BIOLOGICAL ASSESSMENT

Federal Way City Center Access

Submitted to
Washington State Department of Transportation
Northwest Region
15700 Dayton Avenue North

Shoreline, WA 98133

Prepared for
Federal Highway Administration
and
Washington State Department of Transportation

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Acronyms and Abbreviations

BA	biological assessment
BMP	best management practice
CSTW/DP	combined stormwater treatment wetland/detention pond
dBA	decibels (A-weighted scale)
DPS	distinct population segment
Ecology	Washington Department of Ecology
EFH	essential fish habitat
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FHWA	Federal Highway Administration
FR	Federal Register
HOV	high-occupancy vehicle
HUC	hydrologic unit code
I-5	Interstate 5
L_{eq}	equivalent continuous sound level
NCEI	National Centers for Environmental Information
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NWIFC	Northwest Indian Fisheries Commission
OHWL	ordinary high water line
PBF	physical and biological feature
PGIS	pollution-generating impervious surfaces
SR	State Route
SRKW	southern resident killer whale
SWIFD	Statewide Integrated Fish Distribution
SWM	stormwater management
SWPPP	stormwater pollution prevention plan
TDA	threshold discharge area
TESC	temporary erosion and sediment control
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

Executive Summary

The City of Federal Way initiated the City Center Access Project to provide transportation system changes needed to preserve future mobility in the City Center subarea of Federal Way. The purpose of the project is to improve the economic vitality of the City Center and to improve the quality of life by increasing multimodal mobility and access to regional and local trips while protecting the integrity of the Interstate Highway System. Access and mobility are limited by congestion issues along South 320th Street between Pacific Highway South and Military Road, including to and from Interstate 5 (I-5), and by the lack of multimodal facilities across I-5. The federal nexus for this project is established by the use of funding from the Federal Highways Administration (FHWA), the impact to Interstate 5, and the required authorization under the federal Clean Water Act.

The project will include roadway upgrades, new road construction, culvert replacement, stream realignment, and stormwater facilities.

The project will consist of the following project elements:

- Modification of the South (S) 320th Street interchange by adding braided ramps and access at S 324th Street
- Construction of a new two-lane bridge over I-5 at S 324th Street
- Extension of S 324th Street from 23rd Avenue S to Weyerhaeuser Way S
- Widening S 324th Street from State Route (SR) 99 to 23rd Avenue S
- Improvements to S 320th Street to provide high-occupancy vehicle (HOV) lanes, including replacing the existing bridge over I-5
- Nonmotorized improvements along 23rd Avenue S, S 320th Street, and S 324th Street
- Stream crossing upgrades to improve fish passage, including under I-5

The project will create in-air noise and may increase suspended sediment loads during construction, as well as result in removal of forested and riparian habitats. During operation, the project will discharge stormwater into receiving waters and streams in the Hylebos Creek and Green-Duwamish watersheds. The project will create 15.81 acres of new pollution-generating impervious surface (PGIS) and will provide water quality treatment for 16.23 acres of PGIS.

The project includes the replacement of four culverts. Three of these culverts convey a headwater tributary to East Fork Hylebos Creek (East Fork Hylebos Creek Tributary 0016A) under I-5, S 320th Street, and associated on- and off-ramps. From upstream (northeast) to downstream (southwest), these culverts are identified as follows:

- I-5 northbound on-ramp, milepost 143.90 (WDFW Site ID number 995300)
- I-5 northbound off-ramp, milepost 143.75 (WDFW Site ID number 995299)
- I-5, milepost 143.60 (WDFW Site ID number 992364)
- Winged Foot Way (WDFW Site ID number 420614).

Three of these culverts (995300, 995299, and 992364) are on the list of culverts that must be replaced under a 2013 federal court injunction requiring the removal of state-owned culverts in western Washington that block habitat for salmon and steelhead. The project design includes the replacement of these three culverts, plus a privately owned culvert at Winged Foot Way (culvert 420614) that is directly connected to culvert 992364.

The replacement crossing structures will be sized and configured to prevent them from becoming barriers in the future. The structures will be designed using the design criteria from WSDOT's 2022 Hydraulics Manual and WDFW's 2013 Water Crossing Design Guidelines. The design of the structures will be determined through hydraulic, geotechnical, and structural engineering evaluations.

In total, the project proposes to replace and realign approximately 2,473 feet of existing culverted stream and approximately 212 feet of existing open channel. The proposed alignment will include approximately 1,035 feet of fish-passable culverts and approximately 1,164 feet of new daylighted channel. Removing all four barriers may allow access to approximately 4,500 linear feet of stream habitat, including approximately 1,230 square feet of potential spawning habitat and 49,050 square feet of potential rearing habitat upstream of the replaced culverts.

The project will avoid or minimize potential effects on ESA-listed species and their habitats. No suitable habitat for ESA-listed wildlife or plant species is present in the action area, and stream reaches within 1 mile of the project limits are inaccessible to fish. No critical habitat for any ESA-listed species is present within 1 mile of the project limits. As such, the project will have no direct effects on ESA-listed species or critical habitat. However, contaminants in stormwater runoff discharged to streams in and near the project limits may degrade water quality in downstream waters where ESA-listed fish and critical habitat are present. The proposed treatment strategy will reduce the frequency and intensity of exposure of ESA-listed fish to contaminants that may remain in treated stormwater or that occur when treatment BMPs are bypassed, compared to existing conditions.

The project will also contribute to the long-term recovery of ESA-listed fish species by correcting barriers to fish migration in headwater reaches of East Fork Hylebos Creek Tributary 0016A. After downstream barriers are corrected, these improvements will increase the amount of habitat accessible to anadromous salmonids.

Table ES-1 on the next page identifies the species and critical habitat addressed in this BA and summarizes the effect determinations. Table ES-2 on the next page summarizes project effects on essential fish habitat (EFH) for Pacific salmon, groundfish, and coastal pelagic species. The EFH assessment is included as Appendix A.

Table ES-1. ESA-Listed Species, Critical Habitats, and Recommended Determinations

Species	Agency with ESA Jurisdiction	ESA Listing Status	Species Effect Determination	Critical Habitat Status	Critical Habitat Effect Determination
Marbled murrelet (*Brachyramphus marmoratus*)	USFWS	Threatened	No Effect	Designated; none in action area	No Effect
Streaked horned lark (*Eremophila alpestris strigata*)	USFWS	Threatened	No Effect	Designated; none in action area	No Effect
Yellow-billed cuckoo (*Coccyzus americanus*) (Western DPS)	USFWS	Threatened	No Effect	Designated; none in action area	No Effect
Taylor's checkerspot (*Euphydryas editha taylori*)	USFWS	Endangered	No Effect	Designated; none in action area	No Effect
Gray wolf (*Canis lupus*)	USFWS	Endangered	No Effect	None designated	Not Applicable
North American wolverine (*Gulo gulo luscus*)	USFWS	Proposed Threatened	Provisional No Effect	None designated	Not Applicable
Bull trout (*Salvelinus confluentus*)	USFWS	Threatened	Not Likely to Adversely Affect	Designated within the action area	Not Likely to Adversely Affect
Chinook salmon (*Oncorhynchus tshawytscha*) (Puget Sound ESU)	NMFS	Threatened	Likely to Adversely Affect	Designated within the action area	Likely to Adversely Affect
Steelhead (*Oncorhynchus mykiss*) (Puget Sound DPS)	NMFS	Threatened	Likely to Adversely Affect	Designated within the action area	Likely to Adversely Affect
Southern Resident killer whale (*Orcinus orca*)	NMFS	Endangered	Not Likely to Adversely Affect	Designated; none in action area	Not Likely to Adversely Affect
Bocaccio (*Sebastes paucispinis*) Puget Sound/Georgia Basin DPS	NMFS	Endangered	No Effect	Designated; none in action area	No Effect
Yelloweye rockfish (*Sebastes ruberrimus*) Puget Sound/Georgia Basin DPS	NMFS	Threatened	No Effect	Designated; none in action area	No Effect

DPS = Distinct Population Segment; ESU = Evolutionarily Significant Unit

USFWS = United States Fish and Wildlife Service; NMFS = National Marine Fisheries Service

Table ES-2. Effect Determinations for Essential Fish Habitat

Fishery	Effect Determination
Pacific salmon	May Adversely Affect
Groundfish	May Adversely Affect
Coastal pelagic species	Will Not Adversely Affect

1. Introduction

The City of Federal Way initiated the City Center Access Project, hereafter referred to as "the project," to provide transportation system changes needed to preserve future mobility in the City Center subarea of Federal Way. The purpose of the project is to improve the economic vitality of the City Center and to improve the quality of life by increasing multimodal mobility and access to regional and local trips while protecting the integrity of the Interstate Highway System. Access and mobility are limited by congestion issues along South (S) 320th Street between Pacific Highway S and Military Road, including to and from Interstate 5 (I-5), and by the lack of multimodal facilities across I-5.

The project will consist of the following project elements:

- Modification of the S 320th Street interchange by adding braided ramps and access at S 324th Street
- Construction of a new two-lane bridge over I-5 at S 324th Street
- Extension of S 324th Street from 23rd Avenue S to Weyerhaeuser Way S
- Widening S 324th Street from State Route (SR) 99 to 23rd Avenue S
- Improvements to S 320th Street to provide high-occupancy vehicle (HOV) lanes, including replacing the existing bridge over I-5
- Nonmotorized improvements along 23rd Avenue S, S 320th Street, and S 324th Street
- Stream crossing upgrades to improve fish passage, including under I-5

The Washington State Department of Transportation (WSDOT) coordinated the development of this biological assessment (BA) in accordance with Section 7(c) of the Endangered Species Act (ESA), to determine the project's potential impacts on listed species and their designated critical habitats and to support consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). This BA also includes an analysis of essential fish habitat (EFH) for federally managed fisheries in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (Appendix A).

The anticipated federal nexus for this project is funding from the Federal Highway Administration (FHWA). Regardless of funding, FHWA will have to authorize a temporary break in access along I-5 for project construction. As such, FHWA will act as the federal lead agency for ESA consultation. Additionally, the project will require environmental permits from the U.S. Army Corps of Engineers in relation to the Clean Water Act.

1.1 Background and Consultation History

Pre-BA meetings were held virtually on July 15, 2021, and again on September 15, 2022. Representatives from USFWS, NMFS, WSDOT, FHWA, the City of Federal Way, and the consultant team attended the meetings. Notes from the pre-BA meetings are included in Appendix B. Topics covered during the July 2021 meeting included stormwater management, injunction culverts, known fish use and existing barriers, the effects of *N*-(1,3-Dimethylbutyl)-*N'*-phenyl-*p*-phenylenediamine-quinone (6PPD-quinone) on ESA-listed fish, and habitat conditions for marbled murrelet. Topics covered during the September 2022 meeting included hydrology and habitat potential, stormwater treatment, action area definition, fish

use documentation, and the potential for adverse effects on EFH. USFWS representatives concluded that the project will likely be eligible for informal consultation for USFWS. NMFS representatives determined that formal consultation is likely.

1.2 Project Location

The project is located primarily in Federal Way; portions of the project limits east of I-5 and north of S 320th Street extend into unincorporated King County (Figure 1-1). The project lies almost entirely within the Hylebos Creek-Frontal Commencement Bay drainage (sixth-field hydrologic unit code (HUC) 171100190205); a small area at the northeastern corner is in the Mill Creek-Green River drainage (HUC 171100130304). Most of the project footprint is in Water Resource Inventory Area (WRIA) 10 (Puyallup/White); the northeastern corner is in WRIA 9 (Green/Duwamish). The project is in Sections 9, 10, 15, and 16 of Township 21 North, Range 4 East, Willamette Meridian. The center of the project is at latitude 47.3132º N and longitude 122.2983º W.

The primary roadways in the project area are S 320th Street and I-5. S 320th Street crosses I-5 at approximately milepost 143.8. The project footprint encompasses I-5 between mileposts 142.8 and 144.7. The project is bounded by SR 99 on the west and Military Road S on the east.

1.3 Project Description

The project description provided below is organized into the following sections: transportation improvements, culvert replacements, construction activities and equipment, stormwater management, construction schedule, and interrelated and interdependent activities. The project elements are shown in Figure 1-2.

1.3.1 Transportation Improvements

Access Modifications

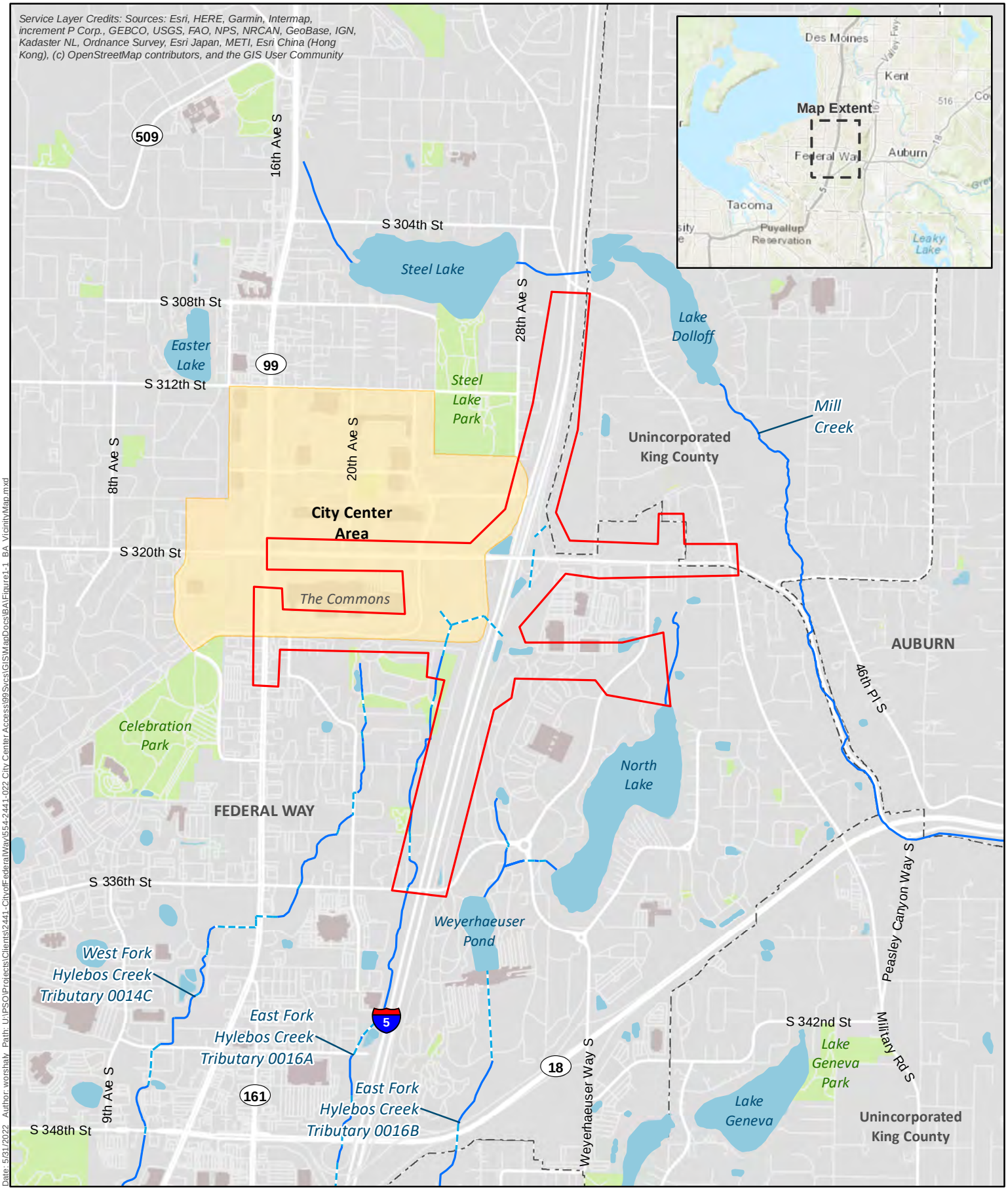
The project includes a modified interchange at S 320th Street, with braided ramps and new access at S 324th Street. All on-ramps from S 320th Street and S 324th Street will be metered and will not include HOV bypasses. Changes in impervious surfaces resulting from these and other project elements are described in Section 1.3.4.

S 324th Street Roadway Improvements

The project includes a new two-lane bridge for S 324th Street across I-5. Both ramp terminals will have single-lane roundabouts with slip lanes in the northwest and southwest quadrants of the interchange between S 324th Street I-5.

West of the new S 324th Street interchange, S 324th Street will be five lanes from SR 99 to 23rd Avenue S and four lanes from 23rd Avenue S to I-5 southbound ramps. There will be a two-lane roundabout at the S 324th Street/23rd Avenue S intersection. The project also includes intersection improvements at S 324th Street/SR 99 that will help manage traffic to and from the new interchange, including additional southbound and northbound left-turn lanes.

S 324th Street will be extended east of I-5. The new roadway will consist of three lanes from the I-5 northbound ramps to Weyerhaeuser Way S, with a single-lane roundabout at S 324th Street/Weyerhaeuser Way S that will include relocated access to the existing Washington Department of Fish and Wildlife (WDFW)-managed boat ramp on North Lake.



Parametrix

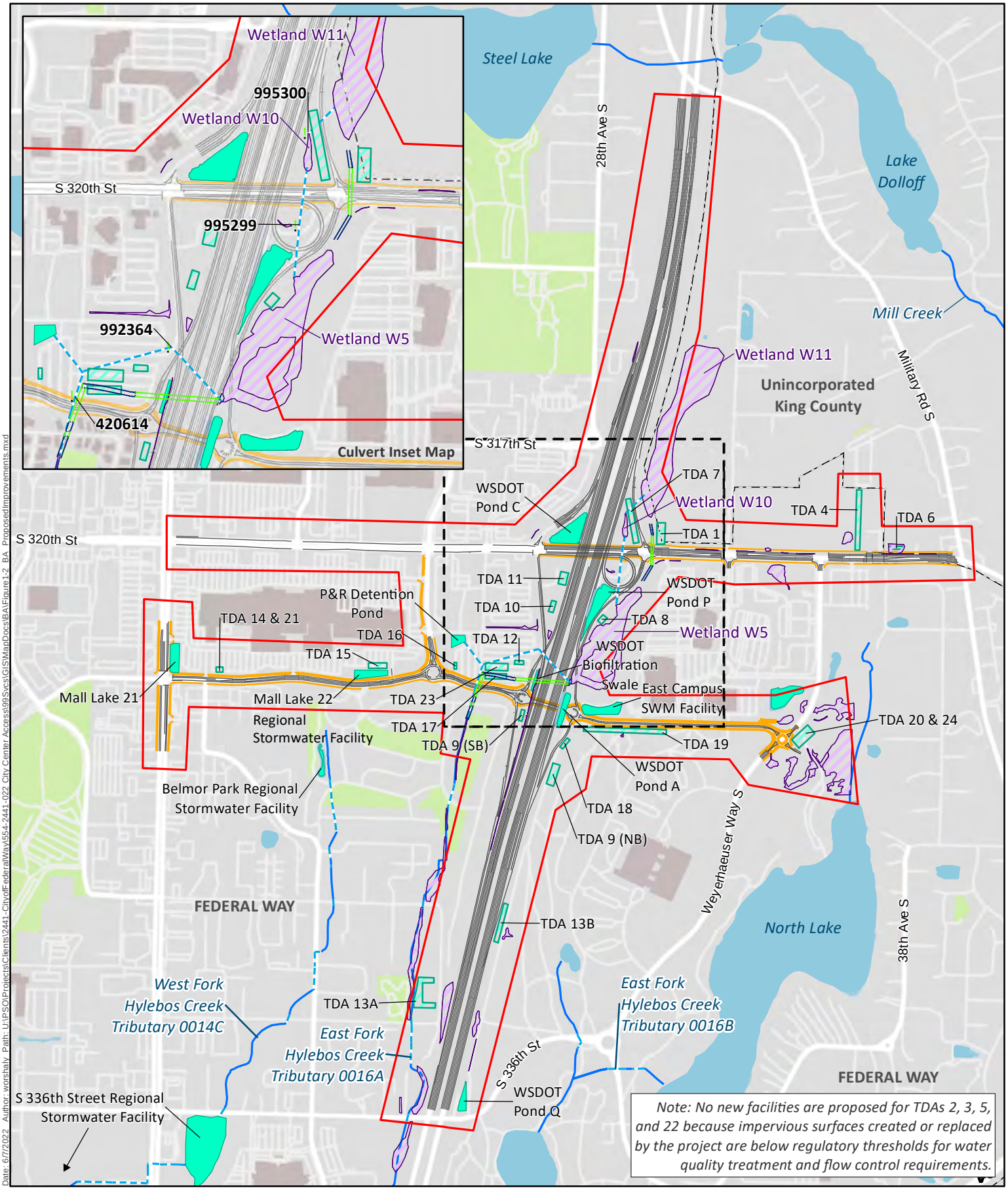
Source: © Mapbox, © OpenStreetMap, King County, City of Federal Way, WA DNR

0 500 1,000 2,000 Feet

Project Area
City Center Area
City Boundary
Stream
Stream (Pipe)

Figure 1-1
Vicinity Map
Federal Way City Center Access
Project: Biological Assessment

Federal Way, WA



Parametrix

Source: © Mapbox, © OpenStreetMap, King County, City of Federal Way, WA DNR

0 250 500 1,000 Feet

- Project Area
- City Boundary
- Stream
- Stream (Pipe)

Project Design

- Sidewalk
- Roadway
- New Culvert
- New Stream Channel

- Existing Culvert
- Wetland

Stormwater Facilities

- Existing Facility
- Proposed Facility

Figure 1-2
Proposed Improvements
Federal Way City Center Access
Project: Biological Assessment

Federal Way, WA

S 320th Street Roadway Improvements

S 320th Street currently includes HOV lanes in both directions between SR 99 and 20th Avenue S. The project will add HOV lanes on S 320th Street in both directions between 20th Avenue S and Military Road. Between 20th Avenue S and the I-5 southbound ramps, a general-purpose lane in each direction will be converted to an HOV lane. Crossing I-5 between the I-5 southbound ramps and I-5 northbound ramps, the S 320th Street bridge will be replaced to include new HOV lanes in both directions and a lengthened left-turn lane for the I-5 southbound on-ramp. Between I-5 and Military Road, S 320th Street will be widened to accommodate the added HOV lanes.

Nonmotorized Improvements

The project includes nonmotorized improvements on both S 324th Street and S 320th Street. Between SR 99 and Weyerhaeuser Way, there will be a shared-use path on the north side of S 324th Street and a sidewalk on the south side of S 324th Street. There is potential for the shared-use path to connect to the BPA Trail in the future. A shared-use path on the west side of 23rd Avenue S between S 324th Street and S 320th Street is included. The S 320th Street bridge crossing I-5 will have sidewalks on the north and south sides. There will also be sidewalks on the north and south sides between the I-5 northbound ramps and Military Road.

1.3.2 Culvert Replacements

The project area includes four culverts that convey a headwater tributary to East Fork Hylebos Creek (East Fork Hylebos Creek Tributary 0016A) under I-5, S 320th Street, associated on- and off-ramps, and under Winged Foot Way (Figure 1-2; Appendix C). From upstream (northeast) to downstream (southwest), these culverts are identified as follows:

- I-5 northbound on-ramp, milepost 143.90 (WDFW Site ID number 995300)
- I-5 northbound off-ramp, milepost 143.75 (WDFW Site ID number 995299)
- I-5, milepost 143.60 (WDFW Site ID number 992364)
- Winged Foot Way in Belmor Park (WDFW Site ID number 420614)

Three of these culverts (995300, 995299, and 992364) are on the list of culverts that must be replaced under a 2013 federal court injunction requiring the removal of state-owned culverts in western Washington that block habitat for salmon and steelhead. The project design includes the replacement of these three culverts, plus a privately owned culvert at Winged Foot Way (WDFW Site ID number 420614) that is directly connected to culvert 992364.

The replacement crossing structures will be sized and configured to prevent them from becoming barriers in the future. The structures will be designed using the design criteria from WSDOT's 2022 Hydraulics Manual and WDFW's 2013 Water Crossing Design Guidelines. The design of the structures will be determined through hydraulic, geotechnical, and structural engineering evaluations.

According to the WDFW Habitat Survey Summary Reports for the existing structures, removing all four barriers may allow access to approximately 4,500 linear feet of stream habitat. Habitat surveys performed in 2015 characterized that habitat as consisting primarily of ponds and wetlands adjacent to I-5. Defined channels with riffles and pools were present in only a few reaches. The upstream extent of potentially fish-bearing stream habitat is at the edge of a residential area approximately 0.3 mile northeast of the inlet to

culvert 995300. Downstream barriers to fish migration currently prevent fish from accessing the proposed habitat gains However, the Washington State Department of Transportation (WSDOT) is planning to correct many of these downstream barriers in the near future. A summary of fish barriers downstream of the project site is provided in Section 2.

In total, the project proposes to replace the existing stream alignment, which includes approximately 2,473 feet of culverts and 212 feet of open channel, with a new alignment that includes approximately 1,035 feet of fish-passable culverts and 1,164 feet of daylighted channel (Appendix C). A summary of the existing and proposed crossing structures is provided in Table 1-1. The remainder of this subsection provides an overview of the existing and proposed configuration of the East Fork Hylebos Creek Tributary 0016A stream channel and culverts at the crossings of S 320th Street and I-5.

Table 1-1. Summary of Existing and Proposed Stream Crossings

Location	Existing Culvert to be Replaced	Proposed Replacement Structure
On-ramp from westbound S 320th St to northbound I-5	• Culvert 995300 • 225 feet long • 30-inch diameter corrugated metal pipe into 36-inch diameter high-density polyethylene	• Single structure will replace 995300 and 995299 • 290-foot-long by 10.5-foot-wide culvert • Up to 675 feet of daylighted channel
S 320th St and I-5 northbound on/off ramps	• Culvert 995299 • 760-foot long, multiple segments • 30-inch diameter concrete pipe	• Stream will bypass culvert • Existing culvert will remain to provide hydrologic connection between wetlands
Under I-5	• Culvert 992364 • 440 feet long • 36-inch-diameter concrete pipe	• Replace existing structure • 500-foot long by 13-foot-wide culvert
Under new extension of S 324th St (Existing Park and Ride)	• Culvert 420614[1], Sections 1 and 2 • 800-foot-long by 48-inch-diameter concrete pipe	• 215-foot-long by 13-foot-wide culvert • 320-foot-long by 25-foot-wide daylighted stream with retaining walls
Winged Foot Way	• Culvert 420614[1], Section 3 • 262-foot long by 48-inch diameter concrete pipe	• 30-foot-long by 13-foot-wide culvert • 205 linear feet of 25-foot-wide daylighted stream with retaining walls

[1] Culvert 420614 consists of three sections from just west of I-5 to south of Winged Foot Way

Under existing conditions, flow enters culvert 995300 at the southern end of a wetland complex (Wetland W11) north of S 320th Street and east of I-5. East Fork Hylebos Creek Tributary 0016A originates in this wetland complex and is conveyed through this and the other culverts identified in Table 1-1. The culvert is a 225-foot-long, 30-inch-diameter corrugated metal pipe that transitions to a 36-inch-diameter, high-density polyethylene pipe at an unknown location along the length of the crossing. The culvert conveys flow from northeast to southwest under the on-ramp from westbound S 320th Street to northbound I-5. The culvert outlet is in a vegetated area upslope of a wetland (Wetland W10) between the onramp and the main line of I-5.

Immediately downstream of culvert 995300, flow enters a ponded area (Wetland 10). Flow runs through Wetland 10 for approximately 180 linear feet before entering culvert 995299. This culvert is 760 feet long and appears to be made up of several segments of pipe. It conveys flow beneath S 320th Street, the on-ramp from eastbound S 320th Street to northbound I-5, and the offramp from northbound I-5 to S

320th Street. The outfall is a 30-inch diameter concrete pipe at the northwestern edge of a bog-wetland complex (Wetland W5) east of the I-5 northbound off-ramp. At this outfall, East Fork Hylebos Creek Tributary 0016A forms a defined channel.

Approximately 15 feet downstream of the culvert 995299 outlet, the stream loses its defined channel and diffuses into Wetland W5. Flow coalesces into a channel approximately 750 feet later, shortly before the stream enters culvert 992364 near the southern end of Wetland W5. The stream is conveyed under I-5 in a 440-foot-long, 36-inch diameter concrete culvert. West of I-5, flow is conveyed under the S 320th Street Park & Ride through a series of pipes totaling approximately 800 feet in length. Flow then enters a 262-foot-long, 48-inch-diameter concrete pipe (WDFW Site ID number 420614) that outfalls to an open channel in the Belmor Park manufactured home community, south of Winged Foot Way.

The project will replace culverts 995300 and 995299 with a single structure that crosses S 320th Street east of the I-5 on- and off-ramps. The structure is expected to be up to 290 feet long, and it will have a minimum hydraulic opening between 10 feet and 13 feet wide. The stream channel will be realigned, and the design will include up to 675 feet of daylighted channel. The upstream extent of grading for stream channel realignment will be at the southern boundary of the Wetland W11 complex north of S 320th Street. The downstream extent of this segment of channel realignment is currently anticipated to be at the location of the existing outlet of culvert 995299. The stream grade will be approximately 50 feet below the proposed S 320th Street roadway surface. At this time, it is assumed that culvert 995299 will remain in place and will continue to convey water from Wetland W10 toward Wetland W5.

Downstream of S 320th Street, the project will replace culverts 992364 and 420614 with a realigned channel that includes crossings of I-5, the future alignment of S 324th Street, and Winged Foot Way. The upstream extent of channel grading for this segment of the stream will be approximately 30 feet upstream of the existing inlet to culvert ID 992364. The existing culverts under I-5, the S 320th Street Park & Ride, and Winged Foot Way will be replaced with new structures and surface-flowing stream channels, as follows (Figure 1-2, Appendix C):

- An approximately 500-foot-long structure with a hydraulic opening of at least 13 feet, approximately 20 feet below the I-5 roadway surface.
- A 320-foot-long, 25-foot-wide reach of daylighted stream channel within the Park & Ride lot west of I-5. The stream elevation will be approximately 25 feet below the existing surface elevation of the parking lot. To allow for an open stream channel while limiting the grading footprint within the Park & Ride, structural retaining walls may be built at the edges of the channel corridor.
- An approximately 215-foot-long structure with a hydraulic opening of at least 13 feet, to convey flow under the proposed new alignment of S 324th Street.
- A 59-foot-long, 25-foot-wide reach of daylighted channel corridor downstream of the S 324th Street crossing, approximately 20 feet in elevation below the existing ground surface. To limit permanent grading impacts, structural retaining walls may be built at the edges of the channel corridor.
- An approximately 30-foot-long structure with a hydraulic opening of at least 13 feet, approximately 22 feet below the roadway surface of Winged Foot Way.
- A 146-foot-long, 25-foot-wide reach of daylighted channel corridor extending from the Winged Foot Way crossing to the downstream grading limit. This reach may also be supported by structural retaining walls located at the edges of the 25-foot-wide channel corridor to allow for an open

stream channel approximately 25 feet below the existing ground surface while limiting the footprint of permanent grading impacts.

1.3.3 Construction Activities and Equipment

This section provides more detail on the construction activities and types of equipment associated with the existing roadway upgrades, new road construction, culvert replacements, and stream realignments described above (Sections 1.3.1 and 1.3.2). These details also apply to the proposed stormwater facilities described below (Section 1.3.4).

The existing roadway will be preserved to the greatest extent possible and will follow the existing alignment and profile. Work related to road upgrades includes grinding the roadway and placing asphalt in the travel lanes, constructing planters and sidewalks adjacent to the roadway, removing existing asphalt and concrete surfaces, clearing and grading of adjacent areas, and placing subgrade material to form a stable roadbed. Construction equipment for road work may include cranes, backhoes, excavators, front loaders, pavement grinders, jackhammers, drilling rigs, pile drivers, vibratory equipment, trucks, air compressors, and concrete pumping equipment.

Construction of the new segment of S 324th Street will entail clearing and grading for roadway construction on both sides of I-5, construction of the new bridge over I-5, and construction of the new roadway and roundabout at Weyerhaeuser Way S. New road surfaces for S 324th Street will be primarily asphalt and concrete. The new bridge over I-5 will likely be supported on driven piles or drilled shaft foundations, and fill will be required on both sides of the new S 324th Street bridge. Equipment for construction of the new bridge structure will include cement mixers, concrete pumps, cranes, pavers, haul trucks, and tractor-trailers.

The use of a pile-driver to install support piles or sheet piles may be required for construction of the new S 324th Street bridge over I-5, the S 320th Street bridge replacement, and retaining walls. Pile installation will use standard impact pile-drivers. As an alternative method for pile driving, an auger may be used instead of an impact driver. Any pile-driving activity would be subject to the regulatory requirements of local jurisdictions' noise ordinances (Federal Way Revised Code 7.10.020, King County Code 12.86.520).

Proposed stream crossing structures and open channels will primarily be built in new alignments outside of the existing OHWL. Such work will not be restricted to in-water work windows. The existing drainage system will remain in place until the proposed drainage system is completed. Work required below the OHWL, such as grading at the connection points, fill, and removal of old culverts, will be performed during the approved in-water work window and follow relevant BMPs for work area isolation. There is a high likelihood that the stream will not have surface flow during the work window; however, if water is present, then fish salvage and dewatering protocols will be implemented as needed.

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

Various areas of the project will be constructed at grade or elevated above the water table, which may reduce the need for dewatering (the removal of water from soil). Discharge of dewatering water will

follow the National Pollution Discharge Elimination System (NPDES) permit requirements specified by the Washington State Department of Ecology (Ecology).

Staging areas will be located within road rights-of-way and adjacent city-owned parcels, where possible, to allow for parking, large equipment storage, and material stockpiles.

Work will take place primarily during daylight hours on weekdays. However, lane restriction requirements will necessitate nighttime operations for some activities, including new bridge construction; replacement, excavation, and haul operations; setting girders; temporary soldier pile wall/shoring installation and removal; and temporary widening of existing roadways (if needed to minimize traffic impacts during construction). Work within the stream channel will be performed during the in-water work window specified by agencies with regulatory authority.

1.3.4 Stormwater Management

Stormwater management (SWM) facilities for the project were designed in accordance with the following design guidance and criteria:

- City-owned, operated, and maintained SWM facilities: 2016 King County Storm Water Design Manual and 2017 City of Federal Way Addendum
- County-owned, operated, and maintained SWM facilities: 2016 King County Storm Water Design Manual
- WSDOT-owned, operated, and maintained SWM facilities: 2019 Highway Runoff Manual

A project-specific Stormwater Pollution Prevention Plan (SWPPP) and a Temporary Erosion and Sediment Control (TESC) Plan will be prepared and implemented before beginning earthwork. The sediment and flow-control best management practices (BMPs) described in the TESC and SWPPP will minimize the potential for water quality impacts to wetland and stream resources in the project area.

Twenty-six (26) threshold discharge areas (TDAs) have been delineated for the project, based on consideration of downstream flow paths, agency jurisdiction, and presence of existing SWM facilities. The receiving waters are West Fork Hylebos Creek Tributary 0014C, East Fork Hylebos Creek Tributary 0016A, East Fork Hylebos Creek Tributary 0016B, and Mill Creek. The three Hylebos Creek tributaries ultimately drain to the mainstem Hylebos Creek, which discharges to the Hylebos Waterway in Commencement Bay. Mill Creek drains to the lower Green River, which becomes the Duwamish River before discharging to the Duwamish Waterway and Elliott Bay. Table 1-2 groups the TDAs by receiving water and provides a summary of the current and anticipated post-construction acreage of pollution-generating impervious surface (PGIS) areas and areas directed to water quality treatment and/or infiltration facilities in each TDA. The amount of area from which runoff will be directed to treatment facilities will exceed the increase in the area of PGIS.

The project will increase the total amount of PGIS (i.e., in all TDAs combined) by approximately 15.81 acres (Table 1-2). New treatment will be applied to a total of 16.23 acres of PGIS. By providing treatment for an amount of PGIS (16.23 acres) that exceeds the overall increase in PGIS (15.81 acres), the project will reduce the amount of untreated PGIS in the action area, albeit slightly (0.42 acre). Similarly, while not shown in the table, the total area of impervious surfaces will increase by 18.15 acres, but the area from which runoff is directed to detention facilities (i.e., flow control BMPs) will increase by 20.17 acres. Based on the difference between the total increase in impervious surface area and the area

directed to detention facilities, the project will result in a 2.02-acre increase the amount of impervious surface runoff being detained.

The overall pattern of the change in treated area being equal to or greater than the change in PGIS (in other words, a net reduction in untreated runoff) is also true at the scale of all but three individual TDAs (TDAs 5, 6, and 21), as summarized in Table 1-2 and discussed below. However, in two of the four watersheds in the action area (West Fork Hylebos Creek Tributary 0014C and Mill Creek) this net reduction will not be achieved, i.e., the amount of area from which runoff will be directed to treatment facilities will be slightly less than the increase in the area of PGIS.

Table 1-2. Existing and Post-project PGIS Area, Area Receiving Stormwater Treatment (Acres), Treatment Type, and Discharge

TDA	Existing		Proposed		Change		Proposed Treatment	Post-Treatment Discharge
	Total PGIS Area	Total Treated Area[1]	Total PGIS Area	Total Treated Area[2]	Total PGIS Area	Total Treated Area		
East Fork Hylebos Creek Tributary 0016A								
1	0.82	0	1.07	0.25	+ 0.25	+ 0.25	CSTW/DP[4] + LSF[5]	Pipe to surface, then to bog/wetland
7	0.71	0	2.59	2.28	+ 1.88	+ 2.28	CSTW/DP + LSF	Pipe to surface, then to bog/wetland
8	1.81	1.81	2.30	2.30	+ 0.49	+ 0.49	CSTW/DP + LSF	Pipe to surface, then to bog/wetland
9 (SB)	0.22	0.22	0.51	0.51	+ 0.29	+ 0.29	CSTW/DP	Pipe to existing system, then to stream
9 (NB)	0.02	0.02	1.13	1.13	+ 1.11	+ 1.11	CSTW/DP + LSF	Pipe to surface, then to bog/wetland
10	2.32	2.32	2.71	2.71	+ 0.39	+ 0.39	CSTW/DP	Pipe to existing system, then to stream
11	1.23	0	1.87	0.65	+ 0.64	+ 0.65	CSTW/DP	Pipe to existing system, then to stream
12	0.40	0.40	0.70	0.70	+ 0.30	+ 0.30	CSTW/DP	Pipe to existing system, then to stream
13A	0.48	0	2.67	2.19	+ 2.19	+ 2.19	CSTW/DP	Pipe to surface
13B	0.25	0.25	1.42	1.42	+ 1.17	+ 1.17	CSTW/DP	Pipe to surface
16	0.65	0	0.59	0	- 0.06	0[3]	Vault	Pipe to existing system, then to stream
17	0.27	0	1.10	0.83	+ 0.83	+ 0.83	Vault + SF[6]	Pipe to existing system, then to stream
18	0.00	0	0.26	0.26	+ 0.26	+ 0.26	CSTW/DP + LSF	Pipe to surface, then to bog/wetland
19	0.00	0	2.01	2.01	+ 2.01	+ 2.01	CSTW/DP + LSF	Pipe to surface, then to bog/wetland
23	6.33	0	7.69	1.36	+ 1.36	+ 1.36	Vault + SF	Pipe to existing system, then to stream
Subtotal	*15.51*	*5.02*	*28.62*	*18.60*	*+ 13.11*	*+ 13.58*		

Table 1-2. Existing and Post-project PGIS Area, Area Receiving Stormwater Treatment (Acres), Treatment Type, and Discharge (continued)

TDA	Existing		Proposed		Change		Proposed Treatment	Post-Treatment Discharge
	Total PGIS Area	Total Treated Area[1]	Total PGIS Area	Total Treated Area[2]	Total PGIS Area	Total Treated Area		
East Fork Hylebos Creek Tributary 0016B								
2	0.97	0.97	0.91	0.97	- 0.06	0	Exempt	Pipe to existing system, then to North Lake
3	1.05	1.05	0.98	1.05	- 0.07	0	Exempt	Pipe to existing system, then to North Lake
4	1.41	0	1.83	0.42	+ 0.42	+ 0.42	CSTW/DP	Pipe to existing system, then to surface
5	0.34	0	0.36	0	+ 0.02	0	Exempt	Pipe to existing system
20	0.17	0	1.10	0.94	+ 0.93	+ 0.94	CSTW/DP	Pipe to surface, then to North Lake
24	0.11	0	0.44	0.34	+ 0.33	+ 0.34	CSTW/DP	Pipe to surface, then to North Lake
Subtotal	4.05	2.02	5.62	3.72	*+ 1.57*	*+ 1.70*		
West Hylebos Creek Tributary 0014C								
14	1.59	1.59	1.71	1.71	+ 0.12	+ 0.12	Vault + SF	Pipe to existing system, then to stream
15	2.93	2.93	3.67	3.67	+ 0.74	+ 0.74	Vault + SF	Pipe to existing system, then to stream
21	2.22	2.22	2.42	2.34	+ 0.20	+ 0.12	Vault + SF	Pipe to existing system, then to stream
22	0.03	0.03	0.03	0.03	0	0	Exempt	Pipe to existing system, then to stream
Subtotal	6.77	6.77	7.83	7.75	+ 1.06	+ 0.98		
Mill Creek								
6	1.06	0	1.12	0	+ 0.06	0[3]	DP	Pipe to existing system
Project Total	**27.38**	**13.81**	**43.19**	**30.03**	**+ 15.81**	**+ 16.23**		

[1] Under current conditions, "Treated Area" consists of areas directed to water quality treatment facilities.
[2] Under proposed conditions, "Treated Area" includes areas directed to new or existing treatment facilities.
[3] SWM facilities in TDAs 16 and 6 may provide water quality treatment; see text for details.
[4] CSTW/DP = Constructed Stormwater Treatment Wetland / Detention Pond, (provides enhanced treatment and flow control).
[5] LSF = Large Sand Filter (provides enhanced treatment)
[6] Vault + SF = Vault with presettling and sand filter (provides enhanced treatment and flow control).

