

Geddes Marina Phase 2 Remediation Biological Assessment

Prepared for
City of Marysville



April 2022

Prepared by
Parametrix

Geddes Marina Phase 2 Remediation Biological Assessment

Prepared for

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CITATION

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
ADT	average daily traffic
AWM	advanced wetland mitigation
BA	biological assessment
BAS	best available science
BMPs	best management practices
BNSF	Burlington Northern Santa Fe
CFR	Code of Federal Regulations
cfs	cubic feet per second
City	City of Marysville
cm/s	centimeters per second
Corps	U.S. Army Corps of Engineers
dB	decibels
dBA	decibels on the A-weighted scale
DPS	distinct population segment
E2EMI	intertidal estuarine persistent emergent
E2SB5	intertidal estuarine mud streambed
Ecology	Washington State Department of Ecology
EFH	essential fish habitat
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FR	Federal Register
ha	hectare
HGM	hydrogeomorphic
HPA	Hydraulic Project Approval
I-5	Interstate 5
LWD	large woody debris
NMFS	National Marine Fisheries Service
OHWL	ordinary high water line
PBF	physical and biological feature

ACRONYMS AND ABBREVIATIONS (CONTINUED)

PFMC	Pacific Fishery Management Council
ppt	parts per thousand
PSSB	saturated palustrine scrub-shrub
RM	river mile
RI/FS	Remedial Investigation/Feasibility Study
Services	NMFS and USFWS
SMP	Shoreline Master Program
SPCC	spill prevention, control, and countermeasures
SR	State Route
SRKW	southern resident killer whale
SWPPP	Stormwater Pollution Prevention Plan
TESC	temporary erosion and sediment control
TMDL	Total Maximum Daily Load
TSS	total suspended solids
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 Marysville has prepared this biological assessment (BA) on behalf of the U.S. Army Corps of Engineers (Corps) to facilitate consultation on the Geddes Marina Phase 2 Remediation project under Section 7 of the Endangered Species Act (ESA). The primary federal nexus for this project is the need for a Federal Clean Water Act Section 404 permit from the Corps.

In 2016, the City initiated an interim remedial action on the Geddes Marina, located at 1326 First, due to soil contamination from past uses. This interim action included demolishing existing structures and associated facilities on the Geddes Marina site and placing a cap of clean soil over the upland portions of the site. The interim action did not include the remediation of contaminated sediments within the former marina boat basin. Per the Remedial Investigation and Feasibility Study Report (RI/FS) (Maul, Foster, and Alongi, Inc., 2020), sediment impacts are widespread within the former marina basin. The purpose of the project is to complete the remedial action to reduce effects on fish, wildlife, and the public caused by contact with contaminated sediments.

The Proposed Action involves capping impacted sediment within the former boat basin and outlet channel to an elevation above the high-water line (OHWL) of the basin with imported clean fill material. A stabilizing layer consisting of a geogrid will be placed on top of the existing inundated sediment to allow for construction and to reduce uneven settling and consolidation of the proposed cap layer. Approximately 5 to 8 feet of clean, imported fill will be used to cap impacted sediments to bring the final grade above the OHWL. Additional fill material will be placed to extend the fill to the top of the existing top of bank of the former boat basin to be even with the remaining site.

The City's downtown stormwater conveyance system currently discharges into the northern portion of the former boat basin, south of First Street. Stormwater discharging from the City's Downtown Stormwater Treatment facility will be rerouted via a conveyance pipeline and energy dissipation structure to a conveyance channel constructed along the western edge of the Geddes Marina site as part of the project. It is necessary to construct an open-channel stormwater conveyance channel because existing onsite soils are too soft and compressible to support the weight of the conveyance pipeline. The short section of pipeline necessary to convey water to the discharge structure will be supported on steel pipe piles. This portion of pile supported pipe is landward of Ebey Slough and will not require in-water work.

The conveyance channel will be tidally influenced and will be designed to mimic a natural tidal channel to conform with the City's Shoreline Management Act policies and regulations. The remediation project includes onsite buffer restoration as required by City of Marysville Critical Areas code. Wetlands and areas below the OHWL of Ebey Slough that are temporarily disturbed by the project will be restored. The remaining upland site area will be seeded with field turf grass mix. Mitigation for impacts to wetlands and aquatic resources will be provided by applying credits from the City's Qwuloolt Advanced Wetland Mitigation (AWM) site.

The project will have primarily beneficial effects on listed species in the long term. The purpose of the project is to complete the remedial action to reduce effects on fish, wildlife, and the public caused by contact with contaminated sediments. The proposed action will eliminate the pathways that listed species and/or their prey species could come in contact with contaminated sediments. There is the potential to affect listed species during construction. Project activities with the potential for direct effects on ESA-listed species include ground-disturbing work and equipment use near and within Ebey Slough. Potential effects of these activities include construction-related noise, temporary loss or degradation of riparian or in-stream habitat (including water quality), and disturbance of fish during

EXECUTIVE SUMMARY (CONTINUED)

in-water work. The project will implement impact avoidance and minimization measures to reduce effects on listed species and critical habitat.

The risk of exposure to construction-related effects will be minimized by isolating work areas from Ebey Slough, implementing effective BMPs to control erosion, sedimentation, and construction-generated stormwater, and/or performing in water during the approved in-water work window.

Table ES-1 identifies the listed species and critical habitats addressed in this BA and summarizes the effect determinations.

The project may adversely affect freshwater essential fish habitat (EFH) for Pacific salmon and groundfish in Ebey Slough. However, it will not adversely affect EFH for coastal pelagic species.

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

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

DPS = Distinct Population Segment; ESU = Evolutionarily Significant Unit

1. INTRODUCTION

The former Geddes Marina Site, located at 1326 First Street in Marysville, Washington, is within the City of Marysville’s Downtown Master Plan Area (Figure 1-1). Project-related photographs are included in Appendix A. The Geddes Marine Phase 2 Remediation Project (project) will complete a remedial action on the former Geddes Marina site. In 2016, the City initiated an interim remedial action on the Geddes Marina site (Phase 1). This action included demolishing existing structures and associated facilities on the Geddes Marina site and placing a cap of clean soil over the upland portions of the site. The interim action did not include the remediation of the former marina boat basin. In January 2019, the City removed all remaining boat houses and docks associated with the former Geddes Marina. Per the project’s Remedial Investigation and Feasibility Study Report (RI/FS) (Maul, Foster, and Alongi, Inc., 2020), sediment impacts are widespread within the former marina basin. Multiple chemical groups exceed cleanup levels. The purpose of the project is to complete site remediation to allow the future planned use of the site as a public park.

Project Information

Project Name: Geddes Marina Phase 2 Remediation
State: Washington
County: Snohomish
Location: Section 33, Township 30 North, Range 5 East, W.M.
Proponent: City of Marysville
Preparer: Parametrix
719 2nd Avenue, Suite 200
Seattle, WA 98104
Contact: Benn Burke, Senior Consultant
Phone: 206-841-6002

1.2 Federal Nexus

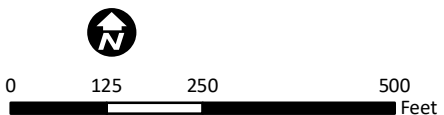
Section 7 of the Endangered Species Act (ESA) requires that federal actions do not jeopardize the continued existence of any threatened, endangered, or proposed species or result in the destruction or adverse modification of critical habitat. The proposed Geddes Marina Phase 2 Remediation project will require a permit from the U.S. Army Corps of Engineers (Corps), which is the federal nexus for the proposed project.

1.3 Report Objectives

This biological assessment (BA) has been prepared by the City on behalf of the Corps to evaluate the potential effects of the proposed action on species and habitats federally listed under the ESA by the Services. The City has prepared this BA to facilitate coordination between the federal action agency (Corps) and the Services.



Source: Snohomish County,
© Mapbox, © OpenStreetMap



- Project Area
- City Boundary
- Parcel
- Railroad

Figure 1-1
Project Vicinity Map
Geddes Marina Phase 2 Remediation

Marysville, WA

This BA describes baseline conditions and potential effects on ESA-regulated fish and wildlife and critical habitat that may be present in the vicinity of the action. This document describes potential direct and indirect effects of the proposed action, as well as the effects of interrelated and interdependent actions upon federally listed species, critical habitat, and the environmental baseline within the project area related to the Geddes Marina Phase 2 Remediation project.

In addition, this BA addresses the potential for the proposed action to adversely affect essential fish habitat (EFH) pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267). The EFH assessment is included in Chapter 8.

1.4 Consultation History

No Pre-BA meeting was attended for the proposed action and no other correspondence with the USFWS or the NMFS has been made to date concerning the proposed action or its potential effects on listed species under their jurisdiction with the exception of obtaining species lists for the project area. Species lists applicable to the project area are included in Appendix B.

1.5 Project Background and Overview

The City's Downtown Master Plan identifies the expansion of the existing Ebey Waterfront Park onto the former Geddes Marina site as an integral element of the overall vision for open spaces, attractive streetscapes, and landscaped areas linking various parts of the downtown together, providing amenities and encouraging development in the downtown area (City of Marysville 2009). In 2010 the City purchased the Geddes Marina site, which is immediately west of the existing Ebey Waterfront Park, with plans to expand park facilities and uses onto the former marina site.

The Geddes Marina site was used to moor boats and for wood products operations starting in the late 1800s. A lumber mill was once located near the northwest corner of the site and operated from the early 1900s to the 1940s. The property became a marina in 1947 and the site was dredged to create a boat basin sometime between 1938 and 1947. In addition to the boat basin, the marina included docks and floats moored in Ebey Slough. The marina included boat storage and maintenance facilities.

All of the former boat houses, floats, docks, and other onsite structures were removed as part of the initial interim remediation action and subsequent site preparation work. The marina boat basin area of the site occupies an area of approximately 2 acres. The Geddes Marina site is currently vacant (Appendix A).

1.5.1 Other Actions In the Project Vicinity

The City is constructing their Downtown Stormwater Treatment Project (DSTP), which is a stormwater treatment retrofit project that will collect and provide water quality treatment for stormwater runoff from downtown Marysville. The DSTP project will be constructed in the northwest of the former Geddes Marina boat basin. Construction is scheduled to begin in early 2022 and be complete in late 2022 or early 2023.

The City is currently planning the expansion of the existing Ebey Waterfront Park, which is directly east of the Geddes Marina site. The primary focus of the park expansion project will be the development of the Geddes Marina site, including the same parcels where both the DSTP and the Geddes Marina Basin

Phase 2 Remediation Project occur. The park expansion project will include expanded and improved public access to Ebey Slough, restoration of the associated shoreline; new overlooks, piers, and docks to facilitate public access to Ebey Slough; additional space and facilities for public outdoor recreation and events; and improved parking, pedestrian circulation, and accessibility within the existing park area. The City completed preliminary design of the park expansion project in March 2019. The Ebey Waterfront Park Expansion project will be implemented and constructed as a separate project following completion of the Downtown Stormwater Treatment Project and Geddes Marina Basin Phase 2 remediation project. No improvements pertaining to park expansion are associated with the proposed action. The proposed action only includes completing the remediation project to allow for safe use of the site in the future.

1.6 Project Location

The Geddes Marina site is in the northwest quarter of Section 33, Township 30 North, Range 5 East, Western Meridian. The project area includes four City-owned parcels situated between First Street to the north, Ebey Slough to the south, a Burlington Northern Santa Fe (BNSF) railroad to the west, and Ebey Waterfront Park to the east (Figure 1-1). Table 1-1 below includes specific information about each parcel.

Table 1-1. Project Property Details

Parcel #	Size (acres)	Notes
30053300202700*	4.53	The former boat basin is within this parcel.
30053300203100	0.25	
30053300202900	0.12	
30053300202500	0.12	

* Parcels have frontage on Ebey Slough.

The parcels are gently sloping toward the slough from an elevation of about 15 feet at First Street to the shoreline of the Ebey Slough. The parcels are located within the City’s Downtown Commercial zoning area. Surrounding land use is primarily commercial.

Ebey Slough (6th Field HUC: 171100110203) is a right bank side channel/tidally influenced distributary of the Snohomish River and connects to the Snohomish River at approximately river mile (RM) 8.1. Ebey Slough then flows north-northwest for approximately 12.4 miles before discharging to Possession Sound approximately 2 miles north of the mouth of the Snohomish River (Williams et al. 1975). Ebey Slough is located within Water Resource Inventory Area (WRIA) 7, the Snohomish Basin. The project area is approximately 2 miles upstream (west) of Possession Sound.

2. PROPOSED ACTION

The Phase 2 Remedial Action involves capping impacted sediment within the former boat basin and outlet channel to an elevation above the high-water line (OHWL) of the basin with imported clean fill material. Project plans are included in Appendix C. The purpose of the cap and fill is to eliminate the primary pathway for contaminated sediments to affect water quality, fish and wildlife, and people. Once the cap is placed and the former boat basin is filled, tidal action and stormwater inflows will no longer contact the contaminated sediment. The cap consists of a stabilizing layer of a geogrid placed on top of the existing sediment to create a separating layer, allow for construction, and reduce uneven settling and consolidation of the proposed cap layer. Approximately 5 to 8 feet of clean, imported structural fill will be used to cap impacted sediments to bring the final grade above the OHWL. Additional clean select fill material will be placed to extend the fill to the top of the existing top of bank of the former boat basin to level the remaining site.

The City's downtown stormwater conveyance system currently discharges into the northern portion of the former boat basin, south of First Street. Stormwater discharging from the City's Downtown Stormwater Treatment facility will be rerouted via a conveyance pipeline and energy dissipation structure to a conveyance channel constructed along the western edge of the Geddes Marina site. It is necessary to construct an open-channel stormwater conveyance channel because existing onsite soils are too soft and compressible to support the weight of a fully surcharged conveyance pipeline. The short section of pipeline necessary to convey water to the discharge structure will be supported on steel pipe piles. This portion if of pile-supported pipe is landward of Ebey Slough and will not require in-water work.

The conveyance channel will be tidally influenced and will be designed to mimic a natural tidal channel to the extent possible to conform with the City's Shoreline Management Act policies and regulations. Constructing a complete analogous tidal channel is not feasible because of the need to avoid scour that may damage the cap material and expose and remobilize contaminated sediments. The remediation project includes onsite buffer restoration as required by City of Marysville Critical Areas code. Wetlands and areas below the OHWL of Ebey Slough that are temporarily disturbed by the project will be restored. The remaining upland site area will be seeded with field turf grass mix. Compensatory, mitigation for impacts to wetlands and other aquatic resources will be provided by applying credits from the City's Qwuloolt Advanced Wetland Mitigation (AWM) site.

2.1 Description of Project Sequencing and Timeline

It is anticipated that the proposed action can be constructed over an 18-month period. The initial stage will be to isolate the boat basin and area north of Ebey Slough from the tidally influenced slough. The work to isolate the work areas and other work that occurs waterward of the ordinary high water line of Ebey Slough will happen during the approved in-water work window, which is yet to be established for the project. Based on information obtained from WDFW's and the Corps' websites, the in-water work window is expected to extend from July 15 to August 30. Work will occur following this general sequence with some overlap between activities:

1. Installation of erosion control measures.
2. Isolation of the former marina basin.
3. Installation of stormwater bypass diversion.
4. Dewatering of the former marina basin.

5. Excavation of the conveyance channel landward of Ebey Sough.
6. Placement of the cap material.
7. Construction of stormwater conveyance pipeline and energy dissipator.
8. Placement of topsoil and final site grading landward of Ebey Sough.
9. Excavation to complete the conveyance channel and restore the shoreline along Ebey Slough.
10. Installation of Restoration plantings and seeding.

2.2 Interrelated and Interdependent Actions

An interrelated action is any activity that depends on the larger action for its justification. An interdependent action is one that has no independent utility apart from the proposed action. Interdependent actions that may occur include maintenance of the facilities following construction. Interrelated activities resulting from the proposed action include mitigation for wetland and stream impacts within the construction areas and replanting impacted areas with native vegetation.

2.3 Impact Avoidance and Minimization Measures

Conservation measures and best management practices (BMPs) have been incorporated into the proposed project to avoid and minimize short-term and long-term impacts to listed fish and wildlife species and their habitats in the project vicinity. Significant short-term effects on water quality are not expected if erosion control and spill containment BMPs, including isolating the former marina basin from Ebey Slough, are properly implemented, monitored, and maintained during construction. Long-term water quality impacts are not expected.

The primary purpose of the project is to remediate a known area of sediment contamination, which will reduce potential water quality impacts and reduce the potential future exposure to fish and wildlife to the contamination. A temporary erosion and sediment control (TESC) plan and Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented to minimize sedimentation into Ebey Slough, minimize erosion to surrounding areas, and protect water quality during construction. The following sections include BMPs and conservation measures designed to avoid and minimize impacts to listed species.

2.3.1 Erosion and Sediment Control

- Implementing construction stages that minimizes the amount of earthwork that exposes the ground surface to erosion.
- Implementing a TESC plan, including sediment-control BMPs such as silt fences, check dams, sediment traps, sedimentation basins, and flocculation methods.
- Using erosion-control practices (seeding, mulching, soil conditioning with polymers, use of geo-synthetics, erosion-control blankets, and vegetative buffer strips).
- Using construction entrances, exits, and parking areas that reduce sediment tracking onto public roads.
- Performing routine inspections of erosion-control and sediment-control BMPs and subsequent BMP maintenance.

2.3.2 In-Water Work

- Work within Ebey Slough will require a Hydraulic Project Approval (HPA) from WDFW. The project will comply with all permit conditions to minimize impacts on aquatic resources.
- The marina basin will be isolated from Ebey Slough and stormwater discharges will be diverted and bypassed through the work area prior to placing the cap or constructing the conveyance channel.

2.3.3 Clearing/Vegetation Removal

- Exposed slopes and disturbed areas around the construction area will be stabilized and vegetated.
- High-visibility construction fencing around the work area will be installed to protect sensitive areas such as wetlands and the shoreline from construction related impacts.
- Temporary impacts to the wetland and aquatic area buffers will be restored in accordance with local Critical Area regulations.

2.3.4 Stormwater Pollution/Spill Prevention

- A Spill Prevention, Control, and Countermeasures (SPCC) plan will be implemented. Elements of this plan will satisfy all pertinent requirements set forth by federal, state, and local laws and regulations.
- All vehicles operated within 150 feet of a waterbody will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation. When not in use, all vehicles will be stored in designated staging areas outside of wetlands, streams, and associated buffers. Other vehicles that may be stored in place will be inspected daily for fluid leaks.
- All mechanical equipment will be fueled at least 150 feet from a waterbody. Spill response equipment will be on-site for potential fluid leakage.

2.3.5 Staging Areas

- All staging and stockpile areas will be located outside of waterbodies, wetlands, and vegetated buffers.
- Staging areas will be located in areas that will prevent the potential for contamination of any wetland or water body. Servicing and refueling of vehicles will not occur within 150 feet of the Ebey Slough to reduce potential spills of petroleum and hydraulic fluids in sensitive areas. Additionally, drip pans will be fitted with absorbent pads and placed under all equipment being fueled.
- Erosion of stockpiled materials will be controlled per the City of Marysville Engineering Drainage and Erosion Control Design Standards (City of Marysville 2016).

2.3.6 Construction Activities

- Any use of wet concrete will include provisions for allowing adequate time and protection of material to allow adequate curing before coming into contact with water.

2.3.7 Shading

- There will be no overwater structures constructed as a result of the project.

3. ACTION AREA

The ESA requires that potential effects on listed and proposed endangered and threatened species be evaluated in relation to the complete range of area influenced by the proposed action (the action area) (50 Code of Federal Regulations [CFR] Part 402.02). The action area encompasses the complete extent where measurable direct and indirect effects resulting from the proposed action are foreseeable and are reasonably certain to occur (USFWS 1998).

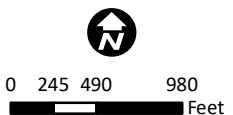
For this assessment, the action area generally includes the entire construction footprint, which includes the parcels including and surrounding the former Geddes Marina. The terrestrial zone of effect includes the project footprint due to clearing, grading, and excavation activities. In addition, the terrestrial zones potentially affected include those areas affected by an increase in noise and human activity. For this project, noise associated with construction activity is anticipated to extend west to Interstate 5 (I-5) for approximately 550 feet, and in all other directions for 3,200 feet prior to reaching background noise levels as determined by using noise assessment guidance provided by the Washington State Department of Transportation (WSDOT 2019) (Figure 3-1).

The action area also includes an aquatic zone of effect extending approximately 300 feet upstream and 300 feet downstream from the project limits (Figure 3-1). These distances encompass the area where aquatic habitats may be subject to direct and indirect effects related to sedimentation and turbidity resulting from in-water work along the shoreline. See Section 6.1 of this BA for a more detailed discussion of how the extent of project-related effects for terrestrial noise was determined.

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Source: Snohomish County,
© Mapbox, © OpenStreetMap



- Project Area
- Terrestrial Zone of Effect
- City Boundary
- Aquatic Zone of Effect
- Railroad

Figure 3-1
Project Action Area
Geddes Marina Phase 2 Remediation

Marysville, WA

4. STATUS/PRESENCE OF LISTED SPECIES AND DESIGNATE CRITICAL HABITAT IN THE ACTION AREA

4.1 Species and Critical Habitat List(s) and Listing Status

USFWS (2021) and NMFS indicate that the project will occur within the general range of the federally listed species and designated critical habitats shown in Table 4-1 below. No species proposed for listing are known or expected to occur in the action area, and there are no proposed designations of critical habitat. Appendix B contains the complete USFWS species list for the project area. NMFS does not provide species lists for individual projects. However, the project site lies within the Puget Sound recovery domain, where populations of Chinook salmon and steelhead are listed as Threatened. This document also addresses potential impacts on southern resident killer whales, based on the potential for adverse impacts on Chinook salmon. The WDFW Priority Habitats and Species database was also consulted to assist with the identification of federally listed species and their occurrence in the action area (WDFW 2021a).

Table 4-1. Occurrence of Listed Species and Critical Habitat Within the Action Area

Common Name	Scientific Name	ESA Status*	Jurisdiction	Critical Habitat
Puget Sound Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	Threatened	NMFS	Yes
Puget Sound Steelhead	<i>O. mykiss</i>	Threatened	NMFS	Yes
Southern Resident Killer Whale	<i>Orcinus orca</i>	Endangered	NMFS	No
Bull Trout	<i>Salvelinus confluentus</i>	Threatened	USFWS	Yes
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threatened	USFWS	No
Oregon Spotted Frog	<i>Rana pretiosa</i>	Threatened	USFWS	No
Streaked Horned Lark	<i>Eremophila alpestris strigata</i>	Threatened	USFWS	No
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Threatened	USFWS	No

Three of the species identified in Table 4-1 are not expected to occur in the project action area for the following reasons:

- Streaked horned larks are not expected to use habitats in the action area. This species is known to occur in portions of southern Puget Sound, along the Washington coast, and at lower Columbia River islands (78 Federal Register [FR] 61451, October 3, 2013). Breeding habitat for streaked horned larks in Washington consists of grasslands and sparsely vegetated areas at airports, sandy islands, and coastal spits. No such habitat is present in the action area. The nearest known breeding area is more than 60 miles from the action area. The nearest location where critical habitat has been designated for the streaked horned lark is more than 100 miles from the project 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, although to be conservative a minimum patch size of 50 acres will be used to define potentially suitable habitat for this species. 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 project area (WDFW 2021a; eBird 2021). 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 action area is situated in the lower Snohomish River estuary, which is relatively devoid of riparian woodlands, especially riparian woodlands larger than 50 acres, thereby lacking the characteristics of potentially suitable habitat for yellow-billed cuckoos. No critical habitat for the yellow-billed cuckoo has been designated in Washington.

