coho Creek.
Bull trout	TCS, FT	Bull trout are present in Ebey Slough primarily during spring and summer. If any bull trout are present in Quilceda Creek, they would likely be rearing juveniles or overwintering adults or subadults. Coho Creek is gradient accessible to bull trout, and it is possible (although unlikely) that adults or subadults may enter Coho Creek to forage. No bull trout were documented at the Tulalip Tribes smolt trap on Coho Creek.
Chum salmon	TCS, SP	Spawning in Coho Creek, November to December; fry emerge from redds around March and migrate directly to marine waters without rearing.

Table 3-2. ESA and State-Listed Aquatic Species That May Use Habitats in the Study Area (continued)

Species	Status	Habitat Use in Study Area
Coho salmon	TCS, SP	Spawning in Coho Creek, November through January; fry emerge from redds in March to June. Juveniles may be present in the study area year-round.
Cutthroat trout	TCS, SP	Cutthroat spawning has documented within Coho Creek; juveniles may rear in the study area and resident adults may be present year-round.
Pacific lamprey	TCS, SP	Documented during trapping activities in Coho Creek in 2004. Rearing habitat is present within the study area, but spawning habitat is currently limited.
Pink salmon	TCS, SP	Unknown; Coho Creek is mapped as gradient-accessible, but pink salmon were not found in Tulalip-monitored smolt traps in operation from 2002–2011.
Rainbow trout	TCS, SP	Unknown; not mapped within Coho Creek and were not found in Tulalip-monitored smolt traps in operation from 2002–2011.
River lamprey	TCS, SP, SC	Documented during trapping activities in Coho Creek in 2004. Rearing habitat is present within the study area, but spawning habitat is currently limited.
Olympic mudminnow	TCS, SP	Use of Coho Creek is unknown. However, suitable habitat is present. Areas of Ebey Slough were mapped as high suitability of Olympic mudminnow habitat.

Sources: Data Basin 2022; TTED 2012; Nelson 2021, personal communication; Nelson 2022c, personal communication; NWIFC 2022; Snohomish Basin Salmon Recovery Forum, 2005; WDFW 2000; USFWS 2020

[a] See discussion in the introduction to this subsection. Species listed under the ESA are discussed in the preceding three subsections of this document.

TCS= Tulalip Tribes culturally important species; FT= federally threatened; SC = candidate for state listing; SP = state priority species

3.2 Vegetation and Wildlife Resources

The vegetation study area includes a variety of cover types and wildlife habitats. Much of the study area consists of urban development, primarily commercial land use. These areas support wildlife species adapted to disturbed urban areas. However, undeveloped habitat within the Coho Creek corridor supports a variety of vegetation types and wildlife species. Vegetation conditions and wildlife habitats are described in the following subsections. Lists of plant and wildlife species known or expected to be present in the study area are included in Appendix B.

3.2.1 Vegetation

Vegetation in the study area was evaluated for the presence of rare plants and priority ecosystems through a review of the Natural Heritage program database (WDNR 2022). There are no documented occurrences of rare plants or priority ecosystems within the vegetation study area (extending 200 feet from the project footprint). The closest known rare plants and nonvascular species of high conservation value are mapped approximately 2,000 feet from the 4th Street project footprint (i.e., outside the study area for vegetation). This mapping includes four small polygons for rare species along the western edge of the Quilceda Creek, within the estuarine wetland complex. These mapped plant species are not federally listed but do carry state-sensitive and state-threatened species status. Additionally, analysts evaluated vegetation in the study area and determined whether it provides essential habitat for plants considered culturally important to the Tulalip Tribes as listed under TTC 7.110.020. Culturally important species include cedar and ironwood.

Land cover in the entirety of the study area was classified and characterized according to the methods described in Section 2.2. Eleven cover types were identified in the study area. Their relative habitat value, occurrence, and description are presented in Table 2-1. Table 3-3 summarizes the acreage of each cover type in the study area, with separate subtotals for the study area around the 4th Street interchange and 88th Street NE interchange. Figures 3 and 4 in Appendix A map the distribution of habitat types in the study area around each interchange.

Table 3-3. Summary of Vegetation and Wildlife Habitats in the Study Areas

Cover/Habitat Type	Acreage in 4th Street Portion of Study Area	Acreage in 88th Street NE Portion of Study Area	Total Acreage
Emergent Wetland	0.00	1.55	1.55
Scrub-Shrub Wetland	0.00	1.30	1.30
Stream Channel	0.00	0.26	0.26
Riparian Forest	0.00	3.61	3.61
Upland Forest	1.59	0.90	2.48
Shrubland	0.60	1.31	1.91
Mown Grass and Landscaping	0.69	3.69	4.39
Roadside Right-of-way	7.51	8.70	16.21
Stormwater Facilities	0.05	0.25	0.30
Residential	0.00	2.29	2.29
Developed Unvegetated Surfaces	23.74	25.16	48.90

3.2.2 Terrestrial Wildlife

Overall, the unvegetated/road, grassland, mown grass, and developed commercial areas are the dominant cover/habitat types in the wildlife study area and as such provide low to moderate habitat value for wildlife. The emergent wetland areas and riparian habitat in the Coho Creek and Quilceda Creek corridors and Ebey slough estuary wetland represent the higher-value cover and habitat types important for wildlife. The Quilceda Creek and Coho Creek corridors provide food, cover, and nesting for species, including bald eagle, great blue heron, red-tailed hawk, belted kingfisher, red-legged frog, and mule deer (eBird 2022; Snohomish County 1999).

The study area for potential disturbance of wildlife extends over Ebey Slough, which is part of the Snohomish River estuary. Numerous species of birds, amphibians, and mammals are known to occupy habitats within the Snohomish River estuary and use them for foraging, breeding, and nesting. Species migrating to nesting grounds in the north or overwintering areas in the south also use these habitats as rest areas.

Wildlife observed during field visits include species typically habituated to human activities, such as rock pigeons, house sparrows, American robins, American crows, dark-eyed juncos, and Northern flickers.

