Programmatic Biological Assessment
for FEMA Floodplain Impacts

Boat Haven Infrastructure & Maintenance Projects
Boat Haven Stormwater Improvement
Western Boatyard Expansion
Sims Way Gateway and Boatyard Expansion

Port of Port Townsend
Jefferson County, Washington

Widener & Associates
Transportation & Environmental Planning

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Acronyms

AKART	All Known, Available, and Reasonable methods of prevention, control, and Treatment
BA	Biological Assessment
BFE	Base Flood Elevation
BMPs	Best Management Practices
BSM	Bioretention Soil Mix
BYGP	Boatyard General Permit
Cu	Copper
CAR	Critical Areas Review
dB	Decibels
dBA	A-weighted decibels
DCH	Designated Critical Habitat
DO	Dissolved Oxygen
DPS	Distinct Population Segment
ESA	Endangered Species Act
ER	Engineering Report
EFH	Essential Fish Habitat
ESU	Evolutionary Significant Unit
FEMA	Federal Emergency Management Agency
FMO	Forage, Migrate, and Overwinter
GCM	General Construction Measures
Kennedy Jenks	Kennedy/Jenks Consultants, Inc.
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MHHW	Mean Higher High Water
MLLW	Mean Lower Low Water
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OHWM	Ordinary High Water Mark
PBF	Physical and Biological Feature
PCB	Polychlorinated Biphenyls
PTMC	City of Port Townsend Municipal Code
PCE	Primary Constituent Elements
PGIS	Pollution Generating Impervious Surfaces
SRKW	Southern Resident Killer Whales
SPCC	Spill Prevention, Control and Countermeasures plan
SWMMWW	Stormwater Management Manual for Western Washington
SWPPP	Stormwater Pollution Prevention Plan
SAV	Submerged Aquatic Vegetation
TESC	Temporary Erosion Sediment Control plan
USFWS	U.S. Fish and Wildlife Service
Ecology	Washington State Department of Ecology
WDFW	Washington Department of Fish & Wildlife
Commerce	Washington Department of Commerce
WDNR	Washington State Department of Natural Resources
WSDOT	Washington State Department of Transportation
WQFR	Water Quality Flow Rate
WRIA	Water Resource inventory Area
Zn	Zinc

1.0 Introduction

The Port of Port Townsend (Port) has received funding from the State of Washington Department of Commerce (Commerce) for the Boat Haven Stormwater Improvement (Stormwater) project located in Port Townsend, Jefferson County, Washington. The Port intends to make significant, proactive improvements to its stormwater conveyance and treatment system to treat runoff from the entire Boatyard, including its new capital projects: the Western Boatyard Expansion (WBYE) and the Sims Way Gateway and Boatyard Expansion (Sims Way); help the Port maintain compliance with new and probable future National Pollutant Discharge Elimination System (NPDES) permit requirements; and voluntarily reduce pollutant loading to Port Townsend Bay in Puget Sound.

The proposed projects are within a FEMA Flood Hazard Area (Zone AE) requiring a floodplain development permit which represents a federal nexus. The federal nexus triggers the requirement for evaluation under the Endangered Species Act (ESA). FEMA delegates the issuance of Type 1-A floodplain development permits to the community to ensure that proposed development projects meet the requirements of the National Flood Insurance Program (NFIP) and the local floodplain management ordinance. As a result, the City of Port Townsend is the lead agency for this Biological Assessment (BA).

This assessment has been prepared for the City of Port Townsend, on behalf of the Federal Emergency Management Agency (FEMA), to evaluate the effects of the Stormwater, WBYE, and Sims Way projects with a programmatic level approach in response to the current U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) Endangered Species Act (ESA) listings. An evaluation of impacts to Essential Fish Habitat (EFH) as indicated in the Magnuson Stevens Fishery Conservation and Management Act (MSA) has also been provided in Appendix A.

Project Location

The Boat Haven Boatyard is located at 2740 Jefferson Street, Port Townsend, Jefferson County, Washington. It lies within Section 1 of Township 30N, Range 1W at (48.107394, -122.778068) (Figure 1). The proposed projects are within Water Resource inventory Area (WRIA) 17 Quilcene-Snow watershed in the Marrowstone Island – Frontal Port Townsend (HUC12 171100190803) sub-watershed.

Project Description

The Port of Port Townsend proposes to make proactive improvements to the Boat Haven Boatyard stormwater conveyance and treatment system to provide a Central Boatyard Stormwater Treatment System which will treat runoff from the entire Boatyard, including its new capital projects: the Western Boatyard Expansion and the Sims Way Gateway and Boatyard Expansion (Figure 2).