SWM facilities providing treatment have been designed to provide enhanced treatment. Enhanced treatment facilities for the project will include combined stormwater treatment wetland/detention ponds (CSTW/DP) and vaults with presettling basins and sand filters. The type of facility varies depending on location and ownership. CSTW/DP facilities are public-domain, non-proprietary SWM facilities. Vaults with presettling basins and sand filters are also public-domain, non-proprietary SWM facilities that meet the requirements of the 2016 King County Surface Water Design Manual. SWM facilities that discharge to Wetland W5 have been designed to provide enhanced treatment using a CSTW/DP plus a large sand filter downslope. This approach meets the requirements of the 2016 King County Surface Water Design Manual. These proposed types of BMPs have also been considered to have "medium" potential to reduce loading of 6PPD and 6PPD-quinone into surface water (Ecology 2022a). As design proceeds, alternative treatment BMPs (public-domain or proprietary) may be implemented to reduce facility footprints and/or address maintenance concerns of the owning agencies. Stormwater BMPs will implement technologies that have been shown to achieve Ecology's performance goals for enhanced treatment.

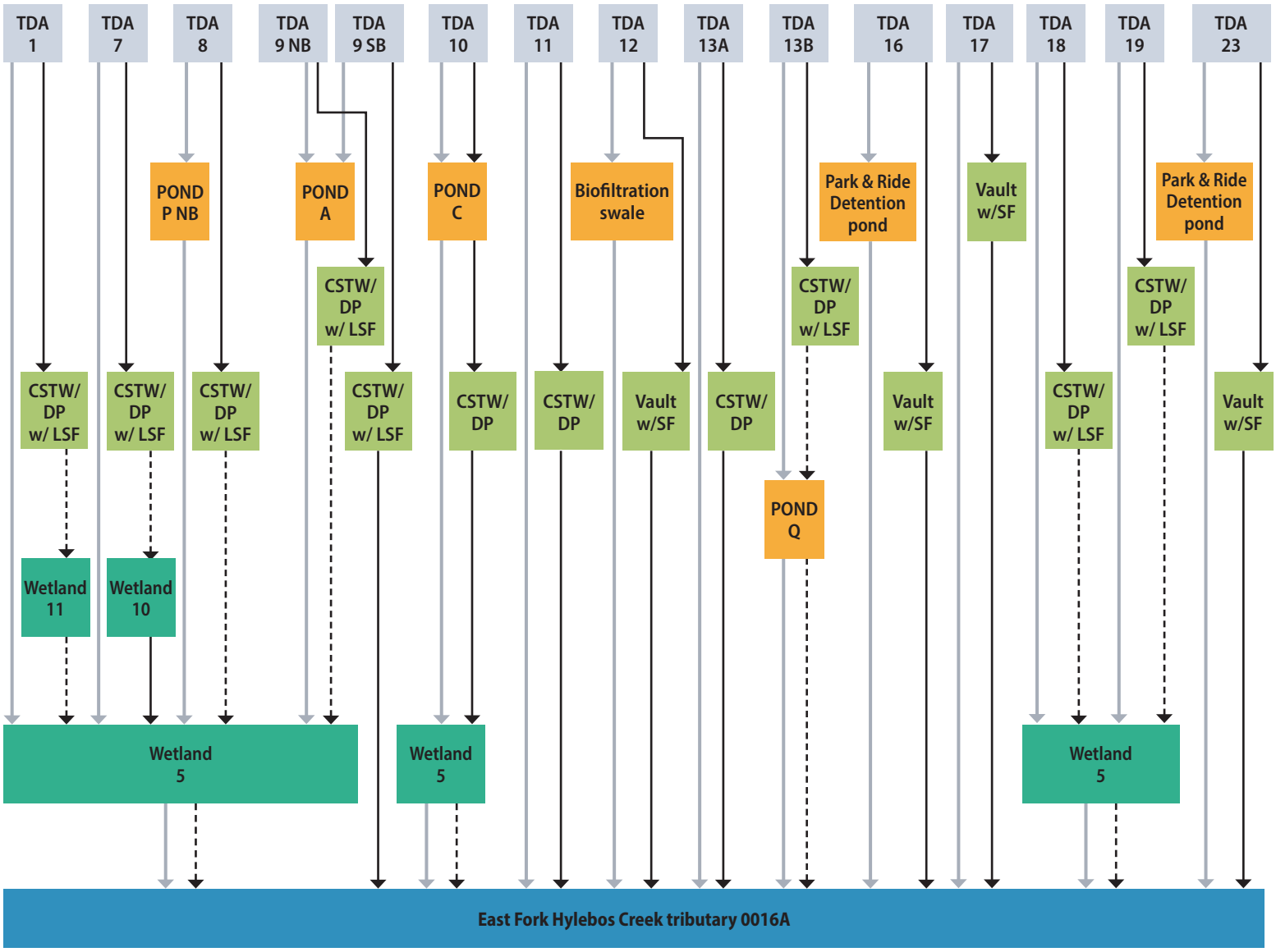
Stormwater treatment facilities will be designed to provide treatment for volumes equivalent to 91 percent of the mean annual runoff volume. This volume is similar to that of a 6-month storm event or to that of 50 percent of the cumulative rainfall from existing, new, and replaced impervious surfaces during a 2-year, 24-hour storm. Given these factors, the treatment capacity of the facilities may be exceeded during major storm events. It is important to note that the first-flush runoff from such events (i.e., that with the highest concentrations of contaminants) will enter the facilities and will receive treatment. Any stormwater that bypasses the facilities will have much lower concentrations of contaminants than the first-flush runoff that enters the facilities.

Flow control BMPs have been conceptually sized based on detaining post-project areas to match flow rate durations for 50 percent of the forested 2-year flow rate through the 50-year flow rate.

The design team has performed a preliminary evaluation of opportunities for additional treatment of currently untreated stormwater runoff in the project area. The preliminary evaluation indicates that WSDOT's portion of the project site is located in an area classified as having a low priority for retrofitting. Consistent with the process established through WSDOT's Stormwater Retrofit Cost-effectiveness and Feasibility Analysis Methods and Timing process, a more detailed (Phase 2) evaluation will be performed when the project design has advanced further.

The potential for including infiltration is still being evaluated. For this analysis, we assume that only a small portion of the treated stormwater effluent will be infiltrated when it experiences overland flow through uplands and/or wetlands.

Following are brief overviews of the TDAs, grouped by receiving water. The overviews identify the catchment area, existing and proposed conveyance network, and receiving water for each TDA. The locations of existing and proposed SWM facilities in the TDAs are shown in Figure 1-2. Figures 1-3 through 1-6 provide more detailed, schematic depictions of existing and proposed treatment facilities and flow paths.

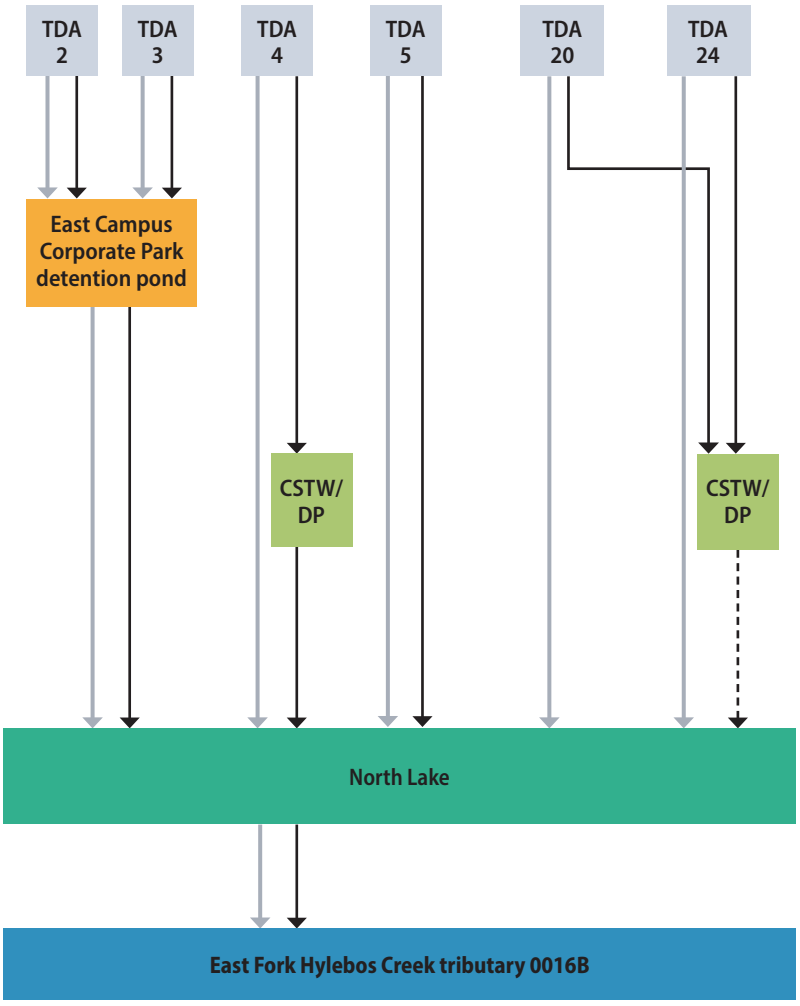


Not to scale. Diagram depicts flow paths only. Size of text boxes and length of arrows do not represent actual area of, or distance between, drainage features.

LEGEND

- Threshold Discharge Area (TDA)
- Existing Treatment Facility
- Proposed Treatment Facility
- Additional Treatment, Unquantified
- Receiving Watershed
- Existing Flow Path
- Proposed Piped Flow Path
- Proposed Overland Flow Path

Figure 1-3
Flowchart 1
Federal Way City Center Access Project: Biological Assessment
Federal Way, WA



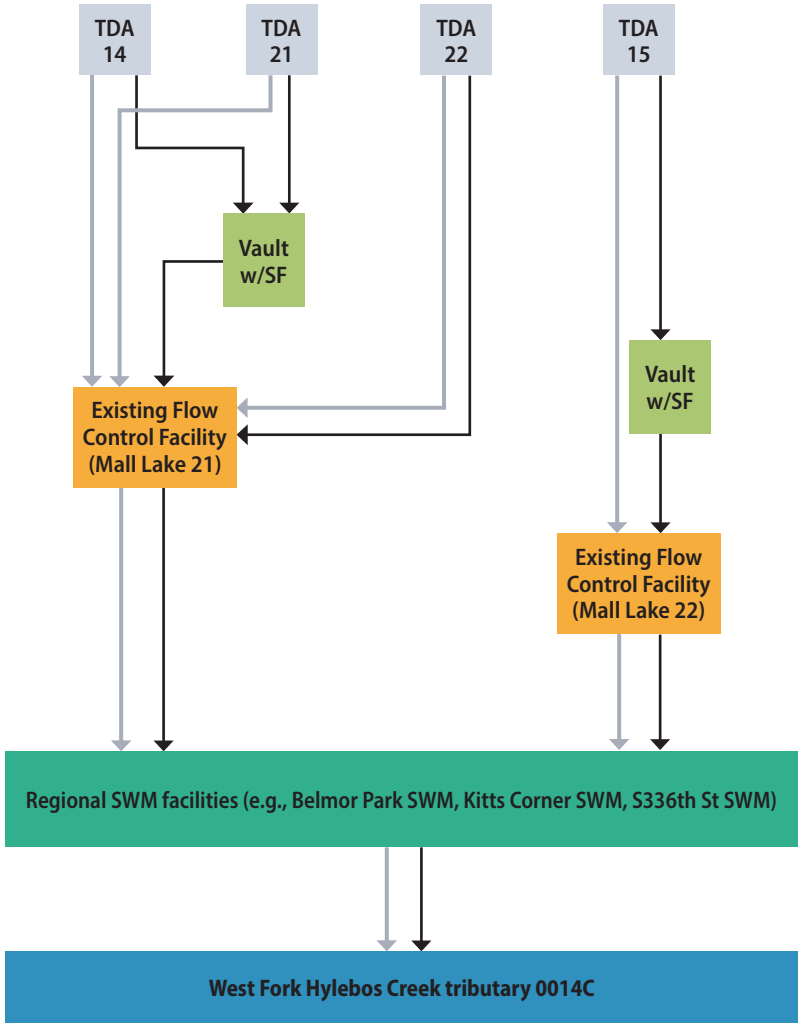
Not to scale. Diagram depicts flow paths only. Size of text boxes and length of arrows do not represent actual area of, or distance between, drainage features.

LEGEND

- Threshold Discharge Area (TDA)
- Existing Treatment Facility
- Proposed Treatment Facility
- Additional Treatment, Unquantified
- Receiving Watershed
- Existing Flow Path
- Proposed Piped Flow Path
- Proposed Overland Flow Path

Figure 1-4
Flowchart 2
Federal Way City Center Access Project: Biological Assessment

Federal Way, WA

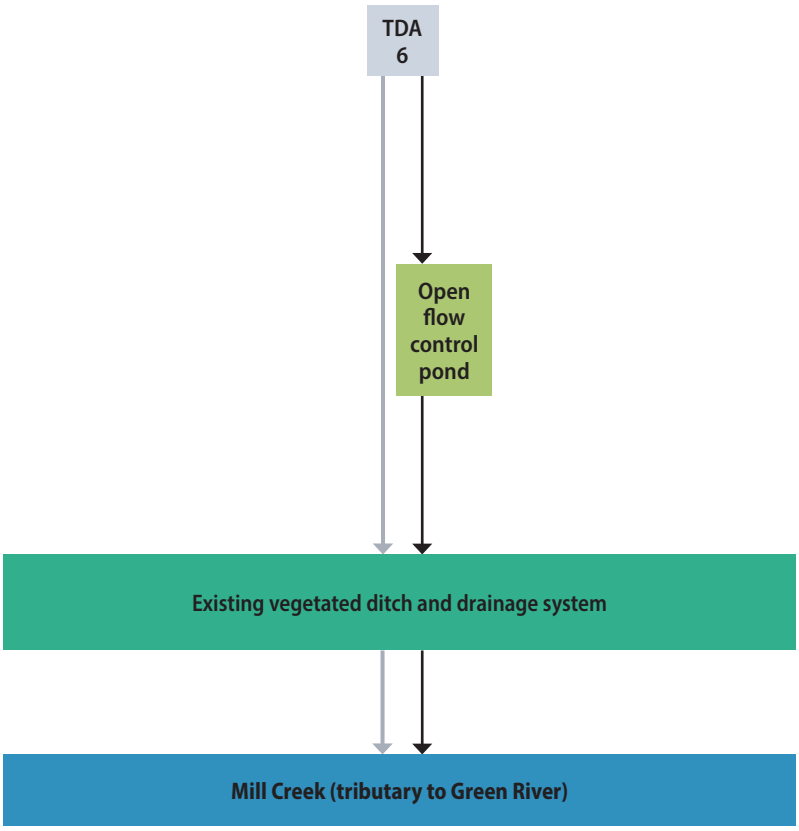


Not to scale. Diagram depicts flow paths only. Size of text boxes and length of arrows do not represent actual area of, or distance between, drainage features.

LEGEND

- Threshold Discharge Area (TDA)
- Existing Treatment Facility
- Proposed Treatment Facility
- Additional Treatment, Unquantified
- Receiving Watershed
- Existing Flow Path
- Proposed Piped Flow Path

Figure 1-5
Flowchart 3
Federal Way City Center Access Project: Biological Assessment
Federal Way, WA



Not to scale. Diagram depicts flow paths only. Size of text boxes and length of arrows do not represent actual area of, or distance between, drainage features.

LEGEND

- Threshold Discharge Area (TDA)
- Proposed Treatment Facility
- Additional Treatment, Unquantified
- Receiving Watershed
- Existing Flow Path
- Proposed Piped Flow Path

Figure 1-6
Flowchart 4
Federal Way City Center Access Project: Biological Assessment

Federal Way, WA

East Fork Hylebos Creek Tributary 0016A

Fifteen TDAs are in the East Fork Hylebos Creek Tributary 0016A watershed (Figure 1-3). East Fork Hylebos Creek Tributary 0016A is located on the west side of I-5 in the project area. See Section 1.3.2 for a description of proposed culvert replacements on this tributary.

TDA 1 includes a portion of S 320th Street east of I-5. Currently there are no SWM facilities in this TDA, and runoff is conveyed via surface discharge to a large bog-wetland complex (Wetland W5) south of S 320th Street. Water from Wetland W5 drains to East Fork Hylebos Creek Tributary 0016A. The current project design includes a CSTW/DP facility with a sand filter for runoff treatment and flow control. Treated water from the facility will discharge to forested uplands upslope of Wetland W11 east of the I-5 northbound on-ramp. As part of the culvert replacement and stream realignment element of the project (see Section 1.3.2), culvert 995300, which currently conveys water from Wetland W11 to Wetland W10, will be plugged or removed. The new flow path will connect Wetland W11 to Wetland W5 via the new stream alignment and culvert. Water that does not infiltrate in Wetland W5 will enter East Fork Hylebos Creek Tributary 0016A upstream of the new crossing structure under I-5.

TDA 7 includes a portion of the project area in the northeastern quadrant of the I-5/S 320th Street interchange. Currently there are no SWM facilities in this TDA. Runoff is conveyed via surface discharge through two culverts and one open channel segment to Wetland W5 south of S 320th Street. The current project design includes a CSTW/DP facility with a sand filter for runoff treatment and flow control, located in the northeastern quadrant of the I-5/S 320th Street interchange. Treated water from the facility will discharge to a forested area upslope of Wetland W10. Water that does not infiltrate in Wetland W10 will flow toward Wetland W5 (via culvert 995299), ultimately entering East Fork Hylebos Creek Tributary 0016A.

TDA 8 includes a portion of the project area in the southeastern quadrant of the I-5/S 320th Street interchange. Currently, runoff undergoes treatment and flow control in Pond P NB, a WSDOT-managed SWM facility located within the cloverleaf of the southeastern quadrant of the I-5/S 320th Street interchange. Water from Pond P NB discharges water to Wetland W5 south of S 320th Street. The current project design includes a CSTW/DP facility with a sand filter for runoff treatment and flow control. Treated water from the facility will discharge to forested uplands upslope of Wetland W5. Water that does not infiltrate in the wetland will enter East Fork Hylebos Creek Tributary 0016A upstream of the new crossing structure under I-5.

TDA 9 NB and TDA 9 SB drain the southbound on-ramp and northbound off-ramp at the new S 324th Street interchange. The TDAs include Pond A, an existing detention pond with dead storage[1] managed by WSDOT. Water from Pond A currently discharges to Wetland W5. The current project design includes two new CSTW/DP facilities (one for TDA 9 NB and one for TDA 9 SB) with sand filters to provide runoff treatment and flow control. Treated water from the TDA 9 NB facility will discharge to forested uplands upslope of Wetland W5. Treated water from the TDA 9 SB facility will discharge directly to East Fork Hylebos Creek Tributary 0016A, west of I-5.

[1] Dead storage, also called the permanent pool, is the storage volume below the outlet of a detention facility. The purpose of dead storage is to help diminish velocities, reduce scour, encourage quiescent settling of sediment, and provide sediment storage volume.

TDA 10 is located in the northwestern quadrant of the I-5/S 320th Street Interchange. Under existing conditions, stormwater drains into WSDOT Pond C, a detention pond with dead storage. Stormwater is treated and receives flow control before discharging via the existing culvert system to Wetland W5. In addition to the existing SWM facility, the current project design includes a CSTW/DP facility that provides runoff treatment and flow control. Treated stormwater will be conveyed to the drainage pipe system on the west side of I-5, and it will discharge to the realigned stream channel.

TDA 11 includes a portion of the project area south of S 320th Street and west of I-5. Under existing conditions, water flows untreated into the existing culvert system. The current project design includes a CSTW/DP facility that will provide runoff treatment and flow control. After exiting the proposed facility, treated water will discharge to the realigned channel of East Fork Hylebos Creek Tributary 0016A west of I-5.

TDA 12 includes a portion of the project area in the northwestern quadrant of the proposed I-5/S 324th Street interchange. Under existing conditions, the TDA includes a biofiltration swale that provides runoff treatment but no flow control. The current project design includes a vault with a presettling basin and sand filter that will provide enhanced treatment and flow control. Treated water from the facility will discharge into the realigned channel of East Fork Hylebos Creek Tributary 0016A west of I-5.

TDA 13A (SB) includes the southern portion of the project area for southbound I-5. Currently there are no SWM facilities in this TDA. The current project design includes a CSTW/DP facility that will provide runoff treatment and flow control. Treated water will discharge to East Fork Hylebos Creek Tributary 0016A approximately 1,000 feet north of S 336th Street. This is the furthest downstream discharge point from a project-related SWM to this stream.

TDA 13B (NB) includes the southern portion of the project area east of northbound I-5. Under current conditions, runoff from this TDA flows to an existing WSDOT-owned flow control pond (Pond Q) with dead storage to treat runoff and provide flow control. The current project design includes a new CSTW/DP facility for runoff treatment and flow control that will be located north of Pond Q. Water from the new facility will flow south towards Pond Q through open, grassy areas. The distance between the outlet of the new CSTW/DP facility and Pond Q is approximately 0.25 mile. Water that enters Pond Q will continue to discharge to a ditch system that then discharges into East Fork Hylebos Creek Tributary 0016A on the north side of S 336th Street west of I-5.

TDA 16 includes a portion of the project area near where the proposed new alignment for 324th Street will intersect with 23rd Avenue S. Under existing conditions, runoff from this TDA flows to a detention pond at the Park & Ride lot; the pond is assumed to provide flow control only. The current project design includes a vault with a presettling basin and sand filter to provide flow control. Treated water will discharge to the realigned stream channel. For this analysis, it is assumed that the new facility will not provide water quality treatment; the change in the amount of PGIS in this TDA does not trigger regulatory requirements for treatment. As the project design progresses beyond the current (conceptual) phase, the design of this facility might be modified to accommodate treatment, if site factors (e.g., availability of space, permeability of soil) allow.

TDA 17 includes a portion of the project area near the northwestern quadrant of the proposed I-5/S 324th Street interchange. Currently there are no SWM facilities in this TDA. The current project design includes a vault with a presettling basin and sand filter to provide enhanced treatment and flow control. Treated water will discharge to the realigned stream channel. As the project design progresses beyond the current (conceptual) phase, the location of this facility will be adjusted as needed to avoid conflict with the daylighted channel of East Fork Hylebos Creek Tributary 0016A.

TDA 18 includes a portion of the project area near the southeastern quadrant of the proposed I-5/S 324th Street interchange. Currently there are no SWM facilities in this TDA. The current project design includes a CSTW/DP facility with a sand filter to provide runoff treatment and flow control. Treated water will discharge to forested uplands upslope of Wetland W5.

TDA 19 includes a portion of the project area near the proposed new section of S 324th Street east of I-5. Currently there are no SWM facilities for stormwater from this TDA. The current project design includes a CSTW/DP with a sand filter to provide runoff treatment and flow control. Treated water from the facility will discharge to the forested uplands upslope of Wetland W5.

TDA 23 includes a portion of the project area at the S 320th Street Park & Ride near the northwestern quadrant of the proposed I-5/S 324th Street interchange. Under existing conditions, runoff from this TDA flows to a detention pond at the Park & Ride lot; the pond is assumed to provide flow control only. The current project design includes a vault with a presettling basin and sand filter to provide enhanced treatment and flow control. Treated water will discharge to the realigned stream channel.

East Fork Hylebos Creek Tributary 0016B

Six TDAs are in the East Fork Hylebos Creek Tributary 0016B watershed (Figure 1-4). East Fork Hylebos Creek Tributary 0016B is east of I-5. Water discharged from SWM facilities in this watershed flows to North Lake before entering East Fork Hylebos Creek Tributary 0016B.

TDA 2 and TDA 3 include portions of S 320th Street, east of I-5, and ultimately discharge into an existing detention pond with dead storage that provides runoff treatment and flow control for runoff from the East Campus Corporate Park. Discharged water is piped to small tributaries that drain to North Lake. The project will reduce the total area of PGIS in both TDAs. The amounts of impervious surfaces created and replaced by the project in both TDAs are below regulatory thresholds for water quality treatment and flow control requirements; consequently, no new SWM facilities are proposed.

TDA 4 includes portions of S 320th Street east of I-5 and discharges into an existing ditch and drainage system that conveys stormwater into a small tributary to North Lake. Currently there are no SWM facilities in this TDA. The current project design includes CSTW/DP facility to provide runoff treatment and flow control. Water will continue to discharge to North Lake via the small tributary.

TDA 5 includes portions of S 320th Street east of I-5 and discharges into an existing ditch and drainage system that eventually discharges to North Lake. Currently there are no SWM facilities in this TDA. The amounts of impervious surfaces created and replaced by the project in this TDA are below regulatory thresholds for water quality treatment and flow control requirements; consequently, no new SWM facilities are proposed.

TDA 20 and TDA 24 include the portion of the project area east of I-5 where the proposed S 324th Street intersects Weyerhaeuser Way S at a proposed roundabout. Currently there are no SWM facilities in this TDA. The current project design includes a new CSTW/DP facility that will provide runoff treatment and flow control for both TDAs. The facility will discharge to upland forested areas upslope of North Lake.

West Hylebos Creek Tributary 0014C

Four TDAs are in the West Fork Hylebos Creek Tributary 0014C watershed (Figure 1-5). West Fork Hylebos Creek Tributary 0014C is west of I-5. Many of the open-channel segments in the northern reaches of this stream are managed as regional SWM facilities, including the Belmor Park regional SWM facility, the Kitts Corner regional SWM facility, and the S 336th Street regional SWM facility. The 336th regional SWM facility is part of the open channel system of West Hylebos Creek Tributary 0014C, and it includes

riparian wetlands. Treated water discharged from new SWM facilities in this watershed will receive additional treatment, detention, and possibly infiltration as it passes through these facilities downstream of the project area and proposed facilities.

TDA 14 includes a portion of the project area at S 320th Street and SR 99**.** Under existing conditions, stormwater is treated and detained in a CSTW/DP facility called Mall Lake 21. To supplement the existing SWM facility, the project will install a vault with a presettling basin and sand filter to provide runoff treatment and flow control for this TDA and TDA 21. Water will continue to be discharged through the existing stormwater pipe system, passing through Mall Lake 21 and the in-stream regional SWM facilities identified above.

TDA 15 includes a portion of the project area north of S 324th Street. An existing CSTW/DP facility (Mall Lake 22) provides runoff treatment and flow control for The Commons at Federal Way. Water from that facility is discharged to West Hylebos Creek Tributary 0014C at the Belmor Park regional SWM facility south of S 324th Street. To supplement the existing SWM facility, the project will install a vault with a presettling basin and sand filter to provide runoff treatment and flow control. After leaving the vault, water will continue to be discharged to West Hylebos Creek Tributary 0014C via Mall Lake 22.

TDA 21 includes a portion of the project area at S 320th Street and SR99 that will undergo road resurfacing and widening**.** Under existing conditions, stormwater is treated and detained. The proposed enhanced treatment vault with a presettling basin and sand filter will provide runoff treatment and flow control. Water will discharge to the existing pipe system, then to West Hylebos Creek Tributary 0014C upstream of the Belmor Park, the Kitts Corner, and the S 336th Street regional SWM facilities.

TDA 22 includes the portion of the project area at SR99 that will undergo road resurfacing and widening. The TDA includes an existing CSTW/DP facility that provides treatment and flow control. Discharged water from the existing facility likely drains into Mall Lake 21 then to West Hylebos Creek Tributary 0014C. The amounts of impervious surfaces created and replaced by the project in this TDA are below regulatory thresholds for water quality treatment and flow control requirements; consequently, no new SWM facilities are proposed.

Mill Creek

One TDA is located in the Mill Creek watershed (Figure 1-6). Mill Creek is a tributary to the Green River.

TDA 6 includes portions of S 320th Street east of I-5 and discharges into an existing ditch and drainage system at the eastern portion of the project area at S 320th Street near Military Road S. Under existing conditions, stormwater is not treated. The current project design includes an open flow control pond. For this analysis, it is assumed that the new facility will not provide water quality treatment; the change in the amount of PGIS in this TDA does not trigger regulatory requirements for treatment. As the project design progresses beyond the current (conceptual) phase, the design of this facility might be modified to accommodate treatment, if site factors allow. Water will be released into the existing stormwater conveyance system that discharges to Mill Creek approximately 1,800 feet east of the project area. That conveyance system includes approximately 800 feet of vegetated ditches containing grasses, herbaceous plants, and shrubs.

1.3.5 Construction Schedule

The design and construction of the City Center Access improvements will have to be phased, and the timing will depend on funding. Table 1-3 summarizes the anticipated project phases. The first phase of

construction is at least 5 years out (2027). Replacement of culverts 995300, 995299, and 992364 (see Section 1.3.2) is anticipated to begin in 2024 or 2025, before work begins on Phase 1. Construction of the new crossing structure under South 324th Street may be included with Phase 1, or it may be completed concurrently with the other fish passage improvements in 2024/2025.

Work within the ordinary high water line (OHWL) of waters of the state and waters of the U.S. will be performed during the in-water work windows specified by agencies with permitting authority.

Table 1-3. Anticipated Project Phasing

	Local Street Improvements and Connections	Ramp and Interchange Improvements
Phase 1	• Construct new S 324th Street between 23rd Ave S and I-5 southbound ramp intersections. • Improve the S 324th Street and SR 99 intersection with added turn lanes.	• Construct/revise I-5 southbound off-ramps to S 320th Street and S 324th Street. • Construct/revise the on-ramps from S 320th Street and S 324th Street to I-5 southbound.
Phase 2	• Widen S 324th Street between SR 99 and 23rd Ave S. • Construct new S 324th Street from I-5 southbound ramp intersection to Weyerhaeuser Way, including the S 324th Street bridge and Weyerhaeuser Way intersection.	• Construct the I-5 northbound off-ramp to S 324th Street. • Construct the portion of the I-5 northbound off-ramp to S 320th Street.
Phase 3A	• Replace the S 320th Street bridge over I-5 • Widen S 320th Street from the I-5 southbound ramp intersection to Military Rd. • Restripe S 320th Street to provide HOV lanes from SR 99 to the southbound ramp intersection.	• Reconstruct the S 320th Street loop on-ramp to I-5 northbound. • Construct the remaining portion of the I-5 northbound off-ramp to S 320th Street.
Phase 3B	• Local improvements associated with this project are substantially complete.	• Realign the I-5 northbound on-ramp from S 320th Street. • Construct the I-5 northbound on-ramp from S 324th Street.

1.3.6 Interrelated and Interdependent Activities

An interrelated activity is part of the proposed action and depends on the proposed action for its justification (50 CFR 402.02). An interdependent activity has no independent utility apart from the action under consultation. Interrelated and interdependent activities associated with the City Center Access project include traffic detours and mitigation for impacts to sensitive areas.

When work occurs adjacent to or over a roadway, closure of lanes or the full roadway may be needed. Where construction will partially or fully close streets, through traffic will be detoured while maintaining access to existing businesses and residences. Road closures and detours will require approval by the local jurisdiction or WSDOT, as well as coordination with local residents and businesses. A Maintenance of Traffic Plan will be prepared to address road closures, detours, access, and other traffic modifications needed for construction activities. Traffic modifications during construction are unlikely to result in effects to listed species based on species use of the action area and general lack of suitable habitat (see Section 2).

Activities associated with mitigation for impacts to streams, wetlands, and wetland buffers can be considered interrelated and interdependent actions for this project. The need for mitigation for such impacts has not yet been determined. Any potential impacts would be mitigated first by avoiding and minimizing impacts through design and by rectifying temporary impacts, and finally by providing compensatory mitigation for unavoidable permanent impacts in compliance with applicable federal, state,

and local requirements. If compensatory mitigation is required, options may include on-site restoration, enhancement, or identification of a suitable site for in-kind mitigation nearby. The preliminary wetland and stream mitigation plan includes wetland and stream restoration, as well as planting native trees and shrubs, within the project area. Based on the lack of suitable habitat in the action area, combined with barriers to access, mitigation activities are unlikely to result in effects on listed species. If those conditions change, or if compensatory mitigation for project-related impacts is identified outside of the project action area (described in Section 1.5), the potential effects of mitigation activities would be reanalyzed to determine if reinitiation of this consultation is necessary.

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

This project is being designed in accordance with the WSDOT Design Manual (M22-01.19, September 2020), WSDOT's Standard Specifications for Road, Bridge, and Municipal Construction (M41-10, 2021), and (for improvements within City rights-of-way) the City of Federal Way Public Works Development Standards (March 2019), all of which provide standards for construction, BMPs, and erosion control measures. Stormwater treatment BMPs and conveyance facilities will be designed using guidance in the WSDOT Highway Runoff Manual (M31-16.05, April 2019). As the design advances, engineers will continue to work in accordance with the current editions of applicable standards.

WSDOT conducted several phases of review and alternatives analysis to identify the proposed project as the alternative that best meets the design objectives while minimizing environmental impacts. Ongoing design will further reduce those impacts. The impact area affects only small portions of the wetlands, and short sections of stream are affected, as needed, to improve stream crossing structures. Measures have been incorporated into the project to avoid and minimize impacts to listed species and suitable habitats and to be in accordance with anticipated permits and project approvals. Generally, the project will avoid and minimize impacts to listed species given the following efforts:

- Impacts to wetlands were minimized during development and design of the proposed project.
- Upland, wetland, riparian, and buffer vegetation removal will be limited to the minimum necessary to construct the project, and areas to be protected will be clearly identified. To minimize ground-disturbing work near streams and associated wetlands, the stumps of trees removed from the riparian zones will be retained on site as feasible.
- The project will implement a project-specific SWPPP and a TESC plan during construction to manage all disturbed soils and to minimize their potential for reaching sensitive waterbodies.
- Management of stormwater runoff from the completed project will include flow control and enhanced treatment methods to minimize changes in hydrology or reductions in water quality in any waterbodies directly or indirectly connected to the project footprint. Project-wide, a net reduction in untreated PGIS will be achieved between the existing and proposed conditions.
- The project will be constructed in accordance with regulatory permits, including the Hydraulic Project Approval issued by WDFW for the culvert replacements.
- In-water work will occur only during the authorized in-water work window as determined by agencies with regulatory authority. The only stream in which in-water work will occur is East Fork Hylebos Creek Tributary 0016A, which ultimately discharges to Commencement Bay. Neither WDFW nor the U.S. Army Corps of Engineers specifies a standard window for work within

tributaries to Commencement Bay. For WSDOT's recent SR 167/I-5 to SR 509–New Expressway project, the in-water work window for tributaries to Hylebos Creek was June 15 through September 30. The in-water work window for the Federal Way City Center Access Project will be established in consultation with the appropriate agencies. Based on the SR 167/I-5 to SR 509 project example, a window similar to June 15 through September 30 seems likely. Notably, East Fork Hylebos Creek Tributary 0016A flows intermittently and is typically dry during summer and early autumn (see Section 3.2.2).

- Project construction will be performed in compliance with Washington state water quality rules (Washington Administrative Code [WAC] 173-201A-200), including requirements for work stoppage if turbidity levels or other relevant parameters exceed allowable levels outside the mixing zone.
- Before work below the OHWL of any stream begins, the work site will be isolated from upstream and downstream waters to facilitate working in a dry channel and minimizing turbidity and erosion potential. If any fish are present within the work area, they will be relocated. While listed fish are not expected to be present within the project area, other resident species may be considered sensitive by the state, or constitute the prey base for salmonids downstream.
- If water is present in stream channels where ground-disturbing work occurs, fish exclusion will follow the guidance outlined within the Recommended Fish Exclusion, Capture, Handling, and Electroshocking Protocols and Standards document (USFWS 2012) and WSDOT's Fish Exclusion Protocols and Standards document (WSDOT 2021a).
- Flow will be gradually introduced to the new channel to minimize sediment delivery in downstream reaches.

The small area of unavoidable impacts to the streams will be mitigated through the design and installation of a major new stream crossing structure under I-5. The unavoidable impacts on wetlands will be mitigated by using guidance in FWCC 19.145.430. Ongoing restoration projects in the Hylebos watershed, the King County in-lieu fee program, and the development of a project-specific mitigation site are possible opportunities for mitigation that will comply with federal, state, and local requirements.

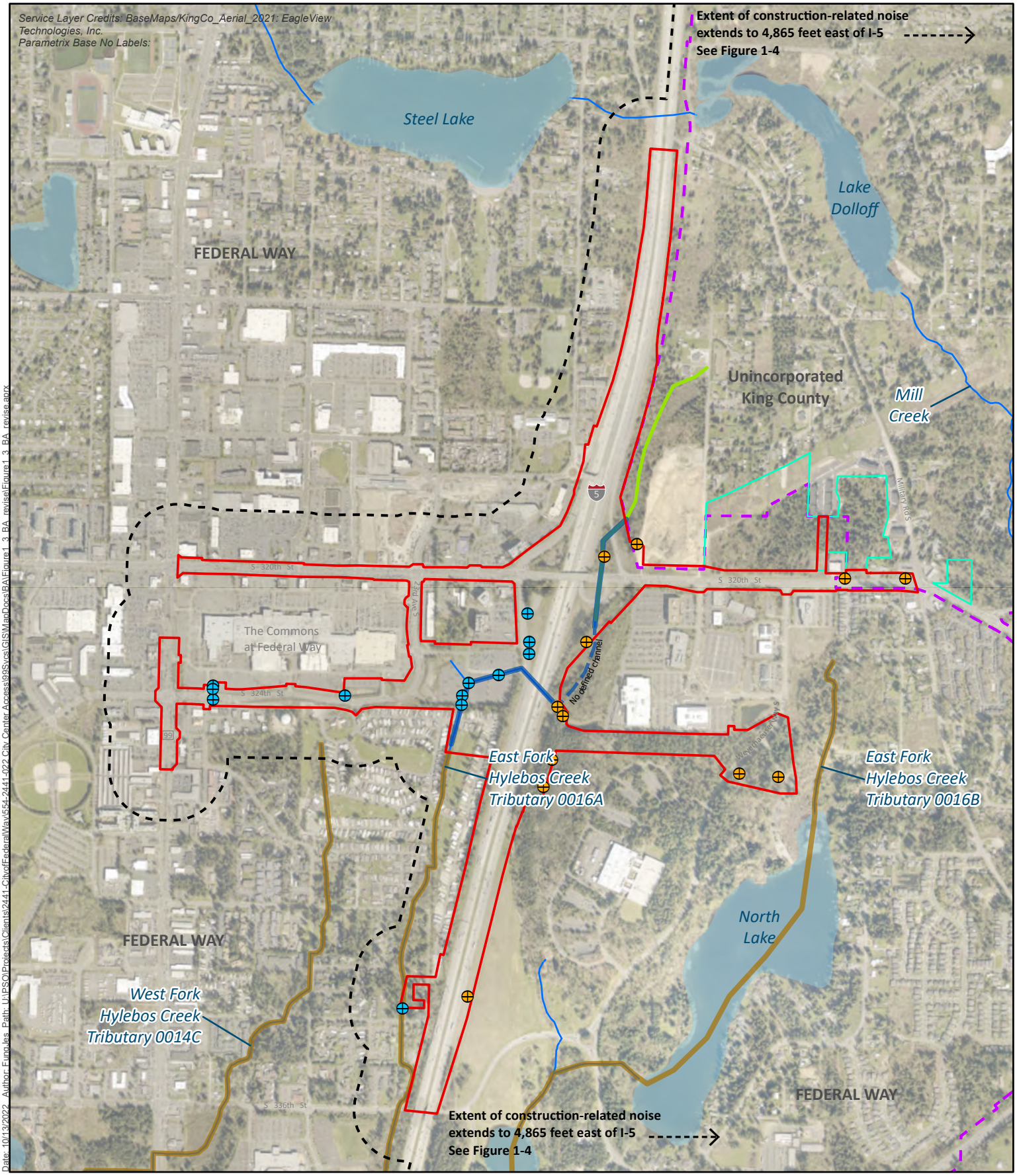
Areas disturbed during construction will be restored with suitable vegetation, consistent with approved revegetation plans and critical area reports. Critical areas and riparian zones will be restored with native woody species adapted to those conditions.

1.5 Project Action Area

The project action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The action area encompasses all areas where the project will have physical, biological, and chemical effects on the environment. This includes all areas within the project construction footprint, all areas influenced by the direct effects or delayed consequences of project construction and operation, and all areas affected by interrelated or interdependent actions.

The project action area is comprised of two components: terrestrial and aquatic. The extents of these two components of the action area are described in Section 1.5.1 and 1.5.2, respectively, and illustrated in Figures 1-7 and 1-8.