3.2.2.1 Species and Habitats of Concern

Species of concern, defined as those with a regulatory status that prompts individual attention through federal, state, and/or local permitting processes, include the following:

- Species listed or proposed for listing as threatened or endangered under the ESA
- Essential habitat for animals considered culturally important to the Tulalip Tribes as listed under TTC 7.110.020

- Species that have established FWHCAs under local critical area rules
  - In the City of Marysville, areas designated as FWHCAs include the following:
    - Areas where any of the following species have a primary association: species listed as state endangered, state threatened, state sensitive, or state candidate, as well as species listed or proposed for listing by the USFWS or NMFS
    - State priority habitats and areas associated with state priority species
    - Habitats and species of local importance
- Bird species protected under the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act

ESA-Listed Species

Based on reviews of information from the USFWS Information for Planning and Consultation website and guidance from WSDOT, analysts determined that the project has the potential to affect two ESA-listed species that may use terrestrial habitats in the study area. These species are the marbled murrelet and the Oregon spotted frog, both of which are listed as threatened. The following subsections summarize the status of these species in the study area, including the timing and nature of their use of habitats in the study area.

According to the USFWS Information for Planning and Consultation website, one additional ESA-listed species (yellow-billed cuckoo) and one species proposed for listing (North American wolverine) could potentially use habitats in the study area (USFWS 2023). Analysts reviewed the habitat requirements of those species and determined that there is no potential for project-related impact on either species. In addition, no critical habitat for any ESA-listed species is present in the study area.

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 (2022) does not report any observations of marbled murrelets in the study area. The closest suitable nesting habitat is located 15 miles east of the study area in the Cascade Mountains of eastern Snohomish County. The wildlife study area overlaps some nearshore marine habitats in Ebey Slough. Therefore, the study 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. Biologists 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.

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 study 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 2022, personal communication; Nelson 2022a, personal communication). 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 8th Street NE crossing contains potentially suitable breeding, rearing, and overwintering habitat for Oregon spotted frogs. 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).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918, administered by USFWS, makes it unlawful to take, import, export, possess, sell, purchase, or barter any migratory bird, with the exception of the taking of game birds during established hunting seasons. The term, *take*, in this context, includes mortality or capture of migratory birds that directly and foreseeably results from an action. The law also applies to feathers, eggs, nests, and products made from migratory birds. Nearly all bird species that may occur in the study area are protected under the Migratory Bird Treaty Act. All habitats in the study area support migratory birds of some type at some time in their life cycle; therefore, all habitats identified above would be considered habitat for migratory birds.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668c) prohibits the take of bald or golden eagles, including their parts, nests, or eggs, unless allowed by a permit issued by the Secretary of the Interior (16 U.S.C. § 668(a); 50 CFR part 22). The Bald and Golden Eagle Protection Act and implementing regulations define take as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest or disturb.” Activities that disturb vegetation or generate noise or human activity near an active nest (generally, 660 feet or closer) may require an incidental take permit. No eagle nests have been identified within 660 feet of the project footprint.

Other Wildlife Species of Concern

In addition to the ESA-listed species discussed above, several species that may use terrestrial habitats in the study area have state listing status or are considered culturally important to the Tulalip Tribes. Animal species identified as culturally important to the Tulalip Tribes include fish, eagles, hawks, falcons,

owls, deer, and bears (TTC 7.110.020). Based on a review of the distribution and habitat associations of species with tribal, federal or state status, Table 3-4 identifies species that may use habitats in the study area, along with each species' regulatory status and a description of the species' use of habitats in the study area.

Table 3-4. Wildlife Species of Concern That May Use Habitats in the Study Area

Species	Status	Habitat Use in Study Area
Amphibians		
Oregon spotted frog	FT	Wetlands within the study area may provide potentially suitable breeding, rearing, and overwintering habitat.
Western toad	SC, SP	No recent records. May breed in permanent wetlands, ponds, lakes, and off-channel habitats or rivers; adults may move up to a few miles through uplands.
Birds		
Marbled murrelet	FT	Unlikely to inhabit the study area. The closest suitable nesting habitat is located 15 miles east of the study area
Bald eagle	TCS, SP	Common year-round within study area. No known nests within 660 feet of project footprint.
Red-tailed hawk	TCS	Nesting and foraging habitat is present within the Coho Creek riparian corridor.
Cooper's hawk	TCS	Nesting and foraging habitat is present within the Coho Creek riparian corridor.
Sharp-shinned hawk	TCS	Nesting and foraging habitat is present within the Coho Creek riparian corridor.
Western screech owl	TCS	Nesting and foraging habitat is present within the Coho Creek riparian corridor.
Northern saw-whet owl	TCS	Nesting and foraging habitat is present within the Coho Creek riparian corridor.
Northern pygmy owl	TCS	Nesting and foraging habitat is present within the Coho Creek riparian corridor.
Band-tailed pigeon	SP	Fairly common during breeding season, occasionally seen at other times; breeding possible. Nests in trees, often favoring open sites bordered by tall conifers. Mineral springs provide important nutrients.
Barrow's goldeneye	SP	Occasional visitor to Snohomish River estuary.
Brant	SP	Occasional visitor to Snohomish River estuary.
Common goldeneye	SP	Fairly common visitor to Snohomish River estuary.
Common loon	SS, SP	Fairly common visitor to Snohomish River estuary.
Great blue heron	SP	Common year-round in Snohomish Estuary and Coho Creek corridor; breeding possible. Nests in mature forests, forages in shallow, slow-moving or still calm water.
Hooded merganser	SP	Common year-round; breeding possible. Nests in tree cavities near small, forested, freshwater wetlands with emergent vegetation. Low-elevation freshwater lakes, ponds, sloughs, and slow-moving rivers are all used.
Peregrine falcon	TCS, SP	Occasionally seen at all times of year. No nesting habitat (cliffs and cliff-like structures) nearby.
Pileated woodpecker	SC, SP	Occasionally seen year-round; breeding possible. Requires forested habitats with large trees and snags.