- Oregon spotted frogs are associated with large emergent freshwater wetlands, typically larger than 10 acres (Pearl and Hayes 2004). The proposed project has elements located within and adjacent to the tidally influenced portion of Ebey Slough within the lower Snohomish River estuary. No freshwater wetlands are located on site and no alterations will occur to freshwater wetlands. The closest known extant population of Oregon spotted frog is along the boundary of Skagit and Whatcom Counties along the Samish River. Similarly, these areas are also designated as critical habitat. No critical habitat for Oregon spotted frog occurs within the project action area.

Based on the above, the project has no potential to affect streaked horned larks, yellow-billed cuckoos, or Oregon spotted frogs, and these species will not be addressed further in this analysis. Information from the Washington Department of Natural Resources (WDNR) Natural Heritage database indicates that no ESA-listed plant species are known to occur within several miles of the project area (WDNR 2021).

The following subsections provide information about the status of the other five species (Puget Sound Chinook salmon, Puget Sound steelhead, southern resident killer whale, bull trout, and marbled murrelet), as well as the timing and nature of their habitat use in the action area.

4.2 Terrestrial Species

4.2.1 Marbled Murrelet

USFWS listed marbled murrelets as threatened under the ESA in 1992 due to a decline in abundance and habitat degradation in the southern portion of their range (57 FR 191). Marbled murrelet population decline has been attributed primarily to the loss and fragmentation of old-growth nesting habitat caused by logging and development (Ralph and Miller 1995). It is believed that forest fragmentation may be making nests near forest edges vulnerable to predation by other birds such as jays, crows, ravens, and great-horned owls. In addition, this species is vulnerable to fishing nets and oil spills (Marshall 1988). Life history information is provided in Appendix D.

4.2.1.1 Occurrence in the Action Area

Priority Habitat and Species data do not indicate the presence of marbled murrelets in the project action area (WDFW 2021a); however, marbled murrelets have been documented in Possession Sound approximately 2 miles west of the project area where foraging habitat is available (eBird 2021). The closest suitable nesting habitat is located 15 miles east of the project action area in the Cascade Mountains of eastern Snohomish County. The project action area is located inland from any marine foraging habitat and a considerable distance from any suitable nesting habitat; however, murrelets might use the Snohomish River as a flight corridor between foraging and nesting areas.

4.3 Aquatic Species

4.3.1 Chinook Salmon

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

The life history of Puget Sound ESU Chinook salmon is described in the Endangered and Threatened Species: West Coast Chinook Salmon; Listing Status Change; Proposed Rule (63 FR 11482, March 9, 1998) and Status Review of Chinook Salmon from Washington, Idaho, Oregon and California (Myers et al., 1998) and is included herein by reference. This information has been summarized to assist in the discussion of effects related to the proposed action, and is included in Appendix D.

4.3.1.1 Occurrence in the Action Area

The Snohomish River supports both summer-run and fall-run Chinook salmon stocks, which enter the system between June and September and then spawn from early fall through late November (WDFW 2021a, 2021b; City of Everett and Pentec Environmental 2001). Emergence of fall-run Chinook salmon occurs in February and March with migration to the estuary beginning in February. Juvenile Chinook salmon can be found in Ebey Slough during any month of the year (Arber, personal communication, 2019); however, the typical estuary residence time for juvenile Chinook salmon is from February to September with a peak occurring in June (City of Everett and Pentec Environmental 2001; Pentec and NW GIS 1999; Arber 2019; Rice et al. 2014). Typically, individual residence time in the estuary for juvenile fall Chinook, which makes up the largest proportion of Chinook salmon stocks in the Snohomish basin, is between 1 and 3 weeks (City of Everett and Pentec Environmental 2001).

In summary, juvenile Chinook salmon may be present within the action area at any time of year and adults will be migrating through the action area between June and September.

4.3.2 Steelhead

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

The life history of Puget Sound steelhead is described in the Proposed Endangered Status for Five ESUs of Steelhead and Proposed Threatened Status for Five ESUs of Steelhead in Washington, Oregon, Idaho, and California (61 FR 41541, August 9, 1996) and is included herein by reference. This information has been summarized to assist in the discussion of effects related to the proposed action, and is included in Appendix D.

4.3.2.1 Occurrence in the Action Area

The Snohomish River supports both summer-run and winter-run steelhead (WDFW 2021a and 2021b). Winter-run steelhead pass through the lower estuary, including Ebey Slough, and return to the upper Snohomish River between November and April. They spawn in larger tributary streams, including the Skykomish and Snoqualmie Rivers, between January and June (Pentec and NW GIS 1999; WDFW 2021a). Summer-run steelhead usually enter the river system between May and October and spawn between January and June in the upper headwaters of the Skykomish River and the upper Tolt River, a major tributary to the Snoqualmie River (Pentec and NW GIS 1999; WDFW 2021a). Steelhead smolts, because of their larger size and age compared to other species of outmigrating juvenile salmonids, do not typically linger in the estuary environment prior to moving into the marine environment. Limited numbers of steelhead smolts have been sampled in estuary marshes, including the project area, primarily from mid-April through early July, although some steelhead smolts have been sampled through August (Pentec 1992).

Steelhead use of Ebey Slough is limited to migration habitat during upstream spawning migrations for adults and outmigration as juveniles. However, steelhead at varying life stages could be present at any time of year.

4.3.3 Southern Resident Killer Whale

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

The southern resident DPS of killer whales was listed as endangered on February 16, 2006 (70 FR 69903), and a recovery plan was completed in 2008. In 2016, NMFS completed a 5-year review and concluded that SRKW should remain listed as endangered (NMFS 2016). Critical habitat in inland waters of Washington was designated on November 29, 2006 (71 FR 69054); no designated critical habitat is present in the action area.

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 Southern Residents, all of the threats identified are potential limiting factors in the population dynamics of the DPS (NMFS 2008).

Chinook salmon make up a significant proportion of SRKW diets. Estimates range from approximately 70 percent during winter and spring to more than 90 percent during summer and fall (NMFS 2020).

4.3.4 Bull Trout

USFWS listed bull trout as threatened under the ESA on November 1, 1999 (64 FR 58910). Life history information is provided in Appendix D.

Similarly, Dolly Varden (*Salvelinus malma*) was proposed for listing as endangered by the USFWS on January 9, 2001 (66 FR 1628) due to similarity of appearance with bull trout and because they overlap

with bull trout in the coastal and Puget Sound region. A designation of threatened or endangered under the similarity of appearance provisions of the ESA extends the take prohibitions of Section 9 to cover the species. However, under section 4(e) of the ESA, a designation of threatened or endangered due to similarity of appearance does not extend other protections of the ESA, such as the consultation requirements for federal agencies under Section 7. Although not formally discussed in this document, the effects of the action upon Dolly Varden are anticipated to be similar to that of bull trout.

4.3.4.1 Occurrence in the Action Area

Bull trout are documented as occupying habitats within the lower Snohomish River estuary, including Ebey Slough (WDFW 2021a, 2021b). The USFWS (2004a) identifies eight core areas (combination of core habitat and a core population)—including Chester Morse Lake, Chilliwack, lower Skagit, Nooksack, Puyallup, Snohomish/Skykomish, Stillaguamish, and upper Skagit River basins—that support the only known core populations of bull trout within the Puget Sound Management Unit. They have also identified important areas for foraging, migration, and overwintering, as well as areas where additional research is needed.

The anadromous life history form is the most likely life history phase to occur in the project area. Typically, adults return to the Snohomish River from August through September and spawn in headwater tributaries between September and October (Pentec and NW GIS 1999). Newly emerged anadromous bull trout emerge from the gravel in the spring and spend approximately 2 years in fresh water before they migrate to marine waters (WDFW 1998).

The anadromous subadult and adult life stages of bull trout spend much of the growing season (late winter to fall) in the Snohomish River estuary and nearshore marine waters of Possession Sound (USFWS 2004). Goetz (2016) found that 60 percent of bull trout tagged in the Upper Snohomish River enter the lower estuary and nearshore marine areas to rear in early March and exit the estuary and return to the upper Snohomish River near the end of July. The remaining fish that were tagged exhibited varying migratory trajectories, including some that never entered the estuary and some that left the estuary, entered other river systems, and then returned to the upper Snohomish. Anadromous subadults typically overwinter in the mainstem Snohomish River and may include fish from populations outside the Snohomish core area (USFWS 2004; Goetz 2016). Overall, bull trout presence within Ebey Slough is expected for most of the year except September and October, when bull trout are in headwater spawning areas.

4.4 Presence of Federally Designated and Proposed Critical Habitat in the Project Action Area

4.4.1 Chinook Salmon

On September 2, 2005, NMFS designated critical habitat for 12 salmon and steelhead ESUs in California and the Pacific Northwest (70 FR 52629). Critical habitat for Puget Sound Chinook salmon has been designated in the Ebey Slough within the project action area.

Specific physical and biological features (PBFs) of Chinook salmon in freshwater and marine/estuarine areas, as defined by NMFS (70 FR 52629) include:

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

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

Since the project area is located within the lower Snohomish River estuary (Ebey Slough), only PBF 4 above applies to the project action area.

4.4.2 Steelhead

On February 24, 2016, NMFS designated critical habitat for lower Columbia River coho salmon and Puget Sound steelhead (81 FR 9251). Critical habitat for Puget Sound steelhead has been designated in Ebey Slough within the project action area.

PBFs identical to those identified above for Chinook salmon also apply to Puget Sound steelhead, and like Chinook, only the estuarine area PBF applies to the project action area. The estuarine PBF is as follows:

- 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.

4.4.3 Bull Trout

Critical habitat for the Coastal-Puget Sound bull trout was designated in September 2005 (70 FR 56211) and was revised on October 18, 2010 (75 FR 63897).

PBFs for bull trout, as defined by USFWS (75 FR 63897) are:

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

2. Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.
3. An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.
4. Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded 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 that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.
6. In spawning and rearing areas, substrate 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 of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.
7. A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.
8. Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.
9. Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.

Because the project area is in the tidally influenced portion of Ebey Slough, it is classified as a marine nearshore area. The inshore extent of bull trout critical habitat in marine areas includes the uppermost reach of the saltwater wedge in tidally influenced, freshwater heads of estuaries. Of the nine PBFs deemed essential to the conservation of bull trout, only four (PBFs 2, 3, 5, and 8) occur in marine environments and are applicable to this analysis.

5. ENVIRONMENTAL SETTING

The project site is in an area with a long history of industrial and commercial activity and is situated between busy transportation corridors, including I-5 and the BNSF railroad to the west and SR 529 to the east. The immediate project area contains the existing Ebey Waterfront Park to the east. This existing city park is characterized by maintained lawn areas, vegetated stormwater conveyance features, asphalt parking areas, boat launch facilities and associated docks, restroom facilities, concrete sidewalks. Ebey Slough and its associated shoreline border the site to the south. (Appendix A).

The former Geddes Marina site currently contains flat open grass/weed areas (Appendix A: Photo 2) and an approximate 2-acre artificial boat basin with a connecting channel to Ebey Slough (Appendix A: Photo 1). The Geddes Marina site also includes remnant boat launch facilities along the shoreline of Ebey Slough (Appendix A: Photo 7) and pilings that were used to secure dock facilities and boat houses in Ebey Slough (Appendix A: Photo 17).

Final site remediation will include filling the boat basin and connecting channel to Ebey Slough, as well as removing piles and debris from the shoreline area.

5.1 Terrestrial Habitat Conditions in Action Area

There are no documented occurrences of rare plants or priority ecosystems within the immediate project area (WDNR 2021). However, several rare plants and rare plant communities mapped west of I-5, approximately 1,000 feet west of the study area. These areas are associated with the salt marsh habitat at the mouth of Quilceda Creek. These rare plants and rare plant communities include black lily (*Fritillaria camschatcensis*), tufted hairgrass (*Deschampsia caespitosa*), and Pacific silverweed (*Argentina pacifica*)-dominated salt marsh habitat; hardstem bulrush (*Schoenoplectus acutus*) and softstem bulrush (*Schoenoplectus tabernaemontani*) salt marsh habitat; Pacific silverweed—Douglas aster (*Symphyotrichum subspicatum*) salt marsh habitat; Lyngbye's sedge (*Carex lyngbyei*) salt marsh habitat; and Sitka spruce (*Picea sitchensis*), red-osier dogwood (*Cornus sericea*), and yellow skunk cabbage (*Lysichiton americanus*) swamp forest habitat (WDNR 2021). Elements of these rare plant ecosystems were observed within the on-site estuarine wetlands that fringe Ebey Slough (see discussion of wetlands below), including the occurrence of hardstem and softstem bulrush, Pacific silverweed, and Lyngbye's sedge; however, on-site wetlands are now disconnected from these rare plant communities by development along the shoreline.

Eleven cover types were identified in the study area. Table 5-1 summarizes the characteristics and relative habitat value of each cover type based on habitat structure, disturbance types and frequency, and time required for recovery following clearing. Wildlife habitat values were not attributed to each occurrence of a cover type along the project corridor, but instead were assigned to the cover type. Habitat value within a cover type at a specific location can vary and depends on several factors such as size of the area; presence of (or proximity to) other valuable habitat; level and type of human disturbance; diversity of plant species; presence of multiple cover layers (e.g., tree, shrub, forb, and emergent layers); presence of threatened, endangered, or sensitive species; and extent of invasive weeds.

**Table 5-1. Cover Types and Associated Wildlife Habitat Value for
 Geddes Marina Phase 2 Remediation Project**

Cover/Habitat Type	Description	Habitat Value
Unvegetated and Road	Paved roadways. These areas lack wildlife habitat features and are a risk to wildlife. Also includes parking lots and artificially surfaced playfields.	None.
Roadside Right-of-Way	Areas along roadways that are maintained for vehicular safety with mowing and herbicide application. These areas are disturbed regularly with maintenance actions, roadway noise, and pollution. These areas are dominated by non-native grasses and forbs and invasive species.	Low. There is limited habitat structure and the periodic maintenance disturbance is high. These areas may provide some browsing habitat for herbivores such as deer, rabbits, and rodents, and some limited foraging habitat for birds.
Mown Grass	This cover type includes regularly mown turf grass areas used for sports and recreation in Ebey Waterfront Park.	Low. There is limited habitat structure and the disturbance is high. These areas may provide some browsing habitat for herbivores such as deer, rabbits, and rodents, and some limited foraging habitat for birds. This habitat type would be quick to re-establish to current conditions after disturbance.
Grassland	This habitat type is represented by stands of unmown or infrequently mown grass weedy areas on the Geddes Marina site. This area was previously capped to cover contaminated soils.	Medium. Although dominated by an invasive species, grasslands provide habitat to support species adapted to meadows and open areas. The infrequent disturbances in these areas and structural complexity of the tall grass provide resources for a variety of mammals, reptiles, and birds. This habitat type would be quick to re-establish to current conditions after disturbance.
Brush	This habitat type includes patches of Himalayan blackberry (<i>Rubus armeniacus</i>), along with areas of horticultural varieties and native shrubs.	Medium. Areas include native and non-native shrubs. Native shrubs support native wildlife species throughout their life histories. However, thickets of blackberry and other invasive shrubs provide perching, nesting, and hiding habitat for small birds, reptiles, and mammals, including foraging habitat for some species.
Estuarine/Emergent Wetlands	Wetland areas dominated by rushes, sedges, and other emergent wetland vegetation.	High. Moderate structural complexity. The wetland functions further elevate the value of this habitat to wildlife and aquatic processes.
Developed—Commercial	Business properties dominated by buildings and parking areas. Some trees and patches of understory occur. The understory is highly disturbed and many non-native species are present.	Low. Some tree canopy habitat is available for birds and squirrels.
Light/Industrial	Similar to developed commercial areas with a higher component of impervious surfaces.	Very Low. Vegetation is typically limited to patchy invasive shrub vegetation including Himalayan blackberry.
Stormwater Ponds (boat basin)	Areas excavated specifically to detain and manage stormwater from impervious areas. Most areas are dominated by non-native grass species and are typically maintained through mowing and dredging.	Low. The limited structural diversity and periodic disturbance regime limits the value to wildlife. The ponded habitat tends to have a highly variable water table and polluted water source, severely limiting the value of the habitat to aquatic species.

**Table 5-1. Cover Types and Associated Wildlife Habitat Value for
 Geddes Marina Phase 2 Remediation Project (continued)**

Cover/Habitat Type	Description	Habitat Value
Stream Channels	Relatively non-vegetated stream and river channels. Some submerged aquatic vegetation is present.	High. Many in-stream processes elevate the value of this habitat to aquatic wildlife.
Riparian Shrub	Areas dominated by shrubs within approximately 200 feet of the OHWL of streams and rivers.	Medium. Moderate structural complexity; short time to recover this habitat following disturbance. The proximity to streams further elevates the value of this habitat to wildlife and aquatic processes.

Wildlife

Overall, the unvegetated/road, grassland, mown grass, and developed commercial areas are the dominant cover/habitat types in the project area and as such provide low to moderate habitat value for wildlife. The estuarine wetland areas, Ebey Slough, and riparian habitat comprise a small percentage of the overall habitat within the study area; however, these areas represent the higher-value cover and habitat types important for wildlife. Wildlife observed during field visits include species typically habituated to human activities, including rock doves, English sparrow, American robin, American crow, dark-eyed junco, barn swallow, and killdeer.

Numerous species of birds and mammals are known to occupy habitats within the Snohomish River estuary and use them for foraging, breeding, and nesting. Species migrating to nesting grounds in the north or overwintering areas in the south also use these habitats as rest areas.

Ziegler (1986) identified 116 bird migratory and resident bird species using estuarine habitats in the lower Snohomish River estuary. Shorebirds use the estuary during both spring and fall migrations and include species such as Dunlin, western sandpiper, Baird’s sandpiper, sharp-tailed sandpiper, pectoral sandpiper, golden plover, black-bellied plover, and dowitcher (Pentec 1996). Raptors and waterfowl also use habitats in the estuary and include species such as northern harrier, red-tailed hawk, Cooper’s hawk, peregrine falcon, bald eagle, osprey, Merlin, great-horned owl, western screech owl, Canada goose, loon, goldeneye, northern shoveler, American coot, mallard, northern pintail, ruddy duck, trumpeter swan, scoter, brant, and red-breasted merganser (Carroll 1992; Carroll and Pentec 1992). Other bird species include cormorants, gulls, pigeon guillemot, marsh wrens, American bittern, Virginia rail, sora rail, common snipe, and terns. Warblers and other passerines also migrate through the estuary in spring and fall (City of Everett and Pentec Environmental 2001).

Terrestrial mammals known to occur within the estuary include river otter, mink, raccoon, coyote, muskrats, and weasels (City of Everett and Pentec Environmental 2001). Marine mammals include harbor seal, California sea lion, and Steller sea lion (City of Everett and Pentec Environmental 2001).

5.2 Aquatic Habitat Conditions in the Action Area

5.2.1 Wetlands

Three wetlands (A, B, and C) within the study area were delineated and surveyed (Figure 5-1). Detailed descriptions of the delineated wetlands are in the subsections that follow. Wetland classifications and ratings are summarized in Table 5-2.

Date: 2/21/2022 Author: worshahly Path: U:\PSO\Projects\Clients\2967-005 GeddesMarinaPhase2\99\Sves\GIS\mapdocs\Figures-1 EnvironmentalBaseline.mxd



Source: Snohomish County, © Mapbox, © OpenStreetMap

- Project Area
- Parcel
- Railroad
- Delineated OHWM
- Delineated Wetlands

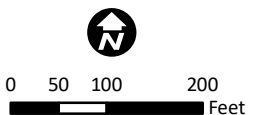


Figure 5-1
Environmental Baseline
Geddes Marina Phase 2 Remediation

Marysville, WA

Table 5-2. Summary of Wetlands Within the Ebey Waterfront Park Study Area

Aquatic Resource Type	Resource Name	USFWS Type	HGM Type	City of Marysville Wetland Rating Category
Wetlands	A	E2EM1/PSSB	Estuarine Fringe	II
	B	E2EM1	Estuarine Fringe	II
	C	E2EM1	Estuarine Fringe	II

E2EM1 = intertidal estuarine persistent emergent; E2SB5 = intertidal estuarine mud streambed; HGM = hydrogeomorphic; PSSB = saturated palustrine scrub-shrub

5.2.1.1 Wetland A

Wetland A is located upstream (east) of the former Geddes Marina site on the adjoining Ebey Waterfront site (see Figure 5-1). The wetland is part of a large wetland complex associated with the north shore of Ebey Slough. Its total size is larger than 1 acre, with approximately 0.32 acre within the study area. Wetland A extends off-site to the east (Figure 5-1; Appendix A: Photos 4 and 5). Within the study area, the wetland is primarily composed of intertidal estuarine persistent emergent habitat with some saturated palustrine scrub-shrub habitat (Cowardin et al. 1979, FGDC 2013). Under the hydrogeomorphic (HGM) classification system (Brinson 1993), Wetland A is classified as an estuarine fringe wetland.

The dominant vegetation within Wetland A includes Lyngbye’s sedge, Pacific silverweed, softstem bulrush, broadleaf cattail (*Typha latifolia*), Baltic rush (*Juncus balticus*), and common glasswort (*Salicornia* sp.).

Wetland A was rated as a Category II wetland based on its special estuarine characteristics (Hruby 2014). Wetland A receives a standard 25-foot buffer in accordance with the City’s Shoreline Master Program (SMP). Wetland A is beyond the proposed work area and will not be affected by the proposed action.

5.2.1.2 Wetland B

Wetland B is located downstream (west) of the Ebey Waterfront Park boat launch and upstream (east) of I-5 (see Figure 5-1) extending completely along the shoreline of the Geddes Marina site. Its total size is larger than 1 acre, with 0.48 acre within the study area (Appendix A: Photos 8 and 9). Due to the similar landscape position, Wetland B is similar to Wetland A. Within the study area, the wetland is primarily composed of intertidal estuarine persistent emergent habitat (Cowardin et al. 1979; FGDC 2013). Under the HGM classification system (Brinson 1993), Wetland B is classified as an estuarine fringe wetland.

The dominant vegetation within Wetland B includes Lyngbye’s sedge, Pacific silverweed, softstem bulrush, bulrush, Baltic rush, common glasswort, and climbing nightshade (*Solanum dulcamara*).

Wetland B was rated as a Category II wetland based on its special estuarine characteristics (Hruby 2014). Wetland B receives a standard 25-foot buffer in accordance with the City’s SMP.