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



Parametrix
Source: King County, City of Federal Way, WA DNR

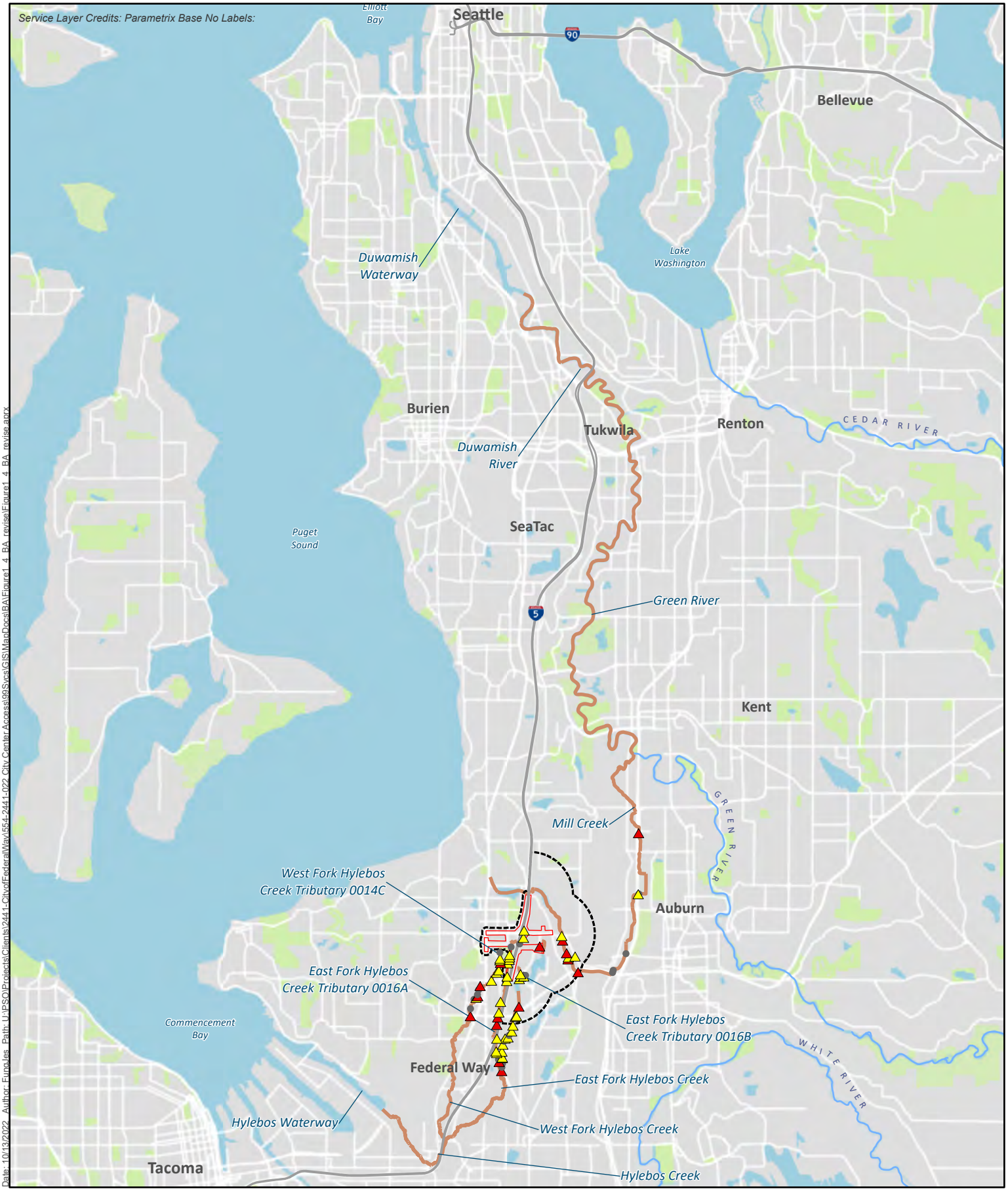
0 250 500 1,000 Feet

Terrestrial Component of the Action Area
- Project Footprint
- Extent of Construction Noise
- Potential Changes in Land Use

Aquatic Component of the Action Area
- Stream Habitat Rendered Accessible
- Potentially Elevated Levels of Contaminants in Stormwater Runoff
- Elevated Turbidity Levels During Construction
- Stream
- Federal Way City Limit

SWM Discharge Point
- Overland flow
- Piped to stream

Figure 1-7
Action Area, Detailed View
Federal Way City Center Access Project: Biological Assessment
Federal Way, WA



Date: 10/13/2022 Author: FungJes Path: U:\PSO\Projects\Clients\2441-CityofFederalWay\554-2441-022 City Center Access\99Svcs\GIS\MapDocs\BA\Figure1_4_BA_reviseFigure1_4_BA_revise.aprx

Parametrix

Source: King County, City of Federal Way, WA DNR

0 1.25 2.5 5 Miles

Existing **Barriers to Fish Passage***
- Total Barrier
- Partial Barrier
- Barrier Status Undetermined

* See text for discussion of barriers slated for removal

Aquatic Component of the Action Area
- Potentially Elevated Levels of Contaminants in Stormwater Runoff

Terrestrial Component of the Action Area
- Project Footprint
- Extent of construction noise

Figure 1-8
Action Area, Expanded View
Federal Way City Center Access
Project: Biological Assessment
Federal Way, WA

1.5.1 Terrestrial Component of the Action Area

The terrestrial component of the action area includes the following areas of potential impact:

- Project construction footprint
- Terrestrial areas where construction noise will be audible
- Areas where project construction may influence the conversion of currently undeveloped or underdeveloped parcels to a more developed state.

Project footprint: The approximate construction footprint includes areas for road improvement, new roadways, interchanges with I-5, intersections, culvert replacements for fish passage barrier removal, and stormwater facilities. These activities are located on or within the immediate vicinity of S 320th Street S, 324th Street, and I-5. Additional wetland off-site mitigation may be required for the project, but the mitigation strategy has not yet been identified. If mitigation for project-related impacts may result in impacts to ESA-listed species and habitats not considered in this analysis, those impacts will be addressed through future consultation.

Noise: The distance at which airborne construction noise will be audible is based on the source sound pressure level, the rate at which the noise attenuates over distance, and the level of ambient or background sound in the area. These three factors vary across the site, resulting in variable distances at which construction noise will be audible. Given the variety of construction activities and site conditions (ranging from dense forest to heavily developed commercial properties), the distance over which project-related noise is audible will vary in different areas. Based on WSDOT's noise modeling calculator (v22), the action area is expected to extend as far as 4,865 feet from the project footprint. This is the maximum extent of airborne noise assuming the combined noise level of construction equipment (106 dBA, including impact pile driver) operating in the quietest (40 dBA) southeastern portion of the action area where the new roadway for the eastward extension of S 324th Street will be constructed through forested areas. In areas that are highly developed, where urban ambient sound levels may be as high as 75 dBA and traffic on the interstate may create up to 90 dBA, the extent of the action area will be less than 500 feet.

The noise impact analysis conservatively estimates that future traffic use of S 320th Street during the peak PM hour will range from 53 to 69 decibels L_{eq} (equivalent continuous sound level), which falls within the existing noise levels within this portion of the project area (Michael Minor & Associates 2021). The new section of S 324th Street, east of I-5, will likely have a similar predicted future traffic noise range, which will attenuate faster due to the surrounding forest.

Potential changes in land use: The action area also encompasses the areas where project construction could reasonably be expected to influence the conversion of currently undeveloped or underdeveloped parcels to a more developed state. The project does not depend on any land-use development or changes in land use or zoning, and no land-use development projects depend directly on completion of this project. Proposed development of the former Weyerhaeuser property south of the proposed S 324th Street will not be affected by this project. The only currently undeveloped or underdeveloped parcels within 0.25 mile of the project area are along the north side of the S 320th Street corridor east of I-5 in Federal Way and unincorporated King County. Other undeveloped or underdeveloped parcels within a quarter mile of the project area are burdened by the presence of critical areas or have already received development approvals and are, therefore, not included within the action area. In sum, the action area encompasses undeveloped or underdeveloped parcels up to approximately 0.25 mile north of S 320th Street between I-5 and the S 321st Street intersection.

1.5.2 Aquatic Component of the Action Area

The aquatic component of the action area includes watercourses that will be affected by the following:

- Construction-related impacts during culvert replacement activities
- Changes in the amount of PGIS
- Future expansion of fish-accessible habitat by removal of fish passage barriers

Construction-related impacts: Fish passage culvert replacements and associated stream realignments may result in temporarily elevated turbidity in East Fork Hylebos Creek Tributary 0016A due to disturbance of the stream bed and bank. Work near and within the stream will be performed during the period when stream flows are lowest and when anticipated stream flow is less than 10 cubic feet per second. Stream flow is intermittent in the project area, and the channel is typically dry during summer and early autumn (i.e., during the anticipated in-water work window). Project construction will be performed in compliance with Washington state water quality rules (WAC 173-201A-200). If water is present in the stream at the time of construction, any potential exceedance of the turbidity criteria established in WAC 173-201A-200 would not be expected to extend more than 100 feet downstream and 50 feet upstream of the project footprint. This distance represents the maximum extent of the aquatic portion of the action area as defined by the effects associated with construction-related turbidity (Figure 1-7).

PGIS-related impacts: New or reconfigured SWM facilities will discharge to three headwater tributaries in the Hylebos Creek drainage basin: West Fork Hylebos Creek Tributary 0014C, East Fork Hylebos Creek Tributary 0016A, and East Fork Hylebos Creek Tributary 0016B (a tributary from North Lake that discharges to East Fork Hylebos Creek). These streams ultimately drain to Hylebos Creek, which discharges to the Hylebos Waterway (an excavated, dredged channel that connects to Commencement Bay). In addition, one new SWM facility will drain toward Mill Creek, which eventually discharges to the Green River and (via the Duwamish Waterway) Elliott Bay.

Based on habitat conditions, intermittent flows, and the presence of total barriers to fish passage, ESA-listed fish are not expected to be present in any stream reaches within 1 mile of the project footprint, including the discharge points of proposed stormwater facilities. However, emerging research related to urban runoff mortality syndrome indicates that adult and juvenile coho salmon (*Oncorhynchus kisutch*) are particularly vulnerable to lethal and sublethal effects of exposure 6PPD-quinone, a ubiquitous chemical in tires that is introduced into streams via road runoff (Tian et al. 2021). Other contaminants, such as metals and polycyclic aromatic hydrocarbons, are also associated with adverse effects on ESA-listed salmonids and their prey. FHWA and WSDOT are closely tracking efforts to gather critical additional information on this topic, such as the fate and transport of 6PPD-quinone and other contaminants in the environment, concentration thresholds for acute and sublethal toxicity, potential effects on species other than coho salmon, and the effectiveness of stormwater treatment facilities in reducing the concentration of contaminants in stormwater runoff. For this analysis, it is assumed that (1) 6PPD-quinone and other contaminants in stormwater are toxic to ESA-listed salmonids, (2) contaminants may be present in harmful concentrations in streams that receive discharges from SWM facilities, and (3) such concentrations may persist, despite dilution from mixing, as far downstream as the streams' discharge points in marine waters. As such, the aquatic component of the action area extends downstream to the mouth of Hylebos Creek, where it drains into the Hylebos Waterway in Commencement Bay, and to Turning Basin Number 3 in the Duwamish River, where it becomes the Duwamish Waterway.

Habitat expansion: The extent of the action area in East Fork Hylebos Creek Tributary 0016A upstream of S 320th Street consists of aquatic habitats on the east side of I-5 to which fish access will be improved through the replacement of two culverts with fish-passable culverts. Accessibility to the aquatic habitats will depend on removal of several barriers downstream of the project area. WSDOT is developing plans for the removal of several barriers to fish passage (2 total barriers and 5 partial barriers) on East Fork Hylebos Creek Tributary 0016A downstream of the project area. It is assumed for this analysis that those barriers will have been removed before work on the Federal Way City Center Access Project begins. Even with the removal of those barriers, however, several barriers (including one total barrier) will impede access to the habitat rendered accessible by this project. The total barrier (WDFW Site ID number 932945) is on a crossing of 363rd Place S approximately 2.6 miles downstream of Winged Foot Way.

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

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

- The USFWS Information for Planning and Consultation program (see Appendix D)
- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species data (WDFW 2022a)
- Maps depicting the freshwater range of ESA-listed Pacific salmon and steelhead under the jurisdiction of NMFS
- Statewide Integrated Fish Distribution Web Map from the Northwest Indian Fisheries Commission (NWIFC 2022).
- USFWS critical habitat online mapper (USFWS 2022)
- Bird species maps and sighting data (eBird 2021)
- Washington Department of Natural Resources (WDNR) Washington Natural Heritage Program data (WDNR 2021a and 2021b)
- City of Federal Way critical areas maps

2.1 Species and Critical Habitat Lists and Listing Status

The USFWS and NMFS lists of ESA-listed species and critical habitats were accessed on their websites on September 2, 2022 (Appendix D). Based on information provided at those websites, ESA-listed species that could occur within the action area are identified in Table 2-1. No species proposed for listing are known or expected to use habitats in the action area, and no areas proposed for designation as critical habitat are present.

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

Table 2-1. ESA-Listed Species and Critical Habitat

Species	Status	Federal Jurisdiction	Critical Habitat in the Action Area
Marbled murrelet (*Brachyramphus marmoratus*)	Threatened	USFWS	No
Streaked horned lark (*Eremophila alpestris strigata*)	Threatened	USFWS	No
Yellow-billed cuckoo (*Coccyzus americanus*) Western U.S. DPS	Threatened	USFWS	No
Taylor's checkerspot (*Euphydryas editha taylori*)	Endangered	USFWS	No
Gray wolf (*Canis lupus*)	Endangered	USFWS	N/A
North American wolverine (*Gulo gulo luscus*)	Proposed Threatened	USFWS	N/A
Bull trout (*Salvelinus confluentus*)	Threatened	USFWS	Yes
Chinook salmon (*Oncorhynchus tshawytscha*) Puget Sound (ESU)	Threatened	NMFS	Yes
Steelhead (*Oncorhynchus mykiss*) Puget Sound DPS	Threatened	NMFS	Yes
Killer whale (*Orcinus orca*) Southern Resident DPS	Endangered	NMFS	No
Bocaccio (*Sebastes paucispinis*) Puget Sound/Georgia Basin DPS	Endangered	NMFS	No
Yelloweye rockfish (*S. ruberrimus*) Puget Sound/Georgia Basin DPS	Threatened	NMFS	No

USFWS = United States Fish and Wildlife Service; NMFS = National Marine Fisheries Service

DPS = Distinct Population Segment; ESU = Evolutionarily Significant Unit; N/A = not applicable; critical habitat has not been designated

Eight of the species identified in Table 2-1 are not expected to occur in the action area for the following reasons:

- **Marbled murrelets** require old-growth forest for nesting and marine habitat for foraging. No foraging habitat is present in the action area. Due to the presence of mature forested habitat within the project vicinity, an analysis of suitable habitat was conducted. The nearest sites where marbled murrelets have been observed in forested habitat are in the Cascade Mountains approximately 30 miles east of the action area. No forest stands classified in the Davis Layer as potentially suitable nesting habitat are present within 0.25 mile of the project footprint (WSDOT 2021b). The nearest modeled potentially suitable nesting habitat is an approximately 10-acre patch near the intersection of I-5 and SR 18 at the southern end of the former Weyerhaeuser Corporate Headquarters Campus, approximately 1 mile south of the project footprint. During a site visit in January 2021, biologists found several trees with potentially suitable nest platforms

within 328 feet of the project footprint. However, the likelihood of marbled murrelets nesting in any of these trees is negligible, for the following reasons:

  - All forested areas in the action area have been logged multiple times in the past century and a half; young forests and small patches of conifers lack the complexity preferred by murrelets. Murrelets typically nest in large coniferous trees in areas containing characteristics of older forests (McShane et al. 2004).
  - The project site is immediately adjacent to I-5 and the urban landscape of Federal Way, where high levels of noise and activity likely discourage use by nesting marbled murrelets. Raphael et al. (2016) found that nesting habitat was strongly correlated with areas of low human disturbance.
  - The nearest sites where potential nesting behavior has been observed are more than 30 miles away.
  - Marbled murrelets have been found to demonstrate a fairly high degree of fidelity to forest stands used for nesting (Plissner et al. 2015). If murrelets historically nested near the project site, any nest trees were removed when the area was cleared at the time of initial settlement by Euro-Americans and on multiple occasions thereafter. Descendants of any murrelets that nested near the project site had to find suitable breeding habitat farther inland, on the western slopes of the Cascades. Birds in those lineages are likely to return to the stands that have been more recently used for nesting. Flying through forested areas near the project site in search of trees with suitable nest platforms would require an excessive expenditure of energy and exposure to predation risk. As such, the probability of any murrelets finding platforms in the project area and selecting them as nest sites is negligible.

- **Streaked horned larks** are not expected to use habitats in the action area. This species requires large areas of open grassland habitat with clear sightlines and is known to occur in portions of southern Puget Sound, along the Washington Coast, and at lower Columbia River islands (78 FR 61451, October 3, 2013). Breeding habitat for streaked horned larks in Washington consists of grasslands and sparsely vegetated areas at airports, sandy islands, and coastal spits. No such habitat is present in the action area. Grassland habitat is present on the Weyerhaeuser property in the southeastern portion of the action area. The total size of the habitat patch is less than 60 acres; the smallest site with evidence of streaked horned lark use in the Puget Trough region is 90 acres (Anderson and Pearson 2015). In addition, the fields on the Weyerhaeuser property are dominated by densely growing, sod-forming grasses. Streaked horned larks typically select habitat patches with low, sparse vegetation and a relatively high percent cover of bare ground, avoiding areas dominated by shrubs or sod-forming grasses (Anderson and Pearson 2015). The nearest known breeding area is at Tacoma Narrows Airport, more than 10 miles from the action area. The nearest location where critical habitat has been designated for the streaked horned lark is more than 80 miles from the action area.
- **Yellow-billed cuckoos** nest almost exclusively in low- to mid-elevation riparian woodlands that cover 50 acres or more within arid to semiarid landscapes (Hughes 1999). Most breeding sites have been found in patches larger than 200 acres. Historical records indicate that breeding habitat for yellow-billed cuckoos in Washington consisted primarily of cottonwood and willow bottoms

along the lower Columbia River and in the Puget Sound lowlands. The last confirmed breeding records of yellow-billed cuckoos in Washington are from the 1930s. Currently, the species no longer breeds in western Canada and the northwestern continental United States (Washington, Oregon, and Montana) (79 FR 59991, October 3, 2014). No observations of this species have been documented within 10 miles of the action area (WDFW 2022a; eBird 2021). No blocks of suitable forested riparian habitat larger than 5 acres are present in the action area.

- **Taylor's checkerspot** butterflies require grassland dominated by fescue or other short-stature grass species, with a diversity of larval host plants and spring nectar sources (Stinson 2005). The nearest known population is more than 15 miles from the project area. Populations in the Puget Sound region are primarily associated with shallow-soil balds and grasses within a forested landscape. In Washington and Oregon, Taylor's checkerspot butterfly larvae feed primarily on native paintbrush and closely related species (e.g., *Castilleja hispida*, *C. levisecta*, *Tryphasaria* spp.), and on plantain species such as non-native *Plantago lanceolata* and native *Plantago maritima* (61938 FR 77, October 11, 2012). Other annuals documented as larval host foods include several species of speedwell (*Veronica* spp.), blue-eyed Mary (*Collinsia grandiflora* and *C. parviflora*), and sea blush (*Plectritus congesta*). *Plantago lanceolata* and *Plantago maritima* could be present in the swath of grassy habitat south of the former Weyerhaeuser campus. Other larval host species have not been observed and are unlikely to be present. Grosboll (2011) found that, within areas of broadly suitable grassland vegetation structure, Taylor's checkerspot butterfly adults lay their eggs in the areas with very high densities of host plants. Of 31 oviposition locations studied, the volume of host plants in all but one exceeded 10,000 cubic centimeters per square meter. No areas with such high densities of paintbrush or plantain species have observed in the project action area.
- **Gray wolves** require areas with abundant prey and low levels of human disturbance. Based on the location of the project area in a lowland urban setting with high levels of human activity and no nearby roadless areas, no suitable habitat for this species is present in the action area. The current range of gray wolves is not known to extend into the Puget Lowlands and there have been no documented den or rendezvous sites within the action area. The nearest pack is the Teanaway pack over 60 miles away from the action area on the other side of the Cascade crest. Critical habitat for gray wolves in Washington has not been designated.
- **North American wolverines** strongly prefer cold areas with a deep snowpack that persists through the spring. Because of this preference, the are typically found at high elevations at the latitude of the project site. Suitable habitat and sufficient prey resources for wolverines do not exist within the action area. Wolverines are proposed for listing as threatened, and critical habitat has not been designated; therefore, an effect determination is not required at this time. Should wolverines become listed under the ESA during the course of this consultation, the provisional determination is no effect on North American wolverines.
- **Bocaccio and yelloweye rockfish** are marine species that are extremely unlikely to enter the action area except potentially as drifting larvae. Adults and subadults of both species occur almost exclusively in waters more than 80 feet deep (Love et al. 2002). No such habitats are present in the action area, which extends only to the mouths of Hylebos Creek and the Duwamish River and not into the estuarine or nearshore marine areas of the Hylebos Waterway and the Duwamish Waterway. Bocaccio juveniles prefer shallow, algae-covered rocks or eelgrass, or they may shelter under kelp mats (Love et al. 2002; U.S. Army Corps of Engineers 2012). Neither the

Hylebos Waterway nor the Duwamish Waterway contain the aquatic vegetation juveniles require. Juvenile yelloweye rockfish are not typically found in intertidal waters (Love et al. 1991; Studebaker et al. 2009, NMFS 2017). Larvae of both species are dispersed by surface currents and, as such, could be carried into the downstream-most portion of the action area; however, larvae are unlikely to be concentrated within either waterway.

Based on the information and rationale provided in this section, the project has no potential to affect marbled murrelets, streaked horned larks, yellow-billed cuckoos, gray wolves, bocaccio, or yelloweye rockfish. Therefore, the effect determination for these species is **no effect,** and these species will not be addressed further in this analysis.

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

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

Information from the WDNR Natural Heritage database indicates that no threatened or endangered plants are known to occur within 1.2 miles of the project site (WDNR 2021a and 2021b).

Discussions in this subsection describe the known and expected use of habitats in the action area by the species identified in Table 2-1. Based on the presence of downstream barriers to fish passage, combined with intermittent flows and a lack of potentially suitable habitat, ESA-listed fish are not expected to be present in any streams within 1 mile of the project site. The following discussions are intended primarily to support evaluations of the exposure of fish in downstream waters to contaminants in stormwater runoff from impervious surfaces created or replaced by project construction. Discussions of species presence and habitat use are divided into the Hylebos Creek and Green River/Duwamish watersheds (HUC 17110019 and 17110013, respectively).

2.2.1 Bull Trout

USFWS listed bull trout as threatened under the ESA on November 1, 1999 (64 FR 58910).

Hylebos Creek Watershed

The Statewide Integrated Fish Distribution (SWIFD) database does not indicate the documented, presumed, or modeled distribution of bull trout in any streams in the Hylebos Creek drainage basin (NWIFC 2022). According to the SWIFD database, the nearest documented presence of bull trout is in the Puyallup River (NWIFC 2022).

Despite the general lack of good habitat in the Hylebos Creek basin (see below), there has been one report of a single sub-adult bull trout or Dolly Varden captured near the S 373rd Street crossing of West Fork Hylebos Creek in August 2018, approximately 3.9 miles downstream of the project footprint (Heltzel 2018 pers. comm.). Genetic analysis was not performed to verify whether the fish was a bull trout or a Dolly Varden. This single observation should be considered in the context of decades of fish monitoring studies in the Hylebos Creek watershed by Puyallup Tribal Fisheries that have not encountered bull trout in the watershed (Marks et al. 2021). Nevertheless, for this analysis, it is assumed that individual bull trout could venture into accessible segments of Hylebos Creek and its tributaries in the future. Based on

the lack of high-quality habitat for bull trout in those streams (as described below), the presence of any such fish would likely be brief.

Bull trout are strongly associated with snowmelt-dominated streams that maintain cold water temperatures in headwater tributaries year-round. Streams supporting bull trout have clean gravel substrates and cold water temperatures (less than 9ºC/48ºF) (63 FR 31693, June 10, 1998). Hylebos Creek is a rainfall-dominated stream that does not provide this type of habitat, and stream temperatures are regularly higher than the temperatures this species requires. Stream substrates in the Hylebos Creek watershed are dominated by fines, particularly near the project footprint. Water temperatures often exceed those preferred by bull trout. A 2001 water quality study of East Fork Hylebos Creek (east of I-5) indicated that temperatures frequently exceeded 14º C in summer months at one of the stations (King County 2002). Such temperatures are likely to limit the presence of bull trout. West Fork Hylebos Creek and portions of its tributaries are included on the 303(d) list of impaired waters, based on temperatures exceeding 17º C (Ecology 2022b). Other 303(d) water quality impairments identified in the watershed include dissolved oxygen, heavy metals, copper, and bacteria, which may also limit the potential presence of bull trout (Ecology 2022b). The Hylebos Waterway has 303(d) listings for chlorinated pesticides, DDT and metabolites, high molecular weight polycyclic aromatic hydrocarbons, and polychlorinated biphenyls, all which detrimentally affect various life history stages of fish.

Green-Duwamish Watershed

The Puget Sound Salmon Recovery Plan did not identify the Green-Duwamish river system as a bull trout core area—that is, the system is not considered to be a biologically functioning unit for bull trout because it lacks the necessary combination of core habitat (i.e., habitat with all necessary components for spawning, rearing, foraging, migrating, and overwintering) and a core population (Shared Strategy for Puget Sound 2007)—but the lower Green River does support foraging, migration, and overwintering habitat for subadult and adult bull trout (USFWS 2010; NWIFC 2022). Although NWIFC (2022) documents the presence of bull trout within the lower Green River, the population of bull trout is likely to be very low (Anchor Environmental 2004; Kerwin and Nelson 2000). Isolated bull trout sightings have occurred in the Green River near the mouth of Newaukum Creek, 17 miles upstream from the confluence of Mill Creek, and in the estuarine Duwamish Waterway 24 miles downstream; however, these encounters are rare and probably do not represent a self-sustaining population (King County 2001). Anadromous bull trout migrate from the marine environment into freshwater habitats in the fall or early winter. Overwintering subadults and adults remain in freshwater habitats until late winter and spring (Goetz et al. 2004; USFWS 2010).

According to NWIFC (2022), bull trout are not known to be present in Mill Creek. Due to low populations of bull trout in the Green River, it is possible, but unlikely, that they would enter Mill Creek. The potential for fish to remain in Mill Creek for extended periods is diminished by poor water quality and habitat conditions. Bull trout only reproduce in clean, cold, relatively pristine streams. Mill Creek has 303(d) listings for pH, bioassessment (e.g., low numbers of invertebrates), dissolved oxygen, and bacteria (Ecology 2022b). Temperatures in the stream range from 0.5º C to 21.9º C (King County 2022a).

2.2.2 Puget Sound Chinook Salmon

Chinook salmon in the Puget Sound ESU are listed as threatened under the ESA (March 24, 1999 [64 FR 14308] and June 28, 2005 [70 FR 37159]; updated April 14, 2014 [79 FR 20802]). 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).

Hylebos Creek Watershed

Chinook salmon have been documented in the Hylebos Creek watershed. Chinook salmon typically spawn in the mainstem channels of rivers and large tributaries, in riffles, and in the tailouts of pools where clean, gravel-dominated substrates are available. Compared to other Pacific salmon, spawning Chinook salmon require larger and deeper streams and pools (at least 3 feet deep), as well as larger gravel (up to 5.5 inches diameter). Such habitats are not available in the low-energy headwater tributaries present near the project site.

Chinook salmon are neither known nor expected to be present in the headwater tributaries to which treated stormwater from the project will be discharged. According to the SWIFD database, the nearest watercourses where Chinook salmon have been documented, are presumed present, or could potentially be present are at least 1.8 miles downstream from any discharge points of stormwater facilities that will be built or reconfigured for this project (NWIFC 2022). Numerous fish passage barriers, combined with small stream sizes and intermittent flow regimes, likely preclude the movement of Chinook salmon into stream reaches in the project area (Ladley 2021a, pers. comm.). In this context, "project area" refers to areas where ground-disturbing work will occur or where water will be discharged from stormwater treatment facilities to receiving waters.

Chinook salmon have been documented in Hylebos Creek and the lower reaches of West Fork Hylebos Creek (downstream of barriers), and they are presumed to be present in the lower 700 feet of East Fork Hylebos Creek (NWIFC 2022). Fisheries biologists from the Puyallup Tribe of Indians have documented Chinook salmon in West Fork Hylebos Creek as far upstream as S 356th Street, approximately 1.4 miles upstream of the upstream extent of the documented distribution of Chinook salmon in that stream, as mapped by NWIFC (2022).

Downstream barriers to fish migration currently prevent Chinook salmon from entering stream reaches in the project area. Table 2-2 provides an overview of the downstream distances to reaches where Chinook salmon have been documented or where their presence is not precluded by stream channel gradients. The latter could become accessible to Chinook salmon in the future, if all downstream impediments to fish passage are removed. The table also identifies the number of fish passage barriers between the project area and reaches where Chinook salmon have been documented. For each stream, the downstream distance is measured as the distance between the farthest downstream discharge point of a stormwater facility and the upstream extent of documented, presumed, or potential presence. The downstream distance to the documented presence of Chinook salmon in the West Fork Hylebos Creek subbasin is based on information provided by the Puyallup Tribe of Indians. The downstream distance to the documented presence of Chinook salmon in the East Fork Hylebos Creek and Mill Creek subbasins is based on information from NWIFC (2022).

Based on the presence of downstream barriers to fish passage, combined with intermittent flows and a lack of potentially suitable habitat, Chinook salmon are assumed to be absent from the Hylebos Creek tributaries near the project area. The remainder of this discussion describes Chinook salmon use of Hylebos Creek, West Fork Hylebos Creek, and the Hylebos Waterway.

Table 2-2. Impediments to Chinook Salmon Presence in the Project Area

Downstream Distance or Number of Barriers	West Fork Hylebos Creek Tributary 0014C	East Fork Hylebos Creek Tributary 0016A	East Fork Hylebos Creek Tributary 0016B	Mill Creek
Distance to nearest gradient-accessible reach[1]	1.8 miles	1.9 miles	3.3 miles	1,200 feet[2]
Distance to nearest reach with presumed presence	2.4 miles	4.4 miles	5.4 miles	N/A
Distance to nearest reach with documented presence	2.4 miles	4.6 miles	5.6 miles	3.5 miles
Number of total barriers	4	3[3]	2	4
Number of partial barriers	6	13[3]	11[3]	2
Number of unassessed barriers	4	2	9	4

[1] Gradient-accessible reaches are those to which access is not precluded by stream channel gradients that pose a barrier to upstream migration.

[2] A project-related SWM facility will release water to a system of pipes and ditches that ultimately discharges to Mill Creek approximately 1,800 feet east of the project area. The discharge point is approximately 1,200 feet upstream of the upstream extent of stream channel classified as gradient-accessible.

[3] Values in this table are based on barrier inventory data as of October 2022. WSDOT is developing plans for the correction of 2 total barriers and 5 partial barriers to fish passage on East Fork Hylebos Creek Tributary 0016A downstream of the project area. Another 2 partial barriers on East Fork Hylebos Creek Tributary 0016B will be corrected. Installation of new, fish-passable structures at these sites will reduce barriers but will not provide access to stream reaches in the project footprint.

Chinook salmon in the Hylebos Creek watershed are classified as fall-run. According to HDR (2014), adults typically return to freshwater habitats in the Hylebos Creek watershed in August and September, with spawning occurring from mid-September through October. EarthCorps (2016) reported that Chinook salmon typically enter and spawn in Hylebos Creek and accessible tributaries between October and December of each year. Based on these characterizations, it is assumed for this analysis that adult Chinook salmon may be present in accessible streams in the Hylebos Creek watershed from August through December.

Fry emerge from spawning gravels in March and April and rear in the system between 2 to 12 months before migrating to Puget Sound (HDR 2014). Some juveniles migrate to salt water as subyearlings (i.e., a few weeks or months after hatching), while others rear in fresh water for a full year (Wydoski and Whitney 2003). Regardless of life history strategy, juveniles make their downstream migrations during spring and early summer. Because juveniles may spend as much as a year in freshwater habitats in the Hylebos Creek watershed, it is assumed that they may be present in accessible streams in the action area at any time of year for this analysis.

The Puyallup Tribal Fisheries Department has documented Chinook salmon spawning in West Fork Hylebos Creek, primarily in the reach extending approximately 0.5 mile upstream from the confluence of West Fork Hylebos Creek and East Fork Hylebos Creek (Marks et al. 2021). Sediments in this reach of West Fork Hylebos Creek are dominated by sand and silt, but some small and isolated patches of suitable spawning habitat are available. Reaches of Hylebos Creek and West Fork Hylebos Creek in the action area also provide rearing habitat for juveniles, as well as serving as a migration corridor for Chinook salmon that may spawn in upstream reaches. Chinook salmon have been documented in West Fork Hylebos Creek as far upstream as S 356th Street (Ladley 2021b pers. comm.).

NMFS and USFWS (2009) determined that juvenile Chinook salmon are typically present in the estuarine waters of the Hylebos Waterway from March and early July, with peak numbers in late May or early June. Subyearling juvenile Chinook salmon have also been captured in Commencement Bay as early as January, during beach seining surveys (Ladley pers. comm., as cited in NMFS and USFWS 2009). Juveniles are generally observed more frequently near the mouths of the waterways than near the heads (Kerwin 1999), and observations are most frequent in the waterways closest to the Puyallup River (NMFS 2001).

As part of ongoing fish and habitat restoration efforts, the Puyallup Tribe has released approximately 10,000 to 20,000 juvenile fall-run Chinook salmon into West Fork Hylebos Creek annually, during the spring (Marks et al. 2021). These fish are produced by the Clarks Creek Hatchery Program and, as such, are included in the Puget Sound ESU (79 FR 20802, April 14, 2014). Hatchery fish have been identified on spawning grounds (Marks et al. 2021).

Green-Duwamish Watershed

No segments of Mill Creek are within 1,000 feet of the project limits. However, a proposed stormwater facility will discharge to a stormwater conveyance system that ultimately drains to Mill Creek (Section 1.3.3). Mill Creek joins the Green River in Kent, approximately 7.5 miles downstream from the project area.

Adult fall Chinook salmon migrate upstream in the Green River from late June to mid-November. Most spawning generally takes place in the mainstem Green River and tributaries upstream of Mill Creek. Rearing habitat in the Green River extends to approximately the SR 167 crossing in Kent, near the confluence of Mill Creek and Green River.

Chinook salmon have been documented within the lower reaches of Mill Creek, and the upper reaches of the stream are classified as gradient-accessible (NWIFC 2022). The upstream extent of stream channel classified as gradient-accessible is approximately 1,200 feet downstream of the point where runoff from the project site enters the stream. A series of total barriers to fish passage prevents Chinook salmon from entering reaches of Mill Creek within approximately 1 mile of the project limits (Table 2-2).

Most Chinook salmon in the Green River exhibit an ocean-type life history, in which juveniles migrate to estuaries during the first year of life, generally within 3 to 4 months of emergence (Lister and Genoe 1970). Seaward migration of Green River Chinook fry typically begins in January and peaks in early March, followed by few fish migrating during late March through April, and then fingerlings migrating from May through July (Ruggerone and Weitkamp 2004). A small proportion of Green River Chinook salmon are stream-type fish—that is, juveniles overwinter in the Green River watershed before migrating seaward (Grette and Salo 1986).

2.2.3 Puget Sound Steelhead

The Puget Sound steelhead DPS is listed as a threatened species under the ESA (May 11, 2007 [72 FR 26722]; updated April 14, 2014 [79 FR 20802]). The DPS includes all naturally spawned anadromous winter-run and summer-run steelhead populations, in streams within the river basins of the Strait of Juan de Fuca, Puget Sound, and Hood Canal, Washington. The DPS also includes steelhead from artificial propagation programs in the Green River.

Hylebos Creek Watershed

Steelhead have been documented in the Hylebos Creek watershed, and they may be present in some tributaries to Hylebos Creek in the action area. Detailed information about habitat use and the timing of steelhead presence is available for the Puyallup River, but not for streams in the Hylebos Creek watershed. Except where stated otherwise, descriptions of patterns of steelhead presence in the Hylebos Creek watershed are based on information from the Puyallup River watershed.

Steelhead have been documented in Hylebos Creek and the lower reaches of West Fork Hylebos Creek and East Fork Hylebos Creek (downstream of barriers) (NWIFC 2022). The nearest watercourses where steelhead have been documented are at least 2.7 miles downstream from any discharge points of stormwater facilities that will be built or reconfigured for this project. Of the three headwater tributaries to which treated stormwater from the project will be discharged, steelhead have been documented only in the lowest reaches of East Fork Hylebos Creek Tributary 0016A, approximately 2.7 miles downstream from the project area. The nearest stream reach that provides potential habitat and could become accessible to steelhead in the future is 0.2 mile downstream from all but one of the discharge points in East Fork Hylebos Creek Tributary 0016A (WDFW 2022c). The discharge point of TDA 13A (the furthest downstream discharge point from a project-related SWM to this stream) is in a reach characterized as gradient-accessible for steelhead—that is, access is not precluded by stream channel gradients that pose a barrier to upstream migration (access is, however, currently precluded by the presence of anthropogenic barriers).

Numerous fish passage barriers, combined with small stream sizes and intermittent flow regimes, preclude the movement of steelhead into stream reaches in the project area (Ladley 2021a, pers. comm.). As noted in the discussion of Chinook salmon, "project area" in this context refers to areas where ground-disturbing work will occur or where water will be discharged from stormwater treatment facilities to receiving waters.

Table 2-3 provides an overview of the downstream distances to reaches where steelhead have been documented or where their presence is not precluded by stream channel gradients. The latter could become accessible to steelhead in the future if all downstream impediments to fish passage were removed. The table also identifies the number of fish passage barriers between the project area and reaches where steelhead have been documented. For each stream, the downstream distance is measured as the distance between the farthest downstream discharge point of a stormwater facility and the upstream extent of documented, presumed, or potential presence, based on information from NWIFC (2022).

Based on the presence of downstream barriers to fish passage, combined with intermittent flows and a lack of potentially suitable habitat, steelhead are assumed to be absent from the Hylebos Creek tributaries near the project area. The remainder of this discussion describes steelhead use of Hylebos Creek, its major tributaries, and the Hylebos Waterway.

Steelhead in the Hylebos Creek watershed are predominantly a winter-run population. The principal spawning stock of steelhead in the Puyallup River system generally enters the river system from January through June, with peak migration occurring in mid- to late April and early May (Marks et al. 2021). In addition, a few individuals, likely strays from summer-run populations in the Green or Skykomish Rivers, are caught in the lower Puyallup River each year during August and September (Marks et al. 2021). WDFW does not recognize a summer run population of steelhead in the Puyallup River system, and only the winter run populations are included in the ESA-listed Puget Sound DPS (NMFS and USFWS 2009).

Table 2-3. Impediments to Steelhead Presence in the Project Area

Downstream Distance or Number of Barriers	West Fork Hylebos Creek Tributary 0014C	East Fork Hylebos Creek Tributary 0016A	East Fork Hylebos Creek Tributary 0016B	Mill Creek
Distance to nearest gradient-accessible reach[1]	1.8 miles	0.2 mile	3.3 miles	1,200 feet[2]
Distance to nearest reach with presumed presence	N/A	N/A	N/A	1.0 mile
Distance to nearest reach with documented presence	3.3 miles	2.7 miles	3.7 miles	6.5 miles
Number of total barriers	4	3[3]	2	4
Number of partial barriers	6	13[3]	11[3]	2
Number of unassessed barriers	4	2	9	4

[1] Gradient-accessible reaches are those to which access is not precluded by stream channel gradients that pose a barrier to upstream migration.

[2] A project-related SWM facility will release water to a system of pipes and ditches that ultimately discharges to Mill Creek approximately 1,800 feet east of the project area. The discharge point is approximately 1,200 feet upstream of the upstream extent of stream channel classified as gradient-accessible.

[3] Values in this table are based on barrier inventory data as of October 2022. WSDOT is developing plans for the correction of 2 total barriers and 5 partial barriers to fish passage on East Fork Hylebos Creek Tributary 0016A downstream of the project area. Another 2 partial barriers on East Fork Hylebos Creek Tributary 0016B will be corrected. Installation of new, fish-passable structures at these sites will reduce barriers but will not provide access to stream reaches in the project footprint.

Juvenile steelhead typical rear in freshwater habitats for 2 years (range: 1 to 4) before migrating to marine waters (Marks et al. 2021). Juvenile out-migration takes place primarily in April and May, although a few individuals have been observed out-migrating as late as late July (NMFS and USFWS 2009).

Information on recent observations of steelhead in the Hylebos Creek watershed is limited. No juvenile or adult steelhead were observed during habitat surveys and electrofishing surveys in several reaches of East Fork Hylebos Creek and West Fork Hylebos Creek in 2014 (HDR 2014). NWIFC (2022) does not classify any stream reaches in the Hylebos Creek watershed as documented spawning habitat. Marks et al. (2021) characterized the spawning frequency for this species in Hylebos Creek as low and inconsistent. NMFS and USFWS (2009) reported that steelhead spawn in the Hylebos Creek watershed occasionally, primarily in West Fork Hylebos Creek between S 373rd Street and SR 99, more than 3 miles downstream from the project area.

Based on these observations, it is assumed for this analysis that steelhead may spawn in the Hylebos Creek watershed, albeit in low numbers and probably not every year. The nearest spawning areas are more than 3 miles downstream from the downstream-most discharge point from a stormwater treatment facility in West Fork Hylebos Creek Tributary 0014C. Adults may be present in accessible streams from January through June, with the highest probability of presence occurring during the peak migration period (April and May).

Juveniles could be present at any time of year, albeit in low numbers and with low probability. The quality of rearing habitat in the action area is limited by the lack of suitable substrates and by elevated water temperatures during summer. Juvenile steelhead in the Hylebos Creek watershed are most likely to rear in lower reaches.

Green-Duwamish Watershed

Natural-origin steelhead that spawn in the Green-Duwamish River system are a winter-run (ocean-maturing) population. A summer-run steelhead population is also present in the Green River. That population originated from the Skamania Hatchery in the Columbia River Basin and is not included in the ESA-listed Puget Sound DPS. Winter-run adults typically enter fresh water and migrate upstream from November through May; spawning generally occurs from early March through mid-June (Puget Sound Steelhead Technical Recovery Team 2013). Juvenile steelhead tend to reside in freshwater habitats for 2 years or more before migrating to marine habitats during April and May.

According to NWIFC (2022), winter-run steelhead are present in the Green River and in the lower 1.2 miles of Mill Creek. A series of total barriers to fish passage prevents steelhead from entering reaches of Mill Creek within approximately 1 mile of the project limits (Table 2-3). The nearest spawning habitat is in the Green River, approximately 3.1 miles upstream of Mill Creek's confluence with the Green River (NWIFC 2022).