Figure 1. Vicinity Map

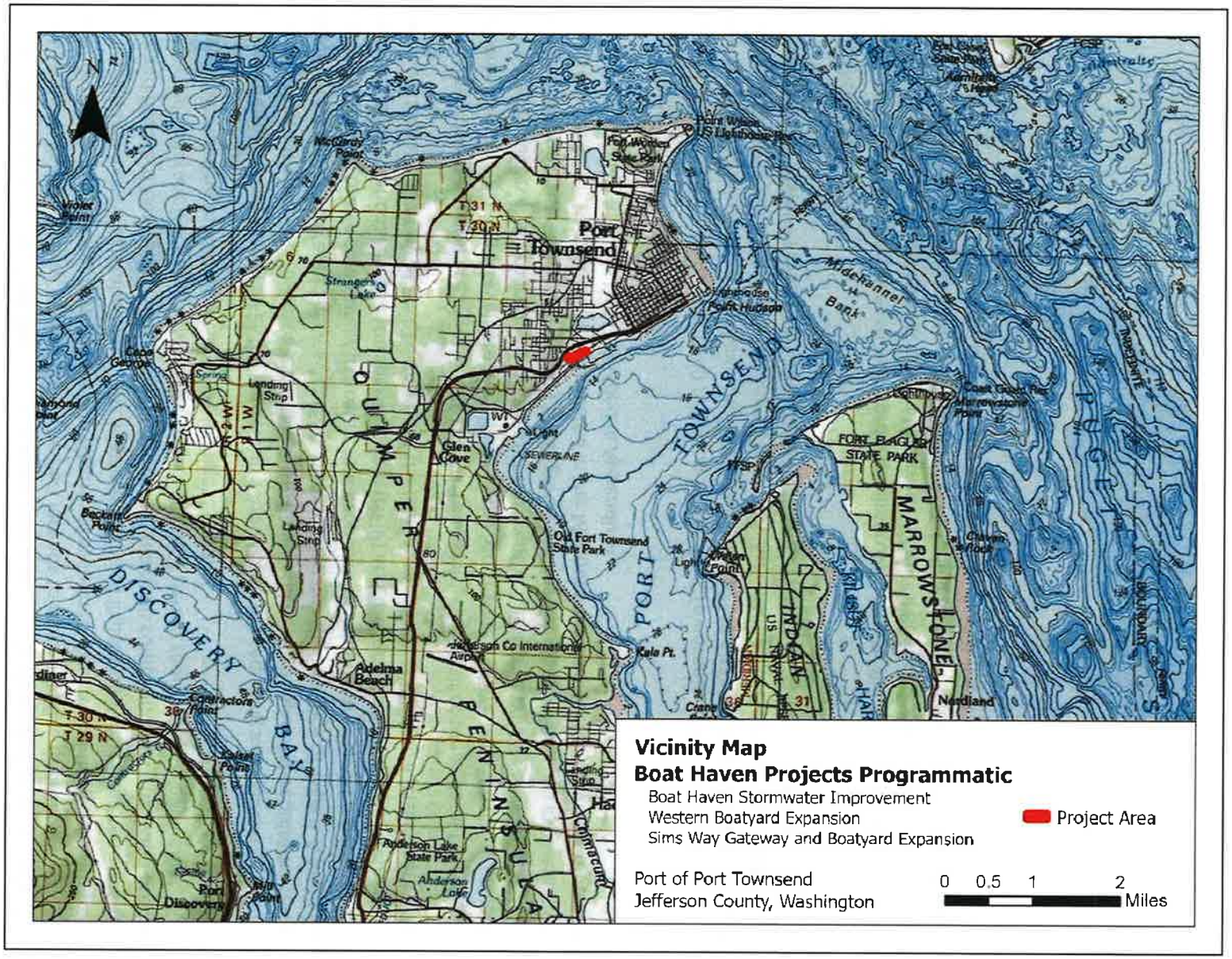
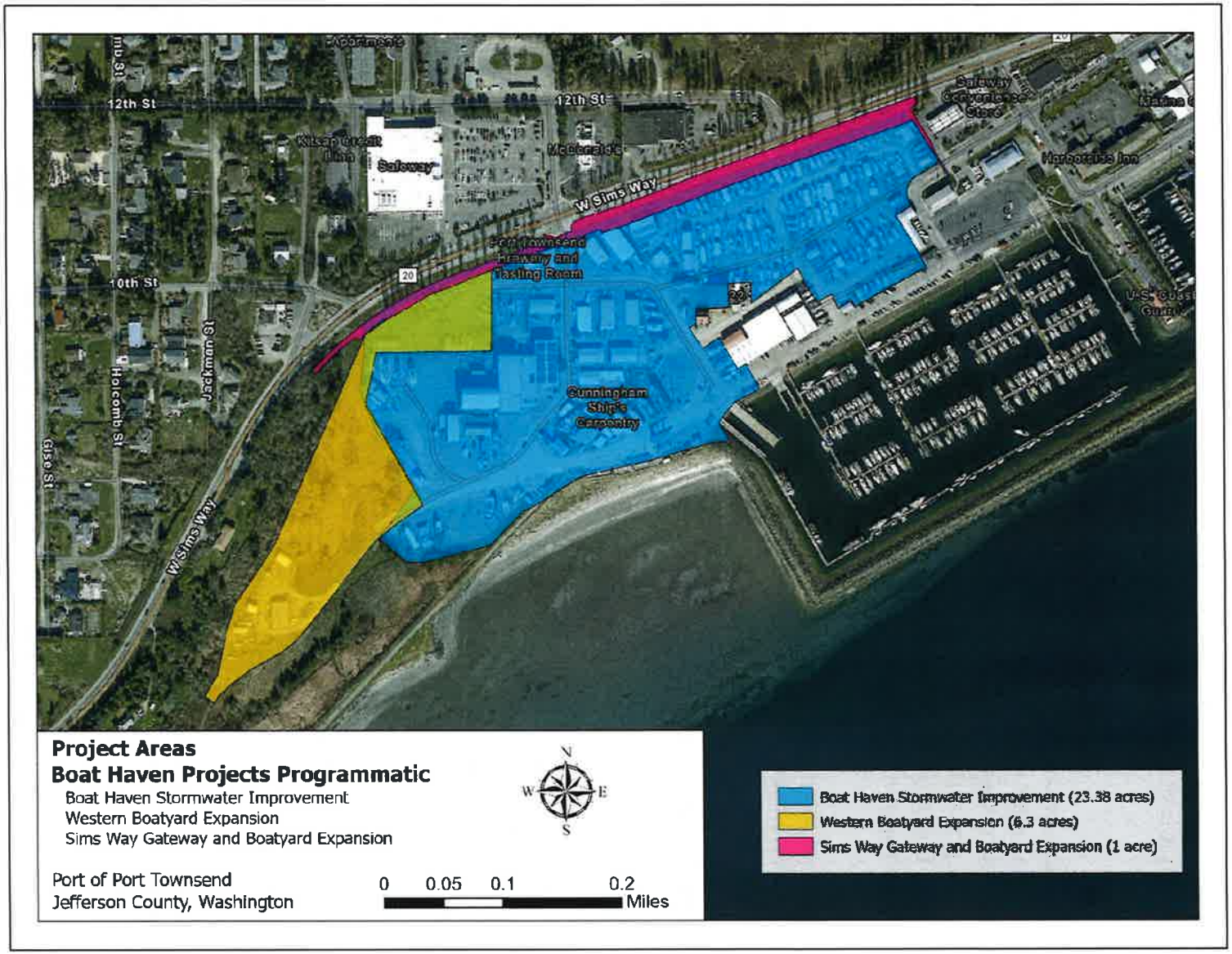


Figure 2. Boat Haven Projects Areas: Boat Haven Stormwater Improvement, Western Boatyard Expansion, & Sims Way Gateway and Boatyard Expansion. Note: overlap of the Stormwater and Sims Way project areas appears purple due to overlay.



To ensure compliance with the federal Clean Water Act and Washington State water pollution laws, the activities of the Boat Haven Boatyard are regulated under the Boatyard General Permit (BYGP), a National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge permit issued by Ecology (BYGP WAG031006). The permit requires that prior to discharging stormwater and non-stormwater to waters of the State, the Permittee must apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). Recent scientific findings indicate that biofiltration may be effective in reducing stormwater pollutants. The proposed Boat Haven Stormwater Improvements project will implement the best available science regarding the treatment of stormwater pollutants from the existing Boatyard and proposed north (Sims Way) and west (WBYE) expansion areas through installation of the proposed 4-stage biofiltration system.

The Port anticipates that the Stormwater, WBYE, and Sims Way projects will leverage the economic health of Boat Haven and the maritime industry to generate a positive economic impact for the Port while reducing the impacts of Boatyard activities on receiving waters. The following sections describe the proposed projects at Boat Haven evaluated in this assessment.

Boat Haven Boatyard Stormwater Improvements

The Port retained the services of Kennedy Jenks Consultants, Inc. (Kennedy Jenks) to conduct a multi-phase pilot study to evaluate the existing stormwater treatment and conveyance system and to recommend permanent stormwater treatment system features to accommodate the drainage and treatment needs of the proposed expansion projects at the Boat Haven Boatyard. The preliminary results of the pilot study were presented to the Port in an Engineering Report (ER) (Kennedy Jenks, 2023). Additional testing has continued through the winter/spring of 2024.

Existing Stormwater Treatment

The existing Boat Haven stormwater conveyance system consists of underground piping (both gravity and pressurized force mains), catch basins, manholes, pumps, vaults, a flow spreader, and outfalls. Stormwater treatment Best Management Practices (BMPs) are installed throughout the developed portions of the Boatyard, and include four sand filters, two proprietary Aquip® media filters (Models 210SBE and 160SBE) with passive dosing of chitosan lactate and detention, and several roof downspout media filters (Appendix B).

The collection and conveyance system, sand filters, and flow spreader were originally installed in 1996, with several modifications occurring in the years since. The Aquip® units were installed in 2011 with partial funding from Ecology. These treatment units reportedly provide pH buffering, chemical adsorption, micro sedimentation, and filtration to stormwater runoff. Water is pumped into the treatment units where it is treated and conveyed back into the storm drain system via gravity flow. In 2019, passive dosing of chitosan lactate was incorporated to improve treatment system performance. The storm drainage collection system discharges to Port Townsend Bay at Outfall A.

Proposed Stormwater Treatment

The Port of Port Townsend proposes to upgrade the existing stormwater treatment system at the Boat Haven Boatyard to a 4-stage biofiltration treatment system (Appendix C). The proposed treatment system is modeled after the Ecology-approved Port of Port Angeles Marine Terminal 3-stage biofiltration treatment system which has been operating successfully to remove and reduce stormwater pollutants since 2017. The proposed 4-stage biofiltration treatment process begins by pumping stormwater to the

first treatment stage, after which it flows via gravity between the remaining treatment stages. The first treatment stage will include the existing passive dosing of chitosan lactate and detention. The second treatment stage consists of pea gravel, a coarse pre-filter anticipated occlude with solids at a slower rate than the existing Aquip® units. The third treatment stage consists of a planted Bioretention Soil Mix (BSM) as described in the SWMMWW (30% compost: 70% sand by volume). The fourth stage will provide a polishing step consisting of biochar and shale, or other appropriate media, to provide additional adsorption of dissolved metals.

The proposed treatment system was designed in accordance with the Stormwater Management Manual for Western Washington (SWMMWW) (Ecology, 2019) and BMP T7.30: Bioretention, with some exceptions and enhancements. The offline water quality flow rate (WQFR) was calculated using the Ecology-approved, continuous simulation runoff model, MGSFlood. Anticipated expansion areas were included in the model so the proposed system can accommodate the full buildout of the Boatyard, including the WBYE and Sims Ways capital projects (Table 1).