5.2.1.3 Wetland C

Wetland C is the area occupied by the former boat basin of the Geddes Marina. The wetland is approximately 2 acres in size and is within an area with a history of high-impact land use (Appendix A: Photo 2). The once natural estuarine wetland was filled sometime between 1938 and 1952.

The fill was later removed, and the site was dredged sometime between 1954 and 1969 to accommodate boat storage and mooring.

Today, the former marina boat basin/Wetland C is no longer used for boat storage or mooring and the weir that was once used to control the water level of the boat basin is in a state of disrepair. As a result, a partially obstructed and semi-natural tidal flux has returned to the site. Wetland C is composed of intertidal estuarine persistent emergent habitat (Cowardin et al. 1979; FGDC 2013). Under the HGM classification system (Brinson 1993), Wetland C is classified as an estuarine fringe wetland.

The dominant vegetation within Wetland C includes Lyngbye's sedge, Pacific silverweed, softstem bulrush, bulrush, Baltic rush, common glasswort, reed canarygrass (*Phalaris arundinacea*), and climbing nightshade. The wetland hydrology is supported by Ebey Slough, tidal flux of Puget Sound, and stormwater input from commercial areas to the north of the project area.

Wetland C was rated as a Category II estuarine wetland based on its special estuarine characteristics (Hruby 2014). The wetland receives a standard 25-foot buffer in accordance with the City's SMP. Sediments within the former boat basin and Wetland C are extensively contaminated. This wetland and the entire former boat basin will be filled to place a protective cap over the contaminated sediments. This is the primary purpose of the remediation project.

5.2.2 Streams

5.2.2.1 Ebey Slough

Ebey Slough is a right bank side channel or tidally influenced distributary of the Snohomish River and connects to the Snohomish River at approximately RM 8.1. Ebey Slough then flows north-northwest for approximately 12.4 miles before discharging to Possession Sound approximately 2 miles north of the Snohomish River (Williams et al. 1975). Ebey Slough forms the southern boundary for the project area (Figure 1-1).

The north bank (right bank) of Ebey Slough, within the study area, has been highly modified by historic and current land use practices. The existing Ebey Waterfront Park includes a boat launch facility and associated dock structures (Appendix A: Photo 11), and the Geddes Marina site contains several remnant and derelict piles/dolphins as well as remnant concrete and wooden rail launches (Appendix A: Photos 7, 8, 9, 16, and 17). Riparian vegetation is limited to a narrow band, only a few feet wide, vegetated mostly with weedy herbaceous species (Appendix A: Photo 18). Narrow estuarine wetlands exist along most of the shoreline within the project area, discussed in more detail above. Common vegetation includes Lyngbye's sedge, Pacific silverweed, softstem bulrush, broadleaf cattail, Baltic rush, and common glasswort.

Bottom substrates in the vicinity of the proposed action are dominated by fines including sand and silt, and maximum depths at slack tide range from 8 to 12 feet (Laughlin 2011). Salinity profiles for the project indicate that 28 percent of the time, freshwater conditions exist (salinity is 0-5 parts per thousand [ppt]); 32 percent of the time, mesohaline conditions exist (salinity is 5-8 ppt); and 40 percent of the time, oligohaline conditions exist (salinity is 0.5-5 ppt) (Rice et al. 2014). Currently a Total Maximum Daily Load (TMDL) allocation is in place for Ebey Slough to address low dissolved oxygen concentrations downstream of I-5. The aquatic portion of the action area does not overlap any waters that are on the current (2016) Ebey Slough also has a 303(d) list of impaired waterbodies for bacteria (Washington State Department of Ecology [Ecology] 2019a).

Fish Use

The lower Snohomish estuary, including the distributary channel of Ebey Slough, supports seven salmonid species including Chinook salmon, coho salmon (*O. kisutch*), sockeye salmon (*O. nerka*), chum salmon (*O. keta*), pink salmon (*O. gorbuscha*), Puget Sound steelhead, sea-run coastal cutthroat trout (*O. clarkii*), Dolly Varden (*Salvelinus malma*), and bull trout (WDFW 2021a, 2021b; Corps 2012).

For adult salmonids, the lower estuary including Ebey Slough is used primarily as a migration corridor and as a physiologic transition zone between salt and freshwater environments. Spawning for all salmonid species occurs farther upstream in the mainstem Snohomish, Snoqualmie, and Skykomish Rivers and their tributaries. For some species like Chinook salmon, coho salmon, and chum salmon, the residence time within the lower estuary environment for outmigrating juveniles is important, as the physiological transition from freshwater to saltwater takes longer for these than other species such as steelhead, pink salmon, and anadromous forms of bull trout and Dolly Varden, which tend not to linger in the lower estuary and move quickly to the marine environment (Corps 2012).

Other species commonly occurring in the lower estuary environment include starry flounder, peamouth chub, Pacific staghorn sculpin, and prickly sculpin. Additional species found in the lower estuary environment include shiner perch, Pacific lamprey, river lamprey, and three-spined stickleback. White sturgeon, pumpkinseed sunfish, and Pacific herring are less common in the lower estuary but may be present occasionally (Snohomish County 2011).

6. EFFECTS OF THE ACTION

Under the ESA, when a discretionary federal action may adversely affect listed species or critical habitat, federal agencies must analyze the direct and indirect effects of the action, as well as effects of future state or private actions reasonably certain to occur related to the action (50 CFR 402.02, 402.03, 402.14). Direct effects include the action's immediate effects on a species or habitat (50 CFR 402.02; USFWS and NMFS 1998). Indirect effects are impacts caused by the proposed action that occur later in time but are still reasonably certain to occur (40 CFR 1508.8; 50 CFR 402.02). These are discussed in the following sections.

6.1 Direct Effects

Activities necessary to construct the proposed action will result in direct effects on the action area that may affect listed species. Direct effects of the proposed action may include:

- Construction noise
- Increased turbidity/sedimentation
- Habitat loss
- Potential for accidental spills of contaminants during construction
- Increased human activity

6.1.1 Terrestrial Construction Noise

Construction is expected to result in a level of disturbance typical for projects of this type. However, installation of piles to support a short section of stormwater pipe and the energy dissipation structure near First Street will require the use of impact pile driving. These pile driving activities will occur over a short time period (expected to be less than 2 weeks of the total 18-month project duration) compared to all other construction activities.

Vibratory methods will be used to remove in-water piles that may occur within the limits of the shoreline restoration areas if they cannot be removed by other means. No visible piles have been identified for removal; however, derelict subsurface piles may be encountered during work to connect the conveyance channel and restore the shoreline.

Cavanaugh and Tocci (1998) identify typical urban residential background noise at 65 decibels (dB) on the A-weighted scale (dBA), which is used to characterize background noise levels at project sites. Two highways bound the project area, with I-5 located approximately 550 feet west and SR 529 located immediately east.

To characterize the combined noise level of all construction equipment operating together, the three loudest pieces of equipment (impact pile driver, vibratory pile driver, and excavator) were combined using the rules for decibel addition. It was determined that construction noise at the site would be 110 dBA at a distance of 50 feet from the source. Note that these noise levels would occur for only a brief period during construction and that the majority of construction activities would create noise levels much lower than that occurring during in-water pile removal. The louder noise levels anticipated during pile driving activities is being used as a conservative estimate of construction noise.

Construction noise at the site is considered point source noise, which is associated with a source that remains in place for extended periods of time, as with most construction activities. Point source noise is reduced by 6 dB per doubling of distance from the source. In addition, soft site conditions exist at the site where unpacked earth or ground cover exists between the source and the receptor, which absorbs noise energy. The soft site conditions result in an additional 1.5 dB reduction in noise levels per doubling of distance from the source. Combined with the 6.0 dB reduction for point source construction noise and the additional 1.5 dB reduction for soft site conditions, construction noise at the site is anticipated to attenuate 7.5 dB per doubling of distance from the source.

Based on this information, construction noise would attenuate to background levels (65 dBA) at a distance of 3,200 feet (0.61 mile) from construction activities. This distance would apply only to the north, south, and east of construction. Noise to the west would attenuate to background levels at or near I-5, which is located approximately 550 feet west of the project area and generates a noise level of approximately 80 dBA. This is based on an average daily traffic (ADT) volume of 134,000 vehicles per day in the vicinity. Published data indicates that the noise levels for traffic can be determined using the posted speed limit and the hourly traffic volume (approximately 10 percent of the ADT) (USDOT 1995). I-5 has a posted speed limit of 60 miles per hour (mph) and a traffic volume of approximately 13,400 vehicles per hour, which equates to an approximate noise level of 80 dBA. Construction noise will attenuate to background levels at I-5.

Marbled murrelets likely forage in Possession Sound, approximately 2 miles west of the project area. Given the distance to suitable foraging habitat and the fact that noise will have attenuated to background levels approximately 550 feet west of the project area, the potential for noise-related impacts to affect marbled murrelets is considered insignificant.

6.1.2 Underwater Construction Noise

Interlocking steel sheet piles, earthen berms, sandbags, or water-filled dams may be used to isolate work area from Ebey Slough. Installation and removal of steel sheet piles for cofferdams, if necessary, will be conducted with a vibratory hammer and would only occur in areas that were dry or isolated from Ebey Slough or other waterbodies accessible to fish or wildlife.

If needed, Geddes Marina Phase 2 Remediation project in-water pile removal is expected to take place in July and August when the potential for ESA-listed fish to be present is minimal. Even though sheet pile would not be installed within the water column, this work would also be limited to the anticipated in-water work window (July 15 to August 31). The potential for various life stages of ESA-listed fish to be present in the action area during the work period is summarized below.

- Juvenile Chinook salmon could be present in the lower estuary at any time of year; however, the number of fish potentially affected by elevated noise levels is lowest during the in-water work window.
- Adult Chinook salmon may be present in the action area *en route* to upstream spawning grounds, but work will occur before the expected peak in upstream migration.
- Adult steelhead could be present in the lower estuary at any time of year.
- Juvenile steelhead are typically present in the estuary only briefly during spring and will not be present during the work period.

- Adult bull trout will have passed through the action area *en route* to upstream spawning grounds and will not be present.
- Juvenile and subadult bull trout will have left the estuary before the work period begins.

As noted above, vibratory pile removal is unlikely to injure fish and is not expected to significantly interfere with behaviors such as migration, rearing, or foraging. In addition, the work will be timed to minimize the number of ESA-listed fish exposed to noise from the work. The potential for vibratory pile removal to affect adult Chinook salmon, juvenile steelhead, and bull trout of any life stage will be discountable. Disturbance of juvenile Chinook salmon and adult steelhead will be unavoidable because those life stages are present in the action area at all times of year. The project will minimize the impact by conducting the work when the numbers of juvenile Chinook salmon and adult steelhead in the action area are at their lowest.

No data is available for estimating the density of adult steelhead in the lower estuary. The number of fish that may be present in the action area at any given time is very low, however. Escapement of winter and summer steelhead within the Snohomish basin averages approximately 2,355 fish, based on 10 years of escapement data between 2010 and 2018 (WDFW 2019c). Assuming steelhead are trickling into the Snohomish basin over the entire year, that equates to approximately 200 fish per month, or six to seven fish per day. Extending this number across the mainstem Snohomish River, Ebey Slough, Steamboat Slough, and other distributary channels in the lower Snohomish River estuary, the potential for any individual steelhead to be within Ebey Slough and the action area during pile removal is low.

6.1.3 Sedimentation and Turbidity

The proposed action will include the temporary disturbance of soils and substrates during grading and excavating activities. Site grading and excavating to develop the site could result in erosion from disturbed upland soils and increase the sediment load in runoff potentially entering Ebey Slough if not properly controlled by BMPs during construction. Sedimentation is a concern because it can degrade spawning habitat, increase scour potential, degrade rearing habitat, and alter riparian vegetative structure. Increased turbidity can affect both primary food production and fish feeding efficiency. The project is located estuarine areas no salmonid spawning habitat occurs within the action area. High turbidity (high total suspended solids [TSS] concentrations) can also impair respiration in salmonids and possibly hinder salmonid reproductive efforts; however, the project area does not contain spawning habitat for any listed fish species.

Site-specific erosion control measures will not be determined until final design is complete. However, a TESC plan and erosion and sediment control BMPs that meet the City's standards for construction will be required. Because of these site-specific BMPs, the effects of sedimentation and turbidity within Ebey Slough is anticipated to be insignificant.

In addition, work will be conducted in accordance with the allowed in-water work window (typically July 15 to August 31), which will reduce the overlap of construction with the presence of listed fish species. Most juvenile outmigration will have been completed prior to any in-water work. However, adult steelhead and juvenile Chinook salmon presence can be anticipated during any time of the year.

6.1.4 Habitat Loss

The center of the Geddes Marina site is an approximately 2-acre former boat basin. The boat basin is the discharge point for stormwater conveyed from the approximately 480-acre drainage area that includes

much of downtown Marysville. Water exchanges between the boat basin and Ebey Slough via an artificial approximately 70-foot-long, 12-foot-wide outlet channel. Remnants of an old water control structure (weir), which allowed the boat basin to maintain adequate depth for use as a marina, are still visible at the outlet channel. The weir no longer functions to control water elevations in the former boat basin.

Under current conditions, the boat basin is tidally influenced, and water levels within the boat basin fluctuate accordingly, but the foundation of the former boat basin weir remains in place and limits the inflow and outflow of water from Ebey Slough to periods with higher tide levels. Most of the boat basin is exposed mud flat when the tide is ebbing, except for a narrow channel cutting through the mudflat that typically stays wetted because of stormwater contributions. The perimeter of the boat basin is vegetated primarily with herbaceous weedy plant. Unidentified juvenile salmonids were observed within the low flow channel.

The sediment in the Geddes Marina site was tested with soil samples taken throughout the site. Arsenic, cadmium, copper, lead, mercury, and zinc were found in various locations and were above the Model Toxics Control Act (MTCA) Method A level or the ecological indicator concentration. The purpose of the fill to provide a clean cap to mitigate the potential for future impact to human health and to prevent fish and wildlife from contacting the contaminated area. Although considered beneficial, the proposed action will result in the loss of what limited habitat was provided by the former marina basin.

The proposed action also includes construction of a conveyance channel with a direct connection to Ebey Slough. An estuarine wetland (Wetland B) is located along the entire length of shoreline adjacent to the Geddes Marina site (Figure 5-1). The proposed action will result in approximately 0.10 acre of permanent impact to Wetland B because of construction of the channel and a small amount of temporary impact due to grading along the shoreline. All temporarily impacted areas will be restored. Shoreline buffer conditions are expected to improve markedly over baseline conditions with installation of native riparian plantings. Currently, the buffer is either unvegetated or composed of weeds and non-native species.

6.1.5 Potential Release of Construction-Related Contaminants

Projects of this scope typically involve the use of various types of heavy equipment and may involve multiple construction crews. Construction will require the use of heavy machinery along the banks of Ebey Slough both above and below the OHWL. Although unlikely, accidents such as spills of hazardous materials (typically green cement or grout, fuel, oils, and hydraulic fluids) or unanticipated construction mishaps could occur. This would degrade water quality and/or be toxic to fish. The potential effect of accidental discharges, should they occur, will be mitigated in large part by implementation of the BMPs discussed herein. Adherence to the site-specific SPCC plan will minimize the potential for direct effects associated with accidental spills to insignificant levels.

6.1.6 Increased Human Disturbance

It can be anticipated that human activity and traffic will increase during construction of the proposed action; however, this will be temporary. In the long term, and given the historic industrial land uses that contributed to the degradation of the site, the proposed action is anticipated to improve environmental baseline conditions.

6.2 Indirect Effects

Indirect effects are impacts caused by the action that occur later in time but are still reasonably certain to occur (USFWS and NMFS 1998). Indirect effects may include operational impacts, erosion and sedimentation, shoreline development, and impacts to prey species and food sources for listed species.

6.2.1 Operational Effects

The proposed action will likely result in an increase in human activity and traffic at the site including:

- Increased use of shoreline
- Increased noise associated with an increase in human activity

Measures to minimize these impacts may include, but are not limited to, deterring access to sensitive areas with signage, educational materials, and dense vegetation plantings; confining pedestrian traffic to walkways; and educating the public about the natural resources and the responsibility for protecting them.

No new pollution-generating impervious surface area will be created as a result of the proposed action. The City and Department of Ecology are currently implementing a separate stormwater treatment retrofit project that will treat runoff from the downtown Marysville. The new conveyance channel will connect the discharge of treated stormwater from the new stormwater retrofit facility to Ebey Slough. Stormwater will be treated in accordance with the most recent version of Ecology's Stormwater Management Manual for Western Washington (Ecology 2019b).

6.2.2 Shoreline Development

The shoreline of Ebey Slough west of the current marina basin outfall channel will be planted with native species and large woody material will be located along the ordinary high tide to increase habitat complexity. Indirect effects from shoreline development are generally beneficial.

6.2.3 Impacts on Prey Species

Impacts to SRKW as a result of impacts on prey species will be generally beneficial. Juvenile Chinook salmon and other fish currently are not precluded from entering the former marina basin where they can be exposed to contaminants and/or forage on benthos that are exposed to sediment contaminants. The primary purpose of the project is to cap the former marina basin to avoid exposure to contaminated sediments. As discussed in Section 6.1, the project will involve potential short term effects to juvenile Chinook salmon as a result of unavoidable in water work in the action area. These effects will be minimal and short-lived and will not translate into population-level effects that would measurably reduce the availability of prey species for SRKW. As such, the potential for adverse impacts on the availability of food resources for SRKW is discountable, and the outcome of any such impacts would be insignificant.

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

The primary purpose of the proposed action is to remediate contaminated sediments within the former boat basin in order to eliminate the primary pathway for these contaminants to impact fish and

wildlife, including juvenile fish and benthic organism that could be prey for listed species. The project is anticipated to have an overall positive effect on prey species because it will eliminate pathways for future contact with known contaminants.

6.3 Analyses of Effects on Critical Habitat Primary Constituent Elements

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

PBFs essential to the conservation of the Puget Sound ESU Chinook salmon and Puget Sound DPS steelhead within the estuarine habitats and the project action include 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.

The proposed action does not include features that would present a barrier to upstream or downstream migration through the project area. Impacts to water quality and sediment quality are anticipated to be beneficial. There will be a potential to increased sedimentation and turbidity resulting from grading and excavation activities along the shoreline to Ebey Slough. If appropriate erosion and sediment control BMPs are implemented and the project proponent complies with current surface water quality standards related to turbidity, the potential to degrade water quality conditions is considered insignificant.

Construction activities have the potential to introduce contaminants such as fuel, oils, grease, and other lubricants. An SPCC plan will be in place and spill response equipment available on site to address potential leaks or spills. Overall, impacts to water quality because of construction and operation of the proposed action are considered insignificant.

With the exception of some estuarine emergent wetland vegetation along the shoreline, the project area currently provides little natural cover. The proposed action will result in minor impacts to this vegetation during construction of the conveyance channel and associated shoreline work; however, the work project includes the removal of debris and rubble along the shoreline within the work area and the restoration of shoreline aquatic and riparian habitats. The design for the shoreline restoration includes several pieces of large woody material that will provide cover during periods of tidal inundation. The project design will also include native tree, shrub, and herbaceous plants along the entire buffer area (within approximately 25 feet of the OHWL), which will improve riparian conditions within the lower reach of Ebey Slough from current degraded baseline conditions.

In-water work along the shoreline may displace prey species for both Chinook salmon and steelhead; however, these effects are temporary and prey species would be expected to return or recolonize these habitats following construction. Given the extent of critical habitat for the species and the availability of prey in adjacent habitats, the proposed action is anticipated to have an insignificant effect on the estuarine PBFs for Chinook salmon and steelhead.

6.3.2 PBFs for Bull Trout

Critical habitat for bull trout has been designated in marine nearshore areas, lakes and reservoirs, and streams. Because the project area is in the tidally influenced portion of the Ebey Slough, it is classified as a marine nearshore area. The inshore extent of bull trout critical habitat in marine areas includes the uppermost reach of the saltwater wedge in tidally influenced, freshwater heads of estuaries. Of the nine PBFs deemed essential to the conservation of bull trout, four occur in marine environments and are applicable to this analysis. These are evaluated below.

1. 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.

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

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

Riparian conditions within the project area are severely degraded. The Geddes Marina site is virtually devoid of riparian vegetation with the exception of some emergent wetland vegetation extending upslope to the approximate OHWL. Upland of the OHWL, vegetation on the Geddes Marina site is limited to weeds and other non-native vegetation. No trees occur on the site; therefore, none will be removed as part of the proposed action. Contributions to the prey base from terrestrial habitats is currently limited within the action area. Fish species commonly occurring in the lower estuary environment include juvenile salmonids (including Chinook salmon, coho salmon, chum salmon, pink salmon, and steelhead), starry flounder and peamouth chub, and Pacific staghorn sculpin and prickly sculpin (Rice et al. 2014). Other species found in the lower estuary environment include shiner perch, Pacific and river lampreys, and three-spined sticklebacks. White sturgeon, pumpkinseed sunfish, and Pacific herring are less common in the lower estuary, but may be present occasionally (Snohomish County 2011).

The project involves in-water work, which could result in temporary alterations in the behavior of prey species for bull trout; however, these activities will be short in duration and will not persist following construction. Water quality could also be degraded from excessive sedimentation or turbidity from grading and excavation activities, as well as from potential spills of construction-related contaminants, which could reduce the quantity of prey species. The proposed action will adhere to a TESC and SPCC plan and associated BMPs to minimize and avoid potential water quality impacts to prey species for bull trout. In addition, there is ample foraging opportunity in adjacent habitats. The proposed conveyance channel is likely to improve habitat conditions for both bull trout and forage species. Additionally, planting of the riparian zone with native tree, shrub, and herbaceous species will improve terrestrial contributions to the prey base for bull trout.

- 3. 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.**

Ebey Slough temperature ranges from a low of 5 °C in January to a high of approximately 17 °C in the late summer and early fall. Bull trout typically move out of the lower estuary upstream to cooler water in late summer in preparation for spawning runs to headwater tributaries.

The project does not include removal of riparian vegetation. The shade produced by riparian vegetation can reduce stream temperatures, particularly in smaller streams. The proposed action includes tree and shrub planting within the riparian zone, which may provide limited benefits to water temperature. It should be noted that the project location is only 2 miles upstream of Possession Sound; therefore, even if plantings are installed, the proposed action will have limited influence on water temperatures downstream. As a result, the proposed action's effects on water temperature are considered insignificant.

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

A TMDL is in place downstream of the site for dissolved oxygen (Ecology 2021a). Average annual flow of the Snohomish River (measured upstream near the confluence of the Snoqualmie and Skykomish rivers) is 273 centimeters per second (cm/s) (9,625 cubic feet per second [cfs]), with a maximum flow of 4,248 cm/s and a minimum flow of 21.6 cm/s, during the period of record from 1964 to 1998 (USGS 1997, from Haas and Collins 2001). Hydrological modeling indicates that approximately 75 percent of the flow occurs in the mainstem, while 25 percent of the flow is routed through Ebey Slough.