2.2.4 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 2021, NMFS completed a 5-year review and concluded that southern resident killer whales (SRKWs) should remain listed as endangered (NMFS 2021). The recovery plan identified several factors that may be limiting SRKW recovery. These include quantity and quality of prey, toxic chemicals that accumulate in top predators, and disturbance from sound and vessels (NMFS 2008). Oil spills are also a risk factor. It is likely that multiple threats are acting together to impact the whales. Although it is not clear which threat or threats are most significant to the survival and recovery of SRKWs, all the threats identified are potential limiting factors in the population dynamics of the DPS (NMFS 2008).

The action area does not include any areas of marine habitat where SRKWs are likely to be present. The aquatic component of the action area extends to the points at which Hylebos Creek enters the Hylebos Waterway and the Duwamish River enters the Duwamish Waterway. SRKWs are unlikely to enter in the shallow waters of Commencement Bay, and they are even less likely to enter the narrow confines of the Hylebos Waterway. Although SRKWs are not expected to enter the Duwamish Waterway, they have been observed in Elliott Bay. It is possible that foraging SRKWs might follow adult salmon that are migrating through the Duwamish Waterway to spawning habitats in the Green-Duwamish River system. Given the narrow configuration of the waterway, combined with the high levels of noise and human activity, this is unlikely to occur, however.

Based on the above, the project has no potential to directly affect SRKWs or their habitat. However, based on the potential for adverse impacts on Chinook salmon, analyses in this BA consider potential indirect impacts on this species. Chinook salmon make up a significant proportion of SRKW diets. Estimates range from approximately 70 percent during winter and spring to more than 90 percent during summer and fall (NMFS 2021).

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

Designated or proposed critical habitat for streaked horned lark, yellow-billed cuckoo, marbled murrelet, southern resident killer whale, bocaccio, or yelloweye rockfish is not present in or near the action area.

- The nearest designated critical habitat for **streaked horned larks** is more than 80 miles from the project area.
- No critical habitat for the **yellow-billed cuckoo** has been designated in Washington.
- The nearest designated critical habitat for **marbled murrelet** is more than 30 miles from the project area.
- Designated critical habitat for **southern resident killer whales** does not extend into Hylebos Creek or the Duwamish River (71 FR 69054, November 29, 2006). As such, critical habitat is not present in the action area.
- Designated critical habitat for **bocaccio** and **yelloweye rockfish** does not extend into the action area.

Based on the above, the project will have **no effect** on critical habitat for these species.

2.3.1 Bull Trout Critical Habitat

Critical habitat for bull trout was designated in September 2005 (70 FR 56211) and was revised on October 18, 2010 (75 FR 63897). The Green River and Duwamish River are designated as bull trout critical habitat, but Mill Creek is not. Critical habitat in the Green River and Duwamish River provides foraging, migration, and overwintering habitat for bull trout, but these waterbodies are not classified as spawning or rearing habitat.

Specific physical and biological features (PBFs) of critical habitat for bull trout in freshwater areas, as defined by USFWS, include the following (75 FR 63897, October 18, 2010):

(1) Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.

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

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

(4) Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes with features such as large wood, side channels, pools, undercut banks, and substrates, to provide a variety of depths, gradients, velocities, and structure.

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

(6) Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal

amount (e.g., less than 12 percent) of fine substrate less than 0.85 mm (0.03 in.) in diameter and minimal embeddedness of these fines in larger substrates are characteristic of these conditions.

(7) A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, they minimize departures from a natural hydrograph.

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

(9) Few or no nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass; inbreeding (e.g., brook trout); or competitive (e.g., brown trout) species present.

PBFs 2, 3, 4, 5, 8, and apply to freshwater habitats. Of these, all but PBF 4 may be present in the Green River and Duwamish River in the action area. Reaches of the two rivers in the action area are a migratory corridor (PBF 2) for bull trout moving between marine habitats and foraging/migration/overwintering habitat in the Green River. Freshwater tributaries provide food sources for bull trout (PBF 3), but prey abundance in the action area is likely limited by degraded water quality and habitat conditions. Reaches of the Green River and the Duwamish River in the action area have been extensively modified; large wood, side channels, pools, undercut banks, and other features of complex habitat (PBF 4) are largely absent. Elevated temperatures have been recorded in the action area, but temperatures between 2º and 15º C are sometimes available (PBF 5). Water quality (PBF 8) in the action area is generally poor (Section 3.2). Smallmouth bass and other nonnative predatory fish may be present in the Green River (PBF 9), but their abundance has not been documented (Kerwin and Nelson 2000).

PBF 7 (natural hydrograph) is essentially absent because water levels in the Green River are controlled by the U.S. Army Corps of Engineers at the Howard A. Hanson Dam; excess water after storms is released in quantities to stay within the downstream channel's capacity. PBFs 1, 6, and 7 apply to streams where bull trout spawn and rear. Therefore, these PBFs are not present in the Hylebos Waterway, the Green River, Duwamish River, or the Duwamish Waterway.

2.3.2 Puget Sound Chinook Salmon Critical Habitat

The final rule designating critical habitat for Puget Sound Chinook salmon included the main stem of Hylebos Creek, West Fork Hylebos Creek downstream of S 373rd Street (west of I-5), the lower 3.8 miles of Mill Creek, and the Green-Duwamish River (70 FR 52630, September 2, 2005).

Specific PBFs for Chinook salmon in freshwater and nearshore marine/estuarine areas, as defined by NMFS, include the following:

1. Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation, and larval development
2. Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks
3. Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival

4. Estuarine areas free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between freshwater and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation
5. Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes supporting growth and maturation, and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels

Freshwater habitats in Hylebos Creek, West Fork Hylebos Creek, Mill Creek, and the Green River in the action area likely support PBFs 2 and 3. Estuarine areas in the lower reaches of Hylebos Creek and the Green-Duwamish River likely support PBF 4. PBF 1 is present only in the reaches of West Fork Hylebos Creek where Chinook salmon spawn. The action area does not include nearshore marine habitats; therefore, PBF 5 is not pertinent to this analysis.

2.3.3 Puget Sound Steelhead Critical Habitat

The lower reaches of East Fork Hylebos Creek and West Fork Hylebos Creek, approximately 2.5 to 3 miles downstream from the project footprint, were included in the designation of critical habitat for Puget Sound steelhead (81 FR 9251, February 24, 2016). Mill Creek, starting 0.7 mile downstream of the project limits, is also designated critical habitat for steelhead, as are all reaches of the Green River and Duwamish River in the action area.

Critical habitat for Puget Sound steelhead is defined by the same PBFs as those identified above for Chinook salmon. Freshwater habitats in East Fork Hylebos Creek, West Fork Hylebos Creek, Mill Creek, and the Green River in the action area likely support PBFs 2 and 3. Estuarine areas in the lower reaches of Hylebos Creek and the lowest reaches of the Green-Duwamish River likely support PBF 4. PBF 1 is present only in the reaches of West Fork Hylebos Creek where steelhead are known or expected to spawn occasionally and infrequently. The action area does not include nearshore marine habitats; therefore, PBF 5 is not pertinent to this analysis.

2.3.4 Southern Resident Killer Whale Critical Habitat

The critical habitat of SRKW has been designated to include all marine waters of Puget Sound where depths are greater than 20 feet (86 FR 41668). Three habitat features essential to the conservation of the DPS include: 1) water quality to support growth and development; 2) prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth; and 3) passage conditions to allow for migration, resting, and foraging. While the geographic definition of SRKW critical habitat does not overlap with the project action area, the second PBF, prey species, may be affected via trophic web interactions.

The potential for the project to have adverse impacts on Chinook salmon leads to the possibility of indirect effects to the quantity, quality, and availability of prey for killer whales. Chinook salmon make up a significant proportion of SRKW diets. Estimates range from approximately 70 percent during winter and spring to more than 90 percent during summer and fall (NMFS 2021). Chinook salmon originating from the action area migrate through SRKW critical habitat and constitute a small proportion of the available prey for SRKW within Puget Sound.

3. Environmental Setting

Before describing the potential effects of the project action, it is important to define the environmental baseline.

"*The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.*" (50 CFR 402.02)

The project area includes I-5 and its right-of way between S 312th Street to the north and S 324th Street to the south, as well as areas on both sides of the freeway, in the urban and suburban developments of Federal Way. On the west side of I-5, the City Center is an urban area characterized by moderate- to high-density residential, retail, and mall development. The project area east of I-5 is less developed. The land between S 320th Street and S 324th Street has been developed for commercial use. Areas north of S 320th Street are zoned for multi-family uses, but they remain undeveloped, consisting predominantly of upland forest. The patch of forest north of S 320th Street abuts a powerline and gas pipeline corridor, includes wetland and riparian habitats, and experiences frequent human disturbances due to encampments. South of 324th Street, the presence of Weyerhaeuser's former corporate headquarters and ancillary buildings on a 430-acre campus has left forest habitat undeveloped, albeit fragmented by roads, parking lots, and driveways. The Weyerhaeuser campus abuts North Lake, which provides wetland, riparian, and lacustrine habitats.

Twenty-four wetlands and a segment of a headwater tributary to Hylebos Creek were mapped within the immediate project vicinity (Parametrix 2021). Other streams affected by the project are discussed in Section 4.3.

Project biologists completed a site visit on January 28, 2021, to evaluate forest habitat. Project biologists and surface water engineers characterized riparian and wetland habitat in the action area during several site visits ranging from fall 2019 to winter 2021. Project area photographs are presented in Appendix E.

3.1 Terrestrial Species and Habitats

The forested portions of the project area are characterized by typical Puget Sound coniferous and deciduous forested communities. The older (second-growth) coniferous forests consist primarily of Douglas-fir (*Pseudotsuga menziesii*) and western redcedar (*Thuja plicata*). Typical understory plants include sword fern (*Polystichum munitum*), salmonberry (*Rubus spectabilis*), beaked hazelnut (*Corylus cornuta*), salal (*Gaultheria shallon*), and trailing blackberry (*Rubus ursinus*).

An approximately 20-acre patch of forest habitat occurs between S 320th Street and the powerline corridor to the north. A larger patch, encompassing approximately 250 acres, is present on the former Weyerhaeuser campus. On the western side of the campus, adjacent to I-5, forested areas consist of younger, relatively dense, Douglas-fir-dominated forest with a sparse understory. The eastern side, particularly near North Lake, includes more mature Douglas-fir and western redcedar trees with a dense understory dominated by salal and sword fern. This portion of the stand includes trees larger than 40 inches in diameter at breast height and more than 100 feet tall. The northern side of North Lake contains lacustrine wetlands with deciduous-dominated forested and scrub-shrub vegetation.

3.2 Aquatic Species and Habitats

The project area contains four streams that will be affected by project construction or that include discharge points from project SWM facilities. Three of these are in the Hylebos Creek watershed (West Fork Hylebos Creek Tributary 0014C, East Fork Hylebos Creek Tributary 0016A, and East Fork Hylebos Creek Tributary 0016B), and one is in the Green-Duwamish watershed (Mill Creek).

West Fork Hylebos Creek Tributary 0014C and East Fork Hylebos Creek Tributary 0016A are both west of I-5 in the project area, and East Fork Hylebos Creek Tributary 0016B is east of I-5. All three streams have been heavily modified to accommodate urban development. Downstream of the project limits, the streams pass through many culverts, most of which are complete or partial barriers to fish passage (WDFW 2022c). Impediments to fish passage include water velocity, surface water drops, and steep slopes. Furthermore, several of the pipes are long and have bends. While long and irregularly shaped culverts are not defined as barriers, such structures are known to inhibit the progress of fish upstream. Within the project area, all three streams are intermittent, and flow is often tied to precipitation. Streambeds in the project vicinity are typically dry during summer and early fall. These tributaries flow into East Fork Hylebos Creek and West Fork Hylebos Creek, which converge to form Hylebos Creek south of the project area near Fife. Hylebos Creek then flows west and north, emptying to marine waters in Commencement Bay at the Hylebos Waterway.

Stormwater from a small portion of the project footprint discharges to ditches in the upper the Mill Creek basin. Mill Creek flows to the Green River, which discharges to Elliott Bay via the Duwamish River and Duwamish Waterway.

These waterbodies are described in the sections below. Discussions of the use of these waterbodies by ESA-listed fish are included in Section 2.2.

3.2.1 West Fork Hylebos Creek Tributary 0014C

The entirety of West Fork Hylebos Creek Tributary 0014C is within the aquatic component of the action area because SWM facilities built or modified for the project will discharge near the headwaters of the stream.

West Fork Hylebos Creek Tributary 0014C first daylights west of I-5 within the Belmor Park manufactured home community and country club, approximately 300 feet south of the project limits. Flow in this reach is likely supported by water from surrounding stormwater runoff and pipes. The stream flows south through residential developments before entering a series of stormwater detention ponds near S 336th Street. The stream then crosses SR 99 through a long, jointed pipe. Approximately 2 miles downstream from the project limits, in Hylebos Creek Wetlands Park, West Fork Hylebos Creek Tributary 0014C joins other tributaries to form West Fork Hylebos Creek. Numerous barriers to fish passage exist downstream of the project limits (see Table 2-2 and Figure 1-8).

Fish habitat in the upper reaches of the stream (i.e., near the project limits) is generally poor. Much of the stream in this area is confined within a straight, ditch-like channel profile. The stream channel has a low gradient and is dominated by fine substrates. Riparian vegetation along the stream in this area includes a mixture of native forest, wetlands, uplands, and developed areas dominated by grasses and horticultural plants. Invasive plants are present throughout. Channel definition is lost within the stormwater detention facilities near both S 324th Street and S 336th Street.

The upstream reaches of West Fork Hylebos Creek Tributary 0014C flow only intermittently. Urbanization in the stream basin has contributed to altered peak and base flows in West Fork Hylebos

Creek Tributary 0014C (King County 1990). As a result, the City of Federal Way has initiated and completed numerous flood control projects, including large SWM facilities, throughout the basin.

Stream segments approximately 1 mile downstream of the project limits are on the 303(d) list of impaired waters, based on violations of state standards for pH, copper, lead, and zinc (Ecology 2022b). Large amounts of impervious surface area in the upper watershed have likely contributed to elevated levels of pollutants associated with vehicle use, including metals such as copper, lead, and zinc.

3.2.2 East Fork Hylebos Creek Tributary 0016A

The entirety of East Fork Hylebos Creek Tributary 0016A is within the aquatic component of the action area because the stream will receive effluent from SWM facilities and because the project will replace four culverts on this stream (see Section 1.3.2).

The headwaters of East Fork Hylebos Creek Tributary 0016A are in a wetland complex northeast of I-5 and S 320th Street, although no evidence of a defined channel was observed in that area. According to the WDFW fish passage site report for culvert 995300, reaches upstream of the on-ramp from S 320th Street to I-5 northbound consist primarily of ponds and wetlands that parallel I-5; only a few channelized reaches with riffles and pools are present. Seasonal ponding in the wetland results in surface flow that crosses under the I-5 northbound on-ramp in a 30-inch concrete pipe (Site ID 995300) and into a permanently ponded wetland bordered by S 320th Street to the south, I-5 to the west, and the northbound I-5 on-ramp to the north and east. Ponding within that wetland results in flow that is conveyed through a submerged 30-inch concrete pipe (Site ID 995299) under S 320th Street and the I-5 off-ramp.

The upper limits of the delineated channel begin at the outlet of the S 320th Street crossing (culvert 995299). Surface flow travels southeast within a defined channel for about 15 feet, toward the Olympic Pipeline easement. Near the pipeline easement, the channel disappears, and surface water transitions to permanent ponding that gradually flows through a palustrine scrub-shrub community and into the delineated bog interior of Wetland W5. Evidence of a defined channel was identified in the southeastern portion of the bog, about 750 feet away. This channel conveys water westward to the culvert under I-5 (Site ID 992364).

Another channel forms along the toe of the I-5 fill slope west of the Olympic Pipeline easement, near the southwestern end of Wetland W5. This channel is likely formed by sheet flow from I-5. This channel meets the main channel of East Fork Hylebos Creek Tributary 0016A at the inlet of culvert 992364.

After passing under I-5, the S 320th Street Park & Ride, and Winged Foot Way, the stream daylights within the golf course of the Belmor Park manufactured home community. The stream then flows southward through a series of piped and open-channel segments for approximately 2.1 miles, confined by I-5 to the east and light industrial, commercial, and residential development to the west. Near S 356th Street, the stream turns east, crosses under I-5, and joins East Fork Hylebos Creek after converging with other tributaries.

West (downstream) of I-5, habitat conditions in East Fork Hylebos Creek Tributary 0016A are similar to those in West Fork Hylebos Creek Tributary 0014C. Much of the stream in this area is confined within a straight, ditch-like channel profile, and fish habitat is poor. The stream gradient is low, and accumulations of fine sediments have resulted in the shallowing and widening of the streambed. Supported by intermittent flow, dense patches of reed canarygrass grow in low-energy areas, exacerbating deposition of fine sediments. Farther downstream, well outside the project limits, the stream passes through areas dominated by wetlands and native forest and provides moderate-quality habitat.

East Fork Hylebos Creek Tributary 0016A flows intermittently in and near the project limits. The streambed in this area is typically dry during summer and early fall. The stream channel was completely dry during a reconnaissance survey in a reach approximately 0.7 mile downstream of the project area on October 9, 2019, and a soil pit excavated to a depth of 20 inches below the ground surface elevation in the stream failed to reach the groundwater table. Rainfall had been above normal during the preceding month (3.32 inches, compared to a normal of 1.61 inches) as well as the preceding 3 months (5.67 inches, compared to normal of 3.18 inches). Two weeks later (October 22, 2019), after several days of consistent rainfall, flows were re-established in the stream channel. East Fork Hylebos Creek Tributary 0016A is not on the 303(d) list of impaired waters (Ecology 2022b).

There is no documented or presumed fish use in the upper reaches of East Fork Hylebos Creek Tributary 0016A (i.e., in areas where project construction will entail ground-disturbing work in or near the stream channel). Under current conditions, human-created barriers to fish passage prevent anadromous salmonids from entering stream reaches in the project area (NWIFC 2022; see Table 2-2 and Figure 1-8). The presence of resident fish is unlikely, given the intermittent flow of the stream and the presence of barriers between the study area and potential population sources downstream. However, the basin size, channel width, and gradient of the stream indicate the potential to support fish in the future. Furthermore, other projects are currently planned to remove several of the downstream barriers (for example, the I-5/SR 161/SR 18 Triangle Interchange project). If access is restored, the upper reaches of East Fork Hylebos Creek Tributary 0016A in and near the project limits have the potential to provide rearing habitat for juvenile salmonids that can swim that far upstream.

3.2.3 East Fork Hylebos Creek Tributary 0016B

The entirety of East Fork Hylebos Creek Tributary 0016B is within the aquatic component of the action area because SWM facilities built or modified for the project will discharge near the headwaters of the stream.

East Fork Hylebos Creek Tributary 0016B originates in the project area, south of S 320th Street and east of Weyerhaeuser Way S. The stream empties to North Lake, which supports a resident population of largemouth bass and is stocked annually with rainbow trout. Water from North Lake flows through pipes and open channels to the Weyerhaeuser Pond. Downstream of the pond, the stream enters an approximately 1,450-foot-long culvert and then continues south through a series of piped and open-channel segments for approximately 1.5 miles, joining East Fork Hylebos Creek Tributary 0016A near Enchanted Parkway S. Segments of East Fork Hylebos Creek Tributary 0016B near the project limits are narrow and driven by intermittent flows. Riparian vegetation consists primarily of native forest, wetlands, and uplands.

Neither NWIFC (2022) nor WDFW (2022a) indicate any known or potential fish use of East Fork Hylebos Creek Tributary 0016B. A total barrier to fish passage near the stream's confluence with East Fork Hylebos Creek Tributary 0016A likely prevents anadromous fish from entering the stream. Intermittent flows and numerous additional barriers (two total, eight partial, and nine unassessed) further reduce the potential for fish to enter stream reaches near the project limits.

3.2.4 West Fork Hylebos Creek

Reaches of West Fork Hylebos Creek downstream of the West Fork Hylebos Creek Tributary 0014C confluence are within the aquatic component of the action area. The only potential project-related impacts on this stream are associated with water quality; treated stormwater from SWM facilities that discharge to West Fork Hylebos Creek Tributary 0014C has the potential to affect water quality in West Fork Hylebos Creek. Therefore, this discussion focuses on water quality and use of this stream by fish.

West Fork Hylebos Creek is a perennial stream. A segment of the stream near S 373rd Street is included on the 303(d) list of impaired waters, based on elevated temperatures, low levels of dissolved oxygen, and elevated levels of fecal coliform bacteria (Ecology 2022b).

Similar to the tributary streams described above, the West Fork Hylebos Creek basin has been affected by extensive urban development. In contrast to the smaller tributaries, large riparian wetland complexes in the West Fork Hylebos Creek basin help maintain base flow conditions and attenuate peak flows. Hydrologic conditions are still not optimal, however, and flood storage is still an issue.

Chinook salmon, coho salmon, steelhead, chum salmon (*Oncorhynchus keta*), and cutthroat trout (*O. clarkii*) have been documented in West Fork Hylebos Creek (NWIFC 2022; WDFW 2022a). The Puyallup Tribal Fisheries Department has documented Chinook salmon, chum salmon, coho salmon, pink salmon, and steelhead spawning in West Fork Hylebos Creek between SR-99 and the confluence with the East Fork Hylebos Creek (Marks et al. 2018). West Fork Hylebos Creek is a migratory corridor for all of these species and provides rearing habitat for juvenile cutthroat trout, coho salmon, Chinook salmon, and steelhead.

3.2.5 East Fork Hylebos Creek

Reaches of East Fork Hylebos Creek downstream of the East Fork Hylebos Creek Tributary 0016A confluence are within the aquatic component of the action area. The only potential project-related impacts on this stream are associated with water quality; treated stormwater from SWM facilities that discharge to East Fork Hylebos Creek Tributaries 0016A and 0016B has the potential to affect water quality in East Fork Hylebos Creek. Therefore, this discussion focuses on water quality and use of this stream by fish.

East Fork Hylebos Creek is a perennial stream. The stream segment in the action area is included on the 303(d) list of impaired waters, based on elevated levels of fecal coliform bacteria (Ecology 2022b).

Chum salmon, coho salmon, and steelhead have been documented in East Fork Hylebos Creek, and reaches of the stream in the action area provide spawning habitat for coho salmon (NWIFC 2022; WDFW 2022a). Neither Chinook salmon nor pink salmon have been documented, but the stream is classified as gradient-accessible for both species (NWIFC 2022).

3.2.6 Hylebos Creek (Mainstem)

The entirety of mainstem Hylebos Creek is within the aquatic component of the action area. The only potential project-related impacts on this stream are associated with water quality; treated stormwater from SWM facilities that discharge to headwater tributaries has the potential to affect water quality in Hylebos Creek. Therefore, this discussion focuses on water quality and use of this stream by fish.

Hylebos Creek originates at the confluence of West Fork Hylebos Creek and East Fork Hylebos Creek, east of I-5. The stream flows south before crossing under the freeway, then veers northwest to the Hylebos Waterway. Hylebos Creek is tidally influenced to approximately 0.5 mile upstream from the Hylebos Waterway.

Hylebos Creek is not currently identified on 303(d) list of impaired waters for any water quality parameters. However, water quality impairments have been identified in several upstream tributaries, including East Fork Hylebos Creek, West Fork Hylebos Creek, and the Hylebos Waterway.

Currently, there are no barriers to fish passage downstream of the action area. Steelhead and Chinook salmon presence has been documented within Hylebos Creek mainstem.

Hylebos Creek in the action area flows through low-gradient floodplain habitat with some slight sinuosity. Habitats are dominated by deep mid-channel and lateral scour pool habitats. Large woody material is present in small quantities within the reach. The potential for future recruitment is limited by the lack of large, mature stands of trees in this reach, combined with the limited ability of upstream areas to transport large woody material to the area. The lack of in-stream and canopy cover reduces the quality of pool habitats. Sediments are dominated by fine materials, including sand and silt. While there is an overall lack of in-stream cover, pool depth is likely sufficient to provide important rearing habitat for juvenile salmonids. While there is some access to floodplain habitats from the main stem, there is a lack of off-channel and side channel habitats that could provide additional rearing habitat for juvenile salmonids.

3.2.7 Hylebos Waterway

The aquatic component of the action area ends where Hylebos Creek enters the Hylebos Waterway, which is a narrow, excavated extension of Commencement Bay. Modification of the historical estuary created a highly developed, industrial upland area surrounding the waterway. Due to pollution from industrial activities, the waterway was declared part of the Commencement Bay/Near Shore/Tideflats Superfund Site in 1983. The Hylebos Waterway has 303(d) listings for chlorinated pesticides, DDT and metabolites, high molecular weight polycyclic aromatic hydrocarbons, and polychlorinated biphenyls (Ecology 2022b). The waterway was declared part of the Commencement Bay/Near Shore/Tideflats Superfund Site in 1983. Cleanup in the Hylebos Waterway involved sediment removal in the head (from 2004 to 2006) and mouth (from 2004 to 2006) of the Hylebos Waterway, and cleanup is ongoing for some sections of the waterway (EPA 2022; Port of Tacoma 2022). Source control efforts include monitoring groundwater for contaminants (EPA 2022). Water temperatures in the adjacent Sitcum Waterway are likely similar to the Hylebos Waterway and range from 47° F to 58° F (as recorded in 2021) (National Centers for Environmental Information [NCEI] 2022).

Based on poor water quality, the lack of complex habitat features, and high levels of boat traffic and other sources of disturbance, anadromous salmonids (including ESA-listed species) that pass through the Hylebos Waterway on their way to habitats in the Hylebos Creek system are unlikely to remain in the waterway for extended periods.

3.2.8 Mill Creek

The lower approximately 7.5 miles of Mill Creek are within the aquatic component of the action area. The only potential project-related impacts on this stream are associated with water quality; treated stormwater from a SWM facility in the northeastern corner of the project limits has the potential to affect water quality in Mill Creek. Therefore, this discussion focuses on water quality and use of this stream by fish.

Mill Creek is located within WRIA 9 (Green-Duwamish). Lake Geneva and Lake Doloff form the headwaters of Mill Creek. The stream is approximately 8.4 miles long and enters the Green River at river mile 23.9 (King County 2022b). Approximately three quarters of the Mill Creek watershed are developed; the rest consists of agricultural areas (pasture/hay/cultivated crops), forest, and wetlands. Mill Creek has 303(d) listings for pH, bioassessment (e.g., low numbers of invertebrates), dissolved oxygen, and bacteria (Ecology 2022b).

Chinook salmon, coho salmon, steelhead, and cutthroat trout have been documented in the lower reaches of Mill Creek (NWIFC 2022). Spawning areas for coho salmon are present approximately 1 mile downstream from the upper extent of the action area in Mill Creek. According to NWIFC (2022), bull trout have not been documented within Mill Creek but are known to be in the Green River. A series of

total barriers to fish passage prevents anadromous salmonids from entering reaches of Mill Creek within approximately 1 mile of the project limits (WDFW 2022c).

3.2.9 Green-Duwamish River

The lower approximately 24 miles of the Green-Duwamish River are within the aquatic component of the action area. The only potential project-related impacts on the river are associated with water quality; treated stormwater that enters Mill Creek has the potential to affect water quality in the Green River. Therefore, this discussion focuses on water quality and use of this stream by fish.

The lower Green River is on the 303(d) list of impaired waters for dissolved oxygen (Ecology 2022b). The Green River has experienced many alterations including channelization and diking for navigation and flood control; diverting water away from the Green River, resulting in reduction of watershed area; expansion of residential, commercial, and industrial land uses; and construction of the Howard Hanson Dam in the upper watershed for flood control (Kerwin and Nelson 2000). Current land uses within the two lower sections of the Green River include residential, commercial, and industrial development and agriculture. Forest cover adjacent to river represents only a fraction within the action area. The entire Green River in the action area is degraded with poor habitat quality due to the alterations listed above. The river corridor lacks functional riparian habitats due to a nearly continuous system of revetments and levees, and side channels and tributaries have been disconnected from the active floodplain (Kerwin and Nelson 2000). Based on the predominance of fine substrates, habitats in the river in the action area do not provide spawning habitat for salmonids; suitable spawning habitat is present upstream of the action area (Anchor Environmental 2004).

Several populations of anadromous salmonids inhabit the lower Green River and use the lower Green River for migration and rearing, including Chinook salmon and steelhead. Bull trout may be present in Green River, but in lower numbers.

3.2.10 Duwamish Waterway

The action area extends to the mouth of the Duwamish River but does not include the Duwamish Waterway or Elliott Bay, where extensive mixing with marine waters is expected to occur. The Duwamish Waterway is a deep channel with steep shorelines armored with rock or wood bulkheads. Some patches of non-armored shoreline remain; these consist of steep slopes with rock or gravel, with some silty areas. Substrates along the non-armored intertidal zone include sand/mud, gravel, or rock, with limited aquatic or terrestrial vegetation.

Water quality in the Duwamish Waterway is poor. The waterway receives effluent from numerous industrial sites (e.g., manufacturing, shipyards, cargo handling and storage, lumber milling, and petroleum storage) and is a discharge point for many storm drains and combined sewer overflow outfalls. In addition, three active Superfund sites are present along the waterway (Harbor Island, Lockheed West Seattle, and Lower Duwamish Waterway). Ecology (2022b) lists several water quality concerns in the waterway, including fecal coliform, ammonia-N, and temperature. Temperatures exceeding potentially lethal limits for salmonids have been recorded occasionally in the Duwamish Waterway (King County and Washington State Conservation Commission 2000; City of Seattle 2015). The Green-Duwamish River/Estuary is included on the 303(d) list of impaired waters, based on the presence of polychlorinated biphenyls, 4,4'-DDE, 4,4'-DDD, and 4,4'-DDT detected in sample tissues, pH, and water temperatures exceeding 17.5°C (Ecology 2022b).

3.2.11 Wetlands

Parametrix mapped 24 wetlands in the portion of the study area where property access was granted, and other wetlands in the vicinity were mapped by other studies on parcels that Parametrix did not access. The wetlands were classified as having palustrine aquatic bed, emergent, scrub-shrub, and forested vegetation classes. Most wetlands were depressional, but they also included slope and riverine wetlands. Resident fish use is unlikely due to intermittent flows and multiple migration barriers (Parametrix 2021), but the wetlands do constitute the headwaters for Type F streams (FWRC 19.145.260) and could provide limited habitat functions if barriers were removed. Wetland W5 is a large wetland containing bog vegetation community. Wetland buffers range from a variety of habitats that are moderately to highly disturbed. Wetland buffers include forested, shrub, and herbaceous habitats. Disturbance types include regularly mown roadside grasses, access roads, and adjacent roadways. Generally, wetland and buffer habitats lack connectivity to larger corridors, as the surrounding areas are limited by development and roads. However, wetland and buffers do provide some water quality, screening and shade functions, particularly adjacent to North Lake, a headwater to East Fork Hylebos Creek Tributary 0016B.

4. Effects of the Action

The following subsections describe potential effects on ESA-listed species and critical habitat. Direct effects include all immediate impacts from project-related actions, such as habitat loss, disturbance due to construction noise and activity, and work in or near waters where ESA-listed fish may be present. Indirect effects, also known as delayed consequences, include effects that are reasonably certain to occur as a result of the proposed action, but later in time (generally after construction is complete). Beneficial effects have an immediate positive effect without adverse effects to the species or habitat. The term "insignificant" relates to the size or severity of the impact and is used to describe those effects that are undetectable, not measurable, or so minor that they cannot be meaningfully evaluated. The term "discountable" refers to those effects that are extremely unlikely to occur. For an effect to be discountable, there must be a plausible effect (i.e., a credible effect that could result from the action and that would be an adverse effect if it did impact a listed species), but with a very low likelihood of occurring.

4.1 Direct Effects

Ground-disturbing work in and near East Fork Hylebos Creek Tributary 0016A's channel will have the potential to introduce sediment and contaminants into the water. If water is present in the stream channel where ground-disturbing work occurs, elevated turbidity could extend up to 100 feet downstream from the project footprint. Project construction will not entail any equipment use or ground-disturbing work in or near any other streams. As discussed in Section 2.2, numerous downstream barriers to fish passage preclude access by ESA-listed fish to reaches of East Fork Hylebos Creek Tributary 0016A within 1 mile of the project footprint. As such, construction-related turbidity has no potential to affect ESA-listed fish. In addition, the potential for construction-related impacts on water quality will be avoided through implementation of conservation measures and BMPs specified in the SWPPP and TESC plan that will be prepared and implemented before project construction begins. Moreover, the measures specified in Section 1.4 will be implemented, and they will reduce or eliminate the potential for water quality impacts during construction.

Based on the above, construction activities in and near streams (including fish exclusion) have no potential to affect ESA-listed fish. Finally, no critical habitat for any ESA-listed species is present in or near the project footprint. For these reasons, the project will have no direct effects on ESA-listed species or critical habitat. The remainder of this section analyzes potential indirect effects, effects of interrelated and interdependent activities, and cumulative impacts.

4.2 Indirect Effects

Indirect effects may result from the operation of the project (e.g., long-term impacts on water quality) or from future activities related to the project (e.g., induced land use change or growth). Indirect effects can also include beneficial effects resulting from habitat enhancement. Analyses in this section address effects resulting from changes in the amount of impervious surface in the action area, potential changes in land use, potential changes in prey abundance, impacts to riparian habitat along stream reaches that may eventually become accessible to fish, and stream habitat enhancement (i.e., daylighting, fish passage barrier removal).

Although ESA-listed fish currently do not have access to stream reaches near Wetland W5, the bog-wetland complex provides important ecological functions in the East Fork Hylebos Creek Tributary 0016A watershed. Impacts to that wetland could contribute to degradation of habitat quality in waters currently accessible to ESA-listed fish—or to waters that are rendered accessible by future barrier correction projects. The project will avoid direct impacts to the wetland. In addition, the culvert replacement elements of the project will be designed to avoid impacts to the hydrology of Wetland W5. The thalweg elevation of the design streambed will match the invert elevation of the existing inlet for the culvert (WDFW Site ID number 992364) at that location. During construction, the streambed will also be placed in lifts with streambed sand washed in such that test flows applied to the streambed remain on the surface, per WSDOT Water Crossings specifications.

4.2.1 Stormwater

By increasing the total area of PGIS, the project will result in increased levels of contaminants in stormwater runoff. The project will reduce the potential for increased contaminant levels by providing water quality treatment for stormwater runoff. Runoff from new or replaced PGIS will be directed to CSTW/DP facilities (some with sand filters) or to vaults with presettling basins and sand filters to provide enhanced treatment and flow control. Overall, the project will reduce the amount of untreated PGIS in the action area, albeit slightly (Table 1-2). In nearly all TDAs—and in the project area as a whole—the amount of area from which runoff will be directed to treatment facilities will equal or exceed the increase in the area of PGIS (Table 1-2). However, in two of the four watersheds in the action area (West Fork Hylebos Creek Tributary 0014C and Mill Creek), the amount of area from which runoff will be directed to treatment facilities will be slightly less than the increase in the area of PGIS. As discussed below, contaminant levels in stormwater runoff entering those streams will be reduced through infiltration and adsorption to organic material in stream channels, ditches, and regional SWM facilities before it enters any stream reaches where ESA-listed fish may be present.

Contaminant levels in runoff leaving some treatment facilities will be further reduced through incidental infiltration and adsorption to organic material as water flows overland or in vegetated ditches before it enters potentially fish-bearing waters. For the foreseeable future, the potential for ESA-listed fish to be exposed to contaminants that may remain in treated or untreated stormwater will be reduced by the distance between the project area and stream reaches that are accessible to these species. Eventually, if all public and private crossing structures that impede fish access are removed, the small, fine-substrate-dominated, headwater tributaries near the project area are not expected to support substantial numbers of ESA-listed fish.

Runoff from PGIS that is created or replaced by the project will be treated in accordance with the guidelines in the current Stormwater Management Manual for Western Washington, which represents the best available science for stormwater treatment and flow control. Implementation of these practices is expected to minimize the frequency and intensity of exposure of ESA-listed fish to elevated concentrations of pollutants (including dissolved metals and other chemical contaminants) in runoff from impervious surfaces created or replaced by the project.

Nevertheless, residual contaminants in stormwater runoff from PGIS can harm ESA-listed fish, even after the water has been treated to reduce pollutant loads (see Section 1.5.2 of this BA for an overview of analysis assumptions relating to the concentrations of contaminants in water discharged from SWM facilities). In addition, as described in Section 1.3.4, untreated stormwater will bypass SWM facilities during major storm events—but the first-flush runoff from such events (i.e., that with the highest concentrations of contaminants) will enter the facilities and will receive treatment.

ESA-listed fish in receiving waters may be exposed to contaminants in stormwater that is discharged to the receiving waters, or they may be exposed by consuming contaminated prey. Effects of exposure may range from avoidance of affected areas, to reduced growth, altered immune function, or mortality. The intensity of effects depends largely on the pollutant, its concentration, and/or the duration of exposure (Brette et al. 2014; Feist et al. 2011; Gobel et al. 2007; Incardona et al. 2004, 2005; McIntyre et al. 2012; Meador et al. 2006; Sandahl et al. 2007; Spromberg et al. 2016). Repeated exposure, even at very low concentrations, may also result in adverse effects (Feist et al. 2011; Spromberg and Meador 2006; Spromberg and Scholz 2011).

Examples of stormwater contaminants that may harm ESA-listed fish include polycyclic aromatic hydrocarbons, which have been found to cause reduced growth, increased susceptibility to infection, and increased mortality in salmonids (Meador et al. 2006; Varanasi et al. 1993). Another common component of stormwater runoff is copper, which can impair the olfactory system of salmonids and hinder their predator avoidance behavior (Sandahl et al. 2007).

In addition, recent research has found 6PPD-quinone, a contaminant found in runoff from roadways, to be a major contributor to pre-spawning mortality in coho salmon (Tian et al. 2021). The effects of this contaminant on ESA-listed Chinook salmon, steelhead, and bull trout have not been studied in depth. The concentration at which 6PPD-quinone may have toxic effects on those species is unknown, as is the effectiveness of stormwater treatment facilities in reducing its concentration in stormwater runoff. However, the use of bioretention facilities, such as the CSTW/DP facilities proposed for this project, has been found to prevent the acute lethal effects of stormwater on salmonids (Spromberg et al. 2015). Other recent studies have found compost-amended bioswales to be effective at removing a variety of contaminants from runoff, including PAHs and heavy metals (Fardel et al. 2020; McIntyre et al. 2015). Similar to compost-amended bioswales, the CSTW/DP facilities proposed for this project include large amounts of organic matter that can bind or otherwise remove contaminants from the stormwater. As such, CSTW/DP facilities are likely to have a similar degree of effectiveness.

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

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

The following subsections evaluate potential project-related changes in contaminant levels in each of the four receiving waters (East Fork Hylebos Creek Tributary 0016A, East Fork Hylebos Creek Tributary 0016B, West Fork Hylebos Creek Tributary 0014C, and Mill Creek). As discussed in Section 2.2, under current conditions, ESA-listed fish are neither known nor expected to be present within 1 mile of any discharge points from project SWM facilities, and no critical habitat is present in any of those streams. The potential for ESA-listed species and critical habitat farther downstream to be exposed to elevated contaminant levels is addressed in the subsection that follows discussions of impacts on the four streams.

East Fork Hylebos Creek Tributary 0016A

The total area from which runoff will be directed to treatment facilities will increase by an amount that exceeds the increase in the area of PGIS in this watershed (Table 1-2). Water from all 15 TDAs in this basin will receive treatment and flow control. In seven TDAs, treated water from SWM facilities will discharge to vegetated areas upslope of wetlands before entering the stream channel. The other eight TDAs will enter pipes that discharge to the stream channel. Overall, treatment and overland flow are expected to reduce the loading of contaminants in stormwater that is discharged from the project site to East Hylebos Creek Tributary 0016A, compared to current conditions.

The project will add 13.11 acres of PGIS in the East Fork Hylebos Creek Tributary 0016A watershed, and the area directed to treatment facilities will increase by 13.58 acres (Table 1-2). SWM facilities in TDAs 1, 7, 8, 9 SB, 13B, 18, and 19 will discharge to upland areas. The treated area in these TDAs amounts to more than half of the total area receiving treatment in this watershed. Infiltration and adsorption during overland flow and within wetlands will further reduce contaminant levels in water from TDAs before it enters streams that connect to fish-bearing waters. Facilities in the remaining TDAs will discharge treated water directly to East Fork Hylebos Creek Tributary 0016A. Any residual contaminants in all treated stormwater that enters East Fork Hylebos Creek Tributary 0016A will undergo substantial mixing, dilution, infiltration, and adsorption in the approximately 4.4 miles of stream channel between the project area and waters where ESA-listed fish are known or expected to be present.

East Fork Hylebos Creek Tributary 0016B

The total area from which runoff will be directed to treatment facilities will increase by an amount that exceeds the increase in the area of PGIS in this watershed (Table 1-2). In three of the six TDAs in this watershed, the amounts of impervious surfaces created and replaced by the project are below regulatory thresholds for water quality treatment and flow control requirements; no new SWM facilities are proposed in those TDAs. The project will reduce the area of PGIS in those three TDAs by a combined total of 0.11 acre. CSTW/DP facilities built for the project will provide treatment and flow control in the other three TDAs.

Water discharged from all new and existing SWM facilities in this watershed will flow overland through various combinations of forested upland, small tributaries/ditches, and wetlands before reaching North Lake. Any residual contaminants that enter the lake will undergo substantial mixing, dilution, infiltration, and adsorption in the lake before entering East Hylebos Creek Tributary 0016B. Additional mixing, dilution, infiltration, and adsorption will occur in the approximately 2.7 miles of stream channel between North Lake and waters where ESA-listed fish are known or expected to be present.

Based on the above, project-related increases in the area of PGIS in the East Hylebos Creek Tributary 0016B watershed will have a negligible potential to increase contaminant levels in waters where ESA-listed fish are known or expected to be present.

West Fork Hylebos Creek Tributary 0014C

The total area from which runoff will be directed to treatment facilities will increase by an amount that is slightly less than the increase in the area of PGIS in this watershed (Table 1-2). However, water that leaves the project area will pass through several additional regional SWM facilities before entering any streams where ESA-listed fish are known or expected to be present. Treated water discharged from existing and new SWM facilities in this watershed will receive additional treatment, detention, and possibly infiltration as it passes through these facilities downstream of the project area.