Table 3-4. Wildlife Species of Concern in the Study Area (continued)

Species	Status	Habitat Use in Study Area
Purple martin	SC, SP	Uncommon during breeding season. Nests in tree cavities or artificial structures over water; feeds over open land near water. Regularly seen within Snohomish River estuary.
Trumpeter swan	SP	Fairly common winter visitor to Snohomish River estuary.
Tundra swan	SP	Common winter visitor to Snohomish River estuary.
Vaux's swift	SC, SP	Common during breeding season; breeding possible. Nests and roosts in natural cavities with vertical entranceways, such as hollow trees and snags, in areas of coniferous or mixed forest.
Western grebe	SC, SP	Common winter visitor to Snohomish River estuary.
Wood duck	SP	Common in summer, uncommon during winter; breeding possible. Nests in tree cavities near wooded wetlands and slow-moving, tree-lined rivers.
Mammals		
Black bear	TCS	Potential foraging habitat is present within more undisturbed areas of the Coho Creek riparian corridor.
Mule deer	TCS	Potential browsing habitat is present along the edges of the riparian forest.
Big-brown bat, *Myotis* bats	SP	No known maternity or hibernation colonies or other concentrations in or near the study area. Summer roosts generally are in buildings, bridges, hollow trees, spaces behind exfoliating bark, rock crevices, or tunnels. Maternity colonies may form in attics, barns, rock crevices, or tree cavities. Caves, mines, and buildings are used for hibernation.
Townsend's big-eared bat	SC, SP	No known maternity or hibernation colonies or other concentrations in or near the study area. Maternity and hibernation colonies typically are in caves, mine tunnels, and old buildings. Caves, tunnels, buildings, and tree cavities are used as night roosts.

Sources: eBird 2022; NatureServe 2022; Seattle Audubon Society 2022; WDFW 2022.

[a] See discussion in the introduction to this subsection. Species listed under the ESA are discussed in the preceding three subsections of this document.

TCS= Tulalip Tribes culturally important species; FT= federally threatened; SC = candidate for state listing; SP = state priority species

3.3 Wetland Resources

One wetland (Wetland A) was identified in the 88th Street NE area and none were identified within the 4th Street study area. Wetland A is located within the Coho Creek riparian corridor, west of I-5 in the 88th Street NE project footprint. Characteristics of the wetland are described in Section 3.3.1. The mapped location of the wetland and the delineated boundaries are shown in Figure 2 in Appendix A. A summary of wetland characteristics is included in Table 3-5 below.

Table 3-5. Summary of Wetlands in the Study Area

Wetland	Area (acres)[a]	USFWS Classification[b]	HGM Classification[c]	Ecology Rating (2014)[d]	Local Jurisdiction Category[e]	Standard Buffer Width (feet)[f]
Wetland A	2.85	PSS/PEM	Riverine	I	I	200

[a] Area as defined within the study area

[b] Cowardin 1979

[c] Brinson 1993; FGDC 2013

[d] Hruby 2014

[e] TTC 7.110.050

[f] TTC 7.110.070

HGM = hydrogeomorphic; PSS = palustrine scrub-shrub; PEM = palustrine emergent

3.3.1 Wetland Descriptions

3.3.1.1 Wetland A

Size: 2.85 acres
Tulalip Tribe Rating: Category I
USFWS Classification: Palustrine Scrub-Shrub/Palustrine Emergent
Hydrogeomorphic Classification: Riverine

The one wetland identified within the study area, referred to as Wetland A, is a riverine wetland with palustrine scrub-shrub and emergent habitats (Brinson 1993; FGDC 2013). The wetland is located within the Coho Creek riparian corridor west of the 88th Street NE interchange. Overbank flooding from Coho Creek and a high groundwater table support wetland hydrology. USDA maps the soil in the riparian corridor as Norma loam and the upper elevations outside the riparian corridor both east and west of Coho Creek as Ragnar fine sandy loam (USDA 2022a).

Six wetland sample plots were recorded within with Wetland A. Sample plot WLA-SP6 is representative of typical Wetland A soil conditions. The top layer, 0 to 7 inches, was a black (10YR 2/1) silty loam. Beneath this layer, from 7 to 18 inches soils, were dark grayish brown (10YR 4/2) with dark yellowish brown (10YR 4/6) and dark reddish brown (10YR 3/4) redoximorphic features and a sandy loam texture. This sample plot met the indicators for depleted below dark surface (A11) and depleted matrix (F3) hydric soil. Additional hydric soil indicators present within Wetland A at other sample plots include redox dark surface (F6) and histosol (A1).

The scrub-shrub stratum of Wetland A consists primarily of red-osier dogwood, salmonberry, black twinberry, and willow species. The emergent portion of the wetland is dominated by reed canarygrass and spotted jewelweed. Additional emergent vegetation includes common cattail, field horsetail, and lady fern.

Wetland A was functionally rated using the riverine hydrogeomorphic class (Hruby 2014). The wetland scored 23 points on the Ecology rating form and is rated as a Category I wetland, with 8 points for water quality, 7 points for hydrologic functions, and 8 points for habitat functions (Hruby 2014). According to Tulalip Tribal Code 7.110.070, Wetland A is classified as a critical value freshwater wetland and receives a buffer of 200 feet.

4. ENVIRONMENTAL CONSEQUENCES

This chapter describes the expected temporary and permanent effects of the No Action and the Proposed Action alternative for the I-5/4th Street and 88th Street NE Corridor Improvements project on the following resources:

- Aquatic Resources (Section 4.1)
- Vegetation and Wildlife Resources (Section 4.2)
- Wetland Resources (Section 4.3)

Project impacts of the Proposed Action are shown in Figure 2 in Appendix A. Overall, implementation of the Proposed Action would likely have a net benefit for ecosystem resources in Coho Creek and its associated riparian complex. This would be achieved by improving fish passage, realigning Coho Creek and adding in-stream habitat features, enhancing the riparian buffer, and gaining wetland habitat in place of road fill. No net loss of wetland and stream habitat is anticipated as a result the project. Only riparian and wetland buffer would be permanently impacted and subsequently mitigated appropriately. Any areas of temporary riparian buffer impact would be restored in-place with native woody species. The discussion of project impacts assumes that best management practices (BMPs) be implemented and would perform as expected to avoid and minimize certain impacts during construction. For potential mitigation measures, see Chapter 5.