Table 1. Contributing Areas of the Modeled Drainage Basin

Drainage Basin	Size (Acres)
Existing treatment	23.38
Western Boatyard Expansion	6.3
Sims Way Gateway and Boatyard Expansion	1.0
Modeled Drainage Basin	**30.68**

The results of the multi-phase pilot study (Appendix D) conducted by Kennedy Jenks to evaluate the effectiveness of the proposed treatment system indicate that the Port can significantly reduce the mean pollutant load discharging to Port Townsend Bay from the Boatyard with the proposed improvements. Comparing the existing and proposed condition, it is anticipated that the Port can reduce the discharge of total copper (Cu) by 48% (94 kg/year) and zinc (Zn) by 33% (42 kg/year) (Table 2). These reductions are based on a 3-stage biofiltration system; the pilot study did not evaluate the effectiveness of Stage 4, the polishing stage, which is anticipated to further reduce the pollutant load discharging to Port Townsend Bay from the Boatyard.

Table 2. Anticipated Cu and Zn Reductions based on 3-stage Biofiltration System.

Pollutant	Existing Pollutant Load (23.38 acres)	Proposed Pollutant Load (30.68 acres)	▲	
	kgs/year	kgs/year	kgs/year	% Reduction
Cu	196	103	-94	**-48%**
Zn	129	87	-42	**-33%**

Western Boatyard Expansion

The Port of Port Townsend is proposing to expand the Boat Haven Boatyard into the western portion of the existing Port property by 6.3 acres to increase the capacity of the existing facility to accommodate more boats, improve the services offered, and attract new customers. The Port anticipates that the

project will leverage the economic health of Boat Haven and the maritime industry to generate a positive economic impact for the Port and create jobs, which will better support the community in the long-term.

Elements of the project include a new boatyard area with increased boat storage capacity; a vessel storage yard for the existing 75-ton boat lift; expanded maintenance options; a new 300-ton travel boat lift; new and improved water access for the new boat lift; construction of stormwater conveyance to connect to the new Central Boatyard Stormwater Treatment System that will be constructed by the Stormwater project; repairs and modifications to the City stormwater drainage system; and restoration of stormwater drainage patterns.

The new Central Boatyard Stormwater Treatment System will be constructed in the existing boatyard area near the start of the access road to the maintenance shop. Stormwater runoff from the expanded Boatyard area will sheet flow to a curb line along the south edge of the yard and then be conveyed through a combination of curb and gutter, a pump station, and piping to the new Central Boatyard Stormwater Treatment System before discharging to Port Townsend Bay at the existing Outfall A.

The City stormwater system modifications include repair of the existing, damaged SR-20/Sims Way outfall; relocation of the existing SR-20/Sims Way drainage; construction of two new, approximately 300-foot-long, stormwater drainage swales along the hillside of the Larry Scott Memorial Trail, with a discharge pipe connecting to the renovated outfall; and restoration of stormwater drainage patterns to discharge to Puget Sound, as originally intended and consistent with City's adopted *2019 Stormwater Management Plan*. The piping will be routed away from the Port maintenance building to prevent interference with its drainage system.

Sims Way Gateway and Boatyard Expansion

The Port proposes a northern Boatyard expansion to maximize the efficient use of Port property by creating needed safe workspaces for larger vessels, increasing revenues, and maximizing employment growth for the marine trades. The Boat Haven Boatyard will be expanded northward to the Sims Way right-of-way line (or the northern extent of the Port of Port Townsend Property line), from the intersection of Haines Place and West Sims Way eastward to the west curb return to the driveway entrance to the Safeway Gas Station at 2611 East Sims Way.

The north expansion of the Boatyard will require earthwork (an approximate maximum height of 5-feet of fill) as well as a retaining wall to stabilize the expansion area. New pedestrian facilities will then be established on the south side of West Sims Way in the form of a sidewalk or pedestrian path; however, no other new impervious surfaces are proposed. The Jefferson County Public Utility District (PUD) will install underground electrical transmission lines along Sims Way, through a combination of trenching, backfill, and conduit/cable placement; remove the existing poplar trees; and install new landscaping, in accordance with the approved landscaping plan.

Maintenance Upgrades & Activities for BYGP Compliance

This assessment also evaluates the impacts of planned and probable maintenance upgrades and activities the Port will perform to comply with the discharge requirements of the BYGP. Maintenance activities will include improvements to the existing drainage and utility network, replacement of gravel, replacement of buildings with pollution-generating roofs with buildings constructed of non-pollution-

generating materials, and other runoff pollution source control undertakings. The maintenance upgrades and activities will be performed by the Port and/or their contractors, as needed.

Drainage and utility upgrades will assist in the capture and conveyance of stormwater to the new Central Boatyard Stormwater Treatment System. Any improvements to the existing drainage and utility network will be performed with no net fill to avoid floodplain impacts. The gravel surfaces at the Boatyard are assumed to contain lingering pollutants retained via surface adhesion that have not yet been flushed out during storm events. Replacing the gravel will prevent this point source of pollutants from discharging to Port Townsend Bay. Replacement of buildings with pollution-generating metal roofs with buildings constructed of non-pollution-generating materials will reduce the pollutant load passively generated by the Port infrastructure. The maintenance and pollution source control activities will support the efforts of the Port to remain in compliance with new and probable future BYGP permit conditions and reduce pollutant loading to Port Townsend Bay.

Construction Methods & Equipment

Construction methods will be traditional and industry standard, using a mixture of mechanized equipment (excavator, backhoe, dozer, loader, bucket trucks, graders) and human labor for demolition of utility poles, transmission lines/cables, excavation, grading, trenching, stormwater system installation, electrical utility work, paving and concrete placement, and other necessary construction activities as required by the project engineer. No blasting or pile driving will be required.

Construction Timeline

The Boat Haven projects will be constructed on individual timelines to meet funding requirements and limit disturbance. The anticipated timeline details for each project are described in the following sections to give a sense of the construction. The actual timeline may vary but will generally be of a similar nature and duration as presented here.

Stormwater Improvement

The Boat Haven Stormwater improvement project anticipates a 12-month construction duration beginning Spring 2025 and concluding in late Spring of 2026. Excavation, including utility trenching, lift station installation, and construction of tank foundations, will occur in Quarter (Q) 2 and Q3, followed by concrete work in Q4 of 2025. Q1 of 2026 will involve tank plumbing. During Q2 of 2026, the new Central Boatyard Stormwater Treatment System will be commissioned, and the construction activities completed.

Western Boatyard Expansion

The Western Boatyard Expansion will involve an 18-month construction duration to begin in the next five years after funding is secured.

Sims Way Gateway and Boatyard Expansion

The Sims Way and Boatyard Expansion project is anticipated to begin construction in Summer 2025 and conclude at the end of 2025, a construction duration of 6 months. Clearing, embankment construction, grading, and sidewalk construction will take place in Q3 of 2025. Landscaping installation and completion of construction activities will occur in Q4 of 2025. Following construction, vegetation monitoring will take place during the 1-year plant establishment period.

Maintenance Upgrades & Activities for BYGP Compliance

The maintenance upgrades and activities other pollution source control undertakings will be completed as needed, managed through the Port annual budget. The new Central Boatyard Stormwater Treatment System will be maintained as required by the operations and maintenance manual (O&M) to comply with the discharge requirements of the BYGP (*see Stormwater BMP Maintenance Routine*).

Impact Avoidance and Minimization

The project will adopt and implement avoidance measures, minimization measures, and best management practices to limit the magnitude of the proposed action and its implementation.

Proactive Improvements

The Port is proactively improving the Boat Haven Boatyard stormwater treatment and conveyance system in response to the best available science regarding stormwater treatment to reduce impacts to receiving waters. The Port voluntarily retained the services of Kennedy/Jenks Consultants, Inc. (Kennedy Jenks) to perform a treatment pilot study and prepare an Engineering Report (ER) to evaluate the existing stormwater treatment and conveyance system and to recommend permanent stormwater treatment system features to accommodate the drainage and treatment needs of the existing Boatyard and proposed expansion projects at Boat Haven. The proposed treatment system upgrades are not in response to BYGP Level 3 Corrective Action requirements, but a proactive effort of the Port to fulfill its mission to protect and maintain our environment.