Mill Creek

Water that escapes the proposed CSTW/DP flow control facility in TDA 6 will flow through a conveyance system that includes approximately 800 feet of vegetated ditches before reaching Mill Creek approximately 1 mile upstream of a total barrier to fish passage. As water flows through the ditch and the stream, contaminant levels will be reduced through infiltration and adsorption to organic material. Water will be further diluted immediately upon entering the Green River and again at the Duwamish Waterway.

Potential for ESA-Listed Fish to be Exposed to Contaminants

In both the Hylebos Creek basin and the Green-Duwamish River basin, the potential for ESA-listed fish to be exposed to harmful levels of contaminants in stormwater runoff will be minimized through the provision of enhanced treatment. In many TDAs, contaminant levels will be further reduced during flow overland and/or through wetlands or other large waterbodies. Any residual contaminants in runoff from project-related PGIS will be diluted to levels too low to detectably degrade water quality almost immediately upon entering the Hylebos Waterway and the Duwamish Waterway.

The following are evaluations of the exposure potential for the various life stages of ESA-listed fish that may be present in streams in the Hylebos Creek watershed.

- Bull trout are not expected to spawn in the Hylebos Creek system. Exposure to runoff from project-related PGIS would occur only if individual bull adults or subadults from other systems were to venture into Hylebos Creek. Based on the dearth of observations of bull trout in the Hylebos Creek system, any such visits would be rare. The potential for such a visit to correspond with a storm event that discharges large amounts of contaminants to the stream is discountable. In addition, the impacts of any such exposure would likely be insignificant because the visit would be brief and transitory.
- Adult Chinook salmon may be present in the lower watershed in accessible streams from August through December. Accessible stream reaches are more than 2 miles downstream from the discharge points of proposed stormwater treatment facilities. Spawning has been documented in West Fork Hylebos Creek approximately 2.4 miles downstream from the discharge point of the nearest TDA.
- Chinook juveniles may spend up to a year in freshwater habitats of the Hylebos Creek watershed.
- Adult steelhead may be present in the lower watershed in accessible stream reaches from January through June, with the highest probability of presence occurring during the peak migration period (April and May). Accessible stream reaches are more than 2 miles downstream from the discharge points of proposed stormwater treatment facilities. Steelhead may spawn in the Hylebos Creek watershed, albeit in low numbers and probably not every year. Stream reaches most likely to provide spawning habitat are in West Fork Hylebos Creek approximately 2.4 miles downstream from the discharge point of the nearest TDA.
- Juvenile steelhead could be present at any time of year, albeit in low numbers and with low probability. Juvenile steelhead are most likely to rear in lower reaches of the Hylebos Creek watershed.
- In the future, when access is restored to the tributaries near the project area, they are unlikely to provide suitable spawning habitat for bull trout, Chinook salmon, or steelhead due to unsuitable habitat conditions, such as intermittent flows, a high proportion of fine sediments, and lack of sinuosity.

The following are evaluations of the exposure potential for the various life stages of ESA-listed fish that may be present in the Mill Creek and Green-Duwamish watershed.

- No segments of Mill Creek are within 1,000 feet of the project limits. Multiple downstream barriers to fish passage prevent ESA-listed fish from entering reaches of Mill Creek within approximately 1 mile of the discharge point of TDA 6.
- Anadromous bull trout migrate into the Green River in fall or early winter, and overwintering subadults remain in freshwater habitats until late winter and spring. Bull trout may enter Mill Creek; this is unlikely, however, due to unsuitable habitat conditions and the low population of bull trout in Green River. For these reasons, the potential for bull trout in Mill Creek or the Green River to be exposed to residual contaminants in stormwater runoff is discountable.
- Chinook salmon are present within the Green River and the lower reaches of Mill Creek. Adult Chinook salmon migrate up the Green River from late June to mid-November. Juveniles migrate seaward to estuaries from January through April, and fingerlings migrate from May through July. A small proportion are stream-type juveniles that overwinter in the Green River watershed before migrating seaward. Due to the long residency in freshwater, stream-type Chinook salmon are at higher risk of exposure to project-related stormwater effluent. The potential for exposure to elevated contaminant levels will be reduce reduced through infiltration and adsorption to organic material as water flows through 800 feet of vegetated ditches and 1 mile of Mill Creek upstream of reaches accessible to Chinook salmon. Any residual contaminants will immediately be diluted further upon entering the Green River.
- Winter-run steelhead are present in the Green River and in the lower 1.2 miles of Mill Creek. Winter-run steelhead adults will migrate upstream from November through May; spawning generally occurs from early March through mid-June. Juvenile steelhead tend to reside in freshwater for 2 years or more before migrating to marine habitats during April and May. Due to their long residence in freshwater, juvenile steelhead are at higher risk of exposure. The potential for exposure to elevated contaminant levels will be reduce reduced through infiltration and adsorption to organic material as water flows through 800 feet of vegetated ditches and 1 mile of Mill Creek upstream of reaches accessible to steelhead. Any residual contaminants will immediately be diluted further upon entering the Green River.

4.2.2 Changes in Land Use

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

Question 1: Will the project create a new facility (e.g., new road, new interchange, etc.)? (If yes, continue to Question 3.)

Response: Yes. The proposed project will create a new roadway (S 324th Street), as well as a new interchanges between I-5 and S 320th Street and I-5 and S 324th Street.

Question 3: Based on these responses, the delayed consequences analysis guidelines require responses to the five questions (a through e) below.

Analysts reviewed relevant documents, including the Federal Way Comprehensive Plan (City of Federal Way 2015) and the Access Revision Report (City of Federal Way 2022), and they consulted with staff at the City of Federal Way about anticipated development projects in the action area.

a) Is there a building moratorium in place that is contingent on the proposed road improvements?
Response: No.

> City of Federal Way Planning Department staff consulted for this analysis did not identify any proposed or permitted developments dependent on the project as a requirement for development, and staff confirmed that the City does not have a moratorium in place (Perez, pers. comm. 2022).

b) Are there any land use changes tied by permit condition to the proposed project?
Response: No.

> City of Federal Way Planning Department staff consulted for this analysis did not identify any developments tied to the project by permit condition (Perez, pers. comm. 2022).

c) Do the project's National Environmental Policy Act (NEPA) documents identify other actions or land use changes caused by or resulting from the project that are reasonably certain to occur?
Response: No.

> This project is documented as a NEPA Categorical Exclusion. The documentation does not identify any actions or land use changes that are reasonably certain to occur and that would be caused by or result from the project.

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

> There are no development plans with differing land use scenarios based on whether the Federal Way City Center Access project occurs (Perez, pers. comm. 2022).

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

> The project is expected to result in increased development of undeveloped and underdeveloped parcels in Federal Way and unincorporated King County east of I-5. Parcels directly abutting the properties north of S 320th Street in Federal Way's jurisdiction are currently zoned for commercial, office park, and dense residential uses. Parcels in unincorporated King County north of S 320th Street at the intersection of Military Road are zoned for dense residential and neighborhood business uses. Other undeveloped or underdeveloped parcels in unincorporated King County east of I-5 are zoned mostly for medium-density residential uses (minimum of four dwelling units per acre). The City of Federal Way's and King County's comprehensive plans identify this area as a future annexation area with no plans to change the current zoning or land use classifications. Many of the parcels between S 312th Street and S 320th Street are

> undeveloped, with some limitations due to critical areas such as streams, wetlands, and geologic hazards. It is possible that reduction of congestion along the S 320th Street corridor could render currently undeveloped or underdeveloped parcels east of I-5 more attractive to development, particularly where existing zoning supports commercial/business and dense residential uses.

Based on the above responses, the project has the potential to contribute to the conversion of currently undeveloped or underdeveloped parcels in the action area to a more developed condition. The potential impacts of such development projects would include (1) disturbance of sensitive wildlife species due to construction-related noise and (2) impacts to water quality and hydrology due to increased impervious surface area. Based on the lack of suitable habitat in the action area, future development projects would have no potential to disturb ESA-listed terrestrial wildlife species. In addition, any such projects would not be expected to result in substantial increases in runoff from PGIS associated with new development, for several reasons. First, any future development projects in and near the action area will be subject to independent environmental review and permitting by various tribal, federal, state, and local agencies, limiting the potential for adverse effects on ESA-listed species. For example, regulations at both the state and the local level require the inclusion of stormwater treatment facilities in most projects that create new or expand existing impervious surface area (e.g., Washington Administrative Code 173-201A, Water Quality Standards for Surface Waters of the State of Washington). Those regulations require that stormwater be treated or detained before it is released to local streams to minimize detrimental effects on aquatic species and their habitats. In addition, point source stormwater discharges to surface waters from construction sites of 1 acre or larger are required to obtain a National Pollutant Discharge Elimination System permit from Ecology. Compliance with these and other requirements will minimize the potential for adverse effects on ESA-listed species and habitat from future development projects.

Based on the above, it is possible that completion of the project could contribute to delayed consequences related to increased pollutant loadings in runoff from future development projects. The significance of these effects will be minimized, however, through implementation of measures aimed at minimizing adverse effects on fish and wildlife species and habitat.

4.2.3 Changes in Prey Species Abundance

Chinook salmon (a primary prey species for SRKW) and coho salmon (a primary prey species for bull trout) could be adversely affected by residual contaminants in stormwater that is discharged from treatment facilities. As discussed above, the potential for adverse effects will be minimal, for the following reasons:

- The project will reduce the amount of untreated PGIS in the action area.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Stream reaches that will receive discharge from stormwater facilities are currently inaccessible to Chinook and coho salmon.
- If all public and private crossing structures that currently impede fish access are removed, the small, fine-substrate-dominated, headwater tributaries in the project area are not expected to provide suitable spawning habitat for Chinook salmon, and they are far enough upstream from suitable spawning areas to be unlikely to provide rearing habitat for Chinook salmon juveniles.

- Many of the new facilities will discharge to upland areas instead of directly to surface waters.
- Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where critical habitat has been designated, further reducing contaminant levels in treated water that leaves the facilities.

The potential for measurable impacts on the Chinook salmon and coho salmon populations in the Green-Duwamish River basin is negligible, given the minute amount of project-related PGIS in that basin (less than 5,000 square feet), combined with the factors listed above. As noted earlier, before entering Mill Creek, runoff from TDA 6 will be released into the existing stormwater conveyance system that includes approximately 800 feet of ditches containing grasses, herbaceous plants, and shrubs. Contaminant levels in that runoff will be reduced through incidental infiltration and adsorption to organic material in the ditches and in the approximately 1 mile of Mill Creek upstream of total barriers to fish passage. Similar processes will occur in the Hylebos Creek drainage system, although the area of project-related PGIS is substantially greater. However, even if residual contaminants in stormwater were to measurably reduce the number of Chinook or coho salmon in the Hylebos Creek system, that number represents a minute proportion of the overall populations of these species in Puget Sound. Any such effects would not translate into population-level effects that would measurably reduce the availability of prey species for SRKWs or bull trout. Based on the above, the potential for adverse impacts on the availability of food resources for SRKWs or bull trout is discountable, and the outcome of any such impacts would be insignificant.

If water is present in stream channels where ground-disturbing work occurs, in-water work will have the potential to displace prey species for both Chinook salmon and steelhead. The effects of any such displacement would be localized and temporary, and prey species would be expected to return following construction. Moreover, the stream reaches where in-water work will take place are inaccessible to Chinook salmon and steelhead. Given the availability of prey in adjacent habitats, the proposed action is anticipated to have an insignificant effect on the availability of prey for Chinook salmon and steelhead.

4.2.4 Riparian Habitat Impacts

The fish passage barrier removal elements of the project will entail some disturbance of vegetated areas that currently support riparian functions in the headwater reaches of East Fork Hylebos Creek Tributary 0016A. In much of this area, the stream is contained in culverts or lacks a defined channel as it flows through the bog-wetland complex (Wetland W5) south of S 320th Street. Under current conditions, nearly all of the riparian functions for East Fork Hylebos Creek Tributary 0016A in the project area are provided by vegetation in that complex. Impacts on the bog-wetland complex will be avoided.

Project construction will likely require clearing of some areas of forested vegetation on the fill slope of the I-5 off-ramp adjacent to Wetland W5. If all downstream barriers are eventually corrected, and if anadromous salmonids venture into Wetland W5, the loss of neighboring forested habitat may degrade riparian functions such as the provision of shade and large woody material. The amount of area affected cannot be quantified at the current, early stage of project design. However, approximately 1,000 linear feet of the western boundary of Wetland W5 is bordered by forested areas on the off-ramp fill slope that could be cleared for project construction. Any impacts to wetland and/or stream buffer habitat would be mitigated in accordance with applicable critical areas regulations. For example, 100-ft wide buffers are applied to fish-bearing streams (Type F) in Federal Way (FWRC 19.145.270).

In addition to the impacts to forested areas along Wetland W5, construction of the new stream channel south of S 320th Street (near the outlet of the structure that will replace culverts 995300 and 995299) will require the temporary clearing of some areas that currently support forested habitat. Under current conditions, there are no surface-flowing segments of East Fork Hylebos Creek Tributary 0016A within 200 feet of the forested areas that will be cleared for stream channel creation. Similar to the scenario described above, if all downstream barriers are corrected, and if anadromous salmonids pass through Wetland W5 and into the newly constructed channel south of S 320th Street, the riparian habitat surrounding that channel may not provide the full suite of riparian functions. The degree of riparian function will depend on (1) the extent to which trees and other woody vegetation can be used for the restoration of the disturbed area and (2) the duration of the time lag between stream channel creation and anadromous fish entering the new channel.

Any temporary reductions in riparian functions will be offset by the beneficial effect of daylighting the stream, which will allow increased interaction between the stream and associated riparian vegetation. In addition, access by ESA-listed fish to reaches potential affected by riparian vegetation clearing is currently precluded by the presence of numerous total and partial barriers to fish passage downstream of the affected area. For these reasons, the impacts of riparian vegetation on ESA-listed species or critical habitat are expected to be insignificant and (in stream reaches forested habitat may regrow before fish have access) discountable.

4.2.5 Stream Habitat Enhancement

The culvert replacements described in Section 1.3.2 will facilitate fish access to headwater habitats in East Fork Hylebos Creek Tributary 0016A upstream of the project area. According to the WDFW fish passage site report for culvert 995300, removal of those barriers has the potential to facilitate access to approximately 2,670 linear feet of stream channel, including approximately 1,230 square feet of potential spawning habitat and approximately 49,050 square feet of potential rearing habitat. Access to this habitat will be possible only after multiple downstream barriers to fish passage are removed, however.

The project will replace approximately 2,473 feet of culverted stream and approximately 212 feet of existing open channel with approximately 1,035 feet of fish-passable culverts and approximately 1,164 feet of new daylighted channel. By daylighting almost 1,000 linear feet of stream channel, the project will allow increased interaction between the stream and associated riparian vegetation, restoring natural processes such as organic input and flow attenuation. Even if access to the reaches in and upstream of the project limits is not fully restored, the benefits of these restoration activities will likely translate into improvements in ecological functions in downstream reaches.

4.3 Effects on the Physical and Biological Features of Critical Habitat

The project includes no work in or near any waters that have been designated as critical habitat for any ESA-listed species. As such, the project will have no direct effects on the physical or biological components of critical habitat for ESA-listed fish. Analyses in this section address the potential for residual contaminants in stormwater runoff to degrade water quality in waters where critical habitat has been designated for ESA-listed fish.

4.3.1 PBFs for Bull Trout

As discussed in Section 2.3.1, PBFs potentially present in the action area are numbers 2, 3, 4, 5, 8, and 9. The project will not affect riparian habitat or physical in-stream habitat in or near any waters where

critical habitat has been designated for bull trout, and it will not introduce any nonnative predatory, inbreeding, or competitive species into the action area. As such, the only PBFs potentially affected by the project are numbers 2 (migratory habitats), 3 (food base), and 8 (water quality). Potential project-related effects on each of those PBFs are discussed below.

PBF 2 (migratory habitats)

Designated critical habitat in the Green and Duwamish Rivers provides migratory habitat for bull trout that may forage or overwinter in the Green-Duwamish basin. Based on the observation of a single subadult bull trout or Dolly Varden in West Fork Hylebos Creek, the Hylebos Waterway may also serve as a migratory corridor to foraging or overwintering habitat in the Hylebos Creek watershed. Contaminants in runoff from PGIS may degrade water quality for bull trout that pass through these watercourses.

PBF 3 (food base)

Contaminants in runoff from PGIS may degrade water quality for prey species in the Hylebos River, the Duwamish River, and the Green River. If water quality has an appreciable impact on populations of these species, the availability of prey for bull trout could decrease. However, populations of prey species in the action area represent a small proportion of the food sources for bull trout in the region. Neither Hylebos Creek nor the Green River supports spawning by bull trout, so foraging occurs on an opportunistic basis. Given the low numbers of bull trout in the Green River basin, combined with the rarity of bull trout presence in the Hylebos Creek basin, the potential for any decreases in prey species populations (should they occur) to affect the ability of critical habitat to support bull trout is negligible.

PBF 8 (water quality and quantity)

Contaminants in runoff from PGIS may degrade water quality in Hylebos Creek, the Duwamish River, and the Green River. Given the low numbers of bull trout in the Green-Duwamish basin, combined with the rarity of bull trout in the Hylebos Creek basin, the potential for any such impacts (should they occur) to affect the ability of critical habitat to support bull trout is negligible.

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

PBFs essential to the conservation of the Puget Sound ESU Chinook salmon and Puget Sound DPS steelhead in freshwater and estuarine habitats are present in the action area, as identified in Section 2.3.2 and Section 2.3.3. Potential project-related effects on each of those PBFs are discussed below. The project will not affect riparian habitat or physical in-stream habitat in or near any waters where critical habitat has been designated for either of these species. As such, the project will have no direct effects on the physical or biological components of freshwater habitats; the discussions below address potential impacts on water quality.

PBF 1 (freshwater spawning sites)

Designated critical habitat in the lower reaches of West Fork Hylebos Creek provides freshwater spawning sites for Chinook salmon and (infrequently) steelhead. Contaminants in runoff from PGIS may degrade water quality for spawning adults and for incubating eggs and fry of both species.

PBF 2 (freshwater rearing sites)

Designated critical habitat in Hylebos Creek, the lower reaches of West Fork Hylebos Creek and East Fork Hylebos Creek, the lower reaches of Mill Creek, and the lower Green River provides potential freshwater rearing sites for Chinook salmon. Designated critical habitat in the lower reaches of West Fork Hylebos Creek and East Fork Hylebos Creek, Mill Creek, and the lower Green River provides potential freshwater rearing sites for steelhead. Contaminants in runoff from PGIS may degrade water quality for rearing juveniles of both species in these streams.

PBF 3 (freshwater migration corridors)

Designated critical habitat in Hylebos Creek, the lower reaches of West Fork Hylebos Creek and East Fork Hylebos Creek, the lower reaches of Mill Creek, and the lower Green River provides freshwater migration corridors for Chinook salmon. Designated critical habitat in the lower reaches of West Fork Hylebos Creek and East Fork Hylebos Creek, Mill Creek, and the lower Green River provides freshwater migration corridors for steelhead. Contaminants in runoff from PGIS may degrade water quality for adults that migrate through these areas to spawning areas upstream, as well as for outmigrating juveniles.

PBF 4 (estuarine habitats)

The project will have no direct effects on physical or biological components of estuarine habitats that have been designated as critical habitat for Chinook salmon and/or steelhead. As discussed in Section 4.1.1, any residual contaminants in runoff from project-related impervious surfaces will be diluted to levels too low to detectably degrade water quality almost immediately upon entering estuarine or marine waters.

4.4 Effects of Interrelated and Interdependent Actions

Traffic detours and compensatory mitigation activities required for compliance with local critical areas rules are considered interrelated and interdependent actions for this project. Road and lane closures will result in traffic detours while maintaining access to existing businesses and residences. These closures and detours will require approval by the local jurisdiction or WSDOT, as well as coordination with local residents and businesses. A Maintenance of Traffic Plan will be prepared to address road closures, detours, access, and other traffic modifications needed for construction activities. None of the detours described in Section 1.3 will result in substantial increases in traffic volumes on the affected roads. Noise impacts will not exceed those expected under normal conditions. As such, the detours are not expected to increase the action area or result in environmental impacts that have not already been addressed in this analysis.

Compensatory mitigation actions will not contribute to the noise impacts above the planned project impacts, nor will they expand or degrade the aquatic action area. Based on the lack of suitable habitat in the action area, combined with barriers to access, mitigation activities are unlikely to result in effects on listed species. If those conditions change, or if compensatory mitigation for project-related impacts is identified outside of the project action area (described in Section 1.5), the potential effects of mitigation activities would be reanalyzed to determine if reinitiation of this consultation is necessary. Therefore, interrelated and interdependent actions will not contribute to project impacts on listed species.

4.5 Cumulative Impacts

Consistent with the requirements specified in 50 CFR 402.02, the analysis of cumulative effects is based on future actions that are (1) reasonably certain to occur in the action area, and (2) not expected to include a federal nexus that would trigger ESA Section 7 compliance requirements. Any future projects that include work waterward of the OHWL will require a permit from the USACE, and thereby have a federal nexus. For example, the beneficial effect of additional fish barrier corrections in the watershed are not analyzed in this section.

In the action area, the only reasonably foreseeable future actions that have no federal nexus and that could contribute to increased pollutant loading in waters that support ESA-listed fish consist of urban development projects on private lands. No planned projects with that potential have been identified in the action area.

Additionally, future projects will have to comply with state and local regulations that protect wetlands, streams, and other critical areas, and that govern the management of stormwater. Such reviews will trigger the implementation of mitigation measures and practices aimed at avoiding or minimizing the potential for adverse effects on wetlands, aquatic species and habitat, and other natural resources such as fish and wildlife habitat conservation areas. Compliance with those requirements will ensure that any future development projects in the action area will be unlikely to result in adverse impacts on water quality in waterbodies that support ESA-listed fish.

Based on these considerations, the potential project-related effects on water quality are addressed in the direct and indirect effects sections, but are not expected to contribute to adverse cumulative effects on ESA-listed species when considered in conjunction with other reasonably foreseeable future projects within the action area.

5. Conclusions and Effect Determinations

The following subsections present effect determinations and rationales for the ESA-listed species and designated critical habitat not addressed in previous consultations. Table 5-1 provides a summary of effect determinations.

Table 5-1. Summary of Effect Determinations for the Federal Way City Center Access Project

Species or Critical Habitat	Effect Determination
Bull Trout	Not Likely to Adversely Affect
Bull Trout Critical Habitat	Not Likely to Adversely Affect
Puget Sound Chinook Salmon	Likely to Adversely Affect
Puget Sound Chinook Salmon Critical Habitat	Likely to Adversely Affect
Puget Sound Steelhead	Likely to Adversely Affect
Puget Sound Steelhead Critical Habitat	Likely to Adversely Affect
Southern Resident Killer Whale	Not Likely to Adversely Affect
Southern Resident Killer Whale Critical Habitat	Not Likely to Adversely Affect

5.1 Bull Trout

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

- Adult and subadult bull trout may forage, migrate, and overwinter in waters downstream of the project area in the Green River basin, and a subadult bull trout or Dolly Varden was observed in West Fork Hylebos Creek.
- The project will increase the area of PGIS in areas that drain to Mill Creek (a tributary to the Green River) and in the headwaters of tributaries to Hylebos Creek.
- The project will remove crossing structures on East Fork Hylebos Creek Tributary 0016A that impede fish passage, improving access to upstream habitat.

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

- Stream reaches that will receive discharge from stormwater facilities are inaccessible to bull trout.
- If all public and private crossing structures that currently impede fish access are removed, the small, fine-substrate-dominated, headwater tributaries in the project area are not expected to provide suitable habitat for bull trout.
- The project will reduce the amount of untreated PGIS in the action area.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Many of the new facilities will discharge to upland areas instead of directly to surface waters.

- Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where this species might be present, further reducing contaminant levels in treated water that leaves the facilities.
- Bull trout are not expected to spawn in the Hylebos Creek system or in the Green River basin downstream of the Mill Creek confluence due to the lack of suitable habitat. Exposure to runoff from project-related PGIS would occur only if individual bull trout adults or subadults from other systems were to venture into these waters. The potential for such a visit to correspond with a storm event that discharges large amounts of contaminants to the stream is discountable. In addition, the impacts of any such exposure would likely be insignificant because the visit would be brief and transitory.
- The potential for delivery of sediment or contaminants during culvert replacement and stream channel construction in East Fork Hylebos Creek Tributary 0016A will be minimized through implementation of the measures specified in Section 1.4.

5.2 Bull Trout Critical Habitat

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

- Designated critical habitat for bull trout is present in the action area.
- The project will increase the area of PGIS in areas that ultimately drain to waters designated as critical habitat.
- Chemical constituents of stormwater runoff from PGIS can lead to mortality in coho salmon, a prey resource for bull trout.

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

- The project will reduce the amount of untreated PGIS in the action area.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Many of the new facilities will discharge to upland areas instead of directly to surface waters.
- Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where critical habitat has been designated, further reducing contaminant levels in treated water that leaves the facilities.
- The small surface area of PGIS (0.06 acres from TDA 6), and the distance downstream to critical habitat in the Green River, will result in a pollutant load that is unlikely to have a population-level effect on coho salmon; therefore, the effect on prey resources for bull trout will be discountable.

5.3 Puget Sound Chinook Salmon

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

- Chinook salmon are present in the Hylebos Creek watershed and the Green River basin.
- Chinook salmon spawn in West Fork Hylebos Creek approximately 2.4 miles downstream of the discharge point from the nearest TDA.
- The project will increase the area of PGIS in the headwaters of tributaries to Hylebos Creek and in areas that drain to Mill Creek (a tributary to the Green River).
- The project will remove crossing structures on East Fork Hylebos Creek Tributary 0016A that impede fish passage, improving access to upstream habitat.

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

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

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

- Stream reaches that will receive discharge from stormwater facilities are inaccessible to Chinook salmon and any work below the OHWL would occur during the in-water work window when salmon are least likely to occur.
- If all public and private crossing structures that currently impede fish access are removed, the small, fine-substrate-dominated, headwater tributaries in the project area are not expected to provide suitable spawning habitat for Chinook salmon, and they are far enough upstream from suitable spawning areas to be unlikely to provide rearing habitat for juveniles.
- The project will reduce the amount of untreated PGIS in the action area.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Many of the new facilities will discharge to upland areas instead of directly to surface waters.
- Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where critical habitat has been designated, further reducing contaminant levels in treated water that leaves the facilities.
- The potential for delivery of sediment or contaminants during construction in East Fork Hylebos Creek Tributary 0016A will be minimized through implementation of the measures specified in Section 1.4.

5.4 Puget Sound Chinook Salmon Critical Habitat

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

- Designated critical habitat for Puget Sound Chinook salmon is present in the action area.
- The project will increase the area of PGIS in areas that ultimately drain to waters designated as critical habitat.

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

- Contaminants in runoff from PGIS may degrade water quality in waters that are designated as critical habitat and that support the spawning, rearing, and migration PBFs of critical habitat for Puget Sound Chinook salmon.

5.5 Puget Sound Steelhead

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

- Steelhead are present in the Hylebos Creek watershed and the Green River basin.
- Steelhead occasionally spawn in West Fork Hylebos Creek approximately 2.4 miles downstream of the discharge point from the nearest TDA.
- The project will increase the area of PGIS in the headwaters of tributaries to Hylebos Creek and in areas that drain to Mill Creek (a tributary to the Green River).
- The project will remove crossing structures on East Fork Hylebos Creek Tributary 0016A that impede fish passage, improving access to upstream habitat.

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

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

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

- Stream reaches that will receive discharge from stormwater facilities are inaccessible to steelhead.
- If all public and private crossing structures that currently impede fish access are removed, the small, fine-substrate-dominated, headwater tributaries in the project area are not expected to provide suitable spawning habitat for steelhead, and they are far enough upstream from suitable spawning areas to be unlikely to provide rearing habitat for juveniles.
- The project will reduce the amount of untreated PGIS in the action area.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Many of the new facilities will discharge to upland areas instead of directly to surface waters.

- Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where critical habitat has been designated, further reducing contaminant levels in treated water that leaves the facilities.
- The potential for delivery of sediment or contaminants during construction in East Fork Hylebos Creek Tributary 0016A will be minimized through implementation of the measures specified in Section 1.4.

5.6 Puget Sound Steelhead Critical Habitat

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

- Designated critical habitat for Puget Sound steelhead is present in the action area.
- The project will increase the area of PGIS in areas that ultimately drain to waters designated as critical habitat.

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

- Contaminants in runoff from PGIS may degrade water quality in waters that are designated as critical habitat and that support the spawning, rearing, and migration PBFs of critical habitat for Puget Sound steelhead.

5.7 Southern Resident Killer Whale

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

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

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

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

5.8 Southern Resident Killer Whale Critical Habitat

The project **may affect** critical habitat for southern resident killer whale for the following reasons:

- Availability of sufficient prey resources is an important PBF of critical habitat for this species.
- The project will increase the amount of PGIS in an area that drains to waters that support Chinook salmon—the preferred prey of southern resident killer whales.
- Project-generated pollutants may further degrade water quality, leading to adverse effects on a small number of individual Chinook salmon.

The project **is not likely to adversely affect** critical habitat for southern resident killer whale for the following reason:

- The project will not appreciably reduce the survival and recovery of Chinook salmon and will not, therefore, result in any population-scale reductions in the availability of this prey resource for southern resident killer whales.

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APPENDIX A

ESSENTIAL FISH HABITAT ASSESSMENT

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Essential Fish Habitat Background

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), includes a mandate that NMFS must identify essential fish habitat (EFH) for federally managed commercially harvestable fish, and federal agencies must consult with NMFS on all activities, or proposed activities, authorized, funded, or undertaken by the agency that may adversely affect EFH. The Pacific Fishery Management Council has designated EFH for the Pacific Coast salmon fishery, the Pacific Coast groundfish fishery, and the coastal pelagic species fishery.

The objective of this assessment is to determine whether the proposed action may adversely affect designated EFH in the project action area. This assessment also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects on designated EFH resulting from the proposed action.

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

The Pacific Coast salmon management unit includes Chinook, coho, and pink salmon. All three species are known or expected to use habitats in the action area, as summarized below.

Chinook salmon (see Section 2.2.2 of this BA for additional details):

- Documented spawning in the lower reaches of West Fork Hylebos Creek
- Documented rearing in the Green River and the Duwamish River
- Documented presence in Hylebos Creek and the lower reaches of Mill Creek
- Potential presence (i.e., stream reaches are classified as gradient-accessible) in lower reaches of East Fork Hylebos Creek Tributary 0016A and upper reaches of Mill Creek

Coho salmon:

- Documented spawning in West Fork Hylebos Creek, East Fork Hylebos Creek, and Mill Creek (approximately 1 mile downstream of the point where the ditch that receives water from TDA 6 discharges to the stream)
- Documented rearing in the Duwamish River, the Green River, and the lower reaches of Mill Creek
- Documented presence in Hylebos Creek, the lower reaches of East Fork Hylebos Creek, and the Duwamish Waterway
- Potential presence (i.e., stream reaches are classified as gradient-accessible) in West Fork Hylebos Creek Tributary 0014C, East Fork Hylebos Creek Tributary 0016A, and reaches of Mill Creek extending downstream to the point where spawning has been documented.

Pink salmon:

- Documented presence in Green River and the Duwamish River
- Presumed presence in Hylebos Creek and lower reaches of West Fork Hylebos Creek
- Potential presence (i.e., stream reaches are classified as gradient-accessible) in West Fork Hylebos Creek Tributary 0014C and East Fork Hylebos Creek Tributary 0016A.

In estuarine and marine areas, EFH for all three Pacific Coast salmon fishery species extends from the extreme high tide line in nearshore and tidal submerged environments out to the full extent of the Exclusive Economic Zone offshore. The project action area includes the lower Green and Duwamish River but does not extend into the Duwamish Waterway or the Hylebos Waterway.

Pacific Coast groundfish EFH is generally defined as the aquatic habitat from the mean higher high water line, plus the upriver extent of saltwater intrusion in river mouths seaward (Casillas et al. 1998). In the action area, this includes the Duwamish and lower Green River. Pacific Coast groundfish that may potentially occur within the action area during some life history phase include spiny dogfish, California skate, ratfish, lingcod cabezon, kelp greenling, Pacific cod, Pacific whiting (hake), sablefish, bocaccio, brown rockfish, copper rockfish, quillback rockfish, English sole Pacific sanddab, rex sole, and starry flounder.

The Coastal Pelagic Species Fishery Management Plan describes the habitat requirements of five pelagic species: northern anchovy, Pacific sardine, Pacific (chub) mackerel, jack mackerel, and market squid (PFMC 1998). These four finfish and market squid are treated as a single species complex because of similarities in their life histories and habitat requirements. EFH for coastal pelagic species is generally defined as all marine and estuarine waters from the shoreline offshore above the thermocline. EFH for coastal pelagic species does not occur in the project action area.

Description of the Proposed Action

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

Potential Effects of the Proposed Project

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

Effects on Essential Fish Habitat for Pacific Coast Salmon

If water is present in East Fork Hylebos Creek Tributary 0016A when project construction is underway, ground-disturbing work in and near the stream channel has the potential to introduce sediment to stream reaches in and immediately downstream (i.e., within 100 feet) of the project limits. Such impacts may adversely affect Pacific salmon EFH and its ability to support spawning and rearing life stages of Pacific salmon. Sedimentation may also negatively impact the prey base of benthic invertebrates. However, project impacts are expected to be very minor for the following reasons:

- Construction-related disturbance of sediments will be minimized by adherence to a TESC plan and installation and monitoring of appropriate erosion control BMPs during construction, limiting earthwork to only those areas necessary to complete that phase of construction, stabilization of disturbed soils shortly after work is completed, and adhering to approved in-water work windows. These effects are anticipated to be short in duration and are not expected to persist following construction.
- Reaches of East Fork Hylebos Creek Tributary 0016A in and within 1 mile of the project limits are currently inaccessible to all anadromous salmonids. As such, temporary increases in sedimentation or turbidity have no potential to affect Chinook, coho, or pink salmon. Restoration of access to these stream reaches is not expected to be accomplished for many years, long after temporary, construction-related increases in sedimentation or turbidity have disappeared.

As discussed in Section 4.1.1 of this BA, contaminants in stormwater runoff discharged to streams in and near the project limits may degrade water quality in streams that provide EFH for Pacific salmon. Contaminants in stormwater runoff that enters streams in and near the project limits may persist at levels capable of degrading water quality until it is fully diluted in marine waters. If the contaminants are present at levels that have toxic effects on these species, this will constitute an adverse effect on EFH. Potential adverse effects associated with contaminants in stormwater runoff will be minimized by directing runoff to treatment facilities.

Beneficial effects on Pacific Salmon EFH will be achieved by restoring access to potential stream habitat. The project will replace approximately 2,473 feet of culverted stream and approximately 212 feet of existing open channel with approximately 1,035 feet of fish-passable culverts and approximately 1,164 feet of new daylighted channel. According to the WDFW fish passage database, removal of these barriers has the potential to facilitate access to approximately 4,500 linear feet of stream channel, including approximately 1,230 square feet of potential spawning habitat and approximately 49,050 square feet of potential rearing habitat.

Effects on Essential Fish Habitat for Groundfish

Contaminants in stormwater runoff that enters streams in and near the project limits may persist at levels capable of degrading water quality in the lower Green and Duwamish River. If the contaminants are present at levels that have toxic effects on groundfish species, this will constitute an adverse effect.

Effects on Essential Fish Habitat for Coastal Pelagic Species

EFH for coastal pelagic species does not extend into the action area. Any potential adverse effects on coastal pelagic species' EFH due to degraded water quality from the project area are assumed to be negligible by the time runoff reaches marine and estuarine waters.

Essential Fish Habitat Conservation Measures

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

Conclusions

EFH for Pacific Coast salmon and groundfish is present in the action area. Contaminants in effluent from stormwater facilities that discharge to streams in and near the project limits may pose adverse effects on EFH for these species groups.

Based on the anticipated presence of contaminants in stormwater runoff discharged to receiving waters, combined with the possibility that those contaminants may persist at levels capable of degrading water quality as far downstream as the mouth of Hylebos Creek and the mouth of the Duwamish River, the proposed action **may adversely affect** EFH for Pacific Coast salmon and Pacific Coast groundfish. The project **will not adversely affect** EFH for coastal pelagic species.

Literature Cited

Casillas, E., L. Crockett, Y. deReynier, J. Glock, M. Helvey, B. Meyer, C. Schmitt, M. Yoklavich, A. Bailey, B. Chao, B. Johnson, and T. Pepperell. 1998. Essential Fish Habitat, West Coast Groundfish—Appendix. National Marine Fisheries Service. 778 pp

PFMC (Pacific Fisheries Management Council). 1998. The Coastal Pelagic Species Fishery Management Plan: Amendment 8.

PFMC (Pacific Fisheries Management Council). 1999. Amendment 14 to the Pacific Coast Salmon Plan, Appendix A, Identification and Description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon.

APPENDIX B

PRE-BA MEETING NOTES

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Pre-BA Meeting Form and Meeting Notes

July 15, 2021

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Project Name:
Federal Way City Center Access Project

Anticipated BA Submittal Date: October/November 2021

State Route and Mileposts: I-5, MP 142.3 to 147.3. Also, portions of S 320th Street and S 324th Street in Federal Way.

Construction Timeline:
This project is not yet fully funded, so construction timing has not been determined.

Project Proponent:
City of Federal Way
33325 8th Avenue South
Federal Way, WA 98003

The federal nexus for this project is FHWA authorization.

Contact for requesting changes to this submittal:
Sarah Tchang
TchangS@wsdot.wa.gov

Federal Action Agency: FHWA

Pre-BA Meeting attendees:
Anticipated participants include

Jeff Dreier (WSDOT)	Jenna Anderson
Ryan Boyle (WSDOT)	(Parametrix)
Sarah Tchang (WSDOT)	Steve Krueger
Mike Hall (Parametrix)	(Parametrix)

Project Description:
The project will provide improved multimodal mobility and access for regional and local trips while protecting the interstate system by providing congestion relief along S 320th Street and expanded multimodal facilities across Interstate 5 (I-5). The project will consist of the following project elements, as shown in Figure 1:

- Modification of the S 320th Street interchange by adding braided ramps and access at S 324th Street.
- Construction of a new two-lane bridge over I-5 at S 324th Street, with an extension of S 324th Street from 23rd Avenue S to Weyerhaeuser Way S, and a widened S 324th Street from State Route (SR) 99 to 23rd Avenue S.
- Improvements to S 320th Street west of I-5 to add high-occupancy vehicle (HOV) lanes.
- Nonmotorized improvements along 23rd Avenue S, S 320th Street, and S 324th Street.

Preliminary Design Improvements

1. Interchange at S 324th and modified interchange at 320th with braided ramps. All I-5 on-ramps will be metered.
2. 2-lane bridge along S 324th crossing I-5. Shared-use path on north side with potential future connection to BPA Trail. Sidewalk on south side.
3. Single-lane roundabouts at the ramp terminals with slip lanes in the northwest and southwest quadrants of S 324th/I-5 SB Ramps.
4. Additional SB left-turn lane and additional NB left-turn lane at S 324th/SR 99 to manage westbound queues from new interchange.
5. 5 lanes along S 324th from SR 99 to 23rd S. Shared-use path on north side and sidewalk on south side.
6. 2-lane roundabout at S 324th/23rd S.
7. 4 lanes along S 324th from 23rd S to I-5 SB Ramps.
8. 3 lanes along S 324th from I-5 NB Ramps to Weyerhauser. A shared -use path on the north side and sidewalk on the south side.
9. Single-lane roundabout at S 324th/Weyerhauser.
10. Road widening for HOV lanes to support future BRT from SR 99 to Military. Eastbound HOV will drop into existing right turn lane at Military.
11. Sidewalk on north and south side of S 320th bridge.
12. No improvements to S 320th St/SR 99 and S 320th/Military intersections.
13. Shared use path.

Figure 1. Overview of the Federal Way City Center Access Project

Federal Way's city center is served by S 320th Street and is bounded by S 312th Street on the north, S 324th Street on the south, I-5 on the east, and 11th Place S and 14th Avenue S on the west. The City's Comprehensive Plan identifies development of the City Center to include a mix of uses, such as the Performing Arts and Events Center, a public park, and a mix of high-density residential, commercial, office, educational, and civic uses. Access between I-5 and the land uses surrounding the City Center is primarily via the S 320th Street interchange with direct HOV access at the S 317th Street interchange that serves the Federal Way Transit Center. Sound Transit's Link light rail transit system is being extended to Federal Way, with a station opening in the City Center currently scheduled in 2024. Extension of light rail transit to Tacoma is planned for 2030.

Access Modifications

The project includes a modified interchange at S 320th Street, with braided ramps and new access at S 324th Street. The existing gore points north and south of the S 320th Street interchange will be relocated. All on-ramps from S 320th Street and S 324th Street will be metered and will not include HOV bypasses.

S 324th Street Improvements:

The project includes a new two-lane bridge along S 324th Street, crossing I-5. Both ramp terminals will have single-lane roundabouts with slip lanes in the northwest and southwest quadrants of the S 324th Street/I-5 southbound ramps intersection.

West of the new S 324th Street interchange, S 324th Street will be five lanes from SR 99 to 23rd Avenue S and four lanes from 23rd Avenue S to I-5 southbound ramps. There will be a two-lane roundabout at the S 324th Street/23rd Avenue S intersection. The project also includes intersection improvements at S 324th Street/SR 99 that will help manage westbound queues from the new interchange, including an additional southbound left-turn lane and an additional northbound left-turn lane.

S 324th Street will be extended east of I-5. The new roadway will consist of three lanes from the I-5 northbound ramps to Weyerhaeuser Way S, with a single-lane roundabout or signal at S 324th Street/Weyerhaeuser Way S that will include relocated access to the existing Washington Department of Fish and Wildlife-managed boat ramp on North Lake.