The project is anticipated to have no effect on the water quantity PBF within the project action area. The proposed action does not include withdrawals or diversions of water away from the Ebey Slough, nor does it include activities that may interfere with groundwater interactions with the stream or the addition of impervious surface to the basin that may alter peak and base flows.

The project includes the use of heavy equipment adjacent to and over the Ebey Slough. Therefore, there is potential for accidental spills of construction-related contaminants including fuel, oil, grease, and hydraulic fluids. To minimize the potential for accidental spills and avoid degrading water quality, the project proponent will institute engineering controls and other construction-related BMPs. These may include but are not limited to: adhering to an SPCC plan, refueling equipment a minimum of 150 feet from the OHWL of Ebey Slough, and conducting daily inspection of equipment working below the OHWL.

Shoreline restoration work at and below the OHWL may result in the redistribution of bottom sediments or erosion of upland soils and a localized increase in turbidity. Turbidity will comply with surface water quality standards at the edge of the mixing zone or within 150 feet of the activities causing the disturbance. If these standards are exceeded, activities causing the disturbance will be stopped and only restarted once the standards are met.

Based on this information, the project effects on the water quality PBF are considered insignificant.

6.4 Beneficial Effects

NMFS and USFWS (1998) identify beneficial effects as those that “are contemporaneous positive effects without any adverse effects.” The proposed project will result in on-site enhancement and habitat improvement activities. While they may have some limited beneficial effects on the action area scale, these factors are not considered “beneficial effects” as defined in relation to the ESA.

6.5 Cumulative Effects

Cumulative effects are the effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the area of a federal action subject to consultation (50 CFR 402.02). Within the action area and as a result of current and historical industrial and commercial development, riparian zones are not properly functioning and estuarine functions and connectivity have been severely degraded by historical diking. The project area is primarily used for commercial activities with some potential for redevelopment of currently vacant properties. Continued commercial growth is the most likely activity to occur within the action area in the foreseeable future. The City’s Downtown Master Plan identifies that shoreline areas adjacent to Ebey Slough within the project area will be converted to commercial land uses (City of Marysville 2009). Development activities within the basin, potentially affecting riparian habitats, are required to comply with the development standards outlined in Title 22E.050 – Marysville Shoreline Master Program and Title 22E.010 – Critical Area Management. These development regulations are developed using best available science (BAS) and will be protective of the resource.

7. CONCLUSIONS

7.1 Terrestrial Species

The determination of effects for protected salmonids is contingent upon implementation of the previously mentioned impact minimization measures. The proposed action may have the following potential impacts on the species listed in the following sections.

7.1.1 Marbled Murrelet

Considering the information referenced above, the project information provided in the construction plans, and based upon the minimization measures provided, a **may affect** determination is warranted for marbled murrelet because:

- Marbled murrelets may occur and forage in the marine habitats of Possession Sound approximately 2 miles west of the project area.
- The proposed action includes impact pile driving, a highly intensive noise-generating construction activity.

A **not likely to adversely affect** determination is warranted for marbled murrelet based on the following rationale:

- Construction noise will attenuate to background conditions well before reaching suitable foraging habitat to the west in Possession Sound.
- No suitable nesting habitat is located within 15 miles of the project location.

7.2 Aquatic Species

The determination of effects for protected salmonids is contingent upon implementation of the previously mentioned impact minimization measures. The proposed action may have the following potential impacts on Chinook salmon, steelhead, and bull trout.

7.2.1 Chinook Salmon

Considering the information referenced above, the project information provided in the construction plans, and based upon the minimization measures provided, a **may affect** determination is warranted for Puget Sound ESU Chinook salmon because:

- Multiple sources document Chinook salmon usage of Ebey Slough. Juvenile Chinook salmon could be present and rearing within Ebey Slough during any month of the year. Adult Chinook salmon typically migrate through the project action area from June through September on their way to upstream spawning areas outside the project area.
- The proposed action will require soil-disturbing activities adjacent to Ebey Slough.
- The proposed action may result in the loss of prey items for Chinook salmon.
- The proposed action will involve the vibratory installation and removal of pilings in waters where Chinook salmon may be present.

A **not likely to adversely affect** determination for Puget Sound ESU Chinook salmon is warranted because:

- Only vibratory methods will be used for in-water pile removal.
- The project proponent will employ TESC measures during construction to minimize the potential for erosion of upland soils and subsequent turbidity and sedimentation of downstream areas.
- An SPCC plan will be in place to minimize the potential for accidental construction-related spills.
- Equipment will be stored and staged a minimum of 150 feet from Ebey Slough when not in use. An exception to this may be the crane, which is likely to remain staged adjacent to Ebey Slough during work activities. The crane will be inspected daily for leaks and drip pans and absorbent pads will be fitted in place beneath the crane during periods of inactivity.
- No refueling of equipment will occur within 150 feet of Ebey Slough.
- The loss of prey items as a result of the proposed action is relatively insignificant given the available foraging habitat and density of forage available throughout the system.
- All disturbed areas will be stabilized and/or replanted following construction to provide soil stability over the long term.
- The project will improve baseline riparian conditions by planting native trees, shrubs, and herbaceous plants within the currently unvegetated riparian zone.

7.2.2 Steelhead

Considering the information referenced above, the project information provided in the construction plans, and based upon the minimization measures provided, a **may affect** determination is warranted for Puget Sound DPS steelhead because:

- Multiple sources document steelhead usage of Ebey Slough. Adult winter- and summer-run steelhead are anticipated to be present and migrating through the action area during construction.
- The proposed action will require soil-disturbing activities adjacent to Ebey Slough.
- The proposed action may result in the loss of prey items for steelhead.
- The proposed action will involve the vibratory installation and removal of pilings in waters where steelhead may be present.

A **not likely to adversely affect** determination for Puget Sound DPS steelhead is warranted because:

- The number of adult steelhead potentially exposed to elevated noise levels from pile removal will be extremely low.
- Only vibratory methods will be used for in-water pile removal.
- The project proponent will employ TESC measures during construction to minimize the potential for erosion of upland soils and subsequent turbidity and sedimentation of downstream areas.
- An SPCC plan will be in place to minimize the potential for accidental construction-related spills.

- Equipment will be stored and staged a minimum of 150 feet from Ebey Slough when not in use. An exception to this may be the crane, which is likely to remain staged adjacent to Ebey Slough during work activities. The crane will be inspected daily for leaks and drip pans and absorbent pads will be fitted and placed beneath the crane during periods of inactivity.
- No refueling of equipment will occur within 150 feet of Ebey Slough.
- The loss of prey items as a result of the proposed action is relatively insignificant given the available foraging habitat and density of forage available throughout the system.
- All disturbed areas will be stabilized and/or replanted following construction to provide soil stability over the long term.
- The project will improve baseline riparian conditions by planting native trees, shrubs, and herbaceous plants within the currently unvegetated riparian zone.

7.2.3 Southern Resident Killer Whale

Considering the information referenced above, the project information provided in the construction plans, and based upon the minimization measures provided, a **may affect** determination is warranted for SRKW because:

- Project construction is expected to result in adverse effects on Chinook salmon, a primary prey species for SRKW.

A **not likely to adversely affect** determination is warranted for SRKW based on the following rationale:

- The project will not appreciably reduce the survival and recovery of Chinook salmon (see Section 7.2.1) and will not, therefore, result in any population-scale reductions in the availability of this prey resource for SRKW.
- SRKW are not known or expected to use habitats in the action area and will not be exposed to any other potential project-related impacts.

7.2.4 Bull Trout

Considering the information referenced above, the project information provided in the construction plans, and based upon the minimization measures provided, a **may affect** determination is warranted for bull trout because:

- Multiple sources document bull trout usage of Ebey Slough. Anadromous life history forms of bull trout are likely present for the majority of the year, either migrating through the project area to upstream spawning and overwintering habitats in the mainstem Snohomish and headwater tributaries or rearing. Rearing within the lower estuary typically takes place from March through July.
- The proposed action will require soil disturbing activities adjacent to Ebey Slough.
- The proposed action may result in the loss of prey items for bull trout.
- The proposed action will involve the vibratory installation and removal of pilings in waters where bull trout may be present.

A **not likely to adversely affect** determination for bull trout is warranted based on the following rationale:

- In-water pile removal will take place during the approved in water work window.
- Only vibratory methods will be used for in-water pile removal.
- The project proponent will employ TESC measures during construction to minimize the potential for erosion of upland soils and subsequent turbidity and sedimentation of downstream areas.
- An SPCC plan will be in place to minimize the potential for accidental construction-related spills.
- Equipment will be stored and staged a minimum of 150 feet from Ebey Slough when not in use. An exception to this may be the crane, which is likely to remain staged adjacent to Ebey Slough during work activities. The crane will be inspected daily for leaks and drip pans and absorbent pads will be fitted and placed beneath the crane during periods of inactivity.
- No refueling of equipment will occur within 150 feet of Ebey Slough.
- The loss of prey items as a result of the proposed action is relatively insignificant given the available foraging habitat and density of forage available throughout the system.
- All disturbed areas will be stabilized and/or replanted following construction to provide soil stability over the long-term.
- The project will improve baseline riparian conditions by planting native trees, shrubs, and herbaceous plants within the currently unvegetated riparian zone.

7.3 Critical Habitat

7.3.1 Puget Sound ESU Chinook Salmon and Puget Sound DPS Steelhead Critical Habitat

Considering the information referenced above, the project information provided in the construction plans, and based upon the minimization measures provided, a **may affect** determination for designated critical habitat for Puget Sound ESU Chinook Salmon and Puget Sound DPS steelhead is warranted because:

- Ebey Slough within the action area contains designated critical habitat for both Puget Sound ESU Chinook Salmon and Puget Sound DPS steelhead.
- The project action area contains estuarine PBFs essential to the conservation of the species.
- The proposed action includes grading and excavation activities within and adjacent to designated critical habitat.
- The project will include the temporary and permanent impacts to an estuarine wetland along the fringe of Ebey Slough as a result of construction of the conveyance channel and related shoreline grading, temporarily reducing cover provided by wetland vegetation during higher tide events.

A **not likely to adversely affect** determination for designated critical habitat for Puget Sound ESU Chinook salmon and Puget Sound DPS steelhead is warranted because:

- The proposed action will not result in any permanent or temporary barrier to migration of Chinook salmon or steelhead through the project action area.
- Estuarine PBFs related to water quality and prey availability will be maintained in the project action area through the implementation of a TESC plan and erosion and sediment control BMPs to minimize the potential for increased turbidity and sedimentation.
- The side channel component of the estuarine PBF will be improved by creating a conveyance channel off Ebey Slough that is vegetated with native tree, shrub, and herbaceous species and also contains LWD that will improve the natural cover component of the estuarine PBF.
- Estuarine PBFs related to water quality and prey availability will be maintained in the project action area through the implementation of an SPCC plan and associated BMPs to minimize the potential for accidental release of construction-related contaminants.
- While benthic prey will be temporarily and permanently displaced from some habitats during and following construction, it is anticipated that benthic invertebrates from upstream will quickly recolonize the area following construction, thereby maintaining the rearing PBF within the project action area.
- The temporary and permanent wetland impacts will be mitigated by construction of the conveyance channel, which will increase the overall size of the wetland and over time will provide cover through plantings of native emergent vegetation similar to that disturbed during construction.
- Ample foraging habitat is available in adjacent areas.
- The proposed action will not degrade any of the PBFs within the action area to the extent that the conservation of the species would be affected.

7.3.2 Bull Trout Critical Habitat

The overall effect determination for critical habitat for bull trout as a result of the proposed action is **may affect, not likely to adversely affect**.

A **may affect** determination for bull trout critical habitat is warranted based on the following rationale:

- The project lies within designated critical habitat for bull trout.
- Four PBFs are present within the action area.
- The proposed action includes grading and excavation activities within and adjacent to designated critical habitat.
- The project will include temporary and permanent impacts to an estuarine wetland along the fringe of Ebey Slough as a result of construction of the conveyance channel and related shoreline grading, temporarily reducing cover provided by wetland vegetation during higher tide events.

A **not likely to adversely affect** determination is warranted for this proposed action for bull trout critical habitat because:

- The proposed action will not result in any permanent or temporary barrier to migration of bull trout through the project action area.
- The project proponent will adhere to an SPCC plan to minimize the potential for degradation of water quality via accidental construction-related spills.
- Turbidity will comply with Washington state surface water quality standards within 150 feet of activities causing the disturbance, and will be short in duration and associated with piling installation and shoreline grading.
- Food resources for bull trout may be displaced or removed during in water work but are anticipated to return to the area when construction is complete.
- Ample foraging habitat is available in adjacent areas.
- The proposed action is not anticipated to alter the stream temperatures within the action area.
- The proposed action is not anticipated to alter water quantity within the action area; however, the proposed conveyance channel may provide refuge and cover during high flow events.

8. MAGNUSON STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Action Agency: United States Army Corps of Engineers

Project Name: Geddes Marina Phase 2 Remediation project

8.1 Essential Fish Habitat Background

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

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

The Pacific salmon management unit includes Chinook, coho, and pink salmon. Of the managed Pacific salmon species, all three species have been identified as having EFH within the project area. The project area is a migration corridor for all three species on their way to upstream spawning areas and for juvenile outmigration. Ebey Slough provides important rearing habitat for both juvenile Chinook salmon and juvenile coho salmon.

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

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

8.2 Description of the Proposed Action

For the purpose of this assessment, the proposed action for the EFH assessment and BA incorporates the same project elements. A detailed description of the proposed action is included in Section 2 of this

document. Table 8-1 below indicates the federally managed Pacific salmon and life history forms that are potentially present within the project action area.

Table 8-1. Salmonid Species and Life Stages with EFH in the Action Area

Salmon Species	Eggs	Larvae	Young Juvenile	Adult	Spawning
Chinook	N/A	N/A	X	X	N/A
Coho	N/A	N/A	X	X	N/A
Pink	N/A	N/A	X	X	N/A

8.3 Potential Adverse Effects of Proposed Project

Potential impacts of the proposed action to ESA-listed fish species and habitats are discussed in Section 4.0 of this BA and are expected to be similar for all federally managed fish species that occur within the action area.

8.3.1 Adverse Effects on Essential Fish Habitat for Salmonids

Adverse effects on EFH for salmonids is primarily related to reduced water quality (sedimentation and turbidity) as a result of sediment disturbance during dock installation, clearing, grading, excavation, and fill activities associated with site development activities, boat launch facility installation, and construction of the conveyance channel. The 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.

Other effects include:

- Long-term habitat degradation through increased human activity at the site and development of the shoreline.
- A short-term increase in underwater noise levels.
- Resuspension of bottom sediments as a result of shoreline restoration, which will require in-water work.
- Short-term impacts to forage fish species, as they may avoid the project area during construction, thereby increasing energy expenditure and competition for resources.

8.3.2 Adverse Effects on Essential Fish Habitat for Ground Fishes

Potential adverse effects on EFH for ground fishes are similar to those discussed above for salmonids. Ground fishes associated with bottom sediments such as flat fishes may be temporarily displaced during construction. In addition, benthic prey organisms may be removed and ground fishes may compete for other resources. The small area of impact, prey availability in adjacent habitats, and the temporary nature of the disturbance will minimize adverse effects of the action upon ground fishes.

8.3.3 Adverse Effects on Essential Fish Habitat for Coastal Pelagic Species

Potential adverse effects on EFH for coastal pelagic species are similar to those discussed above for salmonids and ground fishes.

8.4 Essential Fish Habitat Conservation Measures

The following measures will be implemented to minimize the potential adverse effects on designated EFH for federally managed pacific salmon as described above:

- The engineer will limit the amount of soil disturbance to that which can be adequately controlled.
- Limit soil-disturbing activities to the summer and early fall months when precipitation is least likely to occur.
- Placement of temporary fencing around critical areas such as streams and wetlands to prevent inadvertent disturbance, where necessary.
- Plant or pave disturbed areas as soon as possible after completion of construction.
- Construction entrances will contain either rock pads or tire wash facilities to prevent tracking of soil onto local roadways and further to prevent the potential for sedimentation and turbidity of receiving waters as a result of runoff from roadways.
- All stockpile areas will be contained and protected by erosion control measures such as silt fencing and straw bales. Stockpiles shall also be covered if inclement weather is forecast.
- Appropriate stockpile and staging areas will be identified and approved prior to construction.
- Staging areas will be located in areas that will prevent the potential for contamination of any wetland or water body. Servicing and refueling of vehicles will not occur within 150 feet of the river to reduce potential spills of petroleum and hydraulic fluids in sensitive areas. Additionally, drip pans will be fitted with absorbent pads and placed under all equipment being fueled.
- Appropriate TESC plans will be approved prior to construction and comply with the City's erosion control standards.
- During construction, monitoring programs could be required to ensure compliance with the site erosion control plan and with local regulatory requirements. A Stormwater Pollution Prevention Plan (SWPPP) and TESC plan will be included within project design documents.
- Routine inspections of erosion-control and sediment-control BMPs will be performed in addition to BMP maintenance.
- The engineer will limit the amount of soil disturbance to that which can be adequately controlled.
- Turbidity curtains may be necessary during soil disturbance activities along the Shoreline of the Snohomish River.
- An SPCC plan will be in place prior to commencing construction activities.

- All vehicles operated within 150 feet of any stream or waterbody will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation. When not in use, all vehicles will be stored in staging areas away from wetlands and surface waters. Other vehicles that may be stored in place will be inspected daily for fluid leaks.
- Work within the Ebey Slough will require an HPA from WDFW. The project will comply with all permit conditions to minimize impacts on aquatic resources. The approved in-water work window is anticipated to be from July 15 to February 15 to minimize impacts to bull trout, steelhead, and Chinook.
- Equipment operating below the OHWL will use vegetable oil-based hydraulic fluids.
- Disturbed areas around the construction area will be replanted.

8.5 Conclusions

EFH for Pacific salmon, coastal pelagic species, and ground fish are present in the project action area. The proposed action may potentially increase sediment load and turbidity, potentially degrade water quality due to presence of heavy equipment in and near surface waters, and increase underwater noise during pile installation and removal. These effects are expected to be short in duration and will not persist beyond the construction period. Therefore, the proposed action **may adversely affect** EFH for all federally managed species.

However, the proposed action is anticipated to be beneficial to EFH for all federally managed species in the project area by remediating a known area of sediment contamination and restoring portions of historically degraded shoreline by planting native tree, shrub, and herbaceous vegetation along the shore. Currently there is no riparian corridor in the expansion area, and the vegetation that does exist is limited to weeds and other invasive plants.

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Appendix A

Project Photos





Photo 1: Lagoon (Wetland C) in background and outlet channel to Ebey slough at high tide. Location of weir is visible and is the break line between Wetland B and Wetland C (4/25/2018).



Photo 2: Lagoon (Wetland C) along perimeter of boat basin at low tide looking north toward 1st Street on Geddes Site (4/25/2018).



Photo 3: Preload material on Geddes Site (10/2020).



Photo 4: Wetland A looking east from beneath SR 529 (4/25/2018).



Photo 5: Ebey Slough shoreline and Wetland A east of Ebey waterfront Park's boat ramp looking toward SR 529 (4/25/2018).



Photo 6: Outlet channel from Lagoon to Ebey Slough with Wetland B on either side of channel and extending to the right and left along Ebey Slough shoreline. Looking southwest toward BNSF & I-5. railroad and I-5.



Photo 7. Old wood rail boat lift on Geddes Site in foreground extending into Ebey Slough with docks and boat houses in background. Approximate location of new non-motorized boat launch with Wetland B on either side (4/25/2018).



Photo 8: Wetland B to along shoreline. Looking west from boat basin outlet to Ebey Slough (4/25/2018). The boathouses and dock have since been removed (see Photo 16 and 17).



Photo 9: Unarmored portion of Wetland B along Ebey Slough looking west toward I-5 (4/25/2018). The boathouses and have since been removed. (see Photos 16 and 17).



Photo 10: Looking north from edge of boat basin on Geddes Site towards the 36-inch culvert that discharges stormwater into lagoon from beneath 1st Street. Wetland C skirts the perimeter of the entire boat basin.



Photo 11. Existing motorized boat launch facilities at Ebey Waterfront Park (4/25/2018).



Photo 12: Constructed stormwater swale in parking area of Ebey Waterfront Park looking north toward park entrance and downtown commercial properties (4/25/2018).



Photo 13: Landscaping and paved parking in Ebey Waterfront Park looking southeast (7/11/2018).

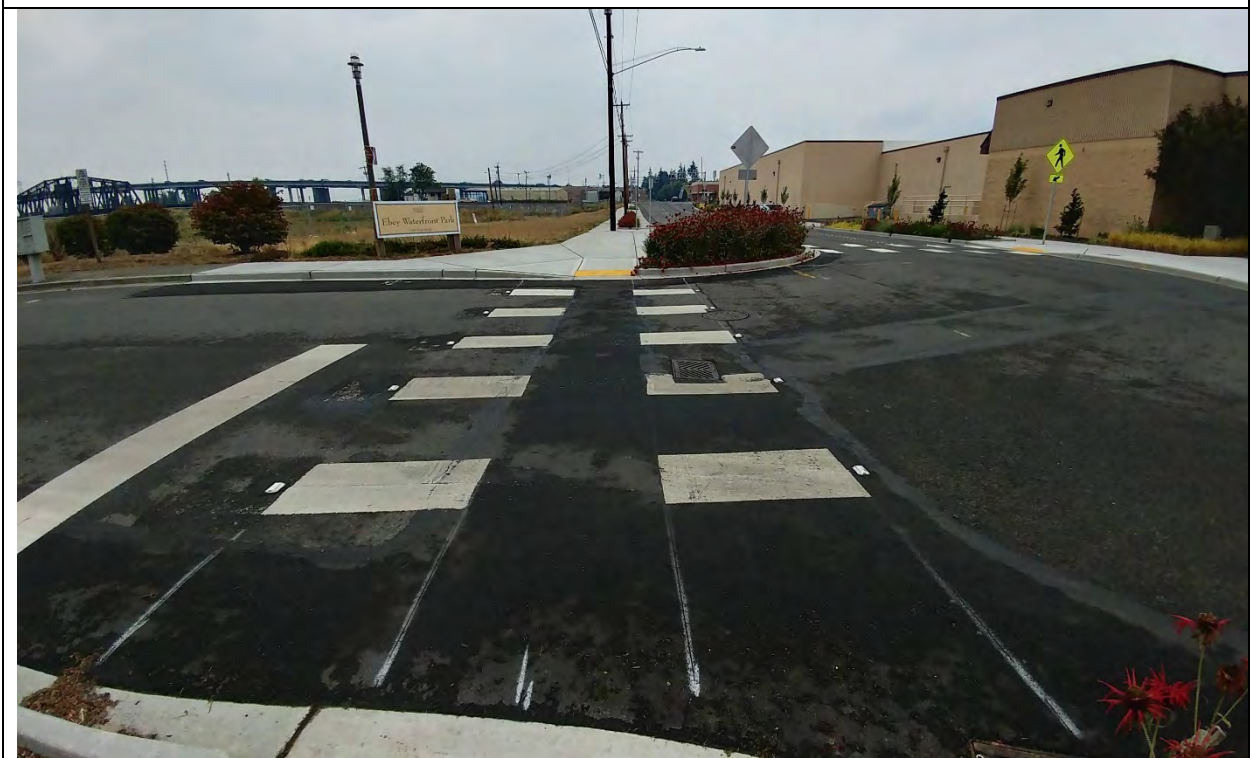


Photo 14: Entrance to Ebey Waterfront Park via 1st Street looking west (7/11/2018).