4.1 Aquatic Resources

4.1.1 Effects of the No Action Alternative

Under the No Action Alternative, there would be no project-related changes to the current water quality or hydrology of Coho Creek or the riparian corridor. No potential temporary or permanent degradation of water quality (such as sedimentation, turbidity, or toxicants) would occur, and there would be no additional stormwater inputs to streams. There would be no potential for fish mortality resulting from fish exclusion work. The stream would remain in its current alignment and conveyance through an undersized culvert. There would be no potential for fish passage improvement or the creation of additional riparian habitat in place of the existing undersized culvert and roadway fill prism. Access by fish to restored sections of Coho Creek upstream of the project area would remain uncertain. No in-stream or riparian improvements, including invasive species removal and large woody material placement, would occur.

4.1.2 Effects of the Proposed Action

This section considered the following potential impacts on aquatic resources:

- Permanent habitat loss
- Beneficial impacts associated with in-stream and riparian restoration and replacing the culvert with a bridge
- Direct fish mortality associated with fish exclusion work during channel realignment
- Temporary degradation of habitat (sedimentation and removal of riparian vegetation)
- Temporary or permanent degradation of water quality (turbidity, temperature, toxicants)

Table 4-1 below identifies the temporary and permanent impacts anticipated to streams and their associated buffers. The riparian buffer impacts described in this report refer to the combined wetland and stream buffer of 200 feet for the Coho Creek corridor.

Table 4-1. Summary of Temporary and Permanent Impacts on Streams (in acres)

Stream	Permanent Impact	Temporary Impacts	Aquatic Conversion Area[1]	Permanent Buffer*	Temporary Buffer*
Coho Creek	0.03	0.00	0.03	0.22	0.24

[1] This area includes existing stream habitat converted to wetland and is considered self-mitigating after stream restoration construction work is complete.

* The riparian buffer impact areas listed include wetland habitat and are therefore greater than the riparian buffer impacts listed in Table 4-3.

4.1.2.1 Permanent Impacts and Aquatic Area Conversion

Realigning the stream channel and building bridge piers and retaining walls would entail the placement of fill (0.03 acre) below the OHWL of Coho Creek. The impacts of aquatic habitat loss in these areas would 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 OHWL of Coho Creek and/or within associated wetland and riparian areas. As mentioned in Section 3.1.1, 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 would render those areas more accessible to anadromous salmonids, including ESA-listed species.

Approximately 160 linear feet of existing stream channel would be converted to wetland upstream and downstream of the 88th Street NE culvert. In its place, approximately 220 linear feet of new stream channel would be created, for a net gain of about 60 linear feet. To realign the stream channel, 0.03 acre of stream would be filled to match the gradient of the existing wetland. This is considered a self-mitigating aquatic area conversion. Approximately 0.02 acre of stream habitat would be gained as a result of the stream realignment.

Stream realignment would also result in the loss of some wetland areas. As with stream channel habitat, these losses would be offset. Approximately 0.09 acre of Wetland A would be affected by fill placement and 0.04 acre of the wetland would be affected by aquatic area conversion associated with stream realignment. However, approximately 0.14 acre of gabion-supported road fill prism would be removed, replaced with native soils, graded to meet wetland and OHWL elevations, and restored with native vegetation. Over time, this area is expected to support wetland and riparian functions, potentially resulting in a net increase of approximately 0.05 acre of wetland area at the project site. In addition, all impacts to wetlands, streams, and their regulatory buffers would be mitigated in accordance with applicable tribal, federal, state, and local requirements. There would be no net loss of wetland or stream area or ecological functions. The project is expected to result in a substantial improvement in system processes and ecological functions of wetlands and streams after fill removal associated with the bridge construction.

In addition to improving fish access, adding large woody material, and replacing the gabion-supported road prism with native riparian vegetation, the project would have the following beneficial effects:

- 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

Runoff from PGIS created or replaced by the project would be treated in accordance with the guidelines in the 2019 Stormwater Management Manual for Western Washington, which represents the best available science for stormwater treatment and flow control (Ecology 2019). Runoff from 90 percent of impervious surfaces (pollution-generating or non-pollution-generating) created or replaced in most parts of the project area would 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 aquatic 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. Even with these measures, it is possible that some residual contaminants may be present in runoff that leaves the project area. These contaminants may be toxic to fish and other aquatic species. The potential for adverse effects on ESA-listed fish, designated critical habitat, and EFH is evaluated in the biological assessment that was prepared to support consultation under the ESA and the Magnuson-Stevens Fishery Conservation and Management Act (Parametrix 2022b).

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 would not be expected to affect the hydrology of Wetland A. Modeling indicates that the project would 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. Over the long term, the proposed habitat improvements in Coho Creek would benefit aquatic species by increasing the amount of available habitat, improving habitat complexity, maintaining riparian cover and water quality, and increasing the prey base.

4.1.2.2 Temporary Impacts

Bridge construction and stream channel realignment would entail clearing vegetation in the riparian zone along Coho Creek. Temporarily disturbed areas within the riparian zone would 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 would likely contribute to improved riparian habitat quality over time. In addition, approximately 0.14 acre of gabion-supported road fill prism would 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 be allowed to grow within 10 feet of the new bridge. Mature forest habitat would not develop in those areas, reducing the potential for recruitment of large woody material to the stream over the long term. This reduction would 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.

The proposed project would 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 in 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. Based on the implementation of site-specific BMPs, the effects of sedimentation and turbidity in Coho Creek are anticipated to be minimal. In addition, the likelihood of any ESA-listed fish being present in Coho Creek during construction is extremely low. As discussed in Section 3.1.2, 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 would 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. No in-water work would be performed outside that window without prior review and approval by Tulalip Tribal staff.

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 2022a, personal communication).

Fish exclusion would occur during the in-water work window established by the Tribes (July 15 to September 30) and in compliance with the WSDOT and USFWS fish exclusion protocol and standards (2021a; 2012). As noted above, in the unlikely event that Chinook salmon, steelhead, or bull trout spawn in Coho Creek, this work would 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. Performing the work during the fish window would also minimize the risk to other fish species potentially in the study area, including cutthroat trout, coho salmon, and chum salmon.