S 320th Street Improvements:

S 320th Street currently includes HOV lanes in both directions between SR 99 and 20th Avenue S. The project will add HOV lanes on S 320th Street in both directions between 20th Avenue S and Military Road to support future bus rapid transit (BRT) along S 320th Street included in the King County Metro long-range plan. Between 20th Avenue S and the I-5 southbound ramps, a general-purpose lane in each direction will be converted to an HOV lane. Crossing I-5 between I-5 southbound ramps and I-5 northbound ramps, the S 320th Street bridge will be widened to include new HOV lanes in both directions and a lengthened left-turn lane for the I-5 southbound on-ramp. Between I-5 and Military Road, S 320th Street will be widened to accommodate the added HOV lanes.

Nonmotorized Improvements:

The project includes nonmotorized improvements on both S 324th Street and S 320th Street. Between SR 99 and Weyerhaeuser Way, there will be a shared-use path on the north side of S 324th Street and a sidewalk on the south side of S 324th Street. There is potential for the shared-use path to connect to the BPA Trail in the future. A shared-use path on the west side of 23rd Avenue S between S 324th Street and S 320th Street is included. The S 320th Street bridge crossing I-5 will have sidewalks on the north and south sides. There will also be sidewalks on the north and south sides between the I-5 northbound ramps and Military Road S.

Project Phasing:

The design and construction of the City Center Access improvements will likely need to be phased due to funding limitations. The following table summarizes the anticipated project phases.

Anticipated Project Phasing

	Local Street Improvements and Connections	Ramp and Interchange Improvements
Phase 1	• Construct new S 324th St between 23rd Ave S and I-5 southbound ramp intersections • Improve S 324th St and SR 99 intersection with added turn lanes	• Construct/revise I-5 southbound off ramps to S 320th St and S 324th St • Construct/revise on ramps from S 320th St and S 324th St to I-5 southbound
Phase 2	• Widen S 324th St between SR 99 and 23rd Ave S • Construct new S 324th St from I-5 southbound ramp intersection to Weyerhaeuser Way, including S 324th St bridge and Weyerhaeuser Way intersection	• Construct I-5 northbound off ramp to S 324th St • Construct portion of I-5 northbound off ramp to S 320th St
Phase 3A	• Replace S 320th St bridge over I-5 • Widen S 320th St from I-5 southbound ramp intersection to Military Rd • Restripe S 320th St to provide BAT lanes from SR 99 to southbound ramp intersection	• Reconstruct S 320th St loop ramp to I-5 northbound • Construct the remaining portion of I-5 northbound off ramp to S 320th St
Phase 3B	• Local improvements associated with this project are substantially complete	• Realign the I-5 northbound on ramp from S 320th St • Construct the I-5 northbound on ramp from S 324th St

Additional Project Elements:

- Cut and fill retaining walls.
    - Cut walls are anticipated to be soil nail walls or soldier pile tieback walls with approximately 1:1 ratio of wall height to nail length.
    - Fill walls are anticipated to be structural earth (SE), also known as mechanically stabilized earth (MSE) walls.
- Fish Passage culvert replacements and stream realignments to cross S 320th St and I-5.
    - Replacement crossing structures are anticipated to be box culverts, which will be sized and configured to prevent them from becoming barriers in the future. The box culverts will be designed using the design criteria from WSDOT's 2019 Hydraulics Manual and WDFW's 2013 Water Crossing Design Guidelines. Based on the recommendations from these two manuals, the evaluations are expected to meet or exceed the requirements for the Stream Simulation Design method, as applicable, at each crossing.
    - Construction methods are unknown at this time. Open-trench or trenchless techniques may be employed. The anticipated culvert depths range from 30 to 55 feet. If open-trench methods are used, then shoring will be required.

- Stormwater management facilities consisting of below-grade vaults and open ponds.
    - Cut or fill retaining walls are anticipated for select open ponds to reduce footprints.
    - Temporary shoring is anticipated for the below-grade vaults to reduce construction footprints.
    - The project is located within the jurisdictional boundaries of the City of Federal Way, King County, and WSDOT. Preliminary engineering for stormwater management facilities is based on the following:
        - City-owned, operated, and maintained facilities: 2016 King County Storm Water Design Manual and 2017 City of Federal Way Addendum
        - County-owned, operated, and maintained facilities: 2016 King County Storm Water Design Manual
        - WSDOT-owned, operated, and maintained facilities: 2019 Highway Runoff Manual
- King County Metro Park and Ride lot modifications, including expanding the lot to the west and north, between 23rd Ave, 324th St, 322nd St, and the developments to the north. Retaining walls will be necessary for the adjacent roads and the parking lot.
- Noise walls will be installed in necessary areas to mitigate noise impacts. Noise walls are anticipated to be concrete panels and range in height from 6 to 18 feet.

Project Action Area

The terrestrial portion of the action area is defined as the areas in which project-related noise will exceed background noise levels. Given the variety of site conditions (ranging from dense forest to heavily developed commercial properties) and anticipated construction activities (which may include impact pile driving in some not-yet-determined areas), the distance over which project-related noise is audible will vary in different areas. Based on WSDOT's noise modeling calculator, the action area is expected extend as far as 4,865 feet from the project footprint in the southeastern portion of the action area (where construction of the new roadway for the eastward extension of S 324th Street through forested areas). Elsewhere, the extent of the action area will be less than 500 feet.

The aquatic potion of the action area includes watercourses that will be affected by water quality impacts (either construction-related impacts or those resulting from changes in the amount of pollution-generating impervious surfaces [PGIS]). New or reconfigured stormwater management facilities will discharge to three headwater tributaries in the Hylebos Creek drainage basin (West Fork Hylebos Creek Tributary 0014C, East Fork Hylebos Creek Tributary 0016A, and a small, unnamed tributary to North Lake, which ultimately discharges to East Fork Hylebos Creek). Based on habitat conditions and the presence of total barriers to fish passage, ESA-listed fish are not expected to be present in any stream reaches within 1 mile of the project footprint, including the discharge points of proposed stormwater facilities.

We acknowledge the emerging research related to urban runoff mortality syndrome (URMS) caused by 6PPD-quinone. Research indicates that adult and juvenile coho salmon are particularly vulnerable to lethal effects of exposure to this chemical. FHWA and WSDOT are closely tracking efforts to gather critical additional information on this topic, such as 6PPD-quinone's fate and transport in the environment, concentration thresholds for acute and sublethal toxicity, and the extent of potential effects on species other than coho salmon. Currently, what is known about 6PPD-quinone is it is a ubiquitous chemical in tires that is introduced to streams via road runoff. Effective treatment occurs from applying bioinfiltration techniques using compost. Not much else is known about BMP efficacy for this pollutant's removal.

To support the analysis of potential effects associated with stormwater runoff, WSDOT's Western Washington Highway Runoff Dilution and Loading Stormwater Model (HI RUN Model) will continue to be used to calculate modeled changes in loadings of dissolved copper and dissolved zinc directed to receiving waters. The modeling results will continue to be used as a proxy for other contaminants of concern, such as 6PPD-quinone, until a more specific approach is negotiated between FHWA, WSDOT, and NMFS.

Listed Species and Designated Critical Habitats in the Action Area:

Species or Critical Habitat	Provisional Effect Determination
Marbled Murrelet	NE
Streaked Horned Lark	NE
Yellow-billed Cuckoo	NE
Bull Trout	NLAA
Bull Trout Critical Habitat	NLAA
Puget Sound Steelhead	NLAA
Puget Sound Steelhead Critical Habitat	NLAA
Puget Sound Chinook Salmon	NLAA
Puget Sound Chinook Salmon Critical Habitat	NLAA

The IPaC list for the project also identifies the gray wolf as an ESA-listed species potentially present in the project area. However, gray wolves were removed from the list of species protected under the ESA on November 3, 2020 (85 Federal Register 69778).

The project will adversely affect essential fish habitat (EFH) for Pacific salmon.

Effect Determination Rationales:

Marbled Murrelet

All project activities with the potential to generate noise or disturb forest habitat will take place within the city limits of Federal Way. No forest stands classified in the Davis Layer as potentially suitable nesting habitat are present within 0.25 mile of the project footprint. Based on reviews of (1) the marbled murrelet habitat model developed for the 20-year review of the Northwest Forest Plan, (2) aerial imagery, and (3) tree heights derived from LIDAR data, biologists determined that forest stands within 328 feet of the project site meet the criteria for potentially suitable nesting habitat[1], necessitating a field review to search for potentially suitable nest platforms.

During a site visit in January 2021, biologists found several trees with potentially suitable nest platforms within 328 feet of the project footprint. However, the likelihood of marbled murrelets nesting in any of these trees is negligible, for the following reasons:

- All forested areas in the action area have been logged multiple times in the past century and a half.
- The project site is immediately adjacent to I-5 and the urban landscape of Federal Way, where high levels of noise and activity likely discourage use by nesting marbled murrelets.
- The nearest sites where potential nesting behavior has been observed are more than 20 miles away.
- Marbled murrelets have been found to demonstrate a fairly high degree of fidelity to forest stands used for nesting. If murrelets historically nested near the project site, any nest trees were removed when the area was cleared at the time of initial settlement by Euro-Americans and on multiple occasions thereafter. Descendants of any murrelets that nested near the project site had to find suitable breeding habitat farther inland, on the western slopes of the Cascades. Birds in those lineages are likely to return to the stands that have more recently been used for nesting. Flying through forested areas near the project site in search of trees with suitable nest platforms would require an excessive expenditure of energy and exposure to predation risk. As such, the probability of any murrelets finding platforms in the project area and selecting them as nest sites is extremely low.

[1] According to the USFWS Western Washington Fish and Wildlife Office, potentially suitable habitat is defined as "Any contiguous coniferous-dominated forested area, greater than five acres, less than or equal to 55 miles from marine waters, with greater than or equal to one platform." A contiguous coniferous-dominated forested areas is defined as a forested area that is dominated by conifers and that is at least 328 feet from any other similar forested area(s), or is otherwise surrounded by non-habitat (i.e., rock, impervious surface, pasture, lake, etc.), and containing trees that are at least one-half the site potential tree height.

Marbled murrelets have been documented in the marine waters of Puget Sound approximately 2.5 miles west of the project footprint. The nearest designated critical habitat is more than 25 miles east of the project footprint.

The project will have **no effect** marbled murrelet because:

- The proposed action occurs within the Federal Way city limits and is also located within busy commercial areas and multiple transportation corridors.
- Marbled murrelets are neither known nor expected to nest in forested habitats in the urbanized corridor along I-5.
- No foraging habitat is present within 2.5 miles of the project area.

Streaked Horned Lark

Streaked horned larks are not known or expected to use habitats in the action area. This species is known to occur in portions of southern Puget Sound, along the Washington coast, and at lower Columbia River islands. Breeding habitat for streaked horned larks in Washington consists of grasslands and sparsely vegetated areas at airports, sandy islands, and coastal spits. No such habitat is present in the action area. The nearest known breeding area is more than 14 miles from the action area.

The project will have ***no effect*** on streaked horned larks for the following reasons:

- Streaked horned larks are not known or expected to use habitats in the action area.
- No potentially suitable nesting habitat is present in the action area.

Yellow-billed Cuckoo

Yellow-billed cuckoos nest almost exclusively in low- to mid-elevation riparian woodlands that cover 50 acres or more within arid to semiarid landscapes. The last confirmed breeding records of yellow-billed cuckoos in Washington are from the 1930s. Currently, the species no longer breeds in western Canada and the northwestern continental United States (Washington, Oregon, and Montana) (79 FR 59992, October 3, 2014). No observations of this species have been documented within 10 miles of the project area. Historical records indicate that breeding habitat for yellow-billed cuckoos in Washington consisted primarily of cottonwood and willow bottoms along the lower Columbia River and in the Puget Sound lowlands.

Dominant vegetation within riparian habitats includes red alder (*Alnus rubra*), with lesser amounts of Oregon ash (*Fraxinus latifolia*), black cottonwood, and Pacific willow (*Salix lasiandra)*. No blocks of forested riparian habitat larger than 10 acres are present in the action area.

The project will have ***no effect*** on yellow-billed cuckoos for the following reasons:

- Yellow-billed cuckoos are not known or expected to use habitats in the action area.
- No suitable nesting habitat (blocks of mature, non-coniferous riparian habitat greater than 50 acres) is present in the action area.

Bull Trout

Currently, Statewide Integrated Fish Distribution (SWIFD) mapping does not indicate the documented, presumed, or modeled distribution of bull trout within the Hylebos Creek drainage basin. Bull trout are strongly associated with snowmelt-dominated streams that maintain cold water temperatures in headwater tributaries year-round. Hylebos Creek is a rainfall-dominated stream that does not provide this type of habitat, and stream temperatures are regularly higher than the temperatures this species requires. Although optimal habitat is not present in the Hylebos Creek basin, a single sub-adult bull trout or Dolly Varden was captured near the S 373rd Street crossing of West Fork Hylebos Creek in August 2018, approximately 3.9 miles downstream of the project footprint. The fish (which was approximately 8 inches long) was released unharmed. No genetic analysis was performed to verify whether the fish was a bull trout or a Dolly Varden. For this assessment we assume it was a bull trout due to the similarity of appearance between the two species.

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

- A subadult bull trout or Dolly Varden was observed in West Fork Hylebos Creek.
- The project will substantially increase the area of PGIS in the headwaters of tributaries to Hylebos Creek.
- The project will remove crossing structures that impede fish passage, improving access to upstream habitat.

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

- The observation of a single fish in West Fork Hylebos Creek in 2018 was anomalous. There are no other records of bull trout in the Hylebos Creek watershed, despite decades of fish monitoring studies. For this reason, the likelihood of bull trout entering the stream system may be considered discountable.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Barriers posed by culverts and high stream temperatures are expected to prevent bull trout from getting within 3 miles of the project footprint. Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where this species might be present. As a result, the concentrations of any pollutants (including 6PPD-quinone) that escape the stormwater treatment facilities will likely be reduced to levels that would have discountable effects on bull trout, if any bull trout were to enter the Hylebos Creek system again.
- Water temperatures and flow regimes in stream reaches that may be rendered accessible by this project are unsuitable for bull trout.

Bull Trout Critical Habitat

Nearshore habitats in Commencement Bay, including the Hylebos Waterway, were included in the designation of critical habitat for bull trout, identified as foraging, migration, and overwintering habitat. Areas of designated critical habitat for bull trout are approximately 7 miles downstream from the project footprint.

The following primary constituent elements (PCEs, also referred to as physical and biological features) of critical habitat in marine nearshore areas are present in the action area, at the mouth of Hylebos Creek:

- Suitable migration habitat (PCE 2)
- Adequate prey base (PCE 3)
- Habitat complexity (PCE 4)
- Cool water temperatures (PCE 5)
- Water quality and quantity (PCE 8)

Based on the distance between the project footprint and the areas of designated critical habitat, the proposed action is not expected to affect PCEs 2, 4, or 5. In addition, as discussed above, the concentrations of pollutants in stormwater runoff will likely be reduced to levels that would have discountable effects on water quality (PCE 8) before water from Hylebos Creek enters the marine nearshore areas that have been designated as critical habitat. Finally, although coho salmon (a prey species for bull trout) are known to be susceptible to lethal effects of exposure to pollutants in stormwater runoff, the Hylebos Creek system is but one of many population sources for this species in the marine nearshore areas that have been designated as critical habitat—and coho salmon are but one of many species that bull trout consume. As such, if the project results in increased amounts of pollutants in the Hylebos Creek system, and if those increases lead to reduced numbers of coho salmon in that system, those reductions would represent a small fraction of the total prey base available to bull trout in areas designated as critical habitat (PCE 3).

For these reasons, the project **may affect** but is **not likely to adversely affect** critical habitat for bull trout.

Puget Sound Steelhead

According to the SWIFD database, the nearest watercourses where steelhead have been documented or could potentially be present are at least 1.9 miles downstream from any discharge points of stormwater facilities that will be built or reconfigured for this project. Numerous fish passage barriers, combined with intermittent flow regimes, likely preclude the movement of steelhead into stream reaches in the project area. Steelhead have been documented in Hylebos Creek and the lower reaches of the East Fork and West Fork, downstream of the barriers. The following table provides an overview of the downstream distances to reaches where steelhead have been documented or where their presence is not precluded by stream channel gradients, as well as the number of fish passage barriers between the project area and reaches where steelhead have been documented.

Downstream Distance or Number of Barriers	West Fork Hylebos Creek Tributary 0014C	East Fork Hylebos Creek Tributary 0016A	North Lake Tributary
Distance to nearest Gradient-Accessible reach	N/A[1]	1.9 miles	3.3 miles
Distance to nearest Documented reach	2.4 miles	2.7 miles	3.7 miles
Number of total barriers	4	3	2
Number of partial barriers	6	13	11
Number of unassessed barriers	4	2	9

[1] The first downstream stream segment identified by SWIFD is classified as having documented presence of steelhead

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

- Steelhead have been documented in the Hylebos Creek system.
- The project will substantially increase the area of PGIS in the headwaters of tributaries to Hylebos Creek.
- The project will remove crossing structures that impede fish passage, improving access to upstream habitat.

The project is **not likely to adversely affect** Puget Sound steelhead for the following reasons:

- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Intermittent flows and barriers to fish passage are expected to prevent steelhead from getting within 2.4 miles of the project footprint in the West Fork Hylebos Creek system, and 2.7 to 3.7 miles in the East Fork Hylebos Creek system. Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where this species might be present. As a result, the concentrations of any pollutants (including 6PPD-quinone) that escape the stormwater treatment facilities will likely be reduced to levels that would have discountable effects on steelhead.

Critical Habitat for Puget Sound Steelhead

The lower reaches of East Fork Hylebos Creek and West Fork Hylebos Creek, approximately 2.5 to 3 miles downstream from the project footprint, were included in the designation of critical habitat for Puget Sound steelhead. Fisheries biologists from the Puyallup Tribe of Indians have observed steelhead spawning in Hylebos Creek. Based on these observations, the following physical and biological features of critical habitat in freshwater habitat are present in the action area:

- Freshwater spawning sites
- Freshwater rearing sites
- Freshwater migration corridors

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

- Designated critical habitat for Puget Sound steelhead is present in the action area.
- The project will substantially increase the area of PGIS in the headwaters of tributaries to Hylebos Creek.

The project is **not likely to adversely affect** critical habitat for Puget Sound steelhead for the following reasons:

- Based on the distance between the project footprint and the areas of designated critical habitat, the proposed action will not affect the availability of freshwater spawning sites, freshwater rearing sites, or freshwater migration corridors.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Stream reaches designated as critical habitat are more than 2 miles downstream of the discharge points from any stormwater facilities that will be built or reconfigured for this project. As discussed above, the concentrations of pollutants in stormwater runoff will likely be reduced to levels that would have discountable effects on water quality before water from the project area enters the designated reaches.

Puget Sound Chinook Salmon

According to the SWIFD database, the nearest watercourses where Chinook salmon have been documented, are presumed present, or could potentially be present are at least 1.9 miles downstream from any discharge points of stormwater facilities that will be built or reconfigured for this project. Numerous fish passage barriers, combined with small stream sizes and intermittent flow regimes, likely preclude the movement of Chinook salmon into stream reaches in the project area. According to the SWIFD database, Chinook salmon have been documented in Hylebos Creek and the lower reaches of West Fork Hylebos Creek (downstream of the barriers), and they are presumed to be present in the lower 700 feet of East Fork Hylebos Creek. Fisheries biologists from the Puyallup Tribe of Indians have documented Chinook salmon in West Fork Hylebos Creek as far upstream as S 356th Street, approximately 1.4 miles upstream of the upstream extent of the documented distribution of Chinook salmon in that stream, as mapped by SWIFD.

The following table provides an overview of the downstream distances to reaches where Chinook have been documented or where their presence is not precluded by stream channel gradients, as well as the number of fish passage barriers between the project area and reaches where Chinook salmon have been documented. The downstream distance to the documented presence of Chinook salmon in West Fork Hylebos Creek Tributary 0014C is based on information provided by the Puyallup Tribe of Indians.

Downstream Distance or Number of Barriers	West Fork Hylebos Creek Tributary 0014C	East Fork Hylebos Creek Tributary 0016A	North Lake Tributary
Distance to nearest Gradient-Accessible reach	N/A[1]	1.9 miles	3.3 miles
Distance to nearest Presumed reach	N/A[1]	4.4 miles	5.4 miles
Distance to nearest Documented reach	2.4 miles	4.6 miles	5.6 miles
Number of total barriers	4	3	2
Number of partial barriers	6	13	11
Number of unassessed barriers	4	2	9

[1] The first downstream stream segment identified by SWIFD is classified as having documented presence of Chinook salmon

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

- Chinook salmon have been documented in the Hylebos Creek system.
- The project will substantially increase the area of PGIS in the headwaters of tributaries to Hylebos Creek.
- The project will remove crossing structures that impede fish passage, improving access to upstream habitat.

The project is **not likely to adversely affect** Puget Sound Chinook salmon for the following reasons:

- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Small stream sizes and intermittent flow regimes likely preclude the movement of Chinook salmon into stream reaches near the discharge points of stormwater facilities that are built or reconfigured for this project.
- Small stream sizes, intermittent flows, and barriers to fish passage are expected to prevent Chinook salmon from getting within 2.4 miles of the project footprint in the West Fork Hylebos Creek system, and 4.6 to 5.6 miles in the East Fork Hylebos Creek system. Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where this species might be present. As a result, the concentrations of any pollutants (including 6PPD-quinone) that escape the stormwater treatment facilities will likely be reduced to levels that would have discountable effects on Chinook salmon.

Puget Sound Chinook Salmon Critical Habitat

Hylebos Creek and the lower reaches of West Fork Hylebos Creek, approximately 3 miles downstream from the project footprint, were included in the designation of critical habitat for Puget Sound Chinook salmon. Fisheries biologists from the Puyallup Tribe of Indians have

observed Chinook spawning in Hylebos Creek. Based on these observations, the following physical and biological features of critical habitat in freshwater habitat are present in the action area:

- Freshwater spawning sites
- Freshwater rearing sites
- Freshwater migration corridors

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

- Designated critical habitat for Puget Sound Chinook salmon is present in the action area.
- The project will substantially increase the area of PGIS in the headwaters of tributaries to Hylebos Creek.

The project is **not likely to adversely affect** critical habitat for Puget Sound Chinook salmon for the following reasons:

- Based on the distance between the project footprint and the areas of designated critical habitat, the proposed action will not affect the availability of freshwater spawning sites, freshwater rearing sites, or freshwater migration corridors.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Stream reaches designated as critical habitat are more than 2 miles downstream of the discharge points from any stormwater facilities that will be built or reconfigured for this project. As discussed above, the concentrations of pollutants in stormwater runoff will likely be reduced to levels that would have discountable effects on water quality before water from the project area enters the designated reaches.

Essential Fish Habitat

EFH for Pacific salmon (coho, pink, and Chinook) is present in the action area. Due to riparian vegetation removal and ground-disturbing work in and near the stream channel, as well as impacts to water quality from stormwater, the project will adversely affect EFH.

Vicinity Map and Air Photo

Note that the barriers identified in this figure are the Fish Passage culverts mentioned in the project description, above. Numerous other barriers to fish passage are present in these streams downstream of the area depicted in this figure.

Parametrix

Source: King County
City of Federal Way

Barrier Outlet Location
Streams

0 500 1,000 2,000 Feet

Figure 1.1 Vicinity Map
East Fork of Hylebos Creek
Federal Way City Center Access

Federal Way, WA

Pre-BA Meeting Notes, July 15, 2021

Attendees: Ryan Boyle (WSDOT), Sarah Tchang (WSDOT), Mike Hall (Parametrix), Jenna Anderson (Parametrix), Steve Krueger (Parametrix), Jeff Dreier (WSDOT), Leslie Durham (USFWS liaison), Michael MacDonald (NMFS liaison), Kerri Wheeler (NMFS/USFWS liaison), DeeDee Jones (NMFS/USFWS liaison), Sharon Rainsberry (NMFS/USFWS liaison), Cindy Callahan (FHWA), Sharon Love (FHWA), Sean Hoffman (FHWA), Nick Wegener (WSDOT HQ), Jeff Coop (Parametrix), Sandy Glover (Parametrix), Rick Perez (City of Federal Way), Kent Smith (City of Federal Way), Katina Kapantais (WSDOT HQ).

Jenna began the presentation by describing the Federal Way project. Jeff Coop then gave an overview of the project's stormwater management. He described the various jurisdictions and associated TDAs. There will be several stormwater facilities in 24 TDAs. The TDAs have been based on topography, existing storm drain systems, jurisdiction, and existing stormwater management facilities. TDAs have also been identified that discharge into systems tributary to the East Fork Hylebos Creek, which includes the injunction culverts. TDAs in the West Fork Hylebos Creek drainage basin discharge into existing major storm drain systems that receive flows from significant offsite areas. The presentation included a table that summarized pre- and post-project conditions. Mike then presented a summary of known fish use in the area and existing barriers. Leslie asked about a stream segment for which SWIFD habitat evaluation appeared to be lacking. Mike responded that there is no data. The presentation also included photos of some barriers.

Mike then started the discussion of effects and 6PPD-quinone, emphasizing the uncertainty about the potential for ESA-listed fish to be exposed to elevated levels of that substance, given distance between the project area and stream reaches where fish are known or expected to be present. Leslie asked about the new PGIS acreage. Kerri also asked about net PGIS gain. Jeff Coop offered to look into it. Later in the meeting, Jeff reported that current estimates indicate the project will create about 15.21 acres of new PGIS. This amount is expected to change as the project design evolves.

Leslie asked about other USFWS species. Mike said it would be a NE determination for other species as shown in the submittal form. Leslie asked about murrelet habitat. Mike described habitat conditions as generally unsuitable. Leslie reminded all that impacts to suitable nesting habitat for marbled murrelets within municipal boundaries are considered NLTAA, not NE. Mike summarized the rationale that support a NE call for this species.

Michael asked about the stormwater facilities near the bog at the I-5/S 320th interchange. Jeff Coop said the design requirements have not been determined at this point but that additional treatment and flow control considerations have been factored into the facility footprints. Jenna said there will be some buffer impacts.

DeeDee said that LTAA determinations are more likely on this project. She said there are unknowns about 6PPD-quinone, and that effects may extend to the next major confluence downstream from the discharge points of stormwater facilities. NMFS is very likely to say effects will occur in downstream reaches where fish are present. Jeff Coop said enhanced treatment is included. DeeDee said that the team would have to prove that fish will not be exposed to contaminants. Without the science, NMFS will assume exposure. NMFS is not accepting HI-RUN dilution distances as a basis for assessing the potential for exposure to harmful concentrations of 6PPD-quinone.

Cindy Callahan said FHWA is engaged in policy conversations regarding stormwater. Timing of this project is important. FHWA and WSDOT are trying to work out a short-term strategy for how to analyze the effects of 6PPD-quinone and how to use HI-RUN. A longer-term strategy is being discussed on how to move forward on a program level. This is an open negotiation between FHWA, WSDOT, and NMFS. This project may be an example as the discussions move forward. The content of the BA will be influenced by the larger discussions.

Leslie said this project could be informal for USFWS, but it is a complicated project. The consultation could take longer than a normal informal project.

Nick concluded the meeting and indicated additional discussions will likely be necessary.

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Pre-BA Meeting Form and Draft Meeting Notes

September 15, 2022

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Project Name: Federal Way City Center Access Project

Federal Action Agency: FHWA

Type of Consultation: Individual

This project was presented at the July 2021 pre-BA meeting. Topics covered during the meeting included stormwater management, injunction culverts, known fish use and existing barriers, the effects of 6PPD-quinone on ESA-listed fish, and habitat conditions for marbled murrelet. USFWS representatives concluded that the project will likely be eligible for informal consultation for USFWS. NMFS representatives determined that formal consultation is likely until the effects of 6PPD-quinone exposure on fish are better understood.

When City of Federal Way staff learned of upcoming changes in the requirements for impacts analysis and consultation on projects involving new PGIS, the City opted to delay initiating ESA consultation until more was known. With the July 2022 completion of the updates to the Stormwater chapter in WSDOT's BA Training Manual, that time has come.

The project design has not changed substantially from what was presented during the July 2021 meeting, nor has our understanding of the distribution of and habitat use by ESA-listed species. What has changed is our understanding of the potential for contaminants in stormwater runoff to affect ESA-listed fish. That, plus the fact that more than 6 months have passed since this project was presented at a pre-BA meeting, leads us to present the project again.

The project description and preliminary effect determinations from the July 2021 pre-BA meeting form have been copied and pasted into this document. To help reviewers identify information that has or has not been updated since July 2021, modifications to the July 2021 text are shown as tracked changes.

Anticipated BA/PNF Submittal Date: October/November 2022

State Route and Mileposts: I-5, MP 142.3 to 147.3. Also, portions of S 320th Street and S 324th Street in Federal Way.

Construction Timeline: This project is not yet fully funded, so construction timing has not been determined.

Published in-water work window: Neither WDFW nor the U.S. Army Corps of Engineers specifies a standard window for work within tributaries to Commencement Bay. The in-water work windows established for WSDOT's recent SR 167/I-5 to SR 509 – New Expressway project were as follows:

- Hylebos Creek: July 15 through September 30
- All other waterbodies (including tributaries to Hylebos Creek): June 15 through September 30

The only stream where the Federal Way City Center Access Project will entail in-water work is a headwater tributary to East Fork Hylebos Creek, known as East Fork Hylebos Creek Tributary 0016A. Based on the SR 167/I-5 to SR 509 – New Expressway example, an in-water work window of June 15 through September 30 seems likely for that stream.

Project Proponent:
City of Federal Way
33325 8th Avenue South
Federal Way, WA 98003

Contact for Requesting Changes to this Submittal:
Emily Pizzichemi, WSDOT – NW Region
pizzice@consultant.wsdot.wa.gov

Pre-BA Meeting Attendees:
Anticipated participants include

Jeff Dreier (WSDOT)
Emily Pizzichemi (WSDOT)
Others from WSDOT?

Tad Schwager (Parametrix)
Anna Hoenig (Parametrix)
Jenna Anderson (Parametrix)
Katheryn Seckel (Parametrix)
Mike Hall [in spirit only] (Parametrix)
Desiree Winkler (City of Federal Way)

Project Description:
The project will provide improved multimodal mobility and access for regional and local trips while protecting the interstate system by providing congestion relief along S 320th Street and expanded multimodal facilities across Interstate 5 (I-5). The project will consist of the following project elements, as shown in Figure 1:

- Modification of the S 320th Street interchange by adding braided ramps and access at S 324th Street.
- Construction of a new two-lane bridge over I-5 at S 324th Street, with an extension of S 324th Street from 23rd Avenue S to Weyerhaeuser Way S, and a widened S 324th Street from State Route (SR) 99 to 23rd Avenue S.
- Improvements to S 320th Street east of I-5 to add high-occupancy vehicle (HOV) lanes, including replacing the bridge.
- Nonmotorized improvements along 23rd Avenue S, S 320th Street, and S 324th Street.
- Stream crossing upgrades to improve fish passage, including three inunction culverts under I-5 and associated on- and off-ramps.

Preliminary Design Improvements

1. Interchange at S 324th and modified interchange at 320th with braided ramps. All I-5 on-ramps will be metered.
2. 2-lane bridge along S 324th crossing I-5. Shared-use path on north side with potential future connection to BPA Trail. Sidewalk on south side.
3. Single-lane roundabouts at the ramp terminals with slip lanes in the northwest and southwest quadrants of S 324th/I-5 SB Ramps.
4. Additional SB left-turn lane and additional NB left-turn lane at S 324th/SR 99 to manage westbound queues from new interchange.
5. 5 lanes along S 324th from SR 99 to 23rd S. Shared-use path on north side and sidewalk on south side.
6. 2-lane roundabout at S 324th/23rd S.
7. 4 lanes along S 324th from 23rd S to I-5 SB Ramps.
8. 3 lanes along S 324th from I-5 NB Ramps to Weyerhauser. A shared -use path on the north side and sidewalk on the south side.
9. Single-lane roundabout at S 324th/Weyerhauser.
10. Road widening for HOV lanes to support future BRT from SR 99 to Military. Eastbound HOV will drop into existing right turn lane at Military.
11. Sidewalk on north and south side of S 320th bridge.
12. No improvements to S 320th St/SR 99 and S 320th/Military intersections.
13. Shared use path.

Figure 1. Overview of the Federal Way City Center Access Project

Federal Way's city center is served by S 320th Street and is bounded by S 312th Street on the north, S 324th Street on the south, I-5 on the east, and 11th Place S and 14th Avenue S on the west. The City's Comprehensive Plan identifies development of the City Center to include a mix of uses, such as the Performing Arts and Events Center, a public park, and a mix of high-density residential, commercial, office, educational, and civic uses. Access between I-5 and the land uses surrounding the City Center is primarily via the S 320th Street interchange with direct HOV access at the S 317th Street interchange that serves the Federal Way Transit Center. Sound Transit's Link light rail transit system is being extended to Federal Way, with a station opening in the City Center currently scheduled in 2024. Extension of light rail transit to Tacoma is planned for 2030.

Access Modifications

The project includes a modified interchange at S 320th Street, with braided ramps and new access at S 324th Street. The existing gore points north and south of the S 320th Street interchange will be relocated. All on-ramps from S 320th Street and S 324th Street will be metered and will not include HOV bypasses.

S 324th Street Improvements:

The project includes a new two-lane bridge along S 324th Street, crossing I-5. Both ramp terminals will have single-lane roundabouts with a slip lane in the northwest quadrant of the S 324th Street/I-5 southbound ramps intersection.

West of the new S 324th Street interchange, S 324th Street will be five lanes from SR 99 to 23rd Avenue S and four lanes from 23rd Avenue S to I-5 southbound ramps. There will be a two-lane roundabout at the S 324th Street/23rd Avenue S intersection. The project also includes intersection improvements at S 324th Street/SR 99 that will help manage westbound queues from the new interchange, including an additional southbound left-turn lane and an additional northbound left-turn lane.

S 324th Street will be extended east of I-5. The new roadway will consist of three lanes from the I-5 northbound ramps to Weyerhaeuser Way S, with a single-lane roundabout at S 324th Street/Weyerhaeuser Way S that will include relocated access to the existing Washington Department of Fish and Wildlife-managed boat ramp on North Lake.

S 320th Street Improvements:

S 320th Street currently includes HOV lanes in both directions between SR 99 and 20th Avenue S. The project will add HOV lanes on S 320th Street in both directions between 20th Avenue S and Military Road. Between 20th Avenue S and the I-5 southbound ramps, a general-purpose lane in each direction will be converted to an HOV lane. Crossing I-5 between I-5 southbound ramps and I-5 northbound ramps, the S 320th Street bridge will be widened to include new HOV lanes in both directions and a lengthened left-turn lane for the I-5 southbound on-ramp. Between I-5 and Military Road, S 320th Street will be widened to accommodate the added HOV lanes.

Nonmotorized Improvements:

The project includes nonmotorized improvements on both S 324th Street and S 320th Street. Between SR 99 and Weyerhaeuser Way, there will be a shared-use path on the north side of S 324th Street and a sidewalk on the south side of S 324th Street. There is potential for the shared-use path to connect to the BPA Trail in the future. A shared-use path on the west side of 23rd Avenue S between S 324th Street and S 320th Street is included. The S 320th Street bridge crossing I-5 will have sidewalks on the north and south sides. There will also be sidewalks on the north and south sides between the I-5 northbound ramps and Military Road S.

Culvert Replacements

The project area includes four culverts that convey a headwater tributary to East Fork Hylebos Creek (East Fork Hylebos Creek Tributary 0016A) under I-5, S 320th Street, associated on- and off-ramps, and under Winged Foot Way. From upstream (northeast) to downstream (southwest), these culverts are identified as follows (see Figure 2):

- I-5 northbound on-ramp, milepost 143.90 (WDFW Site ID number 995300)
- I-5 northbound off-ramp, milepost 143.75 (WDFW Site ID number 995299)
- I-5, milepost 143.60 (WDFW Site ID number 992364)
- Winged Foot Way in Belmor Park (WDFW Site ID number 420614)

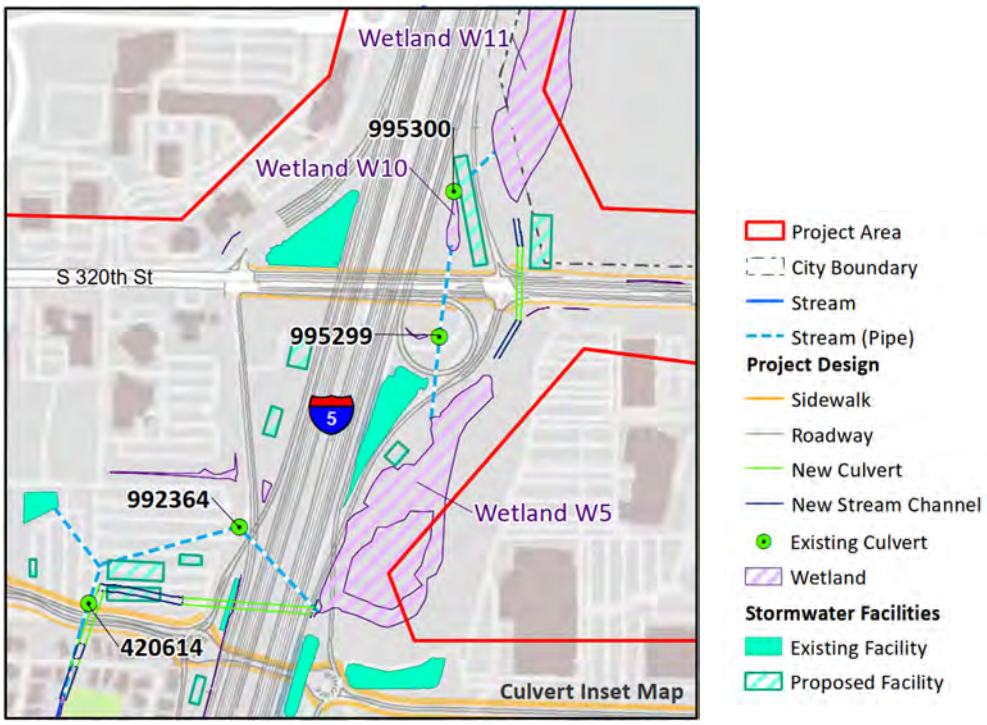

Figure 2. Exiting Culverts to be Replaced

Three of these culverts (995300, 995299, and 992364) are on the list of culverts that must be replaced under a 2013 federal court injunction requiring the removal of state-owned culverts in western Washington that block habitat for salmon and steelhead. The project design includes the replacement of these three culverts, plus the privately owned culvert at Winged Foot Way (420614) that is directly connected to culvert 992364.

The replacement crossing structures will be sized and configured to prevent them from becoming barriers in the future. The structures will be designed using the design criteria from WSDOT's 2022 Hydraulics Manual and WDFW's 2013 Water Crossing Design Guidelines. The design of the structures will be determined through hydraulic, geotechnical, and structural engineering evaluations.

In total, the project proposes to replace approximately 2,473 feet of culverted stream and approximately 212 feet of existing open channel with approximately 1,035 feet of fish-passable culverts and approximately 1,164 feet of new daylighted channel.

Construction methods are unknown at this time. Open-trench or trenchless techniques may be employed. The anticipated culvert depths range from 30 to 55 feet. If open-trench methods are used, then shoring will be required.

Project Phasing:

The design and construction of the City Center Access improvements will likely need to be phased due to funding limitations. The following table summarizes the anticipated project phases.

Anticipated Project Phasing

	Local Street Improvements and Connections	Ramp and Interchange Improvements
Phase 1	• Construct new S 324th St between 23rd Ave S and I-5 southbound ramp intersections • Improve S 324th St and SR 99 intersection with added turn lanes	• Construct/revise I-5 southbound off ramps to S 320th St and S 324th St • Construct/revise on ramps from S 320th St and S 324th St to I-5 southbound
Phase 2	• Widen S 324th St between SR 99 and 23rd Ave S • Construct new S 324th St from I-5 southbound ramp intersection to Weyerhaeuser Way, including S 324th St bridge and Weyerhaeuser Way intersection	• Construct I-5 northbound off ramp to S 324th St • Construct portion of I-5 northbound off ramp to S 320th St
Phase 3A	• Replace S 320th St bridge over I-5 • Widen S 320th St from I-5 southbound ramp intersection to Military Rd	• Reconstruct S 320th St loop ramp to I-5 northbound • Construct the remaining portion of I-5 northbound off ramp to S 320th St

	Local Street Improvements and Connections	Ramp and Interchange Improvements
	• Restripe S 320th St to provide BAT lanes from SR 99 to southbound ramp intersection	
Phase 3B	• Local improvements associated with this project are substantially complete	• Realign the I-5 northbound on ramp from S 320th St • Construct the I-5 northbound on ramp from S 324th St

Additional Project Elements:

- Cut and fill retaining walls.
    - Cut walls are anticipated to be soil nail walls or soldier pile tieback walls with approximately 1:1 ratio of wall height to nail length.
    - Fill walls are anticipated to be structural earth (SE), also known as mechanically stabilized earth (MSE) walls.
- Stormwater management facilities consisting of below-grade vaults and open ponds.
    - Cut retaining walls are anticipated for select open ponds to reduce footprints.
    - Temporary shoring is anticipated for the below-grade vaults to reduce construction footprints.
    - The project is located within the jurisdictional boundaries of the City of Federal Way, King County, and WSDOT. Preliminary engineering for stormwater management facilities is based on the following:
        - City-owned, operated, and maintained facilities: 2016 King County Storm Water Design Manual and 2017 City of Federal Way Addendum
        - County-owned, operated, and maintained facilities: 2016 King County Storm Water Design Manual
        - WSDOT-owned, operated, and maintained facilities: 2019 Highway Runoff Manual
- King County Metro Park and Ride lot modifications, including expanding the lot to the west and north, between 23rd Ave, 324th St, 322nd St, and the developments to the north. Retaining walls will be necessary for the adjacent roads and the parking lot.
- Noise walls will be installed in necessary areas to mitigate noise impacts. Noise walls are anticipated to be concrete panels and range in height from 6 to 18 feet.