Photo 15: Dilapidated weir between lagoon and Ebey Slough. No longer functioning, so lagoon responds to tidal influence (4/25/2018).



Photo 16: Remnant docks/floats/piles waterward of Geddes Site in Ebey Slough. All boat houses shown in prior pictures have been removed (3/13/2019).



Photo 17. Photo showing that boathouses and some of the docks/floats have been removed. Old pilings still remain and will be removed as part of the expansion project (3/13/2019).



Photo 18: Weeds along waterward edge of Geddes Site in Ebey Slough (7/11/2018).

Appendix B
USFWS Species List



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405
<http://www.fws.gov/wafwo/>

In Reply Refer To:

November 19, 2021

Consultation Code: 01EWF00-2022-SLI-0242

Event Code: 01EWF00-2022-E-00652

Project Name: Geddes Marina Phase 2 Remediation

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

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list is currently compiled at the county level. Additional information is available from the Washington Department of Fish and Wildlife, Priority Habitats and Species website: <http://wdfw.wa.gov/mapping/phs/> or at our office website: http://www.fws.gov/wafwo/species_new.html. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether or not the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

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

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). You may visit our website at <http://www.fws.gov/pacific/eagle/for> information on disturbance or take of the species and information on how to get a permit and what current guidelines and regulations are. Some projects affecting these species may require development of an eagle conservation plan: (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Also be aware that all marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas. The importation of marine mammals and marine mammal products into the U.S. is also prohibited. More information can be found on the MMPA website: <http://www.nmfs.noaa.gov/pr/laws/mmpa/>.

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

Related website:

National Marine Fisheries Service: http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

Attachment(s):

- Official Species List
-

Official Species List

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

This species list is provided by:

Washington Fish And Wildlife Office

510 Desmond Drive Se, Suite 102

Lacey, WA 98503-1263

(360) 753-9440

Project Summary

Consultation Code: 01EWF00-2022-SLI-0242

Event Code: Some(01EWF00-2022-E-00652)

Project Name: Geddes Marina Phase 2 Remediation

Project Type: ** OTHER **

Project Description: Cap a former log pond/boat basin with clean sediments and create a new channel for conveying treated stormwater through the remediation area.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@48.047928799999994,-122.18001340978921,14z>



Counties: Snohomish County, Washington

Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, 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.

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

Birds

NAME	STATUS
Marbled Murrelet <i>Brachyramphus marmoratus</i> 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 <i>Eremophila alpestris strigata</i> 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 <i>Coccyzus americanus</i> 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

Amphibians

NAME	STATUS
Oregon Spotted Frog <i>Rana pretiosa</i> 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/6633	Threatened

Fishes

NAME	STATUS
Bull Trout <i>Salvelinus confluentus</i> 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	Threatened

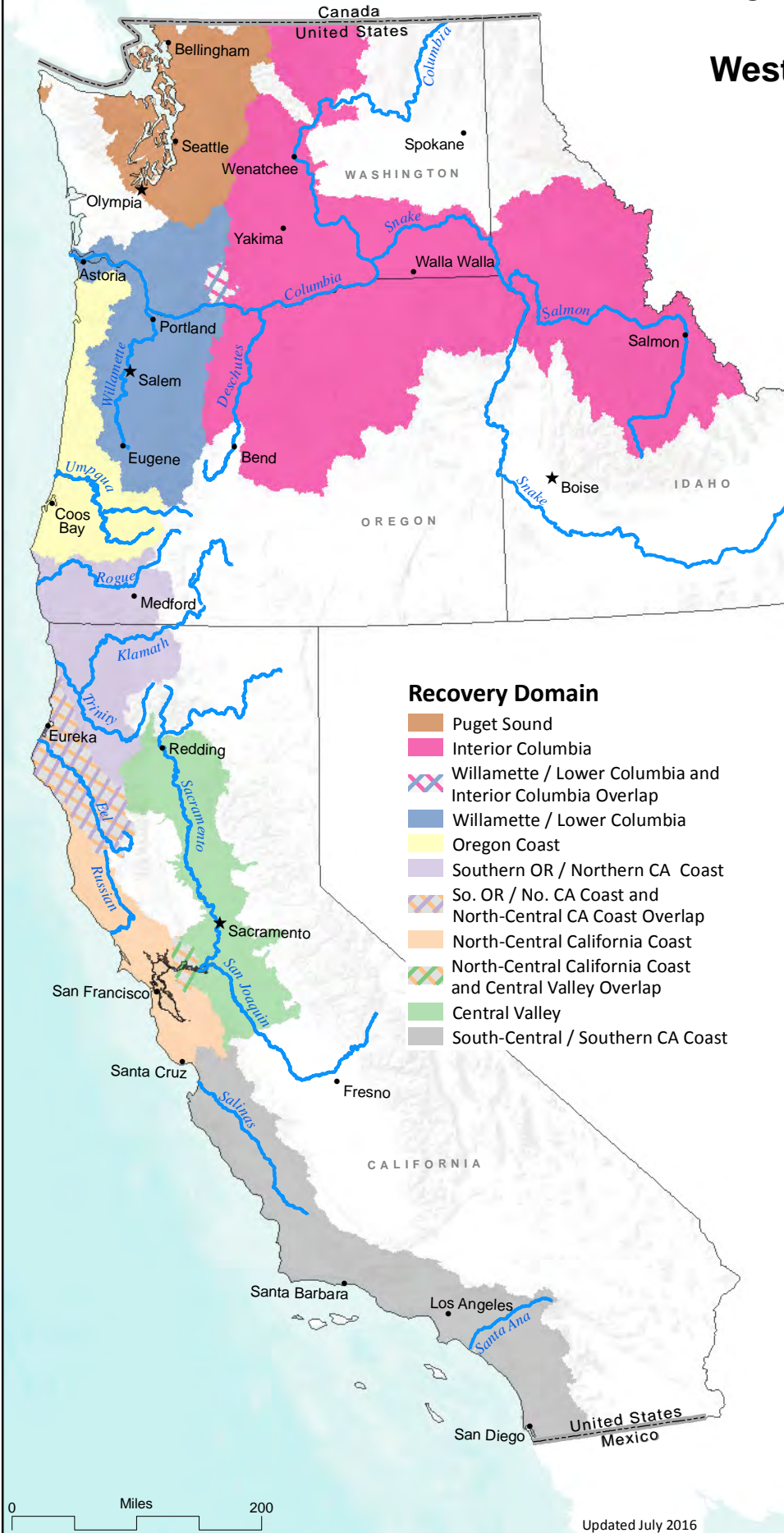
Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

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

Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead



- Recovery Domain**
- Puget Sound
 - Interior Columbia
 - Willamette / Lower Columbia and Interior Columbia Overlap
 - Willamette / Lower Columbia
 - Oregon Coast
 - Southern OR / Northern CA Coast
 - So. OR / No. CA Coast and North-Central CA Coast Overlap
 - North-Central California Coast
 - North-Central California Coast and Central Valley Overlap
 - Central Valley
 - South-Central / Southern CA Coast

Evolutionarily Significant Unit / Distinct Population Segment	ESA Status	Date of ESA Listing	Date of CH Designation
Puget Sound Recovery Domain			
Hood Canal Summer-run Chum Salmon	T	3/25/1999	9/2/2005
Ozette Lake Sockeye Salmon	T	3/25/1999	9/2/2005
Puget Sound Chinook Salmon	T	3/24/1999	9/2/2005
Puget Sound Steelhead	T	5/11/2007	2/24/2016

Interior Columbia Recovery Domain			
Middle Columbia River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Snake River Fall-run Chinook Salmon	T	4/22/1992	12/28/1993
Snake River Spring / Summer-run Chinook Salmon	T	4/22/1992	10/25/1999
Snake River Sockeye Salmon	E	11/20/1991	12/28/1993
Snake River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Upper Columbia River Spring-run Chinook Salmon	E	3/24/1999	9/2/2005
Upper Columbia River Steelhead	T	8/18/1997 1/5/2006	9/2/2005

Willamette / Lower Columbia Recovery Domain			
Columbia River Chum Salmon	T	3/25/1999	9/2/2005
Lower Columbia River Chinook Salmon	T	3/24/1999	9/2/2005
Lower Columbia River Coho Salmon	T	6/28/2005	2/24/2016
Lower Columbia River Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Upper Willamette River Chinook Salmon	T	3/24/1999	9/2/2005
Upper Willamette River Steelhead	T	3/25/1999 1/5/2006	9/2/2005

Oregon Coast Recovery Domain			
Oregon Coast Coho Salmon	T	2/11/2008	2/11/2008

Southern Oregon / Northern California Coast Recovery Domain			
Southern OR / Northern CA Coasts Coho Salmon	T	5/6/1997	5/5/1999

North-Central California Coast Recovery Domain			
California Coastal Chinook Salmon	T	9/16/1999	9/2/2005
Central California Coast Coho Salmon	E	10/31/1996 (T) 6/28/2005 (E) 4/2/2012 (RE)	5/5/1999
Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Northern California Steelhead	T	6/7/2000 1/5/2006	9/2/2005

Central Valley Recovery Domain			
California Central Valley Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Central Valley Spring-run Chinook Salmon	T	9/16/1999	9/2/2005
Sacramento River Winter-run Chinook Salmon	E	11/5/1990 (T) 1/4/1994 (E)	6/16/1993

South-Central / Southern California Coast Recovery Domain			
South-Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Southern California Steelhead	E	8/18/1997 5/1/2002 (RE) 1/5/2006	9/2/2005

ESA = Endangered Species Act, CH = Critical Habitat, RE = Range Extension
E = Endangered, T = Threatened

Critical Habitat Rules Cited

- 2/24/2016 (81 FR 9252) Final Critical Habitat Designation for Puget Sound Steelhead and Lower Columbia River Coho Salmon
- 2/11/2008 (73 FR 7816) Final Critical Habitat Designation for Oregon Coast Coho Salmon
- 9/2/2005 (70 FR 52630) Final Critical Habitat Designation for 12 ESU's of Salmon and Steelhead in WA, OR, and ID
- 9/2/2005 (70 FR 52488) Final Critical Habitat Designation for 7 ESU's of Salmon and Steelhead in CA
- 10/25/1999 (64 FR 57399) Revised Critical Habitat Designation for Snake River Spring/Summer-run Chinook Salmon
- 5/5/1999 (64 FR 24049) Final Critical Habitat Designation for Central CA Coast and Southern OR/Northern CA Coast Coho Salmon
- 12/28/1993 (58 FR 68543) Final Critical Habitat Designation for Snake River Chinook and Sockeye Salmon
- 6/16/1993 (58 FR 33212) Final Critical Habitat Designation for Sacramento River Winter-run Chinook Salmon

ESA Listing Rules Cited

- 4/2/2012 (77 FR 19552) Final Range Extension for Endangered Central California Coast Coho Salmon
- 2/11/2008 (73 FR 7816) Final ESA Listing for Oregon Coast Coho Salmon
- 5/11/2007 (72 FR 26722) Final ESA Listing for Puget Sound Steelhead
- 1/5/2006 (71 FR 5248) Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead
- 6/28/2005 (70 FR 37160) Final ESA Listing for 16 ESU's of West Coast Salmon
- 5/1/2002 (67 FR 21586) Range Extension for Endangered Steelhead in Southern California
- 6/7/2000 (65 FR 36074) Final ESA Listing for Northern California Steelhead
- 9/16/1999 (64 FR 50394) Final ESA Listing for Two Chinook Salmon ESUs in California
- 3/25/1999 (64 FR 14508) Final ESA Listing for Hood River Canal Summer-run and Columbia River Chum Salmon
- 3/25/1999 (64 FR 14517) Final ESA Listing for Middle Columbia River and Upper Willamette River Steelhead
- 3/25/1999 (64 FR 14528) Final ESA Listing for Ozette Lake Sockeye Salmon
- 3/24/1999 (64 FR 14308) Final ESA Listing for 4 ESU's of Chinook Salmon
- 3/19/1998 (63 FR 13347) Final ESA Listing for Lower Columbia River and Central Valley Steelhead
- 8/18/1997 (62 FR 43937) Final ESA Listing for 5 ESU's of Steelhead
- 5/6/1997 (62 FR 24588) Final ESA Listing for Southern Oregon / Northern California Coast Coho Salmon
- 10/31/1996 (61 FR 56138) Final ESA Listing for Central California Coast Coho Salmon
- 1/4/1994 (59 FR 222) Final ESA Listing for Sacramento River Winter-run Chinook Salmon
- 4/22/1992 (57 FR 14653) Final ESA Listing for Snake River Spring/summer-run and Snake River Fall Chinook Salmon
- 11/20/1991 (56 FR 58619) Final ESA Listing for Snake River Sockeye Salmon
- 11/5/1990 (55 FR 46515) Final ESA Listing for Sacramento River Winter-run Chinook Salmon

Appendix C

Preliminary Construction Plans



PATH: U:\PSO\Projects\Clients\2967-City of Marysville\553-2967-005 GeddesMarinaPhase2\995\es\CADD\DWG PLOTTED BY: OlegoCoo DATE: Wednesday, March 16, 2022 2:51:51 PM LAYOUT: G2

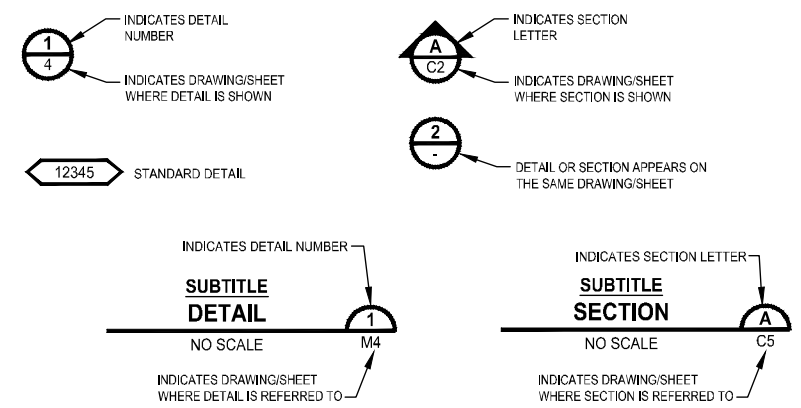
LEGEND:

DESCRIPTION	PROPOSED	EXISTING
HUB & TACK		□
SET MAG NAIL		*
PROPERTY BOUNDARY		-----
STREAM	→---→---→---→	-----
DERBY CREEK BUFFER		-----
SAMMAMISH RIVER BUFFER		-----
WETLAND SYMBOL		
WETLAND BOUNDARY		-----
WETLAND A BUFFER		-----
ORDINARY HIGH WATER LINE	----- OHWL	----- OHWL
DITCH		-----
TEMPORARY BYPASS PIPE	—○—○—○—	
STORM DRAIN		----- SD
STORM DRAIN MANHOLE	⊙	
UNDERGROUND GRAVITY PIPING	▬▬▬▬▬▬	
UNDERGROUND FORCE MAIN	▬▬▬▬▬▬	
CATCH BASIN, TYPE 1		≡
SANITARY SEWER LINE		----- SS
SANITARY SEWER MANHOLE		⊙
CONTOURS MAJOR	----- 10	----- 10
CONTOURS MINOR	----- 2	----- 2
HIGH VISIBILITY SILT FENCE	—□—□—□—□—	
HIGH VISIBILITY FENCE	—X—X—X—	
CLEARING AND GRUBBING	—∞—∞—∞—∞—	
FILL LINE	----- F	
CUT LINE	----- C	
ASPHALT EDGE	▬▬▬▬▬▬	///
CONCRETE LINE	▬▬▬▬▬▬	▬▬▬▬▬▬
EDGE OF GRAVEL	▬▬▬▬▬▬	▬▬▬▬▬▬
BARB WIRE FENCE	—x—x—x—	
CHAIN LINK FENCE	—○—○—○—	
TEMPORARY SAFETY FENCE	—/—/—/—	
STRUCTURAL EARTH WALL	▬▬▬▬▬▬	
COFFER DAM	⊙⊙⊙⊙⊙⊙⊙⊙	

ABBREVIATIONS:

ACP	ASPHALT CONCRETE PAVEMENT	ME	MATCH EXISTING
BOC	BACK OF CURB	MIN	MINIMUM
BOW	BOTTOM OF WALL	MON	MONUMENT
BP	BEGIN POINT	N	NORTH, NORTHING
BVCE	BEGIN VERTICAL CURVE ELEVATION	N.I.C.	NOT IN CONTRACT
BVCS	BEGIN VERTICAL CURVE STATION	NST	NOT STEEPER THAN
CB	CATCH BASIN	OP	POWER (OVERHEAD)
C&G	CURB AND GUTTER	PC	POINT OF CURVE
C/L	CENTERLINE	PI	POINT OF INTERSECTION
CONC	CONCRETE	PT	POINT OF TANGENT
CONST	CONSTRUCTION	P/L	PROPERTY LINE
CMP	CORRUGATED METAL PIPE	PUD	PUBLIC UTILITY DISTRICT
CP	CONCRETE PIPE	PVI	POINT OF VERTICAL INTERSECTION
CSTC	CRUSHED SURFACING TOP COURSE	RCKC	REBAR & CAP KING COUNTY
DIA	DIAMETER	REINF	REINFORCED
DI, DIP	DUCTILE IRON PIPE	ROW or R/W	RIGHT-OF-WAY
E	EAST, EASTING	RR	RAIL ROAD
EP	END POINT	SD	STORM DRAIN
EOA	EDGE OF ASPHALT	SDMH	STORMWATER MANHOLE
EVCE	END VERTICAL CURB ELEVATION	SHT	SHEET
EVCS	END VERTICAL CURB STATION	SIM	SIMILAR
EOG	EDGE OF GRAVEL	SS	SANITARY SEWER
EOP	EDGE OF PAVEMENT	ST	STEEL
EX, EXIST	EXISTING	STA	STATION
FOC	FACE OF CURB	TEL	TELEPHONE
FL	FLANGE, FLOWLINE	TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
G	GAS	TOW	TOP OF WALL
GB	GRADE BREAK	TYP	TYPICAL
HMA	HOT MIX ASPHALT	UNO	UNLESS NOTED OTHERWISE
IE	INVERT ELEVATION	W	WATER
LF	LINEAR FEET	WS	WATER SERVICE
LP	LOW POINT	WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
LT	LEFT	WWM	WELDED WIRE MESH

DETAIL AND SECTION DESIGNATION



PRELIMINARY PERMIT SUBMITTAL

REVISIONS	DATE	BY	DESIGNED DLD
			DRAWN CTO
			CHECKED
			APPROVED

**ONE INCH AT FULL SCALE.
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 FILE NAME
 PS2967005-G1-2
 JOB No.
 553-2967-005
 DATE
 MARCH 2022



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 P 206.394.3700
 WWW.PARAMETRIX.COM

PROJECT NAME
**CITY OF MARYSVILLE
 GEDDES MARINA PHASE 2
 REMEDIATION**
 MARYSVILLE, WA

**LEGEND AND
 ABBREVIATIONS**

DRAWING NO.
 2 OF 11
G2

PATH: U:\PSO\Projects\Clients\2967-005 GeddesMarinaPhase2\985ves\CADD\DWG PLOTTED BY: OdegoCo DATE: Wednesday, March 16, 2022 2:51:55 PM LAYOUT: G3

GENERAL NOTES:

- ALL WORK IN CITY RIGHT-OF-WAY REQUIRES A PERMIT FROM THE CITY OF MARYSVILLE. PRIOR TO ANY WORK COMMENCING, THE GENERAL CONTRACTOR SHALL ARRANGE FOR A PRECONSTRUCTION MEETING AT THE DEVELOPMENT SERVICES CENTER TO BE ATTENDED BY ALL CONTRACTORS THAT WILL PERFORM WORK SHOWN ON THE APPROVED ENGINEERING PLANS, REPRESENTATIVES FROM ALL APPLICABLE UTILITY COMPANIES, THE PROJECT OWNER AND APPROPRIATE CITY STAFF. CONTACT DEVELOPMENT SERVICES AT (360-363-8100) TO SCHEDULE THE MEETING. THE CONTRACTOR IS RESPONSIBLE FOR HAVING THEIR OWN SET OF APPROVED PLANS AT THE MEETING.
- AFTER COMPLETION OF ALL ITEMS SHOWN ON THESE PLANS AND BEFORE ACCEPTANCE OF THE PROJECT THE CONTRACTOR SHALL OBTAIN A "PUNCH LIST" PREPARED BY THE CITY'S INSPECTOR DETAILING REMAINING ITEMS OF WORK TO BE COMPLETED. ALL ITEMS OF WORK SHOWN ON THESE PLANS SHALL BE COMPLETED TO THE SATISFACTION OF THE CITY PRIOR TO ACCEPTANCE OF THE WATER, SANITARY SEWER AND STORM SYSTEMS.
- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION (HEREINAFTER REFERRED TO AS THE "STANDARD SPECIFICATIONS"), WASHINGTON STATE DEPARTMENT OF TRANSPORTATION AND AMERICAN PUBLIC WORKS ASSOCIATION, WASHINGTON STATE CHAPTER, LATEST EDITION. UNLESS SUPERSEDED OR AMENDED BY THE CITY OF MARYSVILLE CITY ENGINEERING DESIGN AND DEVELOPMENT STANDARDS (HEREINAFTER REFERRED TO AS THE "CITY STANDARDS")
- ALL WORK WITHIN THE DEVELOPMENT AND CITY RIGHT-OF-WAY SHALL BE SUBJECT TO THE INSPECTION OF THE CITY ENGINEER OR DESIGNATED REPRESENTATIVE.
- PRIOR TO ANY SITE CONSTRUCTION INCLUDING CLEARING/LOGGING OR GRADING, THE SITE CLEARING LIMITS SHALL BE LOCATED AND FIELD IDENTIFIED BY THE PROJECT SURVEYOR (OR PROJECT ENGINEER) AS REQUIRED BY THESE PLANS. THE PROJECT SURVEYOR'S NAME AND PHONE NUMBER IS _____.
- THE CONTRACTOR ARE RESPONSIBLE FOR WATER QUALITY AS DETERMINED BY THE MONITORING PROGRAM ESTABLISHED BY THE CONTRACTOR'S STORMWATER POLLUTION PREVENTION PLAN. THE EROSION CONTROL LEAD (ECL) NAME AND PHONE NUMBER IS _____.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS FOR UTILITY, ROAD, AND RIGHT-OF-WAY CONSTRUCTION. THE CONTRACTOR FOR THIS PROJECT IS _____ CONTACT PERSON IS _____ PHONE _____, MOBILE PHONE _____, EMERGENCY PHONE _____.
- THE CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (SWPPP) BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED SWPPP PRIOR TO ANY GRADING OR EXTENSIVE LAND CLEARING. THESE FACILITIES MUST BE SATISFACTORILY MAINTAINED UNTIL CONSTRUCTION AND LANDSCAPING IS COMPLETED AND FINAL STABILIZATION HAS OCCURRED. SEDIMENT LADEN WATERS SHALL NOT ENTER THE CITY STORMWATER DRAINAGE SYSTEM OR A NATURAL DRAINAGE SYSTEM.
- THE CONTRACTOR SHALL KEEP TWO SETS OF PLANS ON SITE AT ALL TIMES FOR RECORDING RECORD DRAWING INFORMATION; ONE SET SHALL BE SUBMITTED TO THE PROJECT ENGINEER, AND ONE SET SHALL BE SUBMITTED TO THE CITY ENGINEER AT COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL ACCEPTANCE OF WORK.
- PRIOR TO CONSTRUCTION THE OWNER AND/OR CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER AND THE CITY ENGINEER WHEN CONFLICTS EXIST BETWEEN THE PLANS AND FIELD CONDITIONS. CONFLICTS SHALL BE RESOLVED (INCLUDING PLAN AND PROFILE REVISIONS) AND RESUBMITTED FOR APPROVAL PRIOR TO PROCEEDING WITH CONSTRUCTION.
- ANY REVISIONS MADE TO THESE PLANS, OR CHANGES TO THE DESIGN MUST BE REVIEWED AND APPROVED BY THE CITY PRIOR TO ANY IMPLEMENTATION IN THE FIELD.
- CITY OF MARYSVILLE HORIZONTAL DATUM SHALL BE NAD 83, AND THE VERTICAL DATUM SHALL BE NAVD 88. IN WASHINGTON STATE PLANE COORDINATES (US SURVEY FEET), WASHINGTON NORTH ZONE 4601. A LIST OF BENCHMARKS IS AVAILABLE THROUGH THE PUBLIC WORKS DEPARTMENT. REFER TO SHEET ## FOR SURVEY NOTES AND CONTROL.
- TEMPORARY STREET PATCHING SHALL BE ALLOWED FOR AS APPROVED BY THE CITY ENGINEER. TEMPORARY STREET PATCHING SHALL BE PROVIDED BY PLACEMENT AND COMPACTION OF ATB OR CLASS B ASPHALT CONCRETE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AS REQUIRED.
- PROVIDE TRAFFIC CONTROL PLAN(S) IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS REQUIRED.
- THE CONTRACTOR SHALL INSTALL, REPLACE, OR RELOCATE ALL SIGNS, AS SHOWN ON THE PLANS OR AS AFFECTED BY CONSTRUCTION, PER CITY STANDARDS.
- RIGHT-OF-WAY CROSSINGS OF POWER, STREET LIGHT, CABLE, AND TELEPHONE SHALL HAVE A MINIMUM HORIZONTAL SEPARATION FROM OTHER UTILITIES (SEWER, WATER, AND STORM) OF 5 FEET UNLESS OTHERWISE NOTED.
- DURING CONSTRUCTION, ALL PUBLIC STREETS ADJACENT TO THIS PROJECT SHALL BE KEPT CLEAN OF ALL MATERIAL DEPOSITS RESULTING FROM ON-SITE CONSTRUCTION, AND EXISTING STRUCTURES SHALL BE PROTECTED AS DIRECTED BY THE CITY.