4.2 Vegetation and Wildlife Resources

4.2.1 Effects of No Action Alternative

Under the No Action Alternative, there would be no temporary or permanent project-related impacts to existing vegetation and wildlife habitats. There would be no conversion of vegetated areas to

impervious surfaces and no impacts to significant trees. There would be no changes to trees and shrubs within riparian corridor of Coho Creek. Patches of invasive Himalayan blackberry along the existing roadway fill prism would not be removed for project construction.

4.2.2 Effects of the Proposed Action

This section considered the following potential impacts on vegetation and wildlife resources:

- Permanent impacts associated with the clearing and paving of vegetation and wildlife habitats
- Temporary impacts associated with clearing and staging of equipment
- Permanent and temporary impacts to significant trees in the study area
- Impacts to essential habitat for animals and/or plants considered culturally important to the Tulalip Tribes, as listed under TTC 7.110.020

Construction of the corridor improvements project would result in temporary and permanent impacts to vegetation and wildlife within the study area. As described in Section 1.6, the study area for vegetation cover and habitat types extends 200 feet from the project footprint (see Figures 3 and 4 in Appendix A). Table 4-2 below summarizes the impacts per vegetation cover type. A total of 20 significant trees would be removed within the study area (14 trees within permanent impact areas and 6 within temporary impact areas). Thirteen of these trees are within the Tulalip Reservation and seven are within the City of Marysville.

Table 4.2 Summary of Temporary and Permanent Impacts on Vegetation and Wildlife Habitats (in acres)

	4th Street Portion of Study Area		88th Street NE Portion of Study Area		Total Project Impacts	
Cover/Habitat Type	**Permanent Impact Area**	**Temporary Impact Area**	**Permanent Impact Area**	**Temporary Impact Area**	**Permanent Impact Area**	**Temporary Impact Area**
Emergent Wetland	0.00	0.00	0.05	0.00	0.05	0.00
Scrub-Shrub Wetland	0.00	0.00	0.04	0.00	0.04	0.00
Stream Channel	0.00	0.00	0.03	0.00	0.03	0.00
Riparian Forest	0.00	0.00	0.00	0.02	0.00	0.02
Upland Forest	0.13	0.08	0.14	0.09	0.27	0.17
Shrubland	0.00	0.01	0.37	0.38	0.37	0.39
Mown grass and Landscaping	0.12	0.05	0.45	0.24	0.57	0.29
Roadside Right-of-way	1.58	0.62	1.42	0.82	3.00	1.44
Stormwater Facilities	0.00	0.05	0.08	0.07	0.08	0.12
Residential	0.00	0.00	0.00	0.00	0.00	0.00
Developed Unvegetated Surfaces	4.61	0.57	6.02	0.64	10.63	1.21
TOTAL	**6.44**	**1.38**	**8.60**	**2.26**	**15.04**	**3.64**

4.2.2.1 Permanent Impacts

Within the 4th Street portion of the study area, vegetation and wildlife habitats would be permanently displaced by the project through conversion to paved surfaces. Most of the area within the permanent impact area consists of unvegetated surfaces, such as roads, parking lots, and commercial or industrial lands (Table 4-2). Vegetated areas make up a small portion of the cover in the permanent impact area. Vegetation that would be affected consists primarily of the disturbed roadside right-of-way cover type, with smaller amounts of upland forest and mown grass/landscaping. Affected upland forest vegetation consists primarily of conifer trees near the I-5/4th Street and directly east of I-5 adjacent to commercial businesses. These trees may provide structural habitat for birds and other wildlife, but the disturbance level is very high given the proximity to major highways and roads.

As mentioned in Section 2.2.2 of this report, trees with a diameter of 8 inches or greater (as measured 4 feet above grade) are classified as significant trees for this analysis. Seven trees identified as significant trees within the 4th Street project footprint would be permanently removed during project construction. All seven are conifer trees located in upland areas near the northbound and southbound I-5 on-ramps within the City of Marysville. West of I-5, within the Tulalip Reservation, all of the impacted vegetated areas are disturbed roadside right-of way, shrubland, and landscaped areas. These habitat types do not offer essential habitat for species considered culturally important to the Tulalip Tribes, as listed under TTC 7.110.020.

Similar to the 4th Street portion of the study area, most of the land cover in the permanent impact area in the 88th Street NE portion of the study area consists of unvegetated areas, and most of the affected vegetation consists of the disturbed roadside right-of-way cover type. The other cover types in the permanent impact area are emergent wetland, scrub-shrub wetland, stream channel, upland forest, shrubland, mown grass/landscaping, and stormwater facilities. Impacts to areas classified as stream channel and wetland would be mitigated in accordance with applicable tribal, federal, state, and local requirements.

Five significant trees within Wetland A would be permanently removed to construct the new bridge. These trees are fast-growing deciduous red alder and willow trees. These trees do not provide nesting habitat for culturally important bird species, such as hawks and eagles, and are near the road fill prism. Cedar trees, which are considered culturally important to the Tulalip Tribes, would not be impacted and would be protected through the use of silt fencing and additional BMPs. Additionally, two significant trees (both conifer trees) within the landscaped area east of the 34th Ave and 88th Street NE intersection would be removed for the road realignment. See Figure 2 in Appendix A for the locations of these significant trees.

4.2.2.2 Temporary Impacts

Project construction would require clearing and removing vegetation in the temporary impact area. Outside of areas where roadside vegetation maintenance standards require the planting of grasses or other low-growing species, temporarily disturbed areas would be replanted with native species. Temporary staging areas would be located within previously developed areas (roads) and would not require vegetation clearing.

Most of the land cover in the temporary clearing area in the 4th Street portion of the study area consists of developed unvegetated surfaces or roadside right-of-way vegetation (Table 4-2). Small areas of upland forest, shrubland (primarily invasive Himalayan blackberry), and mown grass/landscaping are also present. No significant trees would be temporarily impacted.

Similar to the 4th Street portion of the study area, most of the land cover in the temporary clearing area in the 88th Street NE portion of the study area consists of developed unvegetated surfaces or roadside right-

of-way vegetation (Table 4-2). The other cover types in the temporary impact area are riparian forest, upland forest, shrubland, mown grass/landscaping, and stormwater facilities. Two significant trees (red alders) would be temporarily impacted within the riparian buffer. These trees are near 34th Ave NE and offer little habitat for wildlife. Additionally, four significant trees would be temporarily impacted within landscaped areas east of the 34th Ave and 88th Street NE intersection. There would be no temporary impacts to cedar trees or other plants identified as culturally important to the Tulalip Tribes.