Twenty-six (26) threshold discharge areas (TDAs) have been delineated for the project, based on consideration of downstream flow paths, agency jurisdiction, and presence of existing SWM facilities. The receiving waters are West Fork Hylebos Creek Tributary 0014C, East Fork Hylebos Creek Tributary 0016A, East Fork Hylebos Creek Tributary 0016B, and Mill Creek. The three Hylebos Creek tributaries ultimately drain to the mainstem Hylebos Creek, which discharges to the Hylebos Waterway in Commencement Bay. Mill Creek drains to the lower Green River, which discharges to the Duwamish Waterway in Elliott Bay.

The project will increase the total amount of PGIS in all TDAs combined by approximately 15.81 acres. The total area of PGIS receiving runoff treatment will increase by a larger amount—16.23 acres. Similarly, the project will increase the total amount of impervious surfaces in all TDAs combined by approximately 18.15 acres. The total area from which runoff is directed to detention facilities will increase by a larger amount—20.17 acres.

Listed Species and Designated Critical Habitats in the Action Area:

The action area has expanded from what was presented during the July 2021 pre-BA meeting. In addition to the freshwater and terrestrial habitats originally described, the action area includes all downstream reaches of streams that will receive project-related stormwater, extending all the way to marine waters.

All but one of the stormwater treatment facilities that will be created or modified for this project are in headwater reaches of tributaries to Hylebos Creek watershed. Hylebos Creek discharges to the Hylebos Waterway (an excavated, dredged channel that connects to Commencement Bay). One new stormwater facility will drain toward Mill Creek, which eventually discharges to the Green River and (via the Duwamish Waterway) Elliott Bay. The action area, therefore, extends southward to the outlet of Hylebos Creek in the Hylebos Waterway and northward to the outlet of the Duwamish River in Elliott Bay.

Based on habitat conditions and the presence of multiple, total barriers to fish passage, ESA-listed fish are not expected to be present in any stream reaches within 1 mile of the project footprint, including the discharge points of proposed stormwater facilities.

Here is the table from the July 2021 pre-BA meeting form for this project, updated with additional species based on the expanded action area and revised effect determinations.

Species or Critical Habitat	Provisional Effect Determination
Marbled Murrelet	NE
Streaked Horned Lark	NE
Yellow-billed Cuckoo	NE
Taylor's Checkerspot	NE
Gray Wolf	NE
Wolverine	NE
Bull Trout	NLAA
Bull Trout Critical Habitat	NLAA
Puget Sound Chinook Salmon	LAA
Puget Sound Chinook Salmon Critical Habitat	LAA
Puget Sound Steelhead	LAA
Puget Sound Steelhead Critical Habitat	LAA
Southern Resident Killer Whale	NLAA
Puget Sound/Georgia Basin Bocaccio	NLAA
Puget Sound/Georgia Basin Yelloweye Rockfish	NLAA

The project **will adversely affect** essential fish habitat (EFH) for Pacific salmon, Pacific salmon, Pacific Coast groundfish, and coastal pelagic species.

Critical habitat for the following species is not present in the action area:

- Marbled murrelet—none within 30 miles of the project area.
- Streaked horned lark—none within 80 miles of the project area.
- Yellow-billed cuckoo—none designated in Washington State.
- Taylor's Checkerspot—none within 30 miles of the project area.
- Southern resident killer whale—critical habitat designation does not extend into the Hylebos Waterway or into waters less than 20 feet deep (relative to extreme high water) in the Duwamish Waterway.
- Bocaccio and yelloweye rockfish—critical habitat designation does not extend into the Hylebos Waterway or the Duwamish Waterway.

Rationale for the Effect Determination for Each Species:

Marbled Murrelet

All project activities with the potential to generate noise or disturb forest habitat will take place within the city limits of Federal Way. No forest stands classified in the Davis Layer as potentially suitable nesting habitat are present within 0.25 mile of the project footprint. Based on reviews of (1) the marbled murrelet habitat model developed for the 20-year review of the Northwest Forest Plan, (2) aerial imagery, and (3) tree heights derived from LIDAR data, biologists determined that forest stands within 328 feet of the project site meet the criteria for potentially suitable nesting habitat[1], necessitating a field review to search for potentially suitable nest platforms.

During a site visit in January 2021, biologists found several trees with potentially suitable nest platforms within 328 feet of the project footprint. However, the likelihood of marbled murrelets nesting in any of these trees is negligible, for the following reasons:

- All forested areas in the action area have been logged multiple times in the past century and a half.
- The project site is immediately adjacent to I-5 and the urban landscape of Federal Way, where high levels of noise and activity likely discourage use by nesting marbled murrelets.
- The nearest sites where potential nesting behavior has been observed are more than 30 miles away.
- Marbled murrelets have been found to demonstrate a fairly high degree of fidelity to forest stands used for nesting. If murrelets historically nested near the project site, any nest trees were removed when the area was cleared at the time of initial settlement by Euro-Americans and on multiple occasions thereafter. Descendants of any murrelets that nested near the project site had to find suitable breeding habitat farther inland, on the western slopes of the Cascades. Birds in those lineages are likely to return to the stands that have more recently been used for nesting. Flying through forested areas near the project site in search of trees with suitable nest platforms would require an excessive expenditure of energy and exposure to predation risk. As such, the probability of any murrelets finding platforms in the project area and selecting them as nest sites is extremely low.

[1] According to the USFWS Western Washington Fish and Wildlife Office, potentially suitable habitat is defined as "Any contiguous coniferous-dominated forested area, greater than five acres, less than or equal to 55 miles from marine waters, with greater than or equal to one platform." A contiguous coniferous-dominated forested areas is defined as a forested area that is dominated by conifers and that is at least 328 feet from any other similar forested area(s), or is otherwise surrounded by non-habitat (i.e., rock, impervious surface, pasture, lake, etc.), and containing trees that are at least one-half the site potential tree height.

Marbled murrelets have been documented in the marine waters of Puget Sound approximately 2.5 miles west of the project footprint (outside the action area). The nearest designated critical habitat is more than 25 miles east of the project footprint.

The project will have **no effect** marbled murrelet because:

- The proposed action occurs within the Federal Way city limits and is also located within busy commercial areas and multiple transportation corridors.
- Marbled murrelets are neither known nor expected to nest in forested habitats in the urbanized corridor along I-5.
- No foraging habitat is present within 2.5 miles of the project area.

Streaked Horned Lark

Streaked horned larks are not known or expected to use habitats in the action area. This species is known to occur in portions of southern Puget Sound, along the Washington coast, and at lower Columbia River islands. Breeding habitat for streaked horned larks in Washington consists of grasslands and sparsely vegetated areas at airports, sandy islands, and coastal spits. No such habitat is present in the action area. The nearest known breeding area is more than 14 miles from the action area.

The project will have ***no effect*** on streaked horned larks for the following reasons:

- Streaked horned larks are not known or expected to use habitats in the action area.
- No potentially suitable nesting habitat is present in the action area.

Yellow-billed Cuckoo

Yellow-billed cuckoos nest almost exclusively in low- to mid-elevation riparian woodlands that cover 50 acres or more within arid to semiarid landscapes. The last confirmed breeding records of yellow-billed cuckoos in Washington are from the 1930s. Currently, the species no longer breeds in western Canada and the northwestern continental United States (Washington, Oregon, and Montana) (79 FR 59992, October 3, 2014). No observations of this species have been documented within 10 miles of the project area. Historical records indicate that breeding habitat for yellow-billed cuckoos in Washington consisted primarily of cottonwood and willow bottoms along the lower Columbia River and in the Puget Sound lowlands.

Dominant vegetation within riparian habitats includes red alder (*Alnus rubra*), with lesser amounts of Oregon ash (*Fraxinus latifolia*), black cottonwood, and Pacific willow (*Salix lasiandra)*. No blocks of forested riparian habitat larger than 10 acres are present in the action area.

The project will have ***no effect*** on yellow-billed cuckoos for the following reasons:

- Yellow-billed cuckoos are not known or expected to use habitats in the action area.
- No suitable nesting habitat (blocks of mature, non-coniferous riparian habitat greater than 50 acres) is present in the action area.

Taylor's Checkerspot

The nearest known observations of this species are more than 15 miles from the action area, in prairie habitats at Joint Base Lewis-McChord. No comparable habitat is present in the action area. Plant species that Taylor's checkerspots may occasionally use as larval hosts (e.g., *Plantago lanceolata*, *Veronica* spp.) could be present in the swath of grassy habitat south of the former Weyerhaeuser campus at the southern end of the action area. However, oviposition occurs almost exclusively in areas with dense cover of host plants. Of 31 oviposition locations studied by Grosboll (2011[2]), the volume of host plants in all but one exceeded 10,000 cubic centimeters per square meter. No areas with such high densities of potential larval host species have observed in the project area. Based on the distance from known populations and the lack of suitable oviposition habitat near the project site, the project will have **no effect** on Taylor's checkerspot butterflies.

Gray Wolf

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

Bull Trout

Currently, Statewide Integrated Fish Distribution (SWIFD) mapping does not indicate the documented, presumed, or modeled distribution of bull trout within the Hylebos Creek drainage basin or in Mill Creek. Bull trout are strongly associated with snowmelt-dominated streams that maintain cold water temperatures in headwater tributaries year-round. Hylebos Creek is a rainfall-dominated stream that does not provide this type of habitat, and stream temperatures are regularly higher than the temperatures this species requires. Similarly, the potential for overwintering bull trout in the Green River to enter Mill Creek is diminished by poor water quality and habitat conditions. Although optimal habitat is not present in the Hylebos Creek basin, a single sub-adult bull trout or Dolly Varden was captured near the S 373rd Street crossing of West Fork Hylebos Creek in August 2018, approximately 3.9 miles downstream of the project footprint. The fish (which was approximately 8 inches long) was released unharmed. No genetic analysis was performed to verify whether the fish was a bull trout or a Dolly Varden. For this assessment we assume it was a bull trout due to the similarity of appearance between the two species.

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[2] Grosboll, D. 2011. Taylor's checkerspot (*Euphydryas editha taylori*) oviposition habitat selection and larval hostplant use in Washington State. Thesis submitted in partial fulfillment of the requirements for the degree Master of Environmental Studies at The Evergreen State College. June 2011.

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

- Adult and subadult bull trout may forage, migrate, and overwinter in waters downstream of the project area in the Green River basin, and a subadult bull trout or Dolly Varden was observed in West Fork Hylebos Creek.
- The project will increase the area of PGIS in areas that drain to Mill Creek (a tributary to the Green River) and in the headwaters of tributaries to Hylebos Creek.
- The project will remove crossing structures on East Fork Hylebos Creek Tributary 0016A that impede fish passage, improving potential access to upstream habitat.

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

- Stream reaches that will receive discharge from stormwater facilities are inaccessible to bull trout.
- The observation of a single fish in West Fork Hylebos Creek in 2018 was anomalous. There are no other records of bull trout in the Hylebos Creek watershed, despite decades of fish monitoring studies. For this reason, the likelihood of bull trout entering the stream system may be considered discountable.
- The project will reduce the amount of untreated PGIS in the action area.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Many of the new facilities will discharge to upland areas instead of directly to surface waters.
- Barriers posed by culverts and high stream temperatures are expected to prevent bull trout from getting within 3 miles of the project footprint. Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where this species might be present. As a result, the concentrations of any pollutants (including 6PPD-quinone) that escape the stormwater treatment facilities will likely be reduced to levels that would have discountable effects on bull trout, if any bull trout were to enter the Hylebos Creek system again.
- Bull trout are not expected to spawn in the Hylebos Creek system or in the Green River basin. Exposure to runoff from project-related PGIS would occur only if individual bull adults or subadults from other systems were to venture into these waters. The potential for such a visit to correspond with a storm event that discharges large amounts of contaminants to the stream is discountable. In addition, the impacts of any such exposure would likely be insignificant because the visit would be brief and transitory.
- Water temperatures and flow regimes in stream reaches that may be rendered accessible by this project are unsuitable for bull trout.

Bull Trout Critical Habitat

Nearshore habitats in Commencement Bay, including the Hylebos Waterway, were included in the designation of critical habitat for bull trout, identified as foraging, migration, and overwintering habitat. The Green River and the Duwamish Waterway are also included in the critical habitat designation for bull trout. Critical habitat in the Hylebos Waterway, Green River, and Duwamish Waterway provides foraging, migration, and overwintering habitat for bull trout, but these waterbodies are not classified as spawning or rearing habitat. Areas of designated critical habitat for bull trout in both the Hylebos Waterway and the Green River are approximately 7 miles downstream from the project footprint.

The following physical and biological features (PBFs) of critical habitat are present in the action area:

- Suitable migration habitat (PBF 2)—Hylebos Waterway, Duwamish Waterway, Green River
- Adequate prey base (PBF 3)—Hylebos Waterway, Duwamish Waterway, Green River
- Cool water temperatures (PBF 5)—Hylebos Waterway, Duwamish Waterway, Green River
- Water quality and quantity (PBF 8)—Green River (water quality in the Hylebos Waterway and the Duwamish Waterway is generally poor)

The Hylebos Waterway, the Duwamish Waterway, and the Lower Green River in the action area have been extensively modified. Large wood, side channels, pools, undercut banks, and other features of complex habitat are largely absent from these watercourses; as such, PBF 4 (complex aquatic environments and processes) is not present in the action area. Based on the distance between the project footprint and the areas of designated critical habitat, the proposed action is not expected to affect PBFs 2 or 5. In addition, as discussed above, the concentrations of pollutants in stormwater runoff will likely be reduced to levels that would have discountable effects on water quality (PBF 8) before water from the project area enters the Hylebos Waterway, the Duwamish Waterway, or the Lower Green River. Finally, although coho salmon (a prey species for bull trout) are known to be susceptible to lethal effects of exposure to pollutants in stormwater runoff, the Hylebos Creek and Lower Green River systems are but two of many population sources for this species in the areas that have been designated as critical habitat—and coho salmon are but one of many species that bull trout consume. As such, if the project results in increased amounts of pollutants in either or both systems, and if those increases lead to reduced numbers of coho salmon, those reductions would represent a small fraction of the total prey base available to bull trout in areas designated as critical habitat (PBF 3).

For these reasons, the project **may affect** but is **not likely to adversely affect** critical habitat for bull trout.

Puget Sound Steelhead

According to the SWIFD database, the nearest watercourses where steelhead have been documented or could potentially be present are at least 0.2 mile downstream from any discharge points of stormwater facilities that will be built or reconfigured for this project. Numerous fish passage barriers, combined with intermittent flow regimes, likely preclude the movement of steelhead into stream reaches in the project area. Steelhead have been documented in Hylebos Creek, the lower reaches of East Fork Hylebos Creek and West Fork Hylebos Creek, and Mill Creek downstream of known barriers to fish passage. Steelhead have been documented in the lower reaches of Mill Creek, and they are presumed present up to approximately 1 mile downstream of the point where project-related stormwater may enter the stream.

The following table provides an overview of the downstream distances to reaches in the Hylebos Creek system where steelhead have been documented or where their presence is not precluded by stream channel gradients, as well as the number of fish passage barriers between the project area and reaches where steelhead have been documented.

Downstream Distance or Number of Barriers	West Fork Hylebos Creek Tributary 0014C	East Fork Hylebos Creek Tributary 0016A	East Fork Hylebos Creek Tributary 0016B
Distance to nearest Gradient-Accessible reach[1]	1.8 miles	0.2 mile	3.3 miles
Distance to nearest Documented reach	3.3 miles	2.7 miles	3.7 miles
Number of total barriers	4	3	2
Number of partial barriers	6	13	11
Number of unassessed barriers	4	2	9

[1] Gradient-accessible reaches are those to which access is not precluded by stream channel gradients that pose a barrier to upstream migration. These reaches could become accessible to steelhead in the future, if all downstream barriers are removed.

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

- Steelhead have been documented in the Hylebos Creek system and the Green River basin.
- Steelhead occasionally spawn in West Fork Hylebos Creek approximately 2.4 miles downstream of the discharge point from the nearest TDA.
- The project will increase the area of PGIS in the headwaters of tributaries to Hylebos Creek and in areas that drain to Mill Creek (a tributary to the Green River).
- The project will remove crossing structures on East Fork Hylebos Creek Tributary 0016A that impede fish passage, improving potential access to upstream habitat.

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

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

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

- Stream reaches that will directly receive discharge from stormwater facilities are inaccessible to steelhead.
- If all public and private crossing structures that currently impede fish access are removed, the small, fine-substrate-dominated, headwater tributaries in the project area are not expected to provide suitable spawning habitat for steelhead, and they are far enough upstream from suitable spawning areas to be unlikely to provide rearing habitat for juveniles.
- The project will reduce the amount of untreated PGIS in the action area.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Many of the new facilities will discharge to upland areas instead of directly to surface waters.
- Intermittent flows and barriers to fish passage are expected to prevent steelhead from getting within 2.4 miles of the project footprint in the West Fork Hylebos Creek system, 2.7 to 3.7 miles in the East Fork Hylebos Creek system, and more than 1 mile in Mill Creek. Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where this species might be present, further reducing the concentration of any residual contaminants that may be present in water that leaves the stormwater facilities.

Critical Habitat for Puget Sound Steelhead

The lower reaches of East Fork Hylebos Creek and West Fork Hylebos Creek, approximately 2.5 to 3 miles downstream from the project footprint, were included in the designation of critical habitat for Puget Sound steelhead. Mill Creek, starting 0.7 mile downstream of the project limits, is also designated critical for steelhead, as are all reaches of the Green River and Duwamish Waterway in the action area. Fisheries biologists from the Puyallup Tribe of Indians have observed steelhead spawning in Hylebos Creek. Based on these observations, the following physical and biological features of critical habitat are present in the action area:

- Freshwater spawning sites
- Freshwater rearing sites
- Freshwater migration corridors
- Estuarine areas

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

- Designated critical habitat for Puget Sound steelhead is present in the action area.
- The project will increase the area of PGIS in areas that ultimately drain to waters designated as critical habitat.

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

- Contaminants in runoff from PGIS may degrade water quality in waters that are designated as critical habitat and that support the spawning, rearing, and migration PBFs of critical habitat for Puget Sound steelhead.

Puget Sound Chinook Salmon

According to the SWIFD database, the nearest watercourses where Chinook salmon have been documented, are presumed present, or could potentially be present are at least 1.8 miles downstream from any discharge points of stormwater facilities that will be built or reconfigured for this project. Numerous fish passage barriers, combined with small stream sizes and intermittent flow regimes, likely preclude the movement of Chinook salmon into stream reaches in the project area. According to the SWIFD database, Chinook salmon have been documented in Hylebos Creek and the lower reaches of West Fork Hylebos Creek (downstream of the barriers), and they are presumed to be present in the lower 700 feet of East Fork Hylebos Creek. Fisheries biologists from the Puyallup Tribe of Indians have documented Chinook salmon in West Fork Hylebos Creek as far upstream as S 356th Street, approximately 1.4 miles upstream of the upstream extent of the documented distribution of Chinook salmon in that stream, as mapped by SWIFD.

Chinook salmon have been documented in the lower reaches of Mill Creek, and the upper reaches of the stream are classified as gradient-accessible. However, a series of total barriers to fish passage prevent Chinook salmon from entering reaches of Mill Creek within approximately 1 mile of the project limits.

The following table provides an overview of the downstream distances to reaches in the Hylebos Creek system where Chinook have been documented or where their presence is not precluded by stream channel gradients, as well as the number of fish passage barriers between the project area and reaches where Chinook salmon have been documented. The downstream distance to the documented presence of Chinook salmon in West Fork Hylebos Creek Tributary 0014C is based on information provided by the Puyallup Tribe of Indians.

Downstream Distance or Number of Barriers	West Fork Hylebos Creek Tributary 0014C	East Fork Hylebos Creek Tributary 0016A	North Lake Tributary
Distance to nearest Gradient-Accessible reach[1]	1.8 miles	1.9 miles	3.3 miles
Distance to nearest Presumed reach	2.4 miles	4.4 miles	5.4 miles
Distance to nearest Documented reach	2.4 miles	4.6 miles	5.6 miles
Number of total barriers	4	3	2
Number of partial barriers	6	13	11
Number of unassessed barriers	4	2	9

[1] Gradient-accessible reaches are those to which access is not precluded by stream channel gradients that pose a barrier to upstream migration. These reaches could become accessible to Chinook salmon in the future, if all downstream barriers are removed.

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

- Chinook salmon have been documented in the Hylebos Creek system and the Green River basin.
- Chinook salmon spawn in West Fork Hylebos Creek approximately 2.4 miles downstream of the discharge point from the nearest proposed stormwater treatment facility.
- The project will increase the area of PGIS in the headwaters of tributaries to Hylebos Creek and in areas that drain to Mill Creek (a tributary to the Green River).
- The project will remove crossing structures on East Fork Hylebos Creek Tributary 0016A that impede fish passage, improving access to upstream habitat.

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

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

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

- Stream reaches that will directly receive discharge from stormwater facilities are inaccessible to Chinook salmon.
- If all public and private crossing structures that currently impede fish access are removed, the small, fine-substrate-dominated, headwater tributaries in the project area are not expected to provide suitable spawning habitat for Chinook

salmon, and they are far enough upstream from suitable spawning areas to be unlikely to provide rearing habitat for juveniles.

- The project will reduce the amount of untreated PGIS in the action area.
- Runoff from new and replaced PGIS will undergo water quality treatment in accordance with applicable requirements.
- Many of the new facilities will discharge to upland areas instead of directly to surface waters.
- Small stream sizes and intermittent flow regimes likely preclude the movement of Chinook salmon into stream reaches near the discharge points of stormwater facilities that are built or reconfigured for this project.
- Small stream sizes, intermittent flows, and barriers to fish passage are expected to prevent Chinook salmon from getting within 2.4 miles of the project footprint in the West Fork Hylebos Creek system, 4.6 to 5.6 miles in the East Fork Hylebos Creek system, and more than 1 mile in Mill Creek. Substantial infiltration, dilution, and adsorption will occur over the distance between stormwater facility discharge points and waters where this species might be present, further reducing the concentration of any residual contaminants that may be present in water that leaves the stormwater facilities.

Puget Sound Chinook Salmon Critical Habitat

Hylebos Creek and the lower reaches of West Fork Hylebos Creek, approximately 3 miles downstream from the project footprint, were included in the designation of critical habitat for Puget Sound Chinook salmon, as was the lower 3.8 miles of Mill Creek, the Green/Duwamish River, and the Duwamish Waterway. Fisheries biologists from the Puyallup Tribe of Indians have observed Chinook spawning in Hylebos Creek. Based on these observations, the following physical and biological features of critical habitat are present in the action area:

- Freshwater spawning sites
- Freshwater rearing sites
- Freshwater migration corridors
- Estuarine areas

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

- Designated critical habitat for Puget Sound Chinook salmon is present in the action area.
- The project will increase the area of PGIS in areas that ultimately drain to waters designated as critical habitat.

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

- Contaminants in runoff from PGIS may degrade water quality in waters that are designated as critical habitat and that support the spawning, rearing, and migration PBFs of critical habitat for Puget Sound Chinook salmon

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

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

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

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

The project **may affect** Puget Sound/Georgia Basin bocaccio and Puget Sound/Georgia Basin yelloweye rockfish for the following reasons:

- Larvae of both species could be carried by surface currents into the Hylebos Waterway or the Duwamish Waterway.
- The project will increase the area of PGIS in areas that ultimately drain to these waterways.

The project is **not likely to adversely affect** Puget Sound/Georgia Basin bocaccio or Puget Sound/Georgia Basin yelloweye rockfish for the following reasons:

- Any residual contaminants in runoff from project-related PGIS will be diluted to levels too low to detectably degrade water quality almost immediately upon entering the Hylebos Waterway and the Duwamish Waterway.
- Juveniles and adults of both species are not expected to use habitats in the action area.

Essential Fish Habitat

EFH for Pacific salmon (coho, pink, and Chinook), Pacific Coast groundfish, and coastal pelagic species is present in the action area.

Several of the streams and other waterbodies in the action area are currently or were historically accessible to salmon.

EFH for Pacific Coast groundfish is defined as areas seaward of the upriver extent of saltwater intrusion in river mouths. In the action area, this includes the Hylebos Waterway, the Duwamish Waterway, and the lower Green River.

EFH for coastal pelagic species is generally defined as all marine and estuarine waters from the shoreline offshore above the thermocline. In the action area, this includes the Hylebos Waterway and the Duwamish Waterway.

Riparian vegetation removal and ground-disturbing work in and near the stream channel could affect freshwater EFH for Pacific salmon. Residual contaminants in project-related stormwater runoff have the potential to degrade water quality in the lower Green River and at the outlets of Hylebos Creek in the Hylebos Waterway and the Duwamish River in the Duwamish Waterway, respectively. Based on these potential impacts, the project will adversely affect EFH for Pacific salmon, Pacific Coast groundfish, and coastal pelagic species.

Vicinity Map and Air Photo
See attached Vicinity Map and Action Area Map

Finally, here is what we currently know about the potential for channel incision:

Hydrogeomorphic analysts have started preliminary evaluations of the potential for incision. The findings of these analyses will be documented in the preliminary hydraulic design (PHD) report for this project. The PHD will include assessments of the longitudinal profile and equilibrium slope calculations that are based on the unit discharge of the channel and assumptions around the critical bed material size.

Preliminary reviews of the longitudinal profiles do not suggest a potential for significant channel regrade following construction of the new crossings. It looks likely that the crossings will transition upstream to downstream reaches uniformly, as the channel gradually steepens from upstream to downstream. The existing and proposed gradients are very low (under 1 percent), which also suggests that differences in stream power will not vary significantly in reaches adjacent to and through the crossings.

The equilibrium slope analysis to be completed will assess the ability of the channel to transport material, which will offer more insight into the potential for channel incision. The other part of that equation, which is to be determined, is the competency of the material in the channel to resist shear stresses. That will depend on what streambed material is designed and accepted for use, as well as the stability of the reaches downstream of the crossings.

Project Name: Federal Way City Center Access Project

Federal Action Agency: FHWA

Type of Consultation: Formal, Individual BA

Anticipated BA/PNF Submittal Date:

State Route and Mileposts: Interstate 5 MP 142.3-147.3; S 320th Street and S 324th Street, Federal Way

Published in-water work window: No published window for Hylebos

Project Proponent: Northwest Region

Contact for Requesting Changes to this Submittal: Jeff Dreier, dreierj@wsdot.wa.gov

Attendees:

Region: Emily Pizzichemi (GEC consultant), Anna Hoenig (Biologist, Parametrix), Jenna Anderson (PM, Parametrix), Katheryn Seckel (NEPA Lead Parametrix), Tad Schwager (Biologist, Parametrix).

FHWA: Cindy Callahan (Senior Biologist), Sharon Love (Environmental PM)

Liaisons: Leslie Durham (USFWS), Michael MacDonald (NMFS), Beth Toberer (NMFS, USFWS), Sharon Rainsberry (NMFS, USFWS), Kerri Wheeler (NMFS, USFWS)

Head Quarters: Jeff Dreier, Kim Toal, Katina Kapantais

Jeff let the meeting attendees know that the meeting was being transcribed.

Anna stated that the project was already presented at Pre-BA and this meeting would focus on changes that developed since the last meeting. Jenna presented a project overview. The project would:

- Modify the S 320th Street interchange by adding braided ramps and access at S 324th Street
- Construct a new two-lane bridge over I-5 at S 324th Street
- Extend S 324th Street from 23rd Avenue S to Weyerhaeuser Way S
- Widen S 324th Street from State Route (SR) 99 to 23rd Avenue S
- Improve S 320th Street to provide high-occupancy vehicle (HOV) lanes, including replacing the bridge
- Provide nonmotorized improvements along 23rd Avenue S, S 320th Street, and S 324th Street
- Upgrade stream crossings to improve fish passage, including under I-5

The team showed images of the fish passage barriers. They informed the team that the preferred design alternative had been selected since the previous Pre-BA meeting. This included the barrier at the intersection of 320th and will include a new crossing at 324th that connects into Hylebos Creek.

Michael asked if there was continuous flow from the north to the south and if there were flows from the east and west. Jenna replied that there were. The flow from the north crosses 320th and then crosses into a wetland bog, and then picks up again and crosses I-5 and outlets into Hylebos Creek.

Michael had questions about the flow path and making connections shorter. He asked if the southern area flow would be rerouted to the east side of I-5 at its downstream end.

Michael asked if the new passage under I-5 would be constructed for fish passage or conveyance. Jenna confirmed it would be built for fish passage. Michael asked if we had fish that far upstream. Anna stated that there is a barrier below that and until it is removed, fish won't be able to access our project site.

The team next discussed the prevalence of barriers downstream that prevent access to this area. Questions were asked why these barriers were being replaced when there were existing barriers downstream. The team replied that they are on the injunction list, so they need to be addressed. Michael asked if there was even enough water for fish to reach the project sites. Anna said the streams had intermittent flows; water is present in the winter, but the northern reaches don't receive flow in summer. Anna clarified that onsite ponding persists through the summer, but flows are disconnected downstream before permanent flows are reached. There is no flow connection in the summer.

Michael asked if by widening the channel we're at risk of reducing the flows into the bogs. Anna replied that the plans were designed to ensure we were not reducing flows into the bog or increasing flows draining out of the bog. Michael asked if there was high quality habitat present. Jenna said there were minor improvements to get the channel to connect and the project will have a light hand in the area. Anna added the goal is to preserve the bog.

Cindy asked if this project was similar to another WSDOT project, titled the "Triangle Project". Emily confirmed these projects are adjacent to one another. The Triangle Project will improve I-5, SR 18 and SR 161 and will correct 9 downstream barriers. The Triangle Project's most northern barrier is directly downstream of this project.

Anna next presented the receiving waterbodies. 16b was previously labled North Lake tributary. Anna clarified that one of the TDAs discharges east to Mill Creek and that it is a tributary to the Green River. The other TDAs all flow into Hylebos. The previous Pre-BA had these same barriers. The team does not expect fish to be within 1 mile of the project area under current conditions.

Michael inquired about the new passage under 320th and if it was connected to Dola. Jenna replied that 16a is by Steel Lake and Lake Dola are part of Mill Creek. She stated they were intermittent streams with a lot of fines and heavily modified and very urbanized.

Michael informed the team that there is an old land fill nearby and said there were areas of concern discovered during the Triangle Project investigation. Emily replied that the team was looking into that part of the Triangle Project and that the area of concern was further south of SR 18 on the SE corner of the intersection. Michael asked if there was any hydrologic connection at all. He expressed concern that we were constructing passage and an attractant site that would expose fish to hazardous materials. He followed up asking if the new interchange at 320th would attract fish to an undesireable location. Emily replied that that the project will maintain the creek on the other side of I-5 to avoid any haz mat concerns. The project is rerouting the stream to the west so haz mat shouldn't be an issue.

Jenna presented stormwater effects. The Hylebos tributaries flow into the Hylebos Creek which outlets into the Hylebos Waterway at Commencement Bay. There is one TDA that flows to Mill Creek to Green River and out to the Duwamish waterway. Anna said portions of the project experience some type of overland flow before it reaches a channel, which includes upland or wetland overflow. There are 26 TDAs with 15.81 ac of new PGIS and 16.23 ac of treatment.

Jenna clarified that the type of treatment depends on ownership and location including vaults with presettling basins and sand filters. There are no infiltration factilities now but the design team is looking at options now but space is limited in this area and half the TDAs discharge to facilities that receive some type of overland flow. One TDA flows to Mill Creek. There is no existing treatment and none is planned because this is a very small TDA with minor new PGIS, only 0.06 ac, which is below regulatory thresholds. Anna stated that they are being very thorough with interpreting the new stormwater guidance. Tad said the team followed the effects down to marine waters which was an extensive action area considering the small amount of PGIS involved.

Michael asked about the action area for Mill Creek. Anna said that flows discharge into ditches and then into the Green River, which continues downstream to the Duwamish.

Michael asked if there were specific areas that sand filters could be added for treatment. Anna replied that the area was well developed with a lot of existing pavement. Parking lots with vaults are common in the area. Further north and east treatment trends more towards stormwater ponds.

Michael asked if compost ammended was possible instead of sand filters as CAVS have a higher treatment value. Jenna said the stormwater was a high level of design. She clarified that WSDOT does not prefer sand filters but they do have a large project footprint. The consultants want to allow more room for the facility and they are looking into CAVS for the future. The team is working to preserve footprint for the facility. Michael stated that if it means getting better treatment, then that is a conversation he recommended occur. Jenna said they were open to other types of treatment and are open to more guidance on that.

Michael asked what to expect in the biological assessment. Jenna replied that the assessment will describe the combined wetland facilities and sand filters.

Cindy stated that the effectiveness of BMPs has been researched by Ecology. She requested the BA include language about BMPs and that they may changed based on current and new information.

Michael asked if reconstructed pavement or PGIS had been quantified and added to the tally. Jenna replied that there will be both replaced and new PGIS. The team is currently focused on the new PGIS and Jenna replied that if they wanted to see the replaced too, to let them know and it will be added. Cindy answered by saying that the conversation is ongoing but that the expectation is that both new and replaced should be included. Jeff added that the replaced issue may come up but not sure if the HRM triggers for replacement were met for this project and suggested the team look into it.

Leslie asked if Jeff was proposing no stormwater treatment for the replaced. Jeff replied no, that he was not proposing omitting that in BAs at this time. Leslie asked if this was Programmatic for USFWS. Jeff answered that this was an Indiviual and not on the Programmatic path.

Michael asked if the footprint for the new interchange skimmed the edge of the bog. Anna replied yes, the buffer for the bog would be clipped but the bog itself would not be touched. The outer part of the parcel is wetland and only the inner portion is bog.

Michael asked if we had identified an offsite location for wetland mitigation. Anna said yes, we will be mitigating for wetlands and the team is looking at options now. Michael asked if there were any mitigation bank opportunities. Anna said they would need to check. Kathryn answered that the team hasn't honed in on mitigation for wetlands yet at this point. Actual impacts to wetlands are small considering overall size of the project. The main goal is to avoid the bog and other high functioning wetlands and improve conditions in the area. Anna replied that once the mitigation plan is known, that information will be included.

Tad began presenting effect determinations and implications for species. Terrestrial species are all NE. There is no suitable habitat nearby, so they won't be anywhere nearby. There are effects to aquatic species due to changes to stormwater guidance extending the effect zone to marine waters. Bull trout and critical habitat are NLTAA based on likelihood to be present and the amount of PGIS draining to specific habitats.

Chinook and steelhead would be LTAA and formal based on the new stormwater guidance.

Southern Resident Killer Whale will be mentioned in the BA due to their association with Chinook. Critical habitat is not part of the action area but due to effects to Chinook there is a link due to prey availability, but it is discountable.

The project action area for rockfish and bocaccio extends to marine waters and there is potential for larvae to be in the action area and exposed to stormwater outputs; however the likelihood is very low. Rockfish and bocaccio larvae could be carried upstream by tides and the team is unsure where the cutoff point is for stormwater. They asked if the cutoff would be at the upper extent of the saltwater wedge, brackish water extent or marine water.

Tad said the Hylebos does not go into Commencement Bay but the mixing area at the Hylebos waterway is a mixing area with marine waters. Jeff said the salt wedge may be the possible furthest extent. Rockfish are not expected to be above the mouth. He agreed it was challenging for projects to determine the extent of effects to species in marine waters and concurred the salt wedge may be a good stopping point for consistency.

Anna asked if there were a more refined way to determine the action area. Jeff said that the stormwater working group is working on refining the guidance and that the upstream extent of marine effects is being developed. He said the wedge is the most likely terminus, assuming full dilution at the mouth and below that point there would be no effect to marine waters. Cindy stated she agreed with this determination based on conversations she has had with the working group.

Tad continued by stating that there are no anticipated effects from project construction to NMFS species or bull trout. They are just looking at stormwater effects in the future based on new PGIS in the area. Chinook and steelhead are in Hylebos Creek, Mill Creek and the Green River. They need to be addressed as formal consultation. Tad asked if there was any threshold for PGIS size that doesn't need to be addressed for a TDA, and if that would be applied to Mill Creek.

Jeff replied that if there is a small amount, and there is a spot downstream that it could be diluted out, such as a lake, larger body of water or other contributing basin, you may shorten the distance to just Mill Creek and the confluence to the Green. Then the effects to the Green River would be NLTAA, and downstream of that point the effects would be NE. He suggested in situations where the TDA is small, but the contributing basin is large or there is potential for dilution into a larger waterbody, to have a conservative limit downstream and downstream of that point would be NLTAA or NE.

Michael informed the team that he is familiar with this stream as he had looked at it before for other projects. Chinook were never documented past a certain point downstream, but there is a defined channel in a wetland. The wetlands can absorb a lot of water and the channel can go dry but doesn't consistently. They City of Auburn did an extensive review of the area around 15 years ago because that was part of their stream enhancement consideration plan. There are no additional flows, but there is a large wetland that would help dilute the water.

Anna replied that Michael's information would support Jeffs thoughts that a call of NLTAA below the confluence with Mill Creek could be made. Michael replied that he was not as up to date on the stormwater guidance changes as Jeff or Cindy were, but there is a large wetland there that would help act as a filter.

Cindy recommended being soft on language as the guidance currently does not define where to draw lines for the action area. She further recommended talking about the project and stormwater effects for the project overall and not going into details or making effect determinations for that specific TDA. Tad asked if that would change the action area and make the end point the Green River. Jeff said no, the action area would be the same and to continue including the Green River. Cindy concurred.

The team continued presenting project effects. There were no direct effects to critical habitat as none is present in the immediate work area. But if the action area continues for miles downstream due to stormwater, then critical habitat may be affected. Jeff responded that the working group is still developing the language but there are currently no hard rules right now. He suggested the team proceed with the action area as it is now and to look at the project effects and not by drainages. Cindy stated that where this matters is when we quantify take and the take differs from our action area and our discussion of adverse effects. She clarified that an incidental take statement is where the take is quantified and described.

Tad said there is discountable presence of bull trout. There is one observation bull trout in the Hylebos, but extending the action area through the Green River adds FMO to the action area. The project is NLTAA for bull trout due to the small area draining into that FMO habitat and the unlikelihood of bull trout being in the Hylebos. Michael stated that bull trout were documented in the Green River many years ago close to where the terminus of where Chinook have been documented. He added that there is nothing preventing bull trout from going upstream. He suggested the team speak with Russ Ladley about bull trout in the Hylebos system as the Puyallup regularly survey those streams and they likely have data. Leslie concurred and stated that fish are probably not there in great numbers but reminded the group that a lack of detection does not mean a lack of presence. She said that the team needs to have something to back up their effect calls such as survey data from the last few years. She added that USFWS has had occurrences of bull trout in ditches so they can show up in unlikely places. Michael added that coho are known to get into the Hylebos and there are no barriers preventing them from

getting upstream. We have opened some habitat on the Hylebos with past projects. It is still a degraded system, but it is improving, and there is food for bull trout especially in the lower Hylebos.

Tad confirmed that if the team moved forward with a NLTAA call they would present evidence that they were not likely to be present. Tad asked if the liaisons expected the effect call to be elevated based on what the tribe said. Leslie said it was extremely unlikely that bull trout were present in the immediate action area, but she was interested in what the tribe's response was. Michael said this data has already been collected for the 167 project and the team could likely use that data. Leslie concurred and said the team would have to defend whichever call they made.

Tad said EFH is AA for Pacific salmon due to the downstream fate of pollutants. For pelagic and rockfish, the project covers the lower portion of Green River and there is overlap with these mapped areas and possible response of these species to these pollutants. Tad stated the team was hoping to get further feedback on an effect assessment. Jeff replied by the time the small contribution of stormwater reaches the Green River it is going to be discountable due to the volume of flows in the Green and other flow contributions. Michael suggested the team aim for the cut off being the interface between fresh and salt water. He asked if that included the upper extent of the saltwater wedge. Jeff said they may know that and using the salt wedge was easier to determine. Michael replied that the Green is flat, and the wedge goes far upstream. Jeff said that in those situations, a cut off at the mouth should be the standard practice. If EFH is mapped upstream of that point then address it but geographically we need a cut off point, and where it meets estuary or marine waters is a good point to do so. If EFH is mapped upstream it needs to be addressed. Tad replied it does on the Green but not the Hylebos, especially for ground fish the map just ends. Jeff suggested if it is an action area call and the action area is based on the new guidance, to provide clarification on the downstream extent of where the effect ends.

Jeff asked when the team planned on submitting. Katheryn stated the second week of October. Leslie reminded the team that FHWA will need to review so that should be added to the schedule.