UTILITY NOTES:

- THE CONTRACTOR SHALL HAVE ALL UTILITIES VERIFIED ON THE GROUND PRIOR TO ANY CONSTRUCTION. CALL (811) AT LEAST TWO WORKING DAYS IN ADVANCE. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER AND THE CITY ENGINEER WHEN CONFLICTS EXIST BETWEEN THE PLANS AND FIELD CONDITIONS. CONFLICTS SHALL BE RESOLVED (INCLUDING PLAN AND PROFILE REVISIONS) AND RESUBMITTED FOR APPROVAL PRIOR TO PROCEEDING WITH CONSTRUCTION. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO POTHOLE AND DETERMINE THE TRUE ELEVATIONS AND LOCATIONS OF HIDDEN UTILITIES. LOCATION OF UTILITIES SHOWN ON CONSTRUCTION PLANS ARE BASED ON BEST RECORDS AVAILABLE AND ARE SUBJECT TO VARIATION. FOR ASSISTANCE IN UTILITY LOCATION, CALL 1-800-424-5555.
- THE CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT ALL EXISTING UTILITIES FROM DAMAGE.
- CONTRACTOR TO PROVIDE SUPPORTS TO UTILITIES AS NEEDED TO PROTECT IN PLACE.
- EXISTING UTILITIES THAT ARE ABANDONED IN PLACE SHALL BE PLUGGED, FILLED, OR DEMOLISHED AS PER SPECIFICATIONS.
- EXCAVATIONS WITHIN FIVE FEET OF EXISTING ELECTRIC, GAS, OR COMMUNICATIONS FACILITIES SHALL BE HAND EXCAVATED OR AT THE DISCRETION, APPROVAL AND DIRECTION OF THE AFFECTED UTILITY.
- CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES DUE TO HIS CONSTRUCTION OPERATIONS. ALL DAMAGE SHALL BE IMMEDIATELY REPAIRED IN ACCORDANCE WITH DIRECTIONS FROM THE OWNING AUTHORITY, TO THE SATISFACTION OF THE ENGINEER.

PAVING NOTES:

- WHERE NEW PAVEMENT ABUTS EXISTING, THE CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT FOR A DEPTH OF TWO AND ONE-HALF (2.5) INCHES MINIMUM OR AS DIRECTED BY THE ENGINEER. SAWCUTS SHALL RECEIVE A TACK COAT PRIOR TO INSTALLING NEW BITUMINOUS ASPHALT PAVEMENT AND ALL JOINTS SHALL BE SEALED.
- PAVEMENTS SHALL BE BUILT TO A SMOOTH EVEN FINISH WITH A CONSISTENT TOP AND PROFILE WITHOUT WAVES OR IRREGULARITIES. ANY WORK NOT MEETING THIS QUALITY STANDARD SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

GRADING, EROSION, AND SEDIMENTATION CONTROL NOTES:

- A GRADING PERMIT ISSUED PURSUANT TO THE CURRENT ADOPTED INTERNATIONAL BUILDING CODE, AND APPROVAL OF THE TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE OBTAINED FROM THE COMMUNITY DEVELOPMENT DEPARTMENT PRIOR TO ANY ON-SITE GRADING WORK NOT EXPRESSLY EXEMPT BY THE CURRENT ADOPTED INTERNATIONAL BUILDING CODE.
- REFER TO TESC PLANS FOR EROSION AND SEDIMENT CONTROL NOTES.
- ALL LIMITS OF CLEARING AND AREAS OF VEGETATION PRESERVATION AS PRESCRIBED ON THE PLANS SHALL BE CLEARLY FLAGGED IN THE FIELD AND OBSERVED DURING CONSTRUCTION.
- IN CASE EROSION OR SEDIMENTATION OCCURS TO ADJACENT PROPERTIES, ALL CONSTRUCTION WORK WITHIN THE SITE THAT WILL FURTHER AGGRAVATE THE SITUATION MUST CEASE, AND THE CONTRACTOR WILL IMMEDIATELY COMMENCE RESTORATION METHODS. RESTORATION ACTIVITY WILL CONTINUE UNTIL SUCH TIME AS THE AFFECTED PROPERTY OWNER IS SATISFIED.
- ALL EARTH WORK SHALL BE PERFORMED IN ACCORDANCE WITH CITY STANDARDS. PRECONSTRUCTION SOILS INVESTIGATION MAY BE REQUIRED TO EVALUATE SOILS STABILITY.
- IF CUT AND FILL SLOPES EXCEED A MAXIMUM OF TWO FEET HORIZONTAL TO ONE FOOT VERTICAL, A ROCK OR CONCRETE RETAINING WALL MAY BE REQUIRED. ALL ROCK RETAINING WALLS GREATER THAN FOUR (4) FEET IN HEIGHT ARE TO BE DESIGNED AND CERTIFIED BY A PROFESSIONAL ENGINEER EXPERIENCED IN SOIL MECHANICS.
- THE SURFACE OF ALL SLOPES SHALL BE COMPACTED. THIS MAY BE ACCOMPLISHED BY OVER-BUILDING THE SLOPES, THEN CUTTING BACK TO FINAL GRADES; OR BY COMPACTING EACH LIFT AS THE SLOPE IS BEING CONSTRUCTED. ALL SLOPES SHALL BE COMPACTED BY THE END OF EACH WORKING DAY.

STORMWATER NOTES:

- DURING CONSTRUCTION, ALL EXISTING AND NEWLY INSTALLED DRAINAGE STRUCTURES SHALL BE PROTECTED FROM SEDIMENTS.
- ALL STORM MANHOLES SHALL CONFORM TO CITY STANDARD DETAIL NO.4-08-009 UNLESS OTHERWISE NOTED.
- UNLESS OTHERWISE NOTED, MANHOLE RING AND COVER SHALL CONFORM TO CITY STANDARD DETAIL 4-08-009 AND 4-080-15 THRU 4-080-024. THE COVER SHALL BE MARKED WITH "STORM" OR "DRAIN" IN 2-INCH RAISED LETTERS. MINIMUM WEIGHT OF THE FRAME SHALL BE 210 POUNDS. MINIMUM WEIGHT OF THE COVER SHALL BE 150 POUNDS.
- CATCH BASINS SHALL BY TYPE I UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER OR DESIGNATED REPRESENTATIVE. TYPE I CATCH BASINS SHALL CONFORM TO CITY STANDARD DETAIL NO.4-080-007 AND 4-080-008 AND SHALL BE USED ONLY FOR DEPTHS LESS THAN 5 FEET FROM TOP OF THE GRATE TO THE INVERT OF THE STORM PIPE.
- CATCH BASINS TYPE II SHALL CONFORM TO CITY STANDARD DETAIL NO. 4-08-009 AND SHALL BE USED FOR DEPTHS GREATER THAN 5 FEET FROM TOP OF THE GRATE TO THE INVERT OF THE STORM PIPE.
- ALL CATCH BASINS AND MANHOLES SHALL HAVE LOCKING LIDS. ROLLED GRATES ARE NOT APPROVED FOR USE OUTSIDE OF THE CITY RIGHT-OF-WAY OR FOR USE WITH TYPE II MANHOLES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL MANHOLE, INLET AND CATCH BASIN FRAMES AND GRATES TO GRADE JUST PRIOR TO CURB INSTALLATION AND/OR PAVING.
- TRENCHING, BEDDING, AND BACKFILL FOR PIPE SHALL CONFORM TO CITY STANDARD DETAIL NO. 3-703-002 AND-003.
- TRENCH BACKFILL OF NEW UTILITIES AND STORMWATER DRAINAGE SYSTEM FEATURES SHALL BE COMPACTED TO 95% MAXIMUM DENSITY (MODIFIED PROCTOR) UNDER ROADWAYS AND 90% MAXIMUM DENSITY (MODIFIED PROCTOR) OFF ROADWAYS. COMPACTION SHALL BE PERFORMED IN ACCORDANCE WITH SECTIONS 7-08.3(3) AND 2-03.3(14)C - METHOD B AS DEFINED IN THE CURRENT EDITION OF THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.
- AFTER ALL OTHER UTILITIES ARE INSTALLED AND PRIOR TO ASPHALT WORK, ALL STORM PIPE SHALL PASS A LOW PRESSURE AIR TEST IN ACCORDANCE WITH SECTION 7-04.3(1) E & F OF THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION. PIPE RUNS SHALL BE TESTED WITH PIPE LOADED AND COMPACTED TO FINISH GRADE. PRODUCTS USED TO SEAL THE INSIDE OF THE PIPE ARE NOT TO BE USED TO OBTAIN THE AIR TEST.
- UPON REQUEST BY THE CITY INSPECTOR, ALL PIPE RUNS SHALL PASS THE LOW PRESSURE AIR TEST REQUIREMENTS OF SECTION 7-04.3(1) E & F OF THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION. PIPE RUNS SHALL BE TESTED WITH PIPE LOADED AND COMPACTED TO FINISH GRADE.
- UPON REQUEST BY THE CITY INSPECTOR, PIPE SHALL BE SUBJECT TO MANDREL TESTING (MANDREL SIZE = 90% OF NOMINAL PIPE DIAMETER).
- PIPE SHALL BE STORED ON SITE IN SHIPPING BUNKS ON A FLAT LEVEL SURFACE. THIS REQUIREMENT WILL BE STRICTLY ENFORCED; FAILURE TO COMPLY MAY RESULT IN REJECTION OF THE PIPE AND/OR FUTURE RESTRICTION ON USE OF MATERIAL.
- MINIMUM DEPTH OF COVER SHALL BE 2 FEET, UNLESS OTHERWISE NOTED.
- COUPLINGS SHALL BE INTEGRAL BELL AND SPIGOT OR DOUBLE BELL SEPARATE COUPLINGS. SPLIT COUPLINGS WILL NOT BE ALLOWED.
- BACKFILL SHALL COMPLY WITH SECTION 7-08.3(3) OF THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION MODIFIED AS FOLLOWS:
- THE SECOND PARAGRAPH OF SECTION 7-08.3(3) IS DELETED AND REPLACED WITH THE FOLLOWING:
THE MATERIAL USED FOR PIPE ZONE BACKFILL AROUND AND ABOVE THE TOP OF THE PIPE SHALL BE CLEAN EARTH OR SAND, FREE FROM CLAY. ANY GRAVEL OR STONES INCLUDED IN THE BACKFILL SHALL PASS THROUGH A 1 INCH SIEVE.
- ALL FIELD CUT CULVERT PIPE SHALL BE TREATED AS REQUIRED IN THE STANDARD SPECIFICATIONS OR GENERAL SPECIAL PROVISIONS.
- ALL PIPE SHALL BE PLACED ON STABLE EARTH. IF IN THE OPINION OF THE CITY INSPECTOR, THE EXISTING TRENCH FOUNDATION IS UNSATISFACTORY, THEN IT SHALL BE EXCAVATED BELOW GRADE AND BACKFILLED WITH GRAVEL BEDDING TO SUPPORT THE PIPE.

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 JOB No.: 553-2967-005
 DATE: MARCH 2022



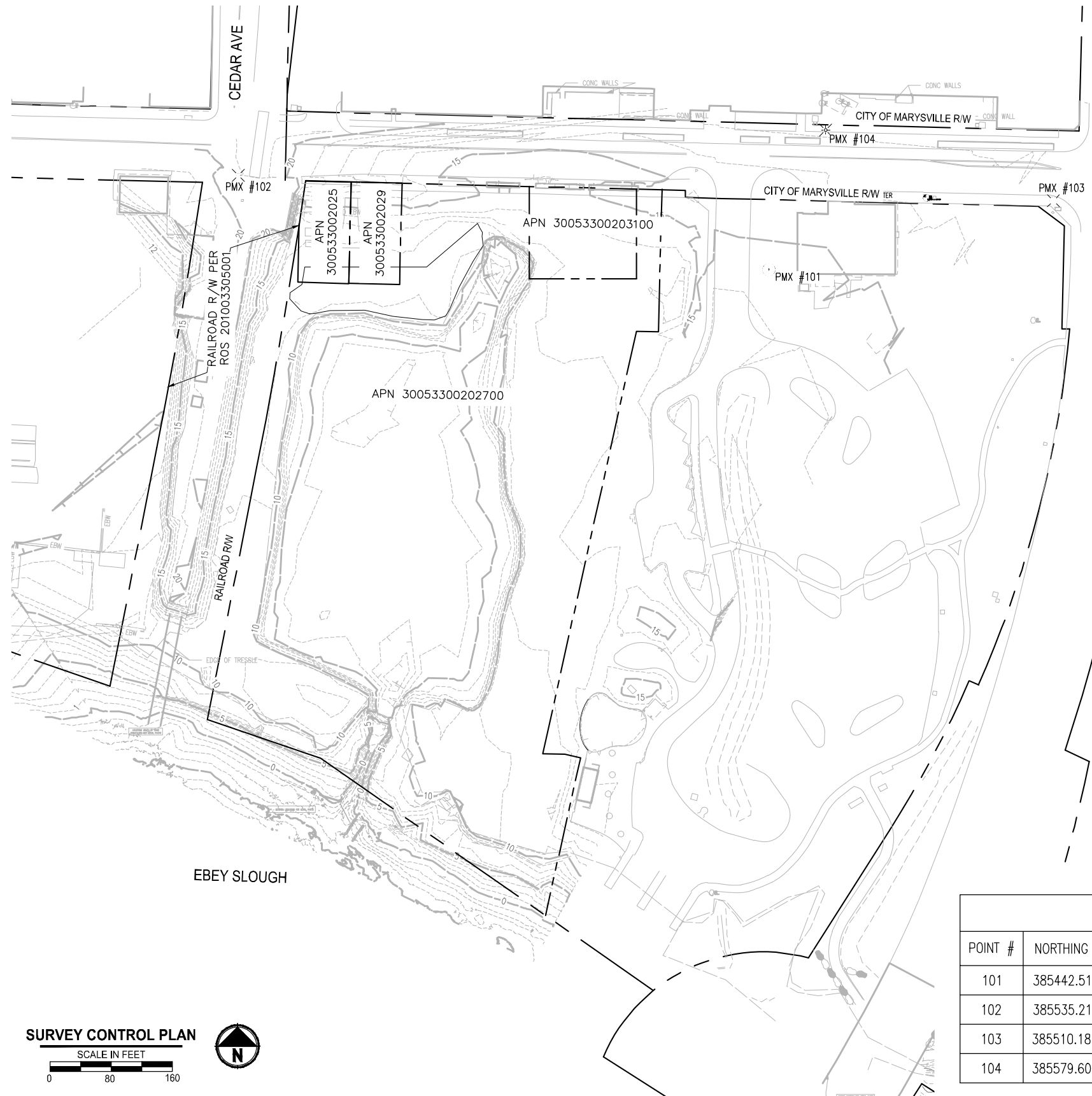
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PROJECT NAME
**CITY OF MARYSVILLE
 GEDDES MARINA PHASE 2
 REMEDIATION**
 MARYSVILLE, WA

CIVIL NOTES

DRAWING NO.
 3 OF 11
G3

LAYOUT: G3
 PATH: U:\PSO\Projects\Clients\2967-005 GeddesMarinaPhase2\99Svcs\CADD\DWG
 PLOTTED BY: OdessaCoo DATE: Wednesday, March 16, 2022 2:52:12 PM



SURVEY NOTES:

1. THIS MAP CORRECTLY REPRESENTS CONDITIONS AND FEATURES EXISTING AT THE TIME OF THIS SURVEY IN MAY, 2018.
2. CONVENTIONAL AND GPS SURVEY EQUIPMENT WAS USED IN THE PERFORMANCE OF THIS SURVEY. ALL EQUIPMENT IS MAINTAINED IN CONFORMANCE WITH CURRENT STATE STATUTE.
3. THIS SURVEY WAS PREPARED BY FIELD TRAVERSE AS PER WAC 332-130-090, PART C. RELATIVE ACCURACY EXCEEDS 1 FOOT IN TEN THOUSAND.
4. ALL SURFACE FEATURES AND INVERT STRUCTURE ELEVATION SHOWN HEREON WERE FIELD LOCATED AND MEASURED BY PARAMETRIX FOR THIS SURVEY. UNDERGROUND UTILITY LINES ARE BASED UPON A COMBINATION OF ASBUILT PLANS, SURFACE FEATURE MEASUREMENTS AND ONSITE UNDERGROUND UTILITY MARKINGS PERFORMED BY OTHERS.
5. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA. EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE.
6. RIGHT-OF-WAY LINES SHOWN HEREON ARE BASED ON RECORD INFORMATION.
7. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT, WHICH MAY REVEAL RESTRICTIONS OR EASEMENTS OF RECORD. ACCORDINGLY, NONE ARE SHOWN HEREON.
8. ALL DISTANCES TO FENCES AND STRUCTURES ARE MEASURED AT RIGHT ANGLES TO THE PROPERTY LINES.
9. PARCEL 30053300203100 BOUNDARY WAS ESTIMATED FROM LAT/LONG COORDINATES FROM SNOHOMISH COUNTY PARCEL VIEWER

HORIZONTAL DATUM:

HORIZONTAL DATUM FOR THIS SURVEY IS NAD 1983(11) BASED ON PUBLISHED INFORMATION FROM WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, POINT DESIGNATIONS GP31529-169 (PMX #1006) AND GP31005-128 (PMX #1005).

PROJECTION IS WASHINGTON STATE PLANE NORTH ZONE, U.S. SURVEY FEET

POINT DESIGNATION - GP31529-169
 NORTHING: 385,513.081
 EASTING: 1,311,594.014

POINT DESIGNATION - GP31005-128
 NORTHING: 386,655.916
 EASTING: 1,310,030.612

VERTICAL DATUM:

VERTICAL DATUM IS NAVD88 BASED ON PUBLISHED INFORMATION FROM WASHINGTON STATE DEPARTMENT OF TRANSPORTATION, POINT DESIGNATION GP31529-169 (PMX #1006)

POINT DESIGNATION - GP31529-169
 ELEVATION: 16.654

TIDAL INFORMATION:

TO CONVERT NAVD88 ELEVATIONS TO MHW DATUM USE THE FOLLOWING EQUATION:

NAVD88 - 8.29 = MHW DATUM

TIDAL DATUMS AT EBHEY SLOUGH, QWULOOLT, POSSESSION SOUND ARE BASE ON:
 CONTROL TIDE STATION: 9447130 SEATTLE WA, PUGET SOUND
 TIDAL EPOCH: 1983-2001

ELEVATION OF TIDAL DATUMS REFERRED TO MEAN HIGH WATER (MHW),

HIGHEST OBSERVED WATER		3.04 FT.
MEAN HIGHER HIGH WATER	MHHW	0.87 FT.
MEAN HIGH WATER	MHW	0.00 FT.