Construction activities would temporarily affect wildlife in and near the project site. Impacts would occur from vegetation and habitat loss, disruption of travel corridors, noise impacts, and displacement of wildlife into potentially less suitable habitats where they might not thrive. Wildlife would likely be displaced when construction begins. Species displaced by construction noise would likely return after construction is complete. However, reestablishing native vegetation would require months to years for herbaceous upland and wetland types, and years to decades for forests.

4.3 Wetland Resources

4.3.1 Effects of the No Action Alternative

Under the No Action Alternative, there would be no permanent or temporary project-related impacts to wetlands in the study area. The vegetation and hydrology conditions would remain the same, and wetland soils would remain intact. There would be no improvements to habitat structure within Wetland A. There would be no potential for the creation of additional wetland and riparian habitat area in place of the existing roadway fill prism.

4.3.2 Effects of the Proposed Action

Permanent and temporary impacts to wetlands resulting from construction of the corridors improvement project are listed in Table 4-3 and discussed in the sections above.

Approximately 0.09 acre of wetland would be permanently filled as a result of the project. There are no temporary wetland impacts associated with the project. After stream restoration efforts are complete, 0.04 acre of riverine wetland habitat would be converted to stream habitat, and 0.03 acre of stream habitat would be converted to wetland. These impacts are regarded as a self-mitigating conversion of aquatic habitat type to another. Additionally, approximately 0.14 acre of gabion-supported road fill prism would be removed, replaced with native soils, graded to meet wetland and OHWL elevations, and restored with native vegetation. Over time, this area is expected to support wetland and riparian functions, potentially resulting in a net increase of approximately 0.05 acre of wetland area at the project site. Overall, the project is expected to result in no net losses of wetland areas or functions.

Table 4-3. Temporary and Permanent Impacts to Wetlands and Their Buffers

Wetland	Vegetation Type	Permanent Impacts	Temporary Impacts	Aquatic Area Conversion[2]	Permanent Buffer Impacts	Temporary Buffer Impacts
A	PSS/PEM	0.09[1]	0.00	0.04	0.16	0.23

[1] This total includes 0.03 acre of wetland below the OHWL, therefore also considered stream impact and included in Table 4-1.

[2] This consists of the conversion of existing wetland habitat to stream and is considered self-mitigating after stream restoration construction work is complete.

PSS = palustrine scrub-shrub; PEM = palustrine emergent

5. POTENTIAL MITIGATION MEASURES

The I-5/4th Street and 88th Street NE Corridor Improvements Project is being designed to comply with all federal, state, and local regulations. Although the Tulalip Tribal Code does not have prescribed mitigation ratios, the project team coordinated with tribal biologists to ensure the mitigation approach would meet the goals and intents of the code.

The project would use a mitigation sequencing approach based on a hierarchy of avoiding and minimizing adverse impacts through careful design, implementing BMPs, and rectifying temporary impacts. Applicable BMPs would be implemented during project construction and operation.

As mentioned previously, there would be no net loss of wetland or stream habitat associated with the project. The project is expected to provide a net gain in ecological functions in Coho Creek and associated wetlands. All areas of temporarily impacted riparian buffer (totaling 0.24 acre) would be restored in place with native woody vegetation after project construction is complete. These areas are currently dominated by reed canarygrass, which supports fewer ecological functions than the native woody species that would be used for site restoration. All areas of permanently impacted riparian buffer (totaling 0.22 acre) would be mitigated at a 1:1 ratio. Several potential buffer mitigation areas totaling 0.28 acre have been identified within the project vicinity. Currently these areas are dominated by invasive Himalayan blackberry. The blackberry would be removed and replanted with a variety of native trees and shrubs to offer increased plant diversity for wildlife. See Figure 5 in Appendix A for the location of these potential buffer mitigation areas.

Based on the anticipated net gains in the area and ecological functions of streams, riparian habitat, and wetlands, additional compensatory mitigation for project impacts on ecosystem resources is not expected to be required. The final mitigation measures would include specific goals and objectives and would specify monitoring criteria that proposed mitigation measures could be compared against. Mitigation measures would be generally described in enough detail so that reviewing agencies can determine the likelihood of the proposed mitigation succeeding and meeting all stated objectives.