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APPENDIX C

PRELIMINARY STREAM DESIGN DRAWINGS

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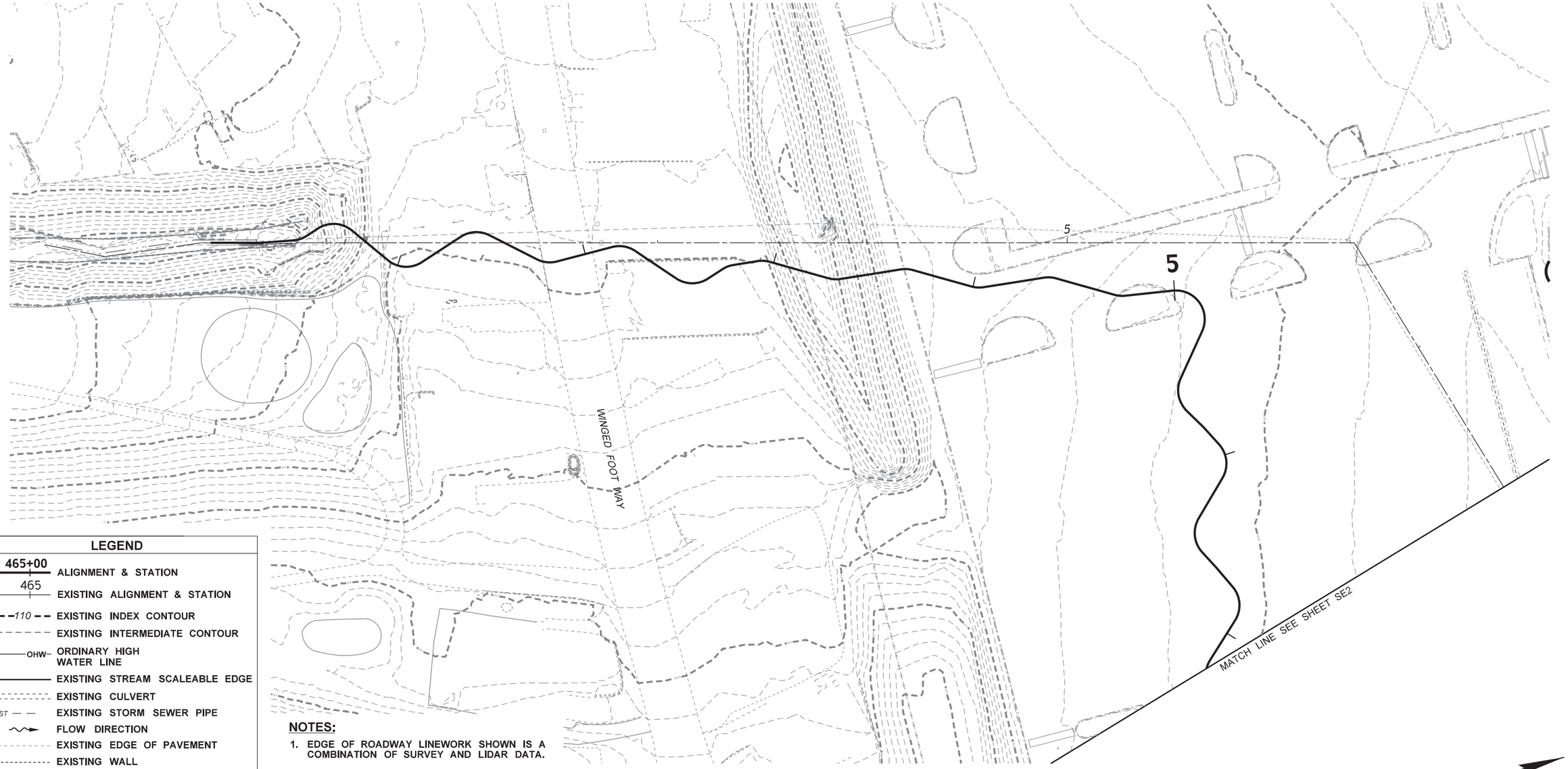

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- FLOW DIRECTION
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- PROPERTY LINE

NOTES:

1. EDGE OF ROADWAY LINEWORK SHOWN IS A COMBINATION OF SURVEY AND LIDAR DATA.
2. HORIZONTAL DATUM: PROJECT DATUM WITH COMBINED FACTOR OF 1.00002121
3. VERTICAL DATUM: NAVD 88
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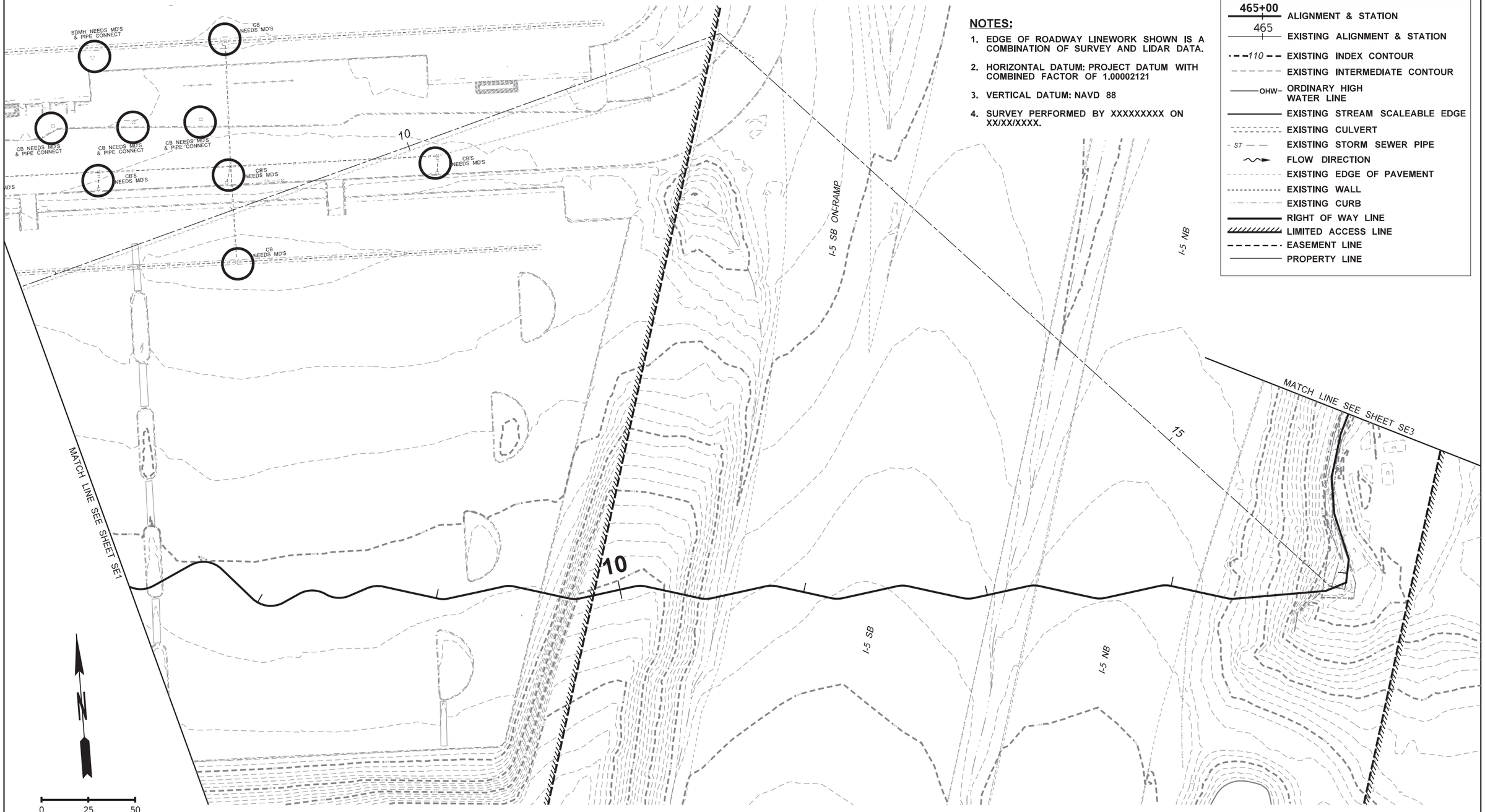

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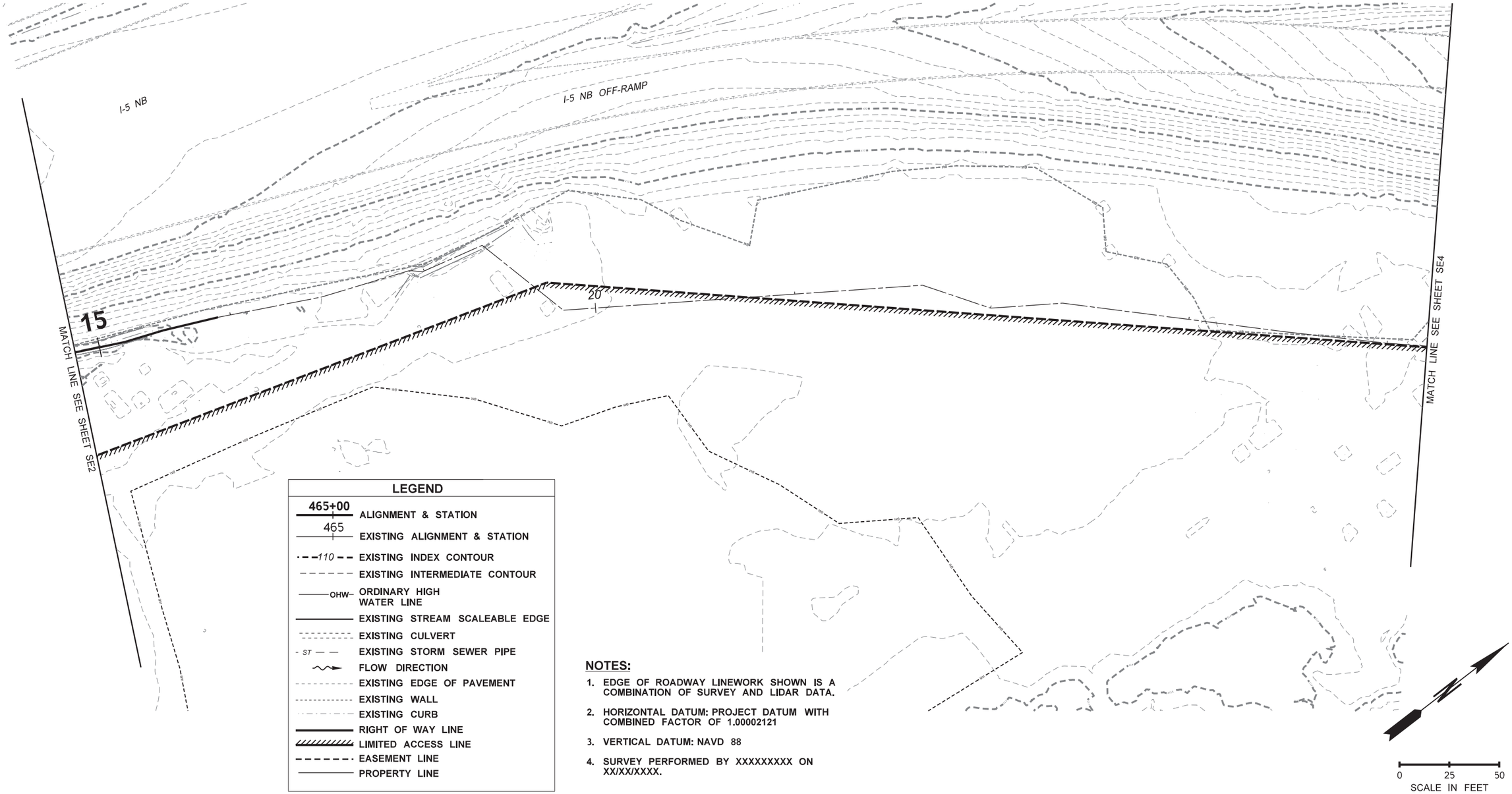

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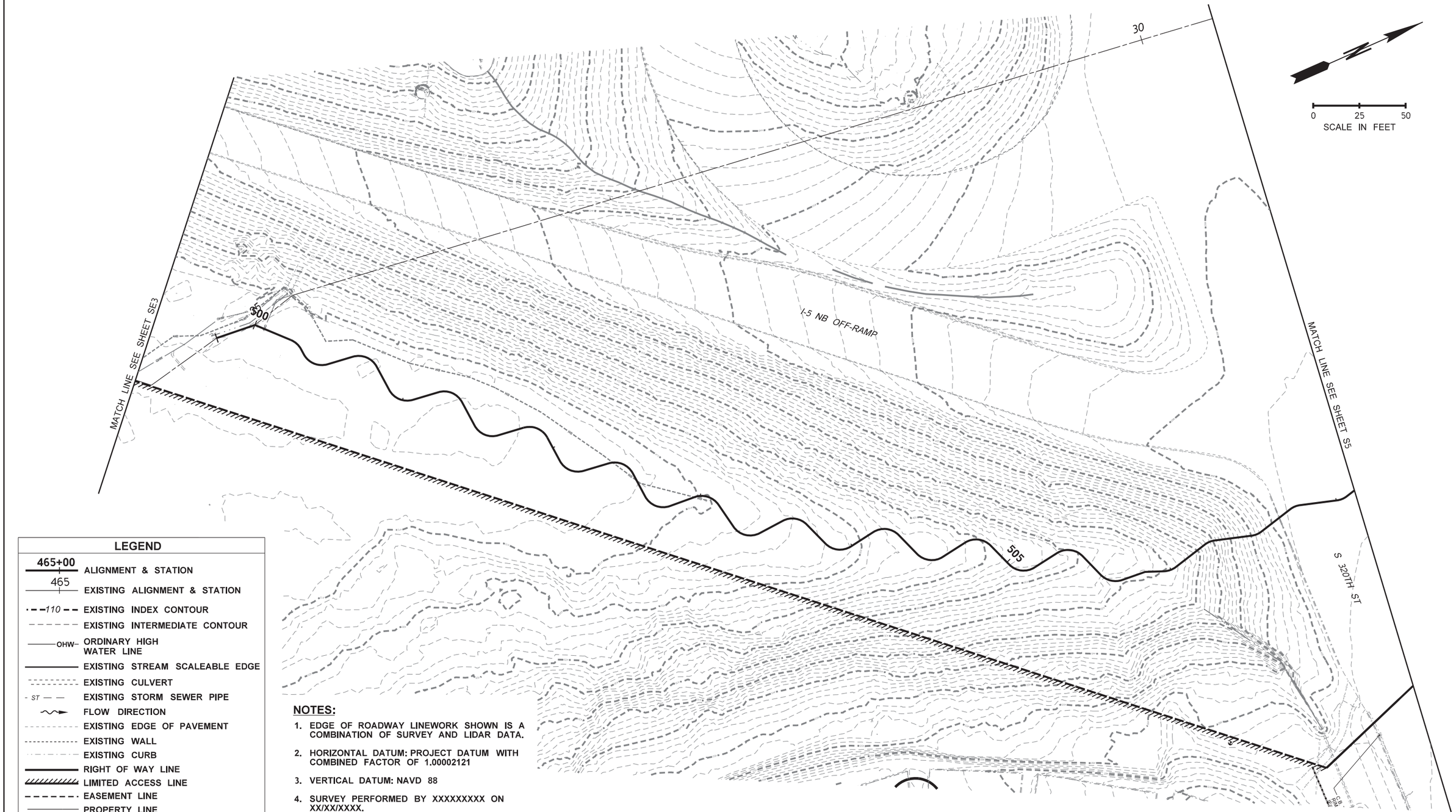

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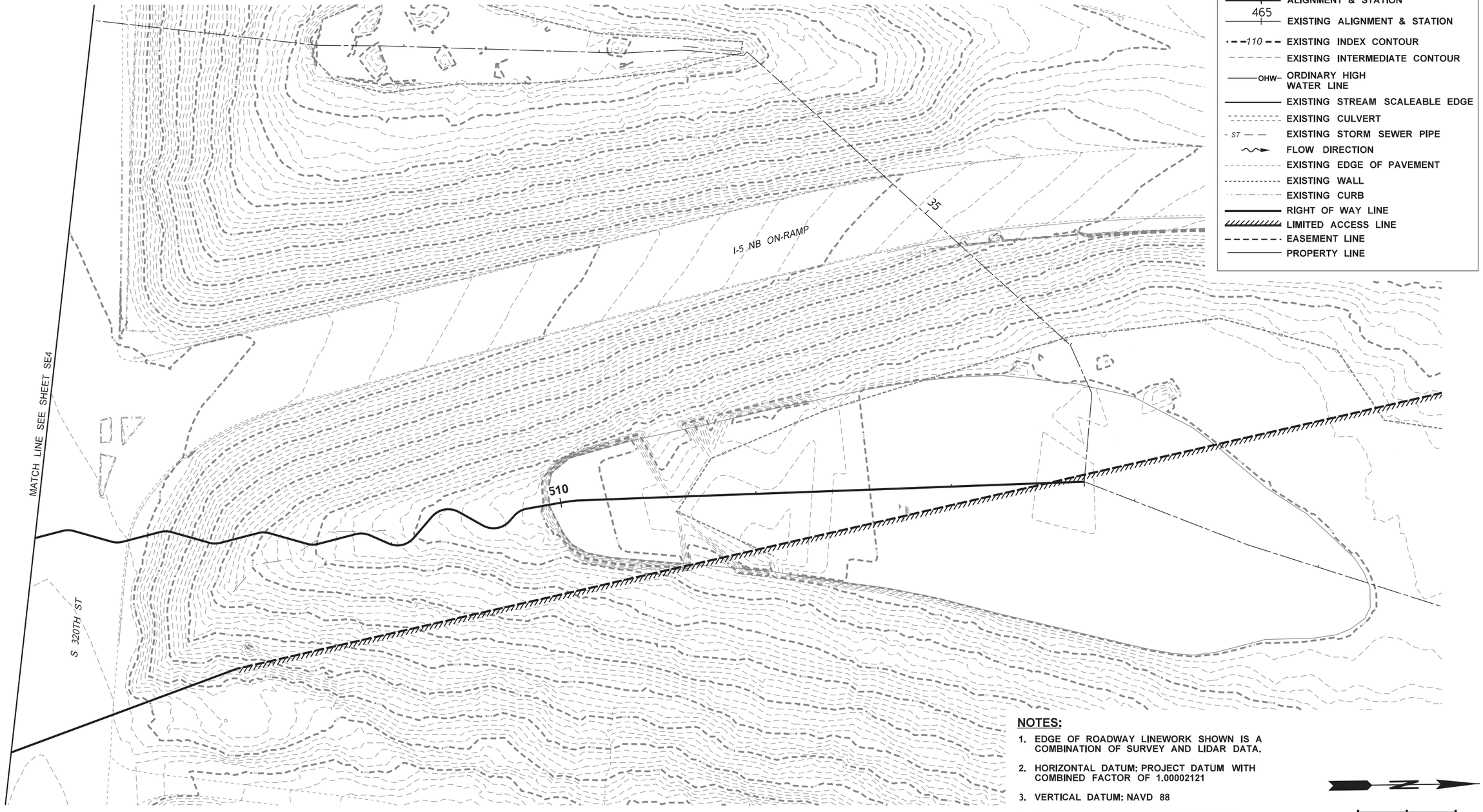

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- EASEMENT LINE
- PROPERTY LINE
- ESTIMATED AREA OF POTENTIAL IMPACT

NOTES:

1. EXACT STRUCTURE TYPE, SIZE, LOCATION, AND WALLS TO BE DETERMINED.
2. GRADING LIMITS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. FINAL LIMITS TO BE DETERMINED BASED ON FINAL STRUCTURE, TYPE, SIZE, AND LOCATION.

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STREAM PLAN

PLAN REF NO STR1

SHEET 6 OF XX SHEETS

NOTES:

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I-5 SB ON-RAMP

I-5 NB

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END CHANNEL GRADING
HS_I-5 LINE 13+82.40

TO BE DETERMINED BY OTHERS

MATCH LINE SEE SHEET STR1

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HS I-5 LINE

I-5 SB

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TO BE DETERMINED BY OTHERS

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STREAM PLAN

PLAN REF NO
STR2

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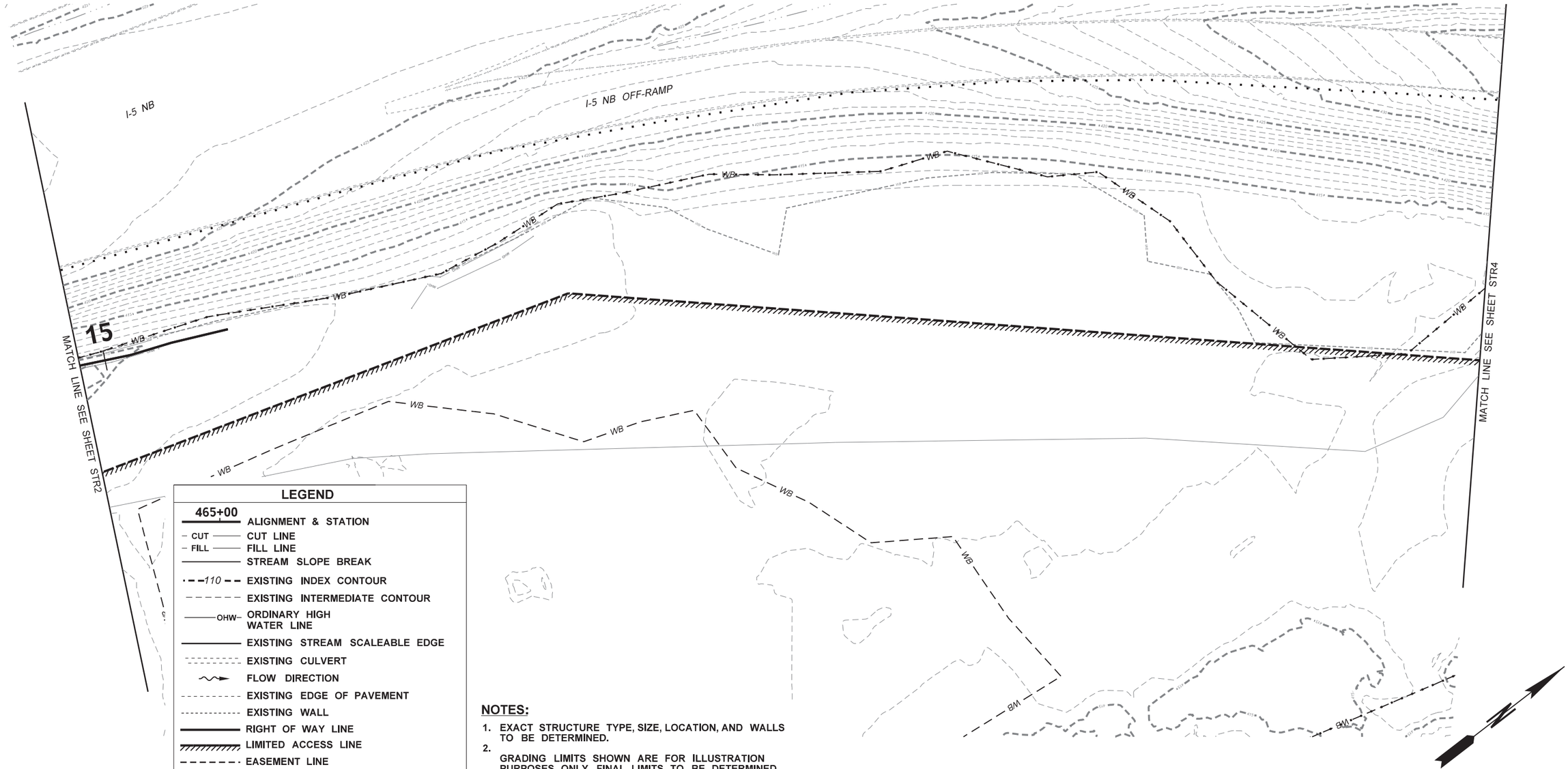

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STREAM PLAN

PLAN REF NO
STR3

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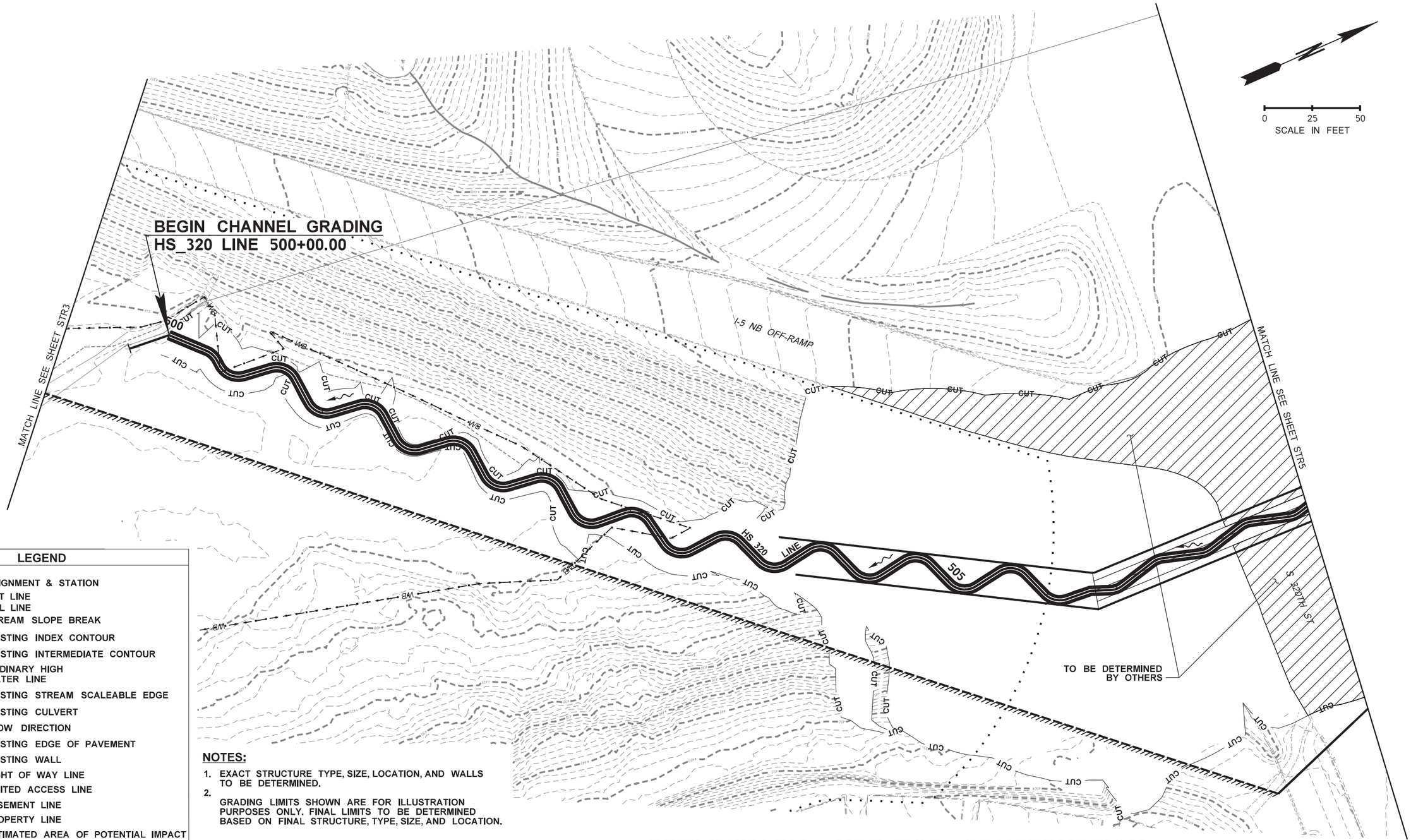

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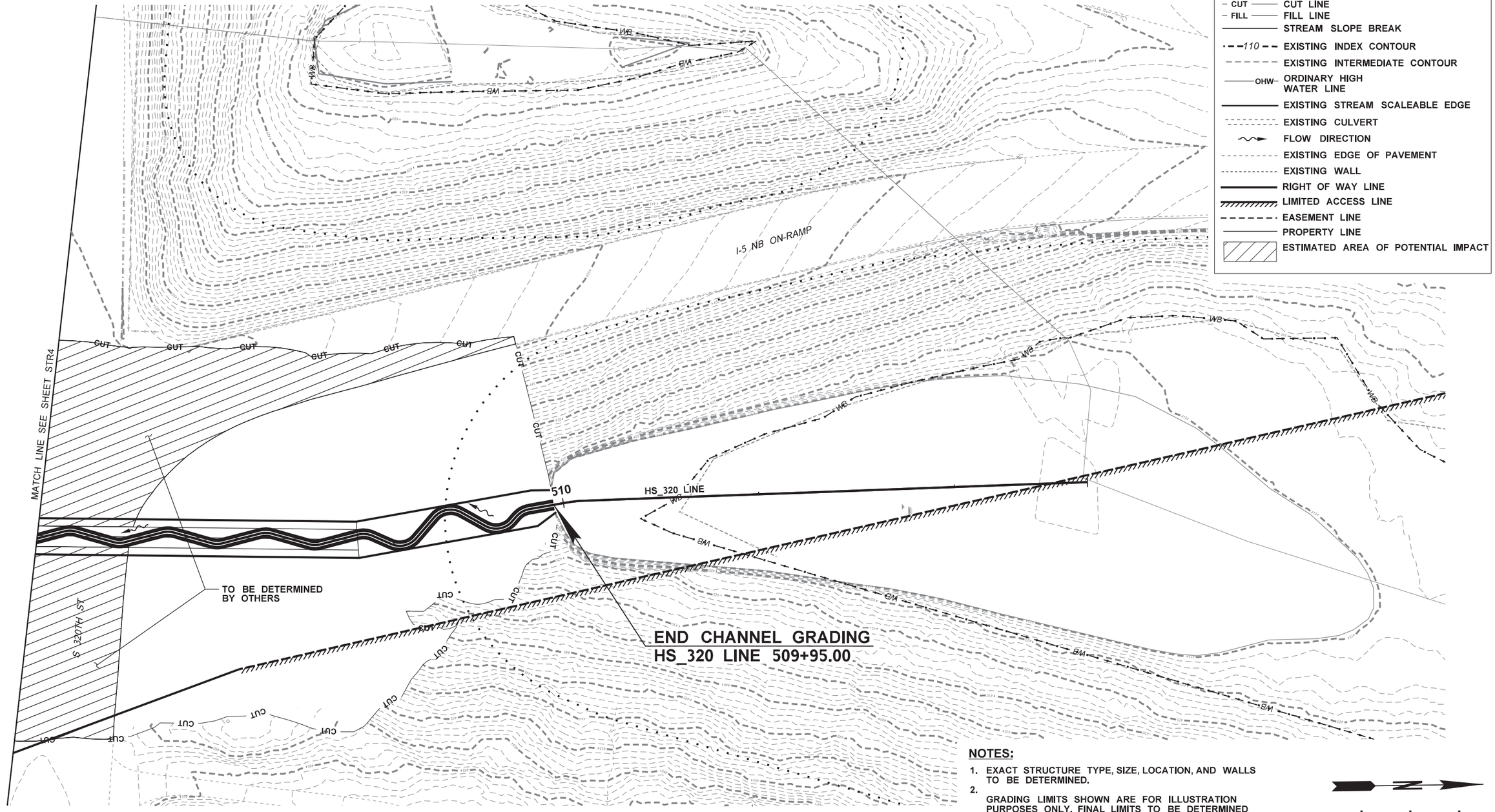
STREAM PLAN

PLAN REF NO STR4

SHEET 9 OF XX SHEETS



PRELIMINARY - NOT FOR CONSTRUCTION

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DESIGNED BY	A. MILLER						
ENTERED BY	J. AUDAR				CONTRACT NO.		LOCATION NO.
CHECKED BY	A. MILLER						
PROJ. ENGR.							
REGIONAL ADM.		REVISION	DATE	BY			

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Washington State Department of Transportation

CITY OF FEDERAL WAY
CITY CENTER ACCESS
PROJECT

STREAM PLAN

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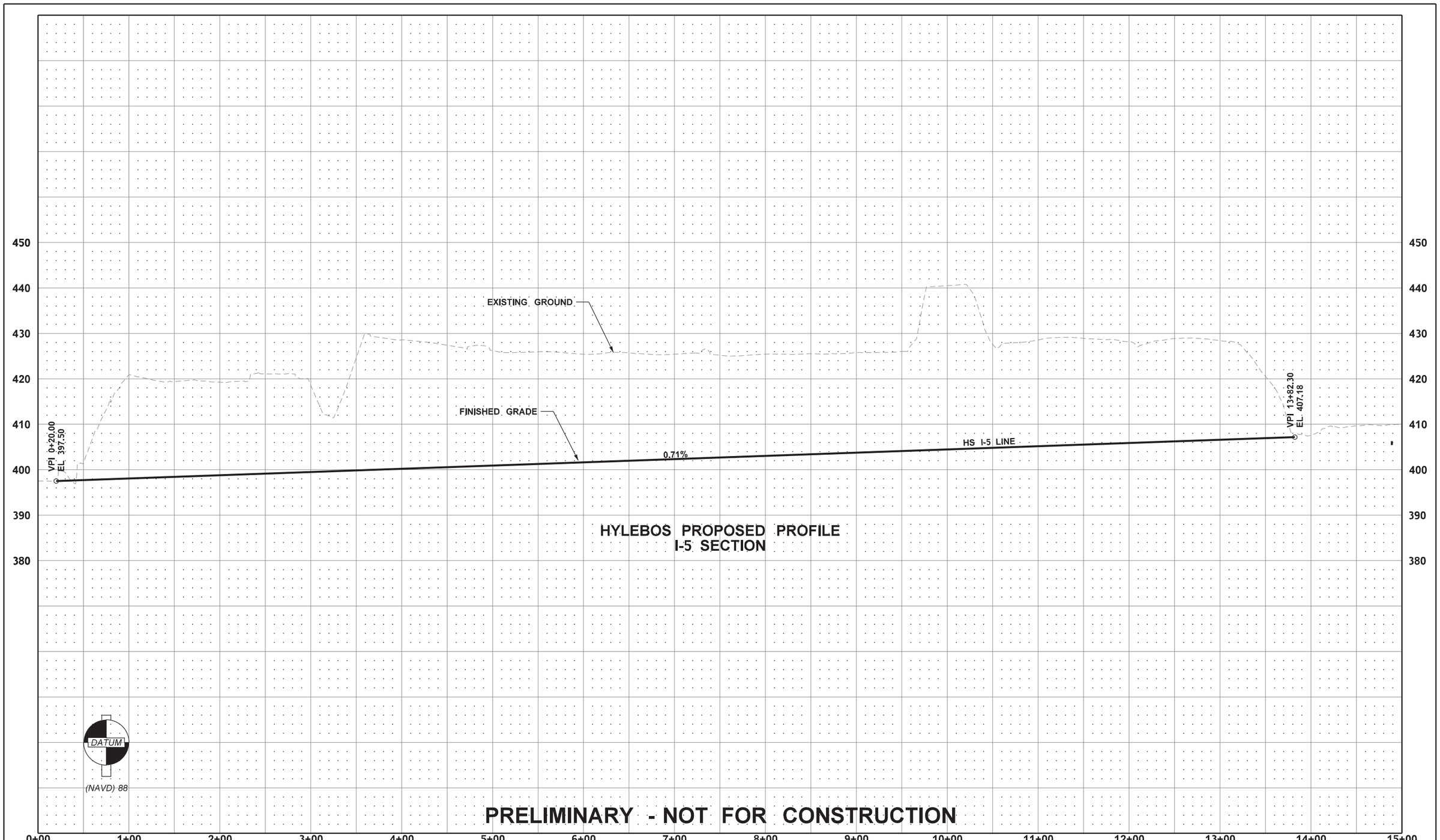

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ENTERED BY	J. AUDAR								
CHECKED BY	A. MILLER								
PROJ. ENGR.									
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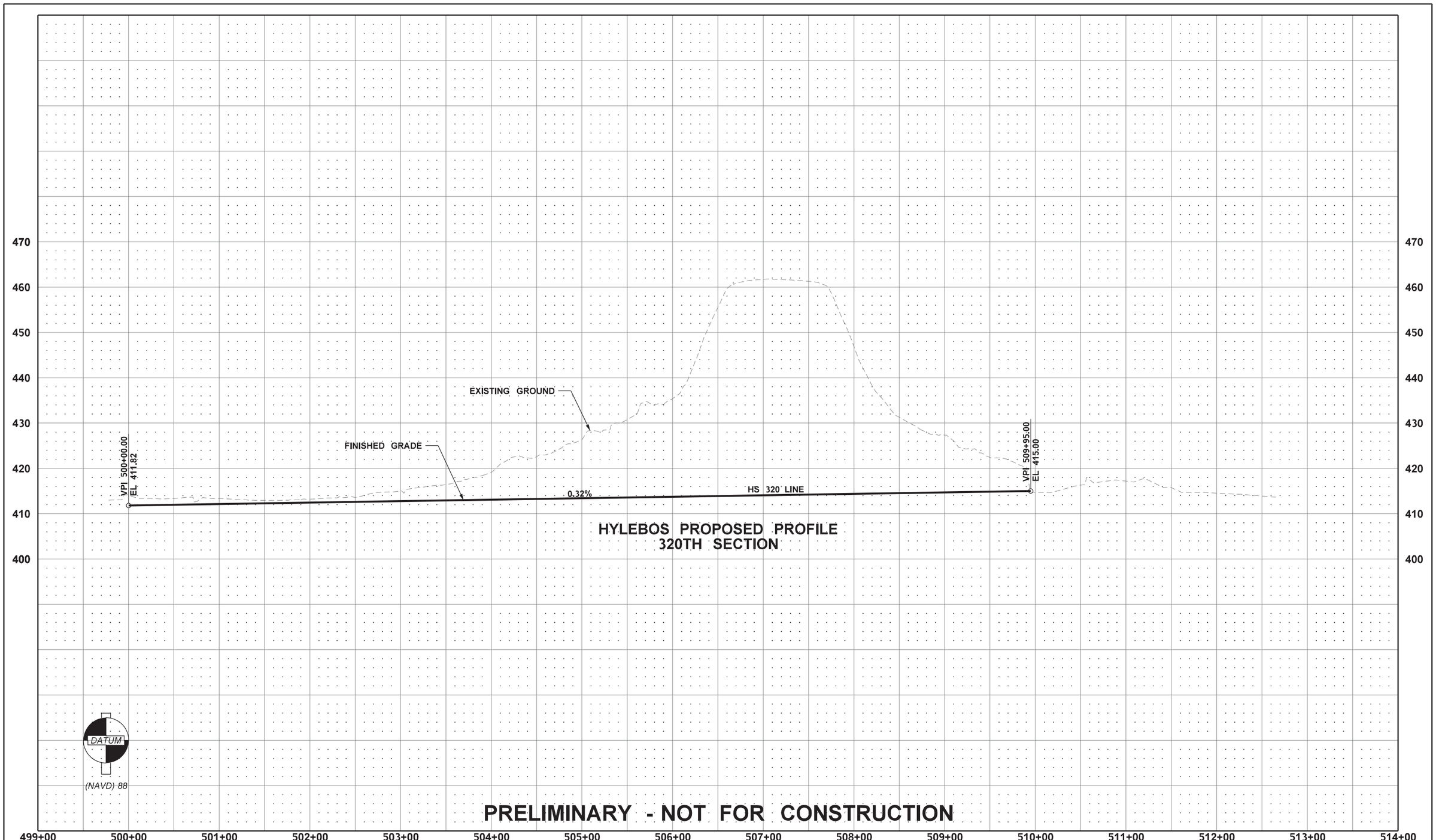
Washington State Department of Transportation

PLAN REF. NO. STP1

SHEET 11 OF XX SHEETS



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DESIGNED BY	A. MILLER								
ENTERED BY	J. AUDAR								
CHECKED BY	A. MILLER				CONTRACT NO.		LOCATION NO.		
PROJ. ENGR.									
REGIONAL ADM.		REVISION	DATE	BY					

Washington State Department of Transportation

CITY OF FEDERAL WAY
CITY CENTER ACCESS PROJECT

STREAM PROFILE

PLAN REF. NO. STP2

SHEET 12 OF XX SHEETS

APPENDIX D

U.S. FISH AND WILDLIFE SERVICE OFFICIAL SPECIES LIST

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405

In Reply Refer To:
Project Code: 2022-0047433
Project Name: Federal Way City Center Access Project

September 02, 2022

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

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

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

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

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
(360) 753-9440

Project Summary

Project Code: 2022-0047433
Project Name: Federal Way City Center Access Project
Project Type: Road/Hwy - New Construction
Project Description: The City of Federal Way initiated the City Center Access Project, hereafter referred to as “the project,” to provide transportation system changes needed to preserve future mobility in the City Center subarea of Federal Way. The purpose of the project is to improve the economic vitality of the City Center and to improve the quality of life by increasing multimodal mobility and access to regional and local trips while protecting the integrity of the Interstate Highway System. Access and mobility are limited by congestion issues along S 320th Street between Pacific Highway S and Military Road, including to and from Interstate 5 (I-5), and by the lack of multimodal facilities across I-5.

The project will consist of the following project elements:

• Modification of the S 320th Street interchange by adding braided ramps and access at S 324th Street
• Construction of a new two−lane bridge over I−5 at S 324th Street
• Extension of S 324th Street from 23rd Avenue S to Weyerhaeuser Way S
• Widening S 324th Street from SR 99 to 23rd Avenue S
• Improvements to S 320th Street west of I-5 to add high-occupancy vehicle (HOV) lanes
• Nonmotorized improvements along 23rd Avenue S, S 320th Street, and S 324th Street.
• Stream realignment and construction of fish-passable culverts on the East Fork Hylebos Tributary 0016A

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@47.313059249999995,-122.2976113139003,14z

Counties: King County, Washington

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Streaked Horned Lark *Eremophila alpestris strigata* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7268	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Bull Trout *Salvelinus confluentus*	Threatened

Population: U.S.A., conterminous, lower 48 states
There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/8212

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

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

Taylor's (=whulge) Checkerspot *Euphydryas editha taylori*	Endangered

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/5907

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

Agency:	Federal Way city
Name:	Anna Hoenig
Address:	719 Second Avenue, Suite 200
Address Line 2:	Suite 200
City:	Seattle
State:	WA
Zip:	98104
Email	ahoenig@parametrix.com
Phone:	2063943700

Lead Agency Contact Information

Lead Agency: Federal Highway Administration

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APPENDIX E

PROJECT AREA PHOTOGRAPHS

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Photo 1. North of S 320th Street. Douglas fir and Western redcedar dominated forest with swordfern understory.

Photo 2. Young Douglas-fir dominated forest at proposed 324th Street, east of I-5.

Photo 3. Forest habitat near proposed S 324th Street roundabout at Weyerhaeuser Way. Douglas fir and Western redcedar dominated forest with salal understory.

Photo 4. West Fork Hylebos Tributary 0014C with Belmor Park in the project area. This stream segment is also managed as a stormwater facility.

Photo 5. Southern segment of East Fork Hylebos Tributary 0016A within Belmor Park in the project area.

Photo 6. Northern segment of East Fork Hylebos Tributary 0016A within Belmor Park in the project area.

Photo 7. The new stream alignment and fish-passable culverts will open up fish habitat to Wetland W11 in the future.

Photo 8. Wetland habitat adjacent to East Fork Hylebos Tributary 0016B north of North Lake.

Photo 9. Location of proposed S 324th Street, east of I-5. Upland forest with heavy invasive English ivy cover.