Stormwater BMP Maintenance Routine

Post-construction, the Port and/or their contractors will maintain the proposed stormwater conveyance and treatment BMPs in accordance with the new Central Boatyard Stormwater Treatment System O&M and the standards outlined in *Chapter 5-5 Operations and Maintenance, WSDOT Highway Runoff Manual (HRM)*, (Appendix E). The 4-stage biofiltration treatment system maintenance routine includes the following actions:

Weekly Maintenance Activities

- General Inspection
- Assessment of pumps and controls
- Examination of piping and valves
- Weeding, watering, and planting

Annual Maintenance Activities

- Cleaning of the sample port and line
- Chitosan sock replacement
- Pea Gravel removal, disposal, and replacement
- Inspection of plants and planting

10-year Maintenance Activities

- Biofiltration media removal, disposal, and replacement
- Mulch chip removal, disposal, and replacement
- Inspection of plants and planting

Minimization Measures

Minimization Measures manage the severity of impacts on resources through the incorporation of appropriate and practicable design and risk avoidance measures. The Port proposes the following minimization measures for the project:

1. Construction impacts have been confined to the minimum area necessary to complete the expansion and improvement projects consisting of the Port of Port Townsend existing property.
2. The boundaries of clearing limits will be clearly flagged to prevent disturbance outside of the limits.
3. Temporary Erosion Sediment Control (TESC) and Spill Prevention, Control, and Countermeasures (SPCC) plans will be implemented to prevent pollutants from entering waterbodies.
4. The contractor shall comply with the Washington State Department of Ecology (Ecology) water quality standards.
5. Stormwater drainage patterns will be maintained to flow into the existing Port of Port Townsend stormwater conveyance system which discharges to Port Townsend Bay within Puget Sound or the City of Port Townsend municipal sanitary sewer system, in accordance with the BYGP issued by Ecology.
6. Temporarily disturbed vegetation areas will be replanted with native vegetation.

Best Management Practices (BMPs)

Best management practices will be implemented throughout construction. Though specific implementation means and methods will be determined by construction contractors, the following BMPs are proposed for the project:

1. The Project will be implemented in compliance with the conditions of the Project permits, which will be obtained prior to commencing work.
2. All work near the water will be conducted in a way that minimizes turbidity, erosion, and other water quality impacts.
3. The City and/or their contractor(s) will monitor for temporary impacts, if any, to water quality (turbidity, sedimentation) during project activities near the water.
4. All temporarily disturbed areas will be revegetated with native species.
5. Management of stormwater runoff will comply with applicable local and State requirements, including the most current Stormwater Management Manual for Western Washington (SWMMWW).
6. All waste materials will be fully contained and disposed of offsite in accordance with federal, state, and local laws.

7. All construction equipment will be in good repair and free of accumulated grease, oil, or mud prior to arriving on site. Equipment will be inspected daily for leaks and accumulation of grease, oil, or mud and repaired immediately.
8. A SPCC Plan will be prepared for all activities that include the use of heavy equipment which will prevent the accidental release of fuels, lubricants, and other hazardous materials from entering waterbodies. The plan will describe all hazardous materials that will be used, proper storage and handling requirements, measures to avoid and minimize impacts from accidental leaks or spills and monitoring and compliance methods.
9. Fueling and servicing of all equipment will be confined to an established fueling area with specific fueling BMPs and spill containment systems as defined in the SPCC.
10. All debris or spill material will be properly disposed of at an approved disposal facility. Any spills, other than construction debris, that enter the waterway will be reported immediately to the Ecology Northwest Regional Office.

Action Area

The action area (Figure 3) defines the extent of all direct and indirect effects of the project for the zones of influence associated with the physical footprint of construction activities and staging areas, terrestrial noise, underwater noise, water quality, and stormwater. No impacts to underwater noise or water quality are anticipated as the project does not propose any in-water work and BMPs will be in place for the duration of construction activities.

Terrestrial Zone of Influence

The greatest extent of terrestrial impacts will result from elevated noise levels during construction. To identify the extent of project-related noise, a construction noise impact assessment (Appendix F) was undertaken using the guidance in Chapter 7 of the WSDOT Biological Assessment Preparation Manual, updated June 2023 (WSDOT, 2023). The terrestrial action area extends 1,991 feet in all directions from the boundary of project activities (Figure 3).

Aquatic Zone of Influence

The aquatic zone of influence is defined as beginning at project area to discharge at the existing Outfall A to Port Townsend Bay in Puget Sound. (Figure 4).

Figure 3. Action Area. The terrestrial zone of influence is defined by the extent of elevated airborne noise (1,991 feet) and the aquatic zone of influence is defined by the extent of stormwater effects.

Figure 4. The Aquatic Zone of Influence, defined by the extent of stormwater effects, will be restricted to the installation of the new 4-stage biofiltration treatment system which will reduce the baseline discharge of pollutants to Port Townsend Bay from the Boat Haven Boatyard through Outfall A.

2.0 Status of Species and Critical Habitat in the Action Area

The potential for listed species and their designated critical habitats to occur within the action area was evaluated by consulting the USFWS IPaC Information for Planning and Consulting, the NOAA Fisheries Species and Habitats application, and USFWS & NMFS species databases (Appendix G).

Species and Critical Habitat List and Listing Status

Table 3 summarizes the status of the species and critical habitats potentially present in the action area.

Table 3. Summary of Species and Critical Habitats Potentially Present in the Action Area.

Species	DPS/ESU	Jurisdiction	Status	Critical Habitat Present?
Marbled Murrelet (*Brachyramphus marmoratus*)	--	USFWS	Threatened	No
Yellow-billed Cuckoo (*Coccyzus americanus*)	Western DPS	USFWS	Threatened	No
Northwestern Pond Turtle (*Actinemys marmorata*)	--	USFWS	Proposed Threatened	No
Bull Trout (*Salvelinus confluentus*)	U.S.A., coterminous, (lower 48 states)	USFWS	Threatened	No
Chum Salmon (*Oncorhynchus keta*)	Hood Canal summer-run ESU	NMFS	Threatened	Yes
Chinook Salmon (*Oncorhynchus tshawytscha*)	Puget Sound ESU	NMFS	Threatened	Yes
Steelhead Trout (*Oncorhynchus mykiss*)	Puget Sound DPS	NMFS	Threatened	No
Bocaccio (*Sebastes paucispinis*)	Puget Sound-Georgia Basin DPS	NMFS	Endangered	Yes
Killer Whale (*Orcinus orca*)	Southern Resident DPS	NMFS	Endangered	Yes

The above list of species and critical habitats that are potentially present in the action area was cross-referenced with information from literature research and field visits. This analysis indicated that the Yellow-billed Cuckoo (*Coccyzus americanus*) and Northwestern Pond Turtle (*Actinemys marmorata*) are not likely to be present within the action area as there is no suitable habitat present for these species. The action area does not contain stands of mature riparian willows and cottonwoods greater than 50 acres; or ponds and/or lakes. Based on the lack of suitable habitat, the project biologist recommends

that the proposed project will have no effect on these species or their designated critical habitats; therefore, they will not be addressed further in this document.

Presence of Species in the Action Area

The occurrence of species potentially present in the action area is discussed in the following sections. Additional species information is provided in Appendix H – Biology of Species.

Marbled Murrelet (*Brachyramphus marmoratus*)

The marbled murrelet was federally listed as a threatened species on October 1, 1992 (57 FR 45328). Critical habitat was designated on May 24, 1996, and revised on October 5, 2011 (61 FR 26256; 76 FR 61599). The species occurs from northern Monterey Bay in California, through British Columbia, Washington, and Oregon, to Bristol Bay, Alaska (USFWS, 2024b). The USFWS IPaC list for this project indicates that the marbled murrelet is potentially present within the action area, but the project is not within marbled murrelet designated critical habitat (USFWS, 2022).

Nesting marbled murrelets are dependent on low elevation mature and old-growth coniferous forests with multi-layered canopies on the lower two-thirds of forested slopes. While compiling information for the listing of marbled murrelet designated critical habitat, all known nesting trees were larger than 30 inches in diameter and had large branches with complex structures to support nests (USFWS 1997). Despite general favorability of larger trees, trees with a DBH of 15 inches or greater with platforms in the canopy are considered suitable habitat (USFWS, 1997). Suitable nesting forest stands are conifer-dominated and greater than 5 acres in size (Harke and Teachout, 2014). Marbled murrelet nests are most often observed within 12 miles of the ocean but have been found as far as 50 miles from saltwater (Shohet et al. 2008). Saltwater foraging habitat exists approximately 12 miles from the project site. The nesting season for marbled murrelet is April 1 through September 23.