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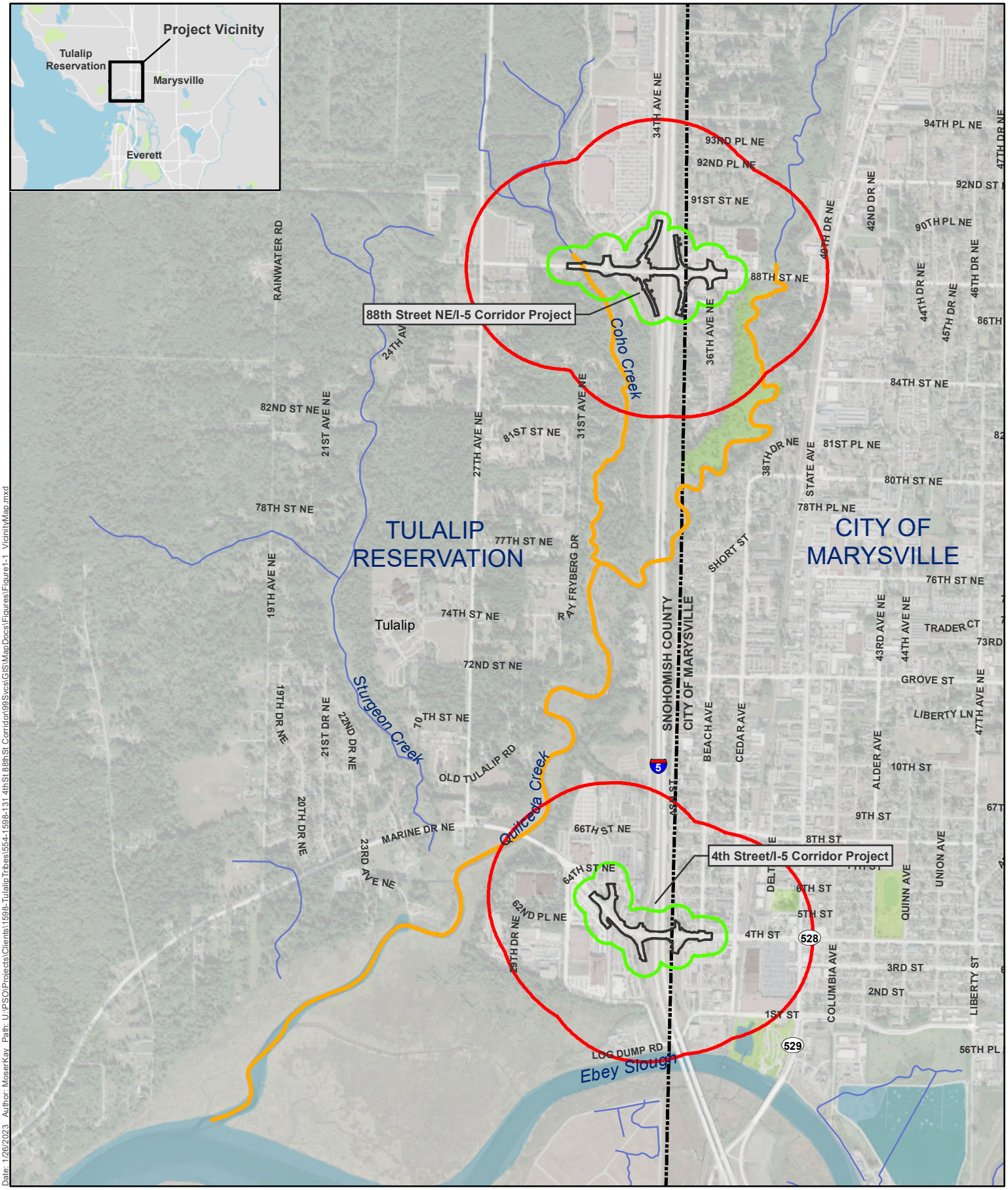
Appendix A

Figures



Source: © Mapbox, © OpenStreetMap, ESRI, WDNR

Streams
Project Area
Aquatic Resources Study Area
Vegetation Study Areas (200 feet)
Terrestrial Wildlife Study Areas (0.25 mi)

0 500 1,000 2,000 Feet

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

Date: 1/26/2023 Author: MoserKav Path: U:\PSO\Projects\Clients\1598-TulalipTribes\554-1598-131 4thSt 88thSt Corridor\99Svcs\GIS\MapDocs\Figures\Figure1-1 VicinityMap.mxd

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 - 3885 SF
- STREAM CONVERTED TO POTENTIAL WETLAND - 1240 SF
- RIPARIAN PERMANENT - 7053 SF
- RIPARIAN TEMPORARY - 10192 SF
- POTENTIAL BUFFER MITIGATION AREA - 12196 SF
- RIPARIAN BUFFER
- OHW — ORDINARY HIGH WATER
- WB — WETLAND BOUNDARY
- IMPACTED SIGNIFICANT TREES

88TH ST NE

34TH AVE NE

COHO CREEK

CC LINE

SCALE IN FEET 0 30 60

FILE NAME	U:\PSO\Projects\Clients\1598-TulalipTribes\554-1598-131 4thSt 88thSt Corridor\99Svcs\CADD\DGN\Figures\Bio Assessment\1598131_88TH_CR-9.dgn				REGION NO. 10	STATE WASH	FED.AID PROJ.NO.
TIME	1:10:03 PM						
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DESIGNED BY	M. TSUN				CONTRACT NO.	LOCATION NO.	
ENTERED BY	B. PURGANAN						
CHECKED BY							
PROJ. ENGR.	H. LONGFELLOW						
REGIONAL ADM.		REVISION	DATE	BY			

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TULALIP TRIBES Parametrix ©

I-5 MP 200.42 TO MP 201.05

88TH STREET NE CORRIDOR IMPROVEMENTS

MARYSVILLE/ SNOHOMISH COUNTY FEBRUARY 2022

STREAM PLAN

PLAN REF NO

SHEET 9 OF 10 SHEETS

Date: 9/19/2022 Author: worshaly

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Parametrix

Source: © Mapbox, © OpenStreetMap, ESRI, WDNR

- Streams
- City Boundary
- Temporary Impact Area
- Permanent Impact Area

Cover/Habitat Type

- Brush
- Developed Unvegetated Surfaces
- Landscaping/Mown Grass
- Roadside ROW
- Stormwater Facility
- Upland Forest