CONTROL TABLE				
POINT #	NORTHING	EASTING	ELEVATION	POINT DESCRIPTION
101	385442.51	1311439.38	16.25	SET REBAR & CAP
102	385535.21	1310918.63	20.93	SET MAG NAIL
103	385510.18	1311718.70	17.13	SET NAIL
104	385579.60	1311495.05	16.70	SET MAG NAIL

SURVEY CONTROL PLAN



PRELIMINARY

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 JOB No.
 533-2967-005
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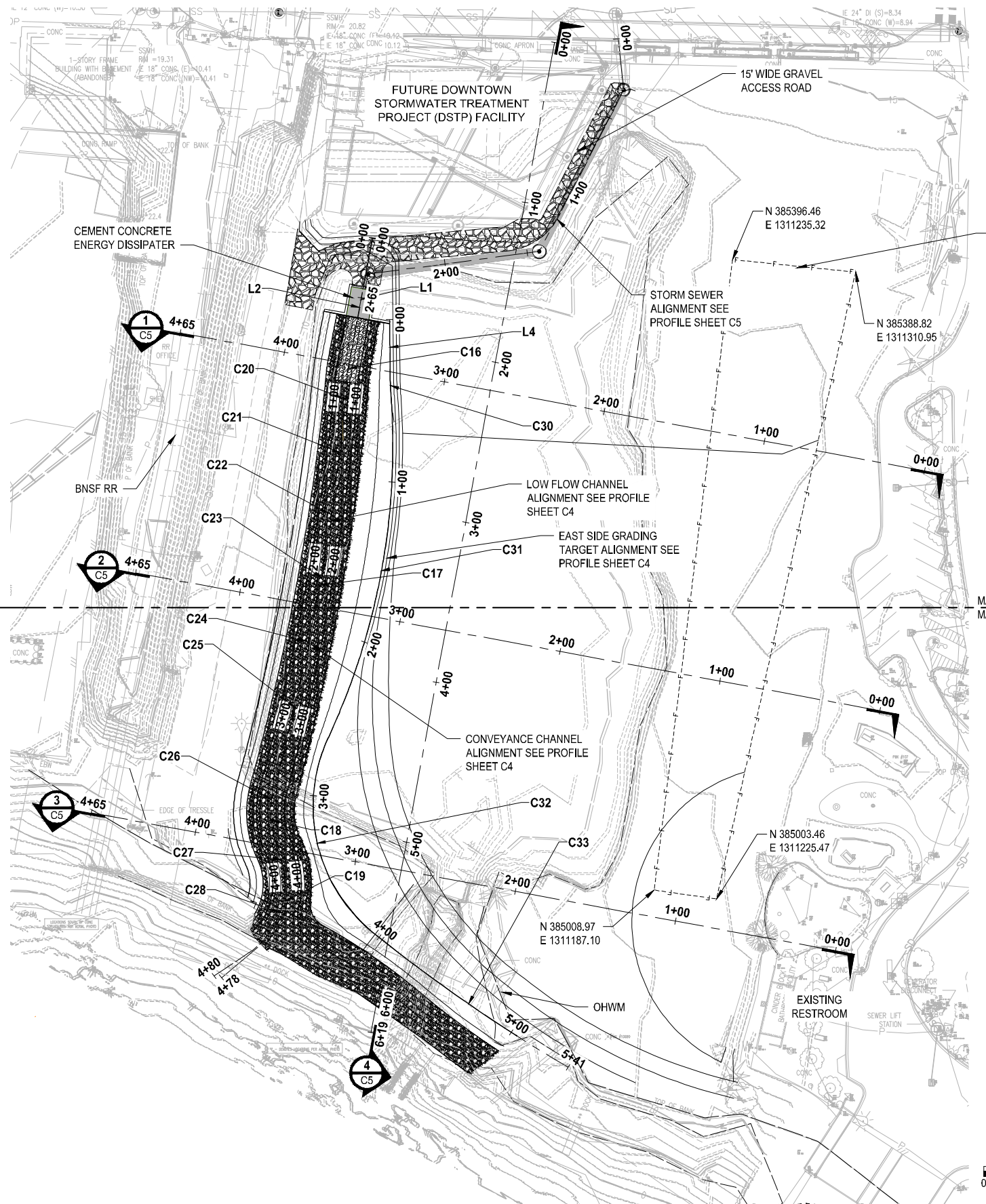
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PROJECT NAME
**CITY OF MARYSVILLE
 GEDDES MARINA PHASE 2
 REMEDIATION**
 MARYSVILLE, WA

SURVEY NOTES
 AND CONTROL

DRAWING NO.
 4 OF 11
G4

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LEGEND

- ORDINARY HIGH WATER MARK (OHWM)
- - - WETLAND BOUNDARY
- RIGHT OF WAY (ROW)
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- ⊙ PROPOSED MAINTENANCE HOLE

AL - CONVEYANCE CHANNEL

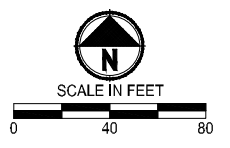
Number	Radius	Length	Line/Chord Direction
L1		77.07	S10° 29' 53.50"W
C16	100.00	9.23	S7° 51' 09.28"W
C17	1500.00	259.30	S10° 09' 33.46"W
C18	50.00	36.13	S5° 35' 23.76"E
C19	50.00	66.58	S11° 51' 24.79"W

AL - LOW FLOW CHANNEL

Number	Radius	Length	Line/Chord Direction
L2		86.57	S10° 29' 53.50"W
C20	150.00	27.38	S5° 16' 08.12"W
C21	150.00	39.67	S7° 36' 58.78"W
C22	150.00	35.87	S8° 20' 32.98"W
C23	150.00	44.20	S9° 56' 02.07"W
C24	150.00	36.16	S11° 28' 08.96"W
C25	150.00	46.63	S13° 28' 02.71"W
C26	100.00	71.13	S1° 59' 45.17"W
C27	100.00	3.18	S17° 28' 15.28"E
C28	50.00	63.38	S19° 45' 08.98"W

AL - EAST SIDE GRADING TARGET

Number	Radius	Length	Line/Chord Direction
L4		34.26	S0° 32' 51.32"E
C30	200.00	12.64	S2° 21' 27.93"E
C31	425.00	216.02	S10° 23' 35.73"W
C32	100.00	132.96	S13° 08' 09.12"E
C33	1000.00	144.99	S55° 22' 47.39"E



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PROJECT NAME
**CITY OF MARYSVILLE
 GEDDES MARINA PHASE 2
 REMEDIATION**
 MARYSVILLE, WA

**SITE PLAN, GRADING
 KEY, AND ALIGNMENTS**

DRAWING NO.
 5 OF 11
C1

REVISIONS	DATE	BY	DESIGNED	DLD

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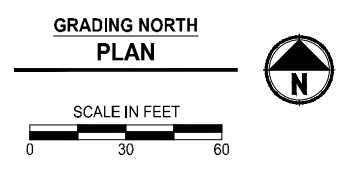
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- KEY NOTES:**
- 1 CEMENT CONCRETE ENERGY DISSIPATER, SEE DETAIL
 - 2 15' WIDE GRAVEL ACCESS ROAD, SEE TYPICAL SECTION
 - 3 STREAMBED AGGREGATE
 - 4 ROCK FOR EROSION AND SCOUR PROTECTION CLASS A (18" MINUS)
 - 5 CATCH BASIN TYPE 2, SEE DETAIL

- LEGEND**
- CSTC
 - ROCK FOR EROSION AND SCOUR PROTECTION CLASS A (18" MINUS)
 - STREAMBED AGGREGATE



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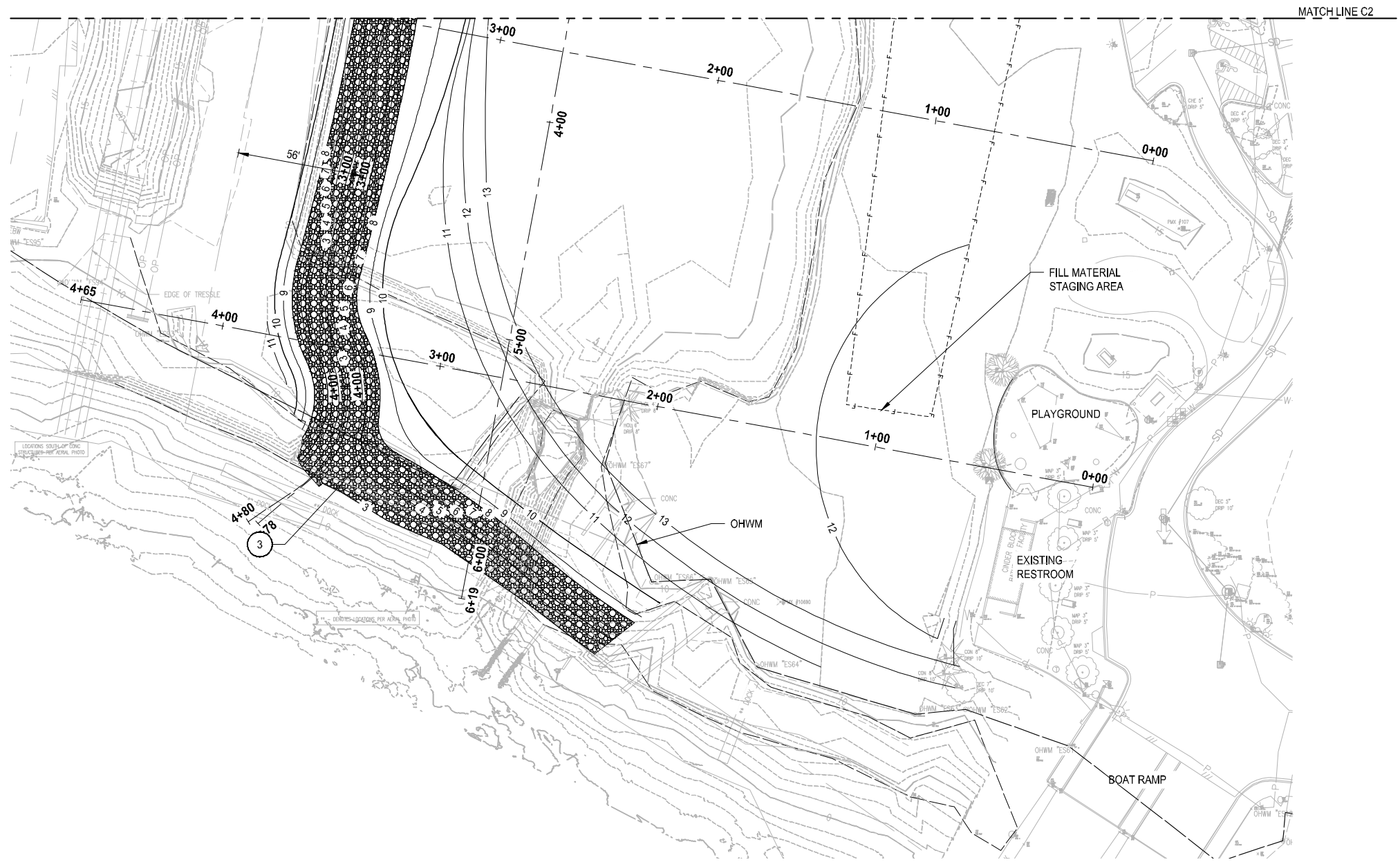
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REMEDATION**
MARYSVILLE, WA

**GRADING AND
DRAINAGE PLAN NORTH**

DRAWING NO.
6 OF 11
C2

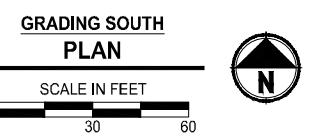
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MATCHLINE C2

- KEY NOTES:**
- 1 CEMENT CONCRETE ENERGY DISSIPATER, SEE DETAIL
 - 2 15' WIDE GRAVEL ACCESS ROAD, SEE TYPICAL SECTION
 - 3 STREAMBED AGGREGATE
 - 4 ROCK FOR EROSION AND SCOUR PROTECTION CLASS A (18" MINUS)
 - 5 CATCH BASIN TYPE 2, SEE DETAIL

- LEGEND**
- CSTC
 - ROCK FOR EROSION AND SCOUR PROTECTION CLASS A (18" MINUS)
 - STREAMBED AGGREGATE



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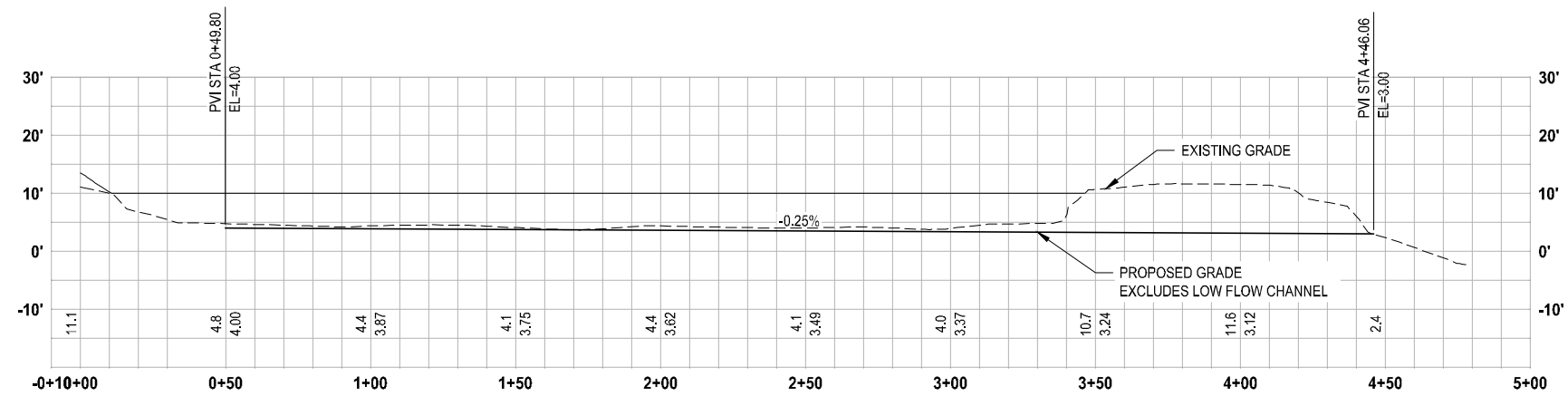
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**CITY OF MARYSVILLE
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MARYSVILLE, WA

**GRADING AND
DRAINAGE PLAN SOUTH**

DRAWING NO.
7 OF 11

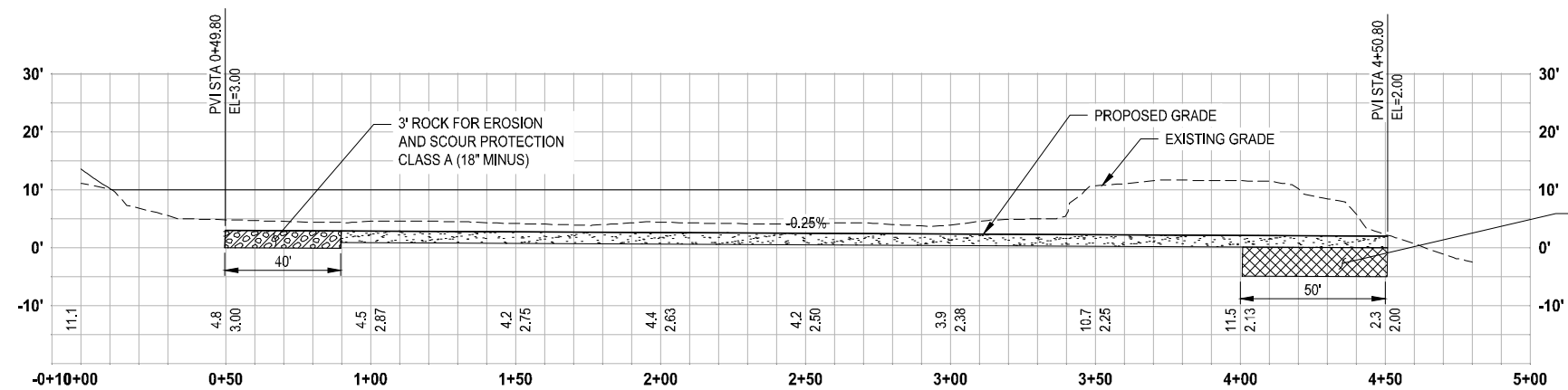
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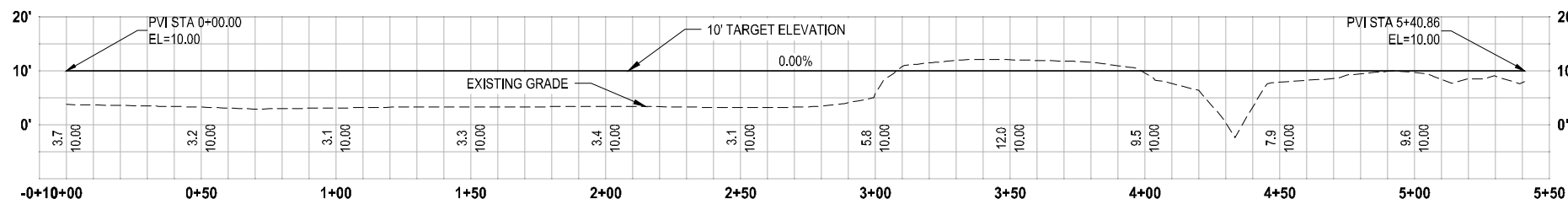
CONVEYANCE CHANNEL PROFILE

HORIZ: 1" = 30'
VERT: 1" = 15'



LOW FLOW CHANNEL PROFILE

HORIZ: 1" = 30'
VERT: 1" = 15'



EAST SIDE GRADING TARGET PROFILE

HORIZ: 1" = 30'
VERT: 1" = 15'

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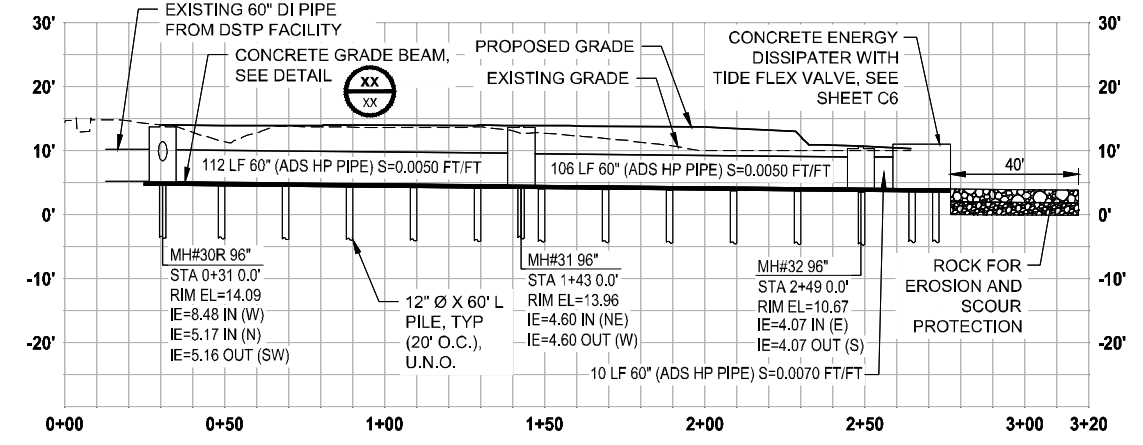
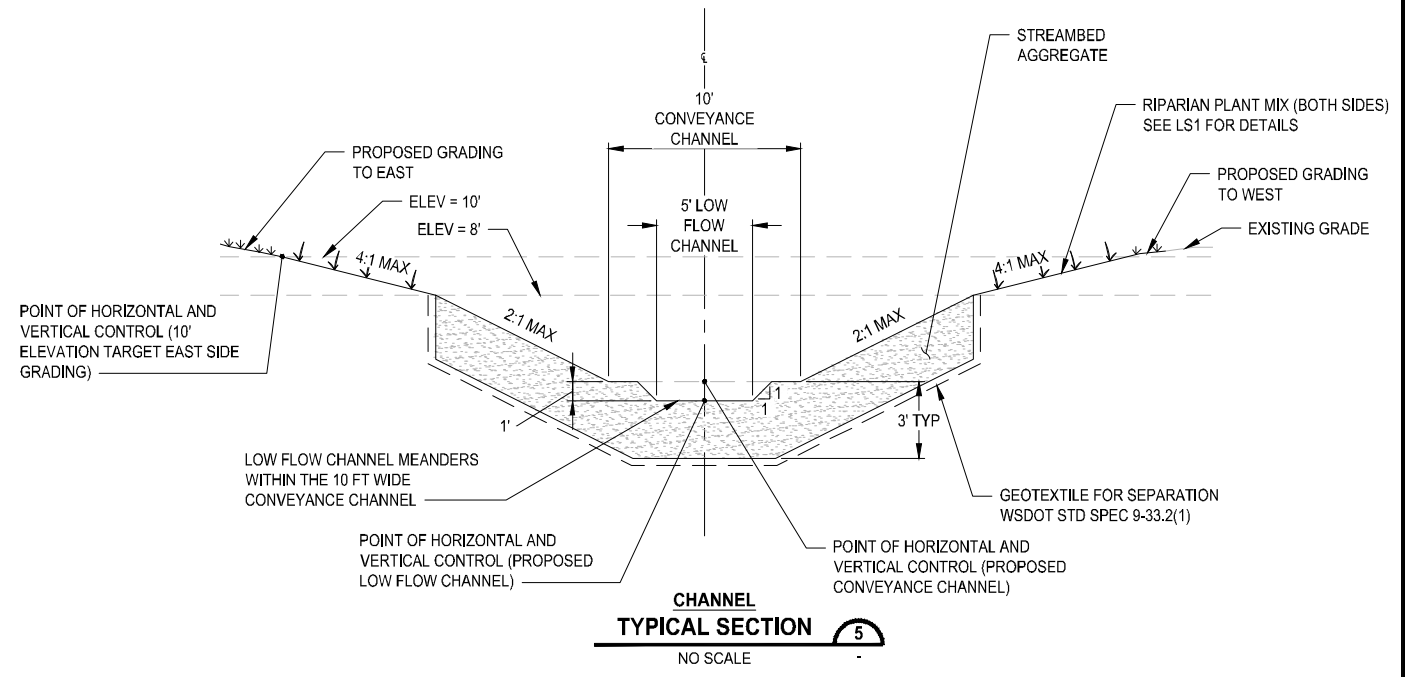
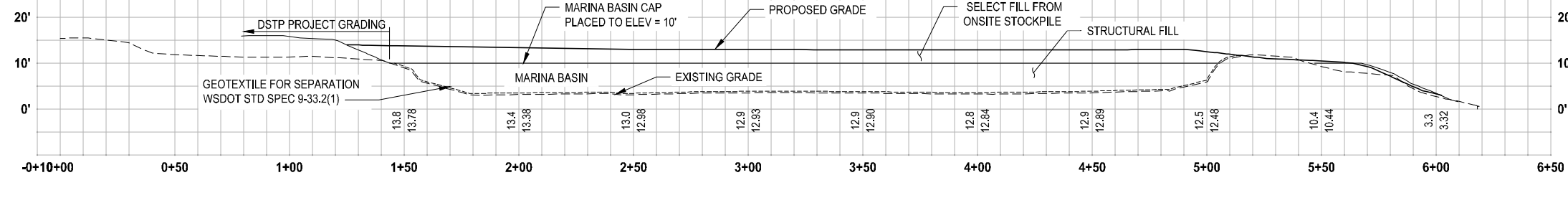
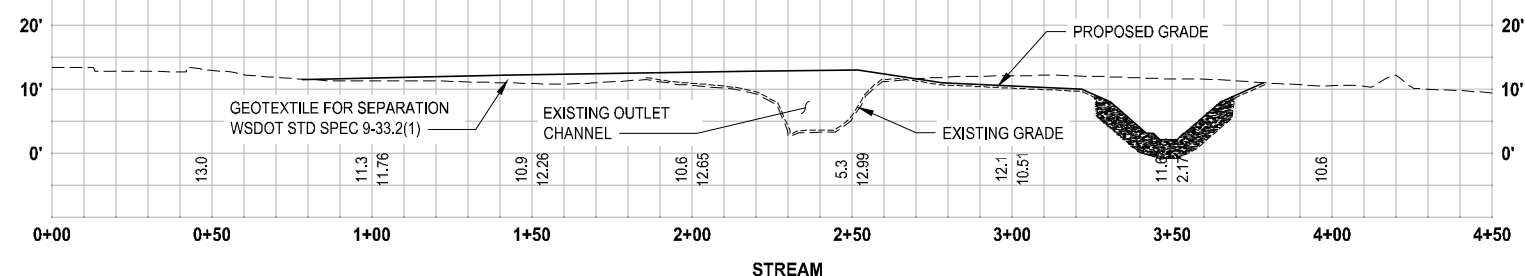
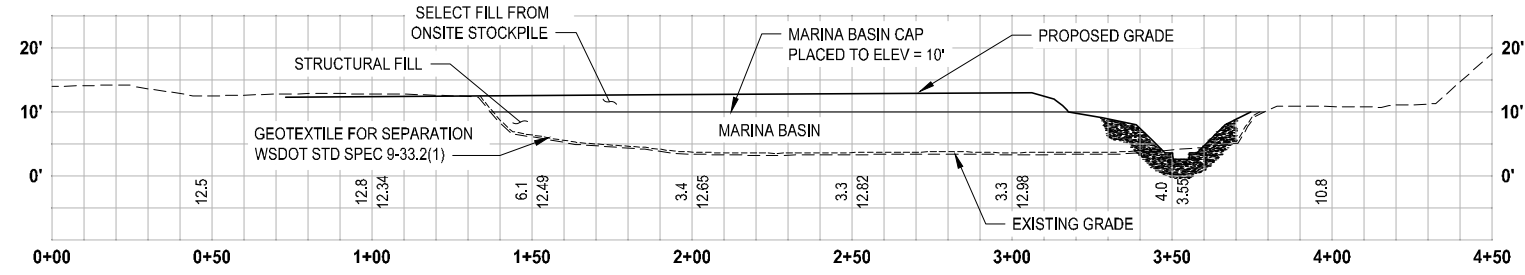
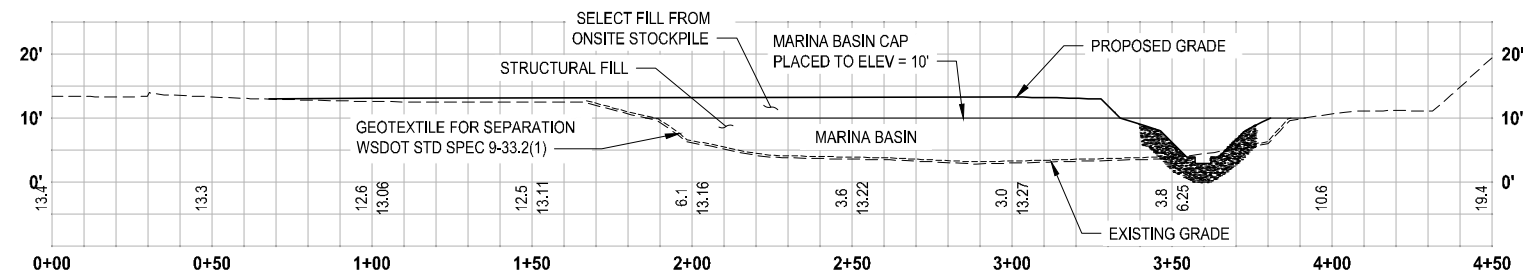
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REMEDATION**
MARYSVILLE, WA