Projects with heavy construction noise should have no effect on marbled murrelets if suitable habitat is greater than 0.25 mile from the project site (DNR, 2016). Within 0.25 miles of the project and action area, most of the land is developed for residential and commercial purposes. No suitable marbled murrelet nesting habitat occurs within the project or action areas. For these reasons, the project will have No Effect on the U.S.A. (CA, OR, WA) population of marbled murrelet.

Bull Trout (*Salvelinus confluentus*) U.S.A., coterminous, (lower 48 states)

Bull Trout were first proposed as an endangered species throughout its range in 1993 (58 FR 28849). In 1998, five DPS of bull trout were recognized but only the Klamath River DPS and Columbia River DPS were federally listed (63 FR 31647). By November 1999, the remaining three DPS were added to the listing to encompass the entire coterminous U.S. population of bull trout, listed as threatened throughout its entire range (64 FR 58910). Critical habitat for the Coastal/Puget Sound (C/PS) DPS of bull trout was designated on September 26, 2005, and was revised on September 30, 2010, as the U.S.A., conterminous, lower 48 states population of bull trout (70 FR 56212; 75 FR 63898). No DCH is present in the action area (USFWS, 2024c).

Bull trout exhibit both resident and migratory life history strategies, although most bull trout are migratory. Both forms will spawn in tributary streams with juveniles remaining to rear for 1-4 years before migrating to rivers, lakes, or coastal environments to mature (64 FR 58910). Resident and migratory forms can produce either resident or migratory offspring, these forms are often found

together (69 FR 35768). Residents reach 6 to 12-inches in length and migratory forms grow up to 24-inches or more (63 FR 31647). Migratory bull trout often exhibit anadromous behavior although some are amphidromous, seasonally returning to freshwater environments for several years before returning to spawn. The amphidromous form appears to be a unique characteristic of the Coastal-Puget Sound population (70 FR 56212). When mature they begin their migration to their spawning tributaries in the late spring and early summer (69 FR 35768), but may begin as early as April (USFWS, 2015).

The nearshore marine waters of Puget Sound provide vital connectivity between spawning and FMO habitats. However, there are no streams with documented presence of bull trout in or near the action area. The closest documented presence of bull trout is at the Dungeness River, over 20 miles away (WDFW, 2020). Considering the great distance from freshwater habitat, the presence of bull trout in the action area is discountable.

Chum Salmon (*Oncorhynchus keta*) Hood Canal summer-run ESU

The Hood Canal summer-run ESU of Chum salmon (including the eastern Strait of Juan de Fuca) were listed as threatened under the Endangered Species Act in 1999 (64 FR 14508). Critical habitat for the species was designated on September 2, 2005 (70 FR 52630). DCH is present in the action area (NOAA, 2024a).

Threats to naturally spawned chum salmon include several human-induced factors (i.e., habitat degradation, water diversions, harvest, and artificial propagation) and the effects of natural factors (i.e., competition and predation) or environmental conditions such as drought and poor ocean conditions (64 FR 14508). Due to ongoing recovery efforts, run sizes of summer chum have been increasing since the mid-1990s, with some of the highest returns on record occurring in recent years (Johnson et. al., 2008).

Chum salmon utilize the lower reaches of coastal streams near saltwater for spawning. Chum fry will rear in freshwater for a few days before moving downstream to the estuary to rear for several months before heading to the open ocean (WDFW, 2024a).

Hood Canal summer-run chum have been documented spawning in Chimacum Creek, 4 miles to the south in Port Townsend Bay (WDFW, 2020). Because of the close proximity of documented presence in Chimacum Creek, migrating chum salmon may be present in the action area. However, as the species does not heavily utilize nearshore areas outside of natal stream estuaries before they migrate to the open ocean, they are not anticipated to linger in the aquatic zone of influence for prolonged periods of time.

Chinook Salmon (*Onchorhynchus tshawytscha*) Puget Sound ESU

In 1998, the Puget Sound population of Chinook salmon was first recognized as an evolutionary significant unit (ESU) and proposed for listing as threatened under the Endangered Species Act of 1973 (63 FR 11482). NMFS issued a final rule in 1999 (64 FR 50394) and a revised listing in 2005 (70 FR 37160); the Puget Sound DPS of Chinook salmon remains listed as threatened (70 FR 52630). Critical habitat for the PS ESU of Chinook salmon was designated on September 2, 2005 (70 FR 52630). DCH is present in the action area.

The Puget Sound ESU of Chinook salmon represents populations that naturally spawned in rivers flowing into Puget Sound (69 FR 74572). The range of Puget Sound ESU extends east from the Elwha River to the Nooksack River and southward to southern Puget Sound. Historically, it is thought that the Puget Sound

had as many as 37 independent spawning aggregations. Currently, only 22 independent populations are identified in Puget Sound (NMFS, 2007). Productivity is classified as in decline or below the replacement value (NMFS, 2007).

Most Puget Sound Chinook will migrate from freshwater to marine waters within the first year to utilize highly productive estuary and nearshore habitats. The majority of Chinook salmon will mature in the marine environment for 1-6 years before returning to freshwater habitats to spawn (NMFS, 2007), but they usually mature between years 2 to 7 (NOAA, 2022). Reentrance to freshwater is suspected to be related to water temperature and flow conditions (NMFS, 2007). While Chinook typically return to their streams of origin, they may utilize nearby streams with similar habitat (NMFS, 2007). Chinook, like most Pacific salmon species, are semelparous, spawning once before dying and returning their nutrients to upstream habitats (69 FR 33101).

Migrating sub-adult and adult Chinook salmon may be present in the action area year-round. The presence of sub-adult and adult life histories peaks in mid to late summer before they begin their freshwater migrations to natal streams. Juveniles are most abundant between May to July when they can be found rearing in nearshore habitats (WSF, 2022).

Steelhead Trout (*Onchorhynchus mykiss*) Puget Sound DPS

The Puget Sound distinct population segment (DPS) of Steelhead trout was first listed as threatened on May 11, 2007 (72 FR 26722), with an updated listing in 2014 (79 FR 20802). The Puget Sound DPS of Steelhead trout encompasses all anadromous forms that naturally spawned below an impassable barrier in a stream flowing into Puget Sound (NOAA, 2023b). The range of Puget Sound ESU extends east from the Elwha River to the Nooksack River and southward to southern Puget Sound (63 FR 13347). Critical habitat was designated for the species on February 24, 2016 (81 FR 9252). No DCH is present in the action area (NOAA, 2024a).

Steelhead trout exhibit both anadromous and non-anadromous (freshwater residents) life strategies and are often found in freshwater together as both can produce either form as offspring (69 FR 74572). Steelhead are also exothermic thus require cool water sources to regulate their temperature (NOAA, 2019). Anadromous forms may remain in freshwater for as many as 7 years before spending for 1-4 years in marine waters before returning to spawn (NOAA, 2022). Winter-run steelhead, which have documented presence in the action area, are considered the "ocean maturing" form as they return to freshwaters already mature and spawn shortly afterward (69 FR 74572). Unlike Pacific salmon, steelhead are iteroparous, meaning they can survive after spawning and are able to repeat their migration to and from marine waters to spawn multiple times in their lifetime. Steelhead on average live between 5-11 years (69 FR 74572; NOAA, 2022).

Steelhead presence in the action area is limited; the species does not heavily utilize nearshore areas as they quickly migrate to deeper waters (Moore et.al., 2015). Around Puget Sound, tow net sampling (deeper nearshore) and beach seine sampling (shallow nearshore) have yielded only a few steelhead trout (WSF, 2022). The presence of this species in the action area is anticipated to be limited to migratory life histories which are not expected to remain within the aquatic zone of influence for significant periods of time.

Bocaccio (*Sebastes paucispinis*) Puget Sound – Georgia Basin DPS

The Puget Sound – Georgia Basin DPS of Bocaccio was first listed as endangered on April 28, 2010 (75 FR 22276). Critical habitat was designated for the species on February 11, 2015 (79 FR 68042). DCH is present in the nearshore zone of Port Townsend Bay.

Bocaccio ranges from Baja California to the Gulf of Alaska although they are most common between Oregon and northern Baja California (NOAA, n.d.a). The Puget Sound – Georgia basin DPS of bocaccio is affected by overfishing, both commercially and recreationally, and habitat degradation including water quality impairment due to low dissolved oxygen (DO) and elevated contaminants, and a lack of regulation (75 FR 22276).

Rockfish are iteroparous; the female bocaccio typically spawns one to three times per season, undergoing internal fertilization and embryo development to give birth to live larval young. Larvae subsist on zooplankton, copepods, small crustaceans, phytoplankton, krill, invertebrate eggs, and other invertebrates until they begin foraging on fish typically within the first year of life. Bocaccio larvae and young of the year will reside in the upper layers for several months before forming schools as juveniles in nearshore bottom habitats. Juveniles typically prefer rocky, cobble and sand areas or kelp forests which provide cover from predation and foraging opportunities. Juveniles move to deeper offshore waters as they mature. Adults primarily utilize rocky habitats in deepwater, in excess of 90 feet, but have also been known to inhabit artificial structures and reefs. Adult bocaccio preferred prey is other rockfishes but they are also known to feed on squid, sablefish, anchovies, and lantern fish. Adults mature and start reproducing from 4 to 7 years old and may live past fifty (NOAA, n.d.a, 79 FR 68042).

While known to be rare in north Puget Sound (75 FR 22276), larvae and juvenile bocaccio may be present in the shallow nearshore habitats of Port Townsend Bay. As juvenile bocaccio are usually associated with rocky habitats where cover from predation and foraging opportunities can be found, it is unlikely that juvenile bocaccio are present in the project area. Adults typically move to deepwater in excess of 90 feet, therefore the presence of adult bocaccio in the action area is discountable.

Killer Whale (*Orcinus orca*) Southern Resident DPS

A review of the NMFS status for Killer Whales revealed a DPS of Southern Resident Killer Whales (SRKW) were listed as endangered under the ESA on November 18, 2005 (70 FR 69903) and a recovery plan was instituted in 2008. Critical habitat was first designated for SRKW in inland waters of Washington State in 2006 (71 FR 69054). Critical habitat was revised in 2021 (86 FR 41668) to include coastal habitat areas along the West Coast from the U.S. international border with Canada to Point Sur, California.

SRKW travel extensively in the winter and early spring, ranging from Queen Charlotte Islands in British Columbia to Monterey Bay in California (Wiles, 2004). While SRKW occur in most marine waters in Washington State, they prefer to spend time in coastal waters where their preferred prey, Chinook salmon, can usually be found. The SRKW population is made up of three social groups or pods referred to as the J, K, and L pods. These pods historic distribution includes the waters surrounding the San Juan Islands and the eastern Strait of Juan de Fuca from late spring to fall (WDFW, 2024b).

The pods spend the late spring, summer, and fall in the Salish Sea feeding on salmon, particularly Chinook salmon. It is estimated that approximately 78% of Southern Resident killer whales' diet is Chinook Salmon, with approximately 19% being other Pacific salmonids and the remaining

approximately 3% being non-salmonid fish (NMFS, 2008). Unlike the transient ecotype of killer whales that feed on marine mammals, resident killer whales feed exclusively on fish.

The SRKW population continues to struggle despite protections, the 2020 population numbered only 72 individuals down from a minimum historical population of 140. Major challenges to this species include reduced prey availability, dependence upon healthy populations of salmon, primarily Chinook, disturbance by vessels and noise, and chemical pollution. (NOAA, 2022).

Within the action area, SRKW may be present during the late spring through fall feeding on salmon.

Presence of Designated Critical Habitat in the Action Area

The presence of USFWS and NMFS designated critical habitat and associated physical and biological factors (PBFs) within the action area are described in the following sections.

Salmon (Oncorhynchus sp.)

Chum (*Oncorhynchus keta*) Hood Canal summer-run ESU & Chinook (*Onchorhynchus tshawytscha*) Puget Sound ESU

Critical habitat for the Hood Canal summer-run of Chum salmon and the PS ESU of Chinook salmon was designated on September 2, 2005 (70 FR 52630). DCH is present in the action area.

NMFS biologists developed PCEs based upon the unique life history of salmon and steelhead. Since these species share many of the same rivers and estuaries and have similar life stage characteristics, the PCEs for chum and chinook salmon are the same. There are six listed PBFs (PCEs) for salmon critical habitat. The PBFs determined essential to the conservation of salmon are (70 FR 52630):

1. *Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation, and larval development. These features are essential to conservation because without them the species cannot successfully spawn and produce offspring.*
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. These features are essential to conservation because without them juveniles cannot access and use the areas needed to forage, grow, and develop behaviors (e.g., predator avoidance, competition) that help ensure their survival.*
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. These features are essential to conservation because without them juveniles cannot use the variety of habitats that allow them to avoid high flows, avoid predators, successfully compete, begin the behavioral and physiological changes needed for life in the ocean, and reach the ocean in a timely manner. Similarly, these features are essential for adults because they allow fish in a nonfeeding condition to*

successfully swim upstream, avoid predators, and reach spawning areas on limited energy stores.

4. *Estuarine areas free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh-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. These features are essential to conservation because without them juveniles cannot reach the ocean in a timely manner and use the variety of habitats that allow them to avoid predators, compete successfully, and complete the behavioral and physiological changes needed for life in the ocean. Similarly, these features are essential to the conservation of adults because they provide a final source of abundant forage that will provide the energy stores needed to make the physiological transition to fresh water, migrate upstream, avoid predators, and develop to maturity upon reaching spawning areas.*
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. As in the case with freshwater migration corridors and estuarine areas, nearshore marine features are essential to conservation because without them juveniles cannot successfully transition from natal streams to offshore marine areas. We have focused our designation on nearshore areas in Puget Sound because of its unique and relatively sheltered fjord-like setting (as opposed to the more open coastlines of Washington and Oregon).*
6. *Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation. These features are essential for conservation because without them juveniles cannot forage and grow to adulthood. However, for the reasons stated previously in this document, it is difficult to identify specific areas containing this PCE as well as human activities that may affect the PCE condition in those areas. Therefore, we have not designated any specific areas based on this PCE but instead have identified it because it is essential to the species' conservation and specific offshore areas may be identified in the future (in which case any designation would be subject to separate rulemaking).*

Within the action area, PBFs 4 & 5 are present; the estuarine and nearshore waters are rated as excellent for aquatic life use (WAC 173-201A-612). The action area is within the Puget Sound estuary which is known to support juvenile and adult physiological transitions between fresh and saltwater (PBF 4). The shoreline of Port Townsend Bay provides nearshore marine habitat (PBF 5). The action area does not contain freshwater, therefore, PBFs 1, 2, & 3 do not occur. The action area is within the estuary of Puget Sound, therefore, does not contain PBF 6, offshore marine areas.

Bocaccio (*Sebastes paucispinis*) Puget Sound – Georgia Basin DPS

The Puget Sound – Georgia Basin DPS of Bocaccio was first listed as endangered on April 28, 2010 (75 FR 22276). Critical habitat was designated for the species on February 11, 2015 (79 FR 68042). DCH is present in nearshore habitats within Port Townsend Bay.

The PBFs determined essential to the conservation of all life forms of bocaccio include nearshore habitats from the extreme high water to -30 MLLW:

1. *Quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities.*
2. *Water quality and sufficient levels of dissolved oxygen to support growth, survival, reproduction, and feeding opportunities.*

An additional PBF determined essential to the conservation of adult bocaccio is:

3. *Benthic habitats deeper than 98 feet with structure and rugosity that supports feeding opportunities and predator avoidance.*

Within the action area, PBFs 1 & 2 are present. The waters in the action area are rated as excellent for aquatic life use (WAC 173-201A-612). Nearshore habitats provide ample foraging opportunities (PBF 1) and sufficient water quality (PBF 2). The action area does not contain rocky benthic habitats deeper than 30 meters (PBF 3).

Killer Whale (*Orcinus orca*) Southern Resident DPS

Critical habitat was first designated for SRKW in inland waters of Washington State in 2006 (71 FR 69054). Critical habitat was revised in 2021 (86 FR 41668) to include coastal habitat areas along the West Coast from the U.S. international border with Canada to Point Sur, California.

PBFs for SRKW DPS (86 FR 41668) include:

1. *Water quality to support growth and development.*
2. *Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction and development, as well as overall population growth.*
3. *Passage conditions to allow for migration, resting, and foraging.*

Within the action area, PBF 1 is present. Waters in the action are rated as excellent (PBF 1) for aquatic life use (WAC 173-201A-612). PBFs 2 & 3 do not occur. While migrating sub-adult and adult Chinook salmon (PBF 2) are anticipated to be present in the action area year-round, reduced quantity and quality of this preferred prey is well documented (NOAA, 2022). SRKW are routinely documented migrating, resting, and foraging (PBF 3) in Puget Sound; however, the action area does not contain waters of an adequate depth for passage.

3.0 Environmental Baseline

The following sections detail the environmental baseline conditions in the vicinity of the project.

Terrestrial Resources

Elements of the terrestrial resources in vicinity of the project area are detailed in the following sections.

Land Use

The project areas are within the Coastal Zone Management Area and are currently zoned for Marine related uses (M-II(A)). Adjacent to state highway SR-20/Sims Way, the Boat Haven Boatyard has been developed in an urban context for decades. A mixture of buildings, graveled access ways, and boatyard surfaces exist in this area. To the north of the project area is a highly urbanized and developed area consisting of the Port Townsend School of Massage, Safeway, McDonald's, and Henery's Hardware. Also to the north are the more natural environments associated with the Kah Tai Lagoon Nature Park. The site is bounded by Port Townsend Bay to the south and public roads to the east and north.

Topography

The topography of the Boatyard is largely flat at an elevation that ranges from 10 feet to 12.5 feet NAVD. The ground elevation for the Boatyard expansion projects will match the elevation of the existing Boatyard.

Vegetation

Boat Haven Stormwater Improvement (Existing Boatyard & Backshore)

The existing Boatyard is predominantly comprised of impervious surfaces including buildings, gravel, asphalt, and concrete. Little vegetation is present in the central portion of the Boatyard other than a few sparse patches of grasses. Along the southwest margin of the Boatyard, near the location of the new 4-stage biofiltration treatment system, vegetation is composed primarily of scrub-shrub, Nootka rose (*Rosa nutkana*), and emergent, Baltic rush (*Juncus balticus*) and hard-stem bulrush (*Schoenoplectus acutus*) vegetation, bordered by shore pine (*Pinus contorta var. contorta*) and Sitka willow (*Salix sitchensis*) (Widener & Associates, 2024c).

The backshore of Port Townsend Beach is crisscrossed with informal pedestrian access paths and large driftwood deposits are present throughout the shoreline area. The vegetation present was a mix of upland and wetland species. As expected, the wetland species have a higher presence in waterward areas, and upland species dominate the area of the new gravity discharge storm drain along the Larry Scott Trail embankment fill. Native species observed include silver bur ragweed (*Ambrosia chamissonis*), common yarrow (*Achillea millefolium*), Puget Sound gumweed (*Grindelia integrifolia*), softstem bulrush (*Schoenoplectus tabernaemontani*), and American dunegrass (*Leymus mollis*). Introduced and noxious species on-site include yellow salsify (*Tragopogon dubius*), alfalfa (*Medicago sativa*), dillweed (*Anethum graveolens*), and Himalayan blackberry (*Rubus armeniacus*) (Widener & Associates, 2024b).

Western Boatyard Expansion (Western Expansion)

The WBYE expansion area is dominated by invasive Himalayan Blackberry (*Rubus Armeniacus*) and Reed Canary Grass (*Phalaris Arundinacea*) interspersed with few native species including Red Osier Dogwood (*Cornus stolonifera*), Narrowleaf Cattail (*Typha Latifolia*), and Salmonberry (*Rubus Spectabilis*) (Widener & Associates, 2024a).

Sims Way Gateway and Boatyard Expansion (North Expansion)

Vegetation in the Sims Way expansion area consists of grasses and non-native Lombardy Poplar trees. The Lombardy Poplar trees will be removed as part of this project, to be replaced by landscaping using a mixture of native trees and shrubs, in accordance with City of Port Townsend standards and the recently amended Gateway Development Plan. The condition of the Lombardy Poplars was inspected by the Port on January 29, 2024, and confirmed by a Widener & Associates biologist on April 11, 2024. The trees were leafless due to the time of year which allowed for thorough and complete inspections which determined that there is no evidence of avian nests or rookeries in any of the trees. Coniferous trees largely do not exist in the project area, save for a handful of ornamental pine trees. Nearby, there are coniferous trees planted in an urban landscaping style context north of Sims Way, adjacent to McDonald's, Henery's Hardware, and Safeway, and coniferous street landscaping on the south side of 12th Street, across from the Haines Street Park and Ride.

Aquatic Resources

Elements of the aquatic resources in vicinity of the project area are detailed in the following sections.

Floodplain

The project areas are mapped within FEMA Zone AE, the 100-year floodplain, at a NAVD 88 elevation of 12.0 feet, equivalent to about 13.3 feet MLLW (FEMA, 2024). As a result, the Port retained the services Blue Coast Engineering (Blue Coast) to conduct hydraulic evaluations for the proposed Boat Haven Infrastructure and Maintenance projects. Blue Coast determined that the proposed projects will not adversely affect base flood elevations (BFEs) as determined by the Federal Emergency Management Agency (FEMA). The project complies with Port Townsend Municipal Code (PTMC) Section 16.08.200 Encroachments as well as Jefferson County Code (JCC) Chapter 15.15.080 Provisions for Flood Hazard Reduction (Blue Coast, 2024a, b, c).

Kah Tai Lagoon

The project area is located south of the water body known as Kah Tai Lagoon, across from the Sims Way right-of-way, approximately 450 feet between the Port north property line and the edge of the lagoon at the narrowest width, well exceeding the 200-foot shoreline buffer.

The current Port Boatyard was part of the lagoon until the 1930s when Sims Way was built across the mouth. This cut Kah Tai Lagoon off from the bay and tidal influence. The area of the lagoon was further reduced by half in the 1960s when it was used as a dumping ground for dredged materials from the Boat Haven Marina expansion, adding 231,000 cubic yards of mud and sand. No hydrologic connection between the project site and the Lagoon remains.

Since the hydrology of the project area has been cut off from Kah Tai Lagoon by roadways, railway, walking trails, and other historic infrastructure projects, the hydrology of the general area is mainly influenced by precipitation and groundwater. However, hydrology at the WBYE project site is dominated by the unintended discharge of poor-quality stormwater runoff from SR-20/Sims Way due to damaged City of Port Townsend drainage pipes and outfalls (Widener, 2024).

No impacts to water quality at Kah Tai Lagoon will occur as it is upgradient from the project area; separated from the site by SR 20/Sims Way, Safeway, and the Haines Place Park and Ride; and is not hydrologically connected to the project area.

Port Townsend Bay

The proposed project will be constructed upland of Port Townsend Bay, a marine surface waterbody that is considered part of Admiralty Inlet. Port Townsend Bay, west of a line between Point Hudson and Kala Point, is designated as "excellent" for aquatic life use (WAC 173-201A-612).

The Boat Haven Boatyard discharges stormwater to Port Townsend Bay in compliance with the Boatyard General Permit (BYGP), a National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge permit issued by Ecology (BYGP WAG031006), effective September 1, 2022. The Boatyard has been discharging stormwater to Port Townsend Bay under previous versions of the BYGP since 1992.

According to the Ecology Water Quality Atlas, inner Port Townsend Bay within Puget Sound is on the 303(d) list of Category 5 Polluted Waters for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a, h)anthracene, indeno (1,2,3-c,d)pyrene, and polychlorinated Biphenyls (PCBs) in tissue samples (Ecology, 2024) (Table 4).

Table 4. Summary of Receiving Waterbody 303(d) Listings.

Receiving Waterbody	Category	Medium	Parameter
Port Townsend Bay (Inner)	5 – Polluted	Tissue	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Chrysene Dibenzo(a, h)anthracene Indeno (1,2,3-c,d)pyrene Polychlorinated Biphenyls (PCBs)

Wetlands

Jefferson County and USFWS National Wetlands Inventory maps were consulted for previously documented wetlands (Jefferson County, 2024; USFWS, 2024c). Two wetlands are present in the vicinity of the project but outside of the area of impact (Widener & Associates, 2024a, 2024b, 2024c) (). Neither wetland will be impacted by the project, and BMPs, such as marking the project limits with high-visibility flags or fencing, will be implemented for the duration of construction to ensure these sensitive areas are protected.

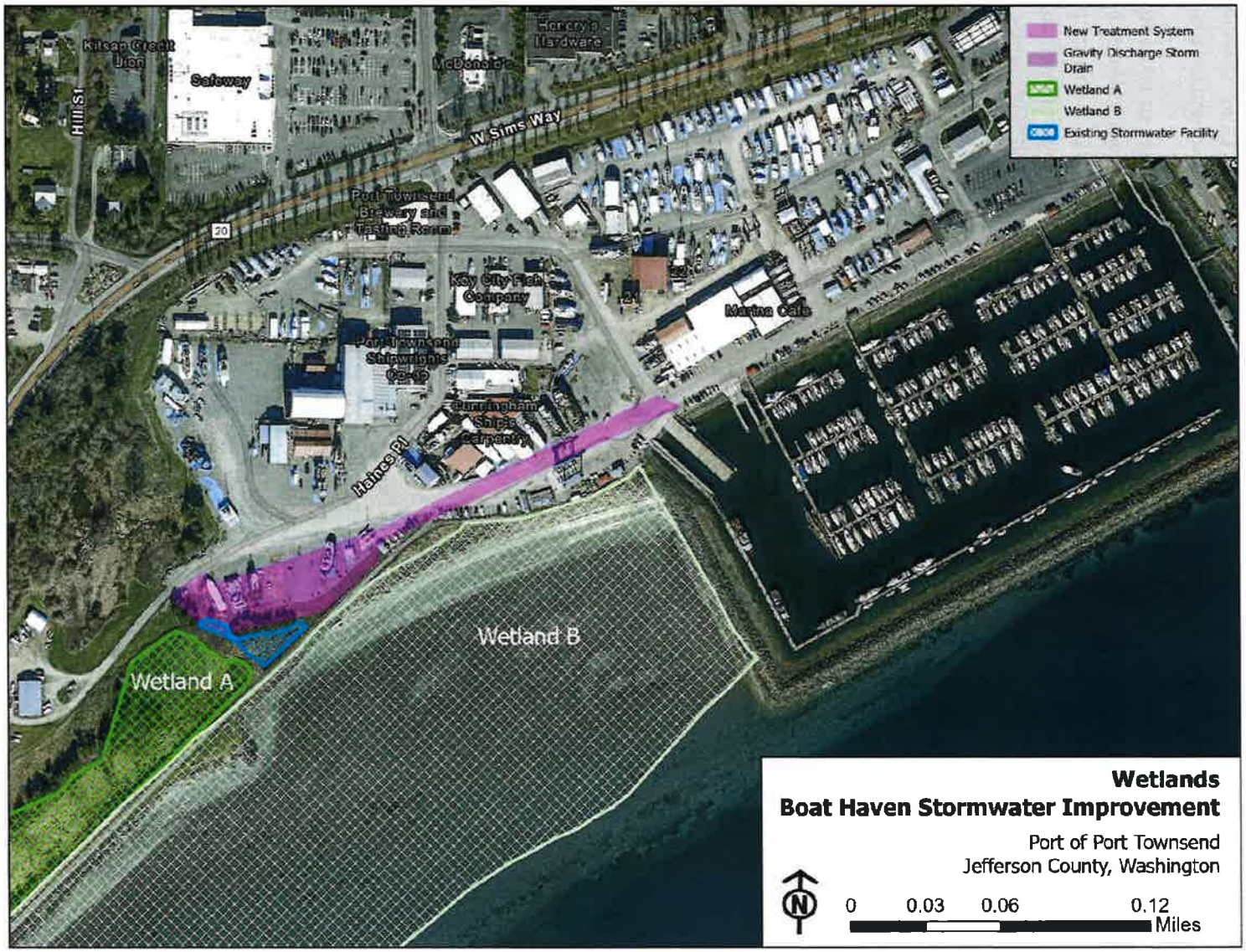
Freshwater Emergent Wetland (Wetland A)

A Widener & Associates biologist previously delineated Wetland A on behalf of the Port. It is a 3.63-acre emergent depressional wetland meeting the requirements for a Category II Coastal Lagoon rating based on functions and special characteristics (Widener & Associates, 2024c). Enhancement plantings of native trees and shrubs in the wetland will mitigate the permanent impacts of the project and improve the baseline habitat conditions of the wetland.

Estuarine and Marine Wetland (Wetland B)

According to the NWI Mapper, Wetland B is a 67.13-acre estuarine and marine wetland habitat extending waterward from Port Townsend Beach (USFWS, 2024c). No impacts within the wetland are proposed.

Figure 5. Wetlands in the Vicinity of the Project, Outside the Impact Area (purple).



4.0 Analysis of Effects

The following sections outline the direct effects, delayed consequences, and cumulative effects of the project activities.

Direct Effects

Direct effects are the impacts of the proposed action. The following sections analyze the exposure, response, and effects of the proposed action on listed species and whether the adverse impacts of the project compromise the conservation role of DCH present in the action area.

Floodplain

The proposed projects will not adversely affect base flood elevations (BFEs) as determined by the Federal Emergency Management Agency (FEMA). The project complies with Port Townsend Municipal Code (PTMC) Section 16.08.200 Encroachments as well as Jefferson County Code (JCC) Chapter 15.15.080 Provisions for Flood Hazard Reduction (Blue Coast, 2024a, b, c).

Terrestrial Noise

During construction, surrounding upland properties will be subject to temporarily elevated levels of airborne noise generated by typical mechanical equipment such as excavators, backhoe, dozer, loader, bucket trucks, graders, and haul trucks. However, these increases will be temporary and are not inconsistent with typical Port operations. Project-generated noise is anticipated to be restricted within the hours of 7:00 a.m. to 6:00 p.m. on weekdays, as feasible and practicable. However, a limited amount of nighttime work and weekend work may be necessary to avoid impacts to boatyard operations. The noise generating activities of the expanded facility will be consistent with existing activities therefore are not anticipated to increase local ambient noise levels long-term.

As the noise generating activities of the project are consistent with existing operations at the Port, and listed species potentially present in the action area are already subject to elevated levels of airborne noise year-round, the effects of airborne noise generated by the project are considered discountable and insignificant.

Vegetation Removal

The Boat Haven Infrastructure and Maintenance projects will result in both temporary and permanent vegetation removal. The WBYE project will only incur permanent vegetation impacts. The Stormwater and Sims Way projects will require both temporary and permanent vegetation removal.

For the Stormwater project, 225 SF (0.01 acres) of temporary vegetation removal will be required to install the new gravity discharge storm drain; these impacts will be fully restored with native species after construction. The Port anticipates 50,925 SF (1.17 acres) of temporary vegetation impacts for the Sims Way project; these impacts will be restored per the landscaping plan to be developed and provided under the cover of a future permit application associated with the Sims Way project.

Permanent vegetation impacts are anticipated at 15,625 SF (0.36 acres) for the Stormwater Improvements, 34,115 SF (0.78 acres) for the Sims Way Expansion, and 148,700 SF (3.41 acres) for the WBYE project. A total of 51,150 SF (1.17 acres) of temporary vegetation removal and 198,440 SF (4.56 acres) of permanent vegetation impacts are expected for the Boat Haven Infrastructure and Maintenance projects (Table 5). The Sims Way project impacts will be mitigated per the landscaping

plan. The Stormwater and WBYE impacts will be mitigated through the planting of native trees and shrubs in the higher-value coastal lagoon at a 3:1 ratio.

Table 5. Vegetation impacts for the Boat Haven Infrastructure and Maintenance projects.

Vegetation Impacts	Temporary		Permanent		Total	
	SF	AC	SF	AC	SF	AC
Existing Boatyard (Stormwater)	225	0.01	15,625	0.36	15,850	0.36
North Expansion (Sims Way)	50,925	1.17	34,115	0.78	85,040	1.95
West Expansion (WBYE)	-	-	148,700	3.41	148,700	3.41
TOTAL	51,150	1.17	198,440	4.56	249,590	5.73

The permanent vegetation impacts include the removal of 105 trees, including 57 non-native Lombardy Poplars (Table 6). The condition of the Lombardy Poplars was inspected by the Port on January 29, 2024, and confirmed by a Widener & Associates biologist on April 11, 2024. The trees were leafless due to the time of year which allowed confirmation that no evidence of avian nests or rookeries is present in any of the trees (Photo 1, Photo 2). The Lombardy Poplars in the project and action areas total fifty-seven according to a count made on January 29, 2024 (trees less than 12" in caliper were not counted) (Table 7). Two Madrona trees in the Sims Way project area are slated to be protected in place but may not survive root damage from nearby utility trenching. The Madrona trees will be replaced with native tree species, if necessary.

Table 6. Tree impacts for the Boat Haven Infrastructure and Maintenance projects.

Tree Impacts	Existing Boatyard (Stormwater)	North Expansion (