0 250 500 Feet

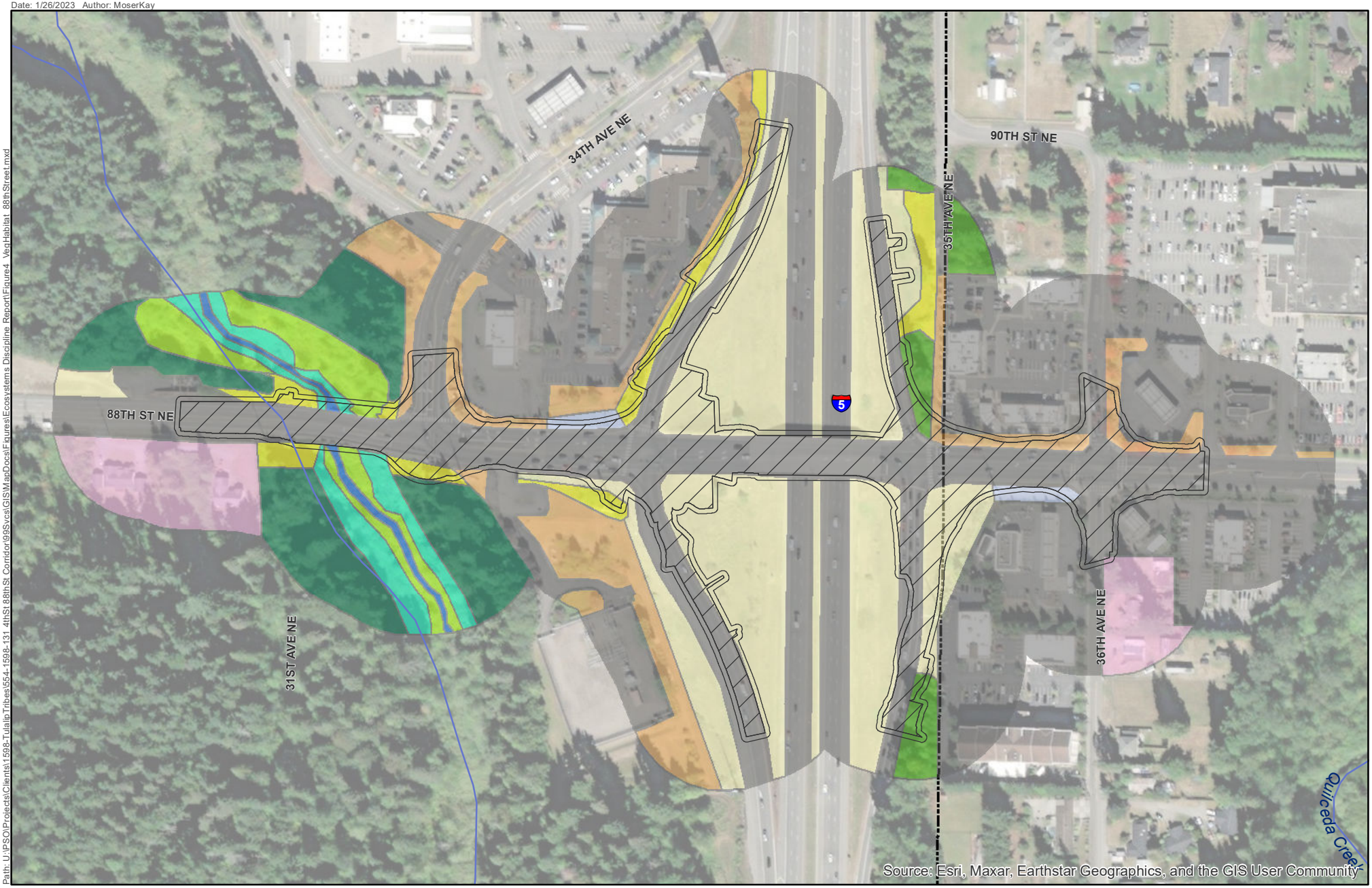
Figure 3

Vegetation Cover Types and Impacts (4th Street)

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

Snohomish County, WA

Date: 1/26/2023 Author: MoserKay



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Parametrix

Source: © Mapbox, © OpenStreetMap, ESRI, WDNR

- Streams
- City Boundary
- Temporary Impact Area
- Permanent Impact Area

Cover/Habitat Type

- Scrub-Shrub Wetland
- Emergent Wetland
- Shrubland
- Developed Unvegetated Surfaces
- Landscaping/Mown Grass
- Residential
- Riparian Forest
- Roadside ROW
- Stormwater Facility
- Stream Channel
- Upland Forest

0 250 500 Feet

Figure 4

Vegetation Cover Types and Impacts (88th Street)

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

Snohomish County, WA

Appendix B

Scientific Names of Species Identified in This Report

Plants

Common Name	Scientific Name
Black twinberry	*Lonicera Involucrata*
Common cattail	*Typha latifolia*
Field horsetail	*Equisetum arvense*
Himalyan blackberry	*Rubus armeniacus*
Ironwood/Oceanspray	*Holodiscus discolor*
Lady fern	*Athyrium cyclosorum*
Red alder	*Alnus rubra*
Red-osier dogwood	*Cornus sericea*
Reed canarygrass	*Phalaris arundinacea*
Salmonberry	*Rubus spectabilis*
Spotted jewledweed	*Impatiens capensis*
Western redcedar	*Thuja plicata*
Willow spp.	*Salix spp.*

Animals

Common Name	Scientific Name
American crow	*Corvus brachyrhynchos*
American robin	*Turdus migratorius*
Bald eagle	*Haliaeetus leucocephalus*
Band-tailed pigeon	*Patagioenas fasciata*
Barrow's goldeneye	*Bucephala islandica*
belted kingfisher	*Megaceryle alcyon*
Big-brown bat	*Eptesicus fuscus*
Black bear	*Ursus americanus*
Brant	*Branta bernicla*
Bull trout	*Salvelinus confluentus*
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Common goldeneye	*Bucephala clangula*
Common loon	*Gavia immer*
Cooper's hawk	*Accipiter cooperii*
Cutthroat trout	*Oncorhynchus clarkii*
Dark-eyed junco	*Junco hyemalis*
House sparrow	*Passer domesticus*
Great blue heron	*Ardea herodias*
Hooded merganser	*Lophodytes cucullatus*
Marbled Murrelet	*Brachyramphus marmoratus*
Mule deer	*Odocoileus hemionus*
North American beaver	*Castor canadensis*
Northern flicker	*Colaptes auratus*
Northern pygmy owl	*Glaucidium californicum*

Northern saw-whet owl	*Aegolius acadicus*
Olympic Mudminnow	*Novumbra hubbsi*
Oregon Spotted Frog	*Rana pretiosa*
Pacific lamprey	*Lampetra tridentata*
Peregrine falcon	*Falco peregrinus*
Pileated woodpecker	*Dryocopus pileatus*
Pink salmon	*Oncorhynchus gorbuscha*
Purple martin	*Progne subis*
Rainbow trout	*Oncorhynchus mykiss*
red-legged frog	*Rana aurora*
Red-tailed Hawk	*Buteo jamaicensis*
River lamprey	*Lampetra ayresi*
Rock pigeon	*Columba livia*
Sharp-shinned hawk	*Accipiter striatus*
Steelhead	*Oncorhynchus mykiss*
Townsend's big-eared bat	*Corynorhinus townsendii*
Trumpeter swan	*Cygnus buccinator*
Tundra swan	*Cygnus columbianus*
Vaux's swift	*Chaetura vauxi*
Western grebe	*Aechmophorus occidentalis*
Western screech owl	*Megascops kennicottii*
Western toad	*Anaxyrus boreas*
Wood duck	*Aix sponsa*