CHANNEL PROFILES

DRAWING NO.
8 OF 11

C4

LAYOUT: C5
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- STREAMBED AGGREGATE NOTES**
1. STREAMBED AGGREGATE SHALL CONSIST OF A UNIFORM MIXTURE OF 60 PERCENT (BY VOLUME) WSDOT STREAM BED SEDIMENT AND 40 PERCENT (BY VOLUME) WSDOT 8" COBBLE GRADATION

PRELIMINARY PERMIT SUBMITTAL
 NOT FOR CONSTRUCTION

REVISIONS	DATE	BY	DESIGNED
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			CHECKED
			APPROVED

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FILE NAME: PS2967005-C
 JOB No.: 553-2967-005
 DATE: MARCH 2022



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**CITY OF MARYSVILLE
 GEDDES MARINA PHASE 2
 REMEDIATION**
 MARYSVILLE, WA

**SECTIONS AND
 STORMWATER PROFILE**

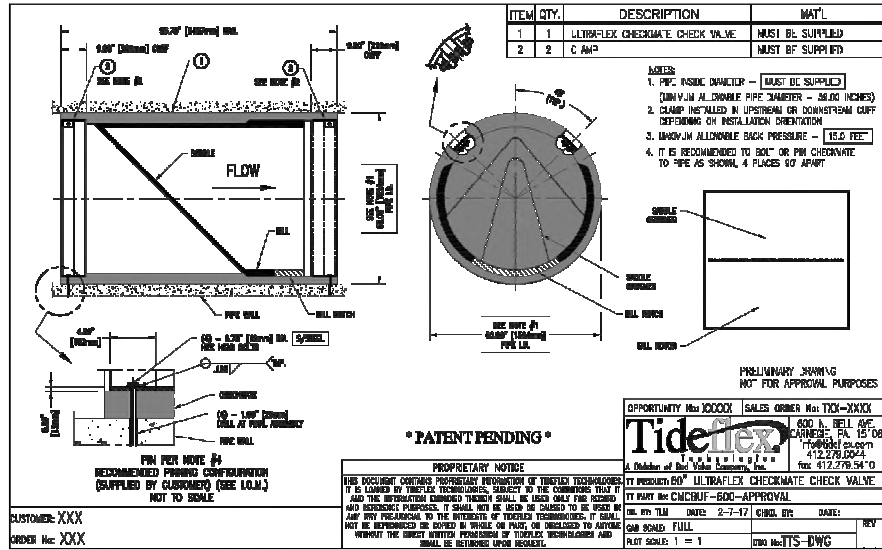
DRAWING NO.
 9 OF 11
C5

LAYOUT: 06 PATH: U:\PSO\Projects\Clients\2967-City of Marysville\553-2967-005_GeddesMarinaPhase2\CADD\DWG PLOTTED BY: OdegoCoo DATE: Wednesday, March 16, 2022 2:54:51 PM

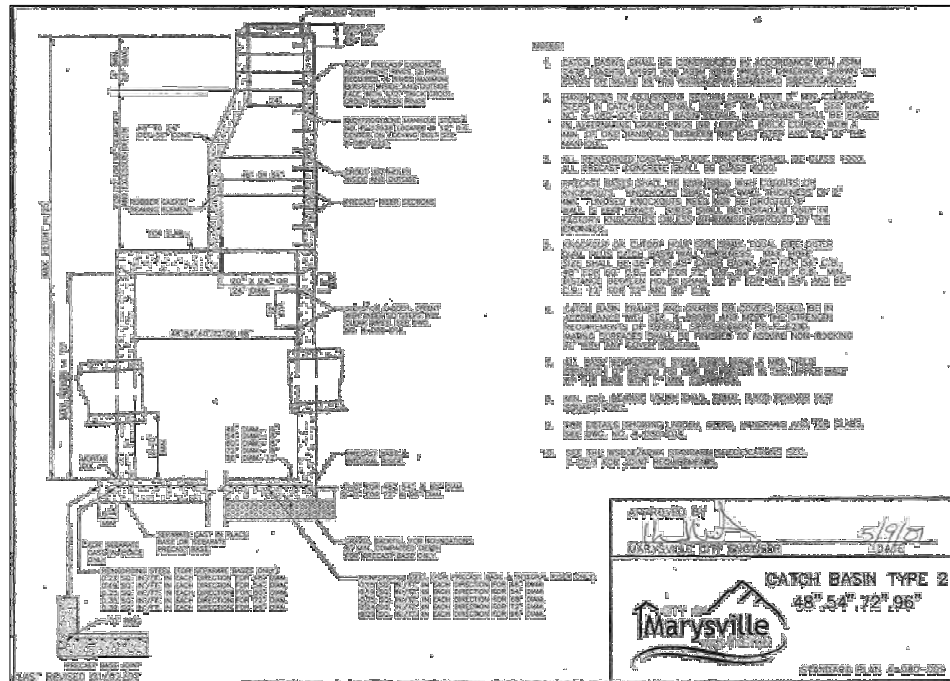


EXAMPLE CONCRETE ENERGY DISSIPATOR WITH TIDE FLEX VALVE

DETAIL 1
NO SCALE



DETAIL 2
NO SCALE



60" IN-LINE CHECK VALVE
DETAIL 3
NO SCALE

PRELIMINARY PERMIT SUBMITTAL
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REVISIONS	DATE	BY	DESIGNED
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			CHECKED
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FILE NAME
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GEDDES MARINA PHASE 2
REMEDIATION**
MARYSVILLE, WA

DETAILS

DRAWING NO.
10 OF 11

C6

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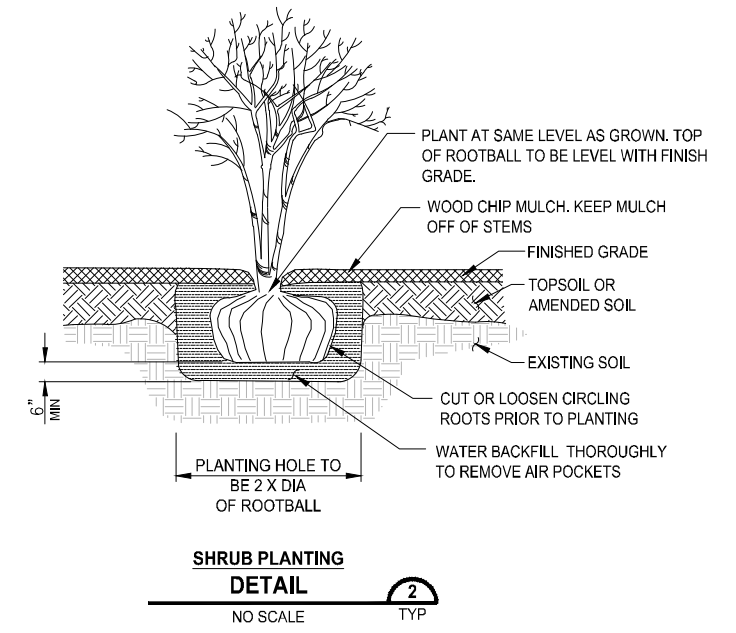
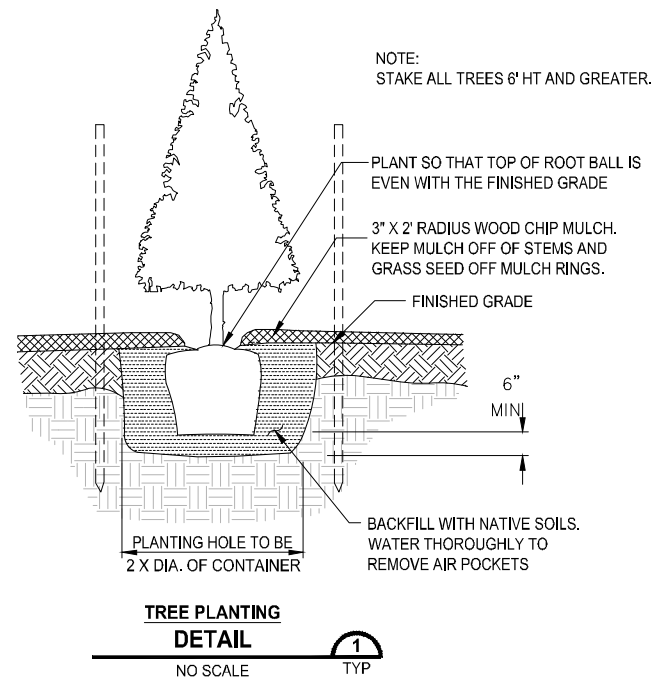
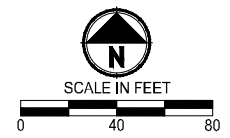


LEGEND

	INTERTIDAL EMERGENT
	RIPARIAN ZONE - WET
	RIPARIAN ZONE - DRY
	HYDROSEED
	DECIDUOUS TREE
	CONIFEROUS TREE
	HABITAT LOG
	15' WIDE GRAVEL ACCESS ROAD
	STREAMBED AGGREGATE
	ROCK FOR EROSION AND SCOUR PROTECTION

PLANT MATERIAL LIST

BOTANICAL NAME	COMMON NAME	SIZE/COND.	SPACING
DECIDUOUS TREE			
SALIX LASIANDRA	PACIFIC WILLOW		
CONIFEROUS TREE			
PINUS CONTORTA VAR. CONTORTA	SHORE PINE		
INTERTIDAL EMERGENT			
CAREX LYNGBYEI	LYNGBYE'S SEDGE		
DISTICHLIS SPICATA	COASTAL SALTGRASS		
ELYMUS MOLLIS	AMERICAN DUNEGRASS		
JUNCUS BALTICUS	BALTIC RUSH		
RIPARIAN ZONE - WET			
ALNUS VIRIDIS	SITKA ALDER		
SALIX HOOKERIANA	HOOKER'S WILLOW		
RIPARIAN ZONE - DRY			
AMELANCHIER ALNIFOLIA	WESTERN SERVICEBERRY		
HOLODISCUS DISCOLOR	OCEANSPRAY		
MAHONIA AQUIFOLIUM	TALL OREGON GRAPE		
RIBES SANGUINEUM	RED FLOWERING CURRANT		
ROSA NUTKANA	NOOTKA ROSE		
SYMPHORICARPOS ALBUS	SNOWBERRY		
HYDROSEED			
(MIX TBD)			



PRELIMINARY PERMIT SUBMITTAL

REVISIONS	DATE	BY	DESIGNED
			J. CERALDE
			DRAWN
			J. CERALDE
			CHECKED
			J. CERALDE
			APPROVED

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FILE NAME: PS2967005-LS1
 JOB No.: 553-2967-005
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 REMEDIATION**
 MARYSVILLE, WA

**LANDSCAPE RESTORATION
 PLAN AND DETAILS**

DRAWING NO.
 11 OF 11
LS1

Appendix D

Species Life History Information



Appendix D

Puget Sound ESU Chinook Salmon Life History

NMFS completed an ESA status review of Chinook salmon populations from Washington, Oregon, Idaho, and California and defined 15 evolutionarily significant units (ESUs) within the region. Naturally spawned spring, summer/fall, and fall Chinook salmon runs from the Puget Sound ESU were considered likely to become endangered in the foreseeable future (Myers et al. 1998). The abundance of Chinook salmon in the Puget Sound ESU has declined substantially from historic levels, and there is concern over the effects of hatchery supplementation on genetic fitness of stocks, as well as severely degraded spawning and rearing habitats throughout the area (Myers et al. 1998). In addition, harvest exploitation rates in excess of 90 percent were estimated to occur on some Puget Sound Chinook salmon stocks. Subsequent to this status review, NMFS issued a ruling in May 1999 listing the Puget Sound ESU as threatened (NMFS, 1999b). Primary factors contributing to declines in Chinook salmon in the Puget Sound ESU include habitat blockages, hatchery introgression, urbanization, logging, hydropower development, harvests, and flood control (NMFS 1998).

Chinook salmon have a historic range from the Ventura River in California to Point Hope, Alaska in North America; and from Hokkaido, Japan to Anadyr River in Russia (63 Federal Register 45 and Myers et al. 1998). Chinook require varied habitats during different phases of their life. Spawning habitat typically consists of riffles and the tailouts of pools with clean substrates dominated by cobbles. These habitats are located in the mainstem of rivers and large tributaries. Juvenile Chinook rear in the lower mainstem of rivers and tributaries before entering the estuary and salt marshes (Myers et al. 1998). Adult Chinook salmon spawn in freshwater streams in the late summer and fall. Fry emerge in the late winter and early spring. Juvenile Chinook may rear in freshwater from three months to two years (63 Federal Register 45; Weitkamp et al. 2000); however, most juvenile Chinook in the Puget Sound Basin are expected to smolt within the first year after emergence. Chinook generally migrate to salt water in the spring and summer. Most Chinook spend from two to four years feeding in the North Pacific before returning to spawn. Adult Chinook salmon return to spawn in their natal streams from mid-May through October (Myers et al. 1998). Chinook salmon die after spawning.

Puget Sound DPS Steelhead

On May 7, 2007, the National Marine Fisheries Service (NMFS) announced the listing of the Puget Sound distinct population segment (DPS) of steelhead as a threatened species under the Endangered Species Act. The listing was published in the Federal Register on May 11, 2007 and took effect on June 11, 2007. The DPS includes all naturally spawned anadromous winter-run and summer-run populations in streams and river basins of the Strait of Juan de Fuca (east of and including the Elwha River), Puget Sound (north to include the Nooksack River), and Hood Canal.

Possible factors influencing the depletion of Puget Sound steelhead populations include habitat destruction and fragmentation, inadequate regulatory mechanisms of hatchery practices and land use activities, and potential genetic introgression between hatchery - and natural-origin steelhead. Presently, the species distribution extends from the Kamchatka Peninsula, east and south along the Pacific coast of North America, to at least Malibu Creek in southern California.

Presently, the species distribution extends from the Kamchatka Peninsula, east and south along the Pacific coast of North America, to at least Malibu Creek in southern California. The Puget Sound steelhead Distinct Population Segment (DPS) distribution extends from the United States/Canada border and includes river basins of the Strait of Juan de Fuca (east of and including the Elwha River), Puget Sound (north to include the Nooksack River), and Hood Canal. Steelhead exhibit one of the most complex suite of life history traits of any salmonid species. Steelhead may be anadromous or freshwater residents (which are usually referred to as rainbow or redband trout). Biologically, steelhead can be divided into two reproductive ecotypes: “stream maturing” and “ocean maturing.” Stream maturing, or summer run steelhead enter fresh water in a sexually immature condition and require several months to mature and spawn. Ocean maturing, or winter run steelhead enter fresh water with well-developed gonads and spawn shortly after river entry. Steelhead adults typically spawn between December and June. Depending on water temperature, steelhead eggs may incubate in redds for 1.5 to 4 months before hatching. Puget Sound DPS steelhead typically smolt after 2 years, though they may spend 1 to 4 years in fresh water. They then reside in marine waters for typically 2 or 3 years prior to returning to their natal stream to spawn. Steelhead are iteroparous, but rarely spawn more than twice before dying; most that do so are females (64 CFR 222).

Coastal – Puget Sound Bull Trout

In 1998, USFWS completed a status review of bull trout, identifying five distinct population segments (DPSs) in the continental U.S. (USFWS 1998a). The Coastal-Puget Sound bull trout DPS is composed of 34 subpopulations (USFWS 1998b; USFWS 1999). USFWS listed bull trout in the Coastal-Puget Sound DPS as threatened under the ESA on November 1, 1999 (USFWS 1999).

Bull trout have a complex life history that includes a resident form and a migratory form. The individuals of the migratory form may be stream dwelling (fluvial), lake dwelling (adfluvial), or ocean/estuarine dwelling (anadromous) (USFWS 1998b). Resident bull trout spend their entire life cycle within their natal or nearby streams. Fluvial populations spawn in tributary streams where the young rear from two to three years before migrating to a river where they grow to maturity (Knowles and Gumtow 1999). Adfluvial forms spawn and rear in headwater streams like fluvial fish but migrate to lakes and reservoirs to mature (KCDNR 2000). Anadromous bull trout spawn in tributary streams, with major growth and maturation occurring in the marine or estuarine environment (KCDNR 2000). Individuals of each form may be represented in a single population; however, migratory populations may dominate where migration corridors and subadult rearing habitats are in good condition (USFWS 1998b).

Like many other salmonids, bull trout migrate to fresh water streams to spawn. Spawning begins in late August, peaking in September and October, and ending in November (WDFW 2000). Bull trout spawn in streams with clean gravel substrates and cold water temperatures (less than 9°C/48°F) (USFWS 1998b). Redds are dug by females in water 8 to 24 inches deep, in substrate gravels 0.2 to 2 inches in diameter (Wydoski and Whitney 1979). Fecundity for bull trout can reach up to 5,000 eggs. Emergence from the streambed typically occurs in late winter and early spring (KCDNR 2000). Among migratory forms (fluvial, adfluvial, and anadromous), outmigration to larger rivers, lakes and the ocean most commonly occurs at age two but has been observed for ages of one to three years.

Bull trout are opportunistic feeders, consuming fish in the water column and insects on the bottom (WDW 1991). Low stream temperatures and clean substrates are key features of bull trout habitat. This species is most commonly associated with pristine or only slightly disturbed basins (USFWS 1998b).

The Coastal-Puget Sound DPS of bull trout, which includes bull trout of the Snohomish River, is unique because it is thought to contain the only anadromous forms of bull trout within the continental U.S. (USFWS 1998a). The status of the migratory (fluvial, adfluvial, and anadromous) forms is of greatest concern throughout most of their range. The majority of the remaining populations in some areas may be largely composed of resident bull trout (Leary et al. 1991; Williams and Mullan 1992).

Marbled Murrelet

USFWS listed marbled murrelets as threatened under the ESA in 1992 due to a decline in abundance and habitat degradation in the southern portion of their range. Marbled murrelets are marine birds that forage in nearshore environments from northern California through Alaska. They nest in mature coniferous forests west of the Cascade crest at low to moderate elevations (Smith et al. 1997). Marbled murrelets are resident year-round on coastal waters. Exact numbers are unknown. Historical data are limited, but murrelets are currently rare and uncommon in areas where they were common or abundant in the early 1900s, especially along the southern coast of Washington, northern coast of Oregon, and coast of California south of Humboldt County (Sealy and Carter 1984; Marshall 1988; Nelson et al. 1992; Ralph 1994). An estimate for the number of individuals in Washington is 5,000 to 6,000 birds (Speich et al. 1992; Speich and Wahl 1995). The breeding population in Washington is estimated to be 1,900 to 3,500 pairs (Speich et al. 1992).

Marbled murrelet population decline has been attributed primarily to the loss and fragmentation of old-growth nesting habitat caused by logging and development (Ralph and Miller 1995). It is believed that forest fragmentation may be making nests near forest edges vulnerable to predation by other birds, such as jays, crows, ravens, and great-horned owls. In addition, this species is vulnerable to fishing nets and oil spills (Marshall 1988).

The USFWS conducted a 5-year review of marbled murrelet status in 2003 (USFWS 2004). Based on available information in the Washington, Oregon, and California, the status review estimated there are currently 2,223,048 acres of suitable murrelet nesting habitat. The status review found that the marbled murrelet population is not stable through reproduction due to low fecundity levels across the 3-state area, as determined through nest success values (i.e., the number of fledglings per breeding pair of murrelets per year). In general, both radio telemetry and at-sea survey methods indicate that murrelet breeding success appears to decline from north to south. Predation has consistently been the most significant cause of nest failure. Murrelets appear to select platforms that provide protection from predation (USFWS 2006). The factors affecting rates of predation on murrelet nests are not fully clear, yet key elements seem to be proximity to humans, abundance of avian predators, and proximity and type of forest edge to the nest. The status review did not find that a change in classification from threatened was warranted.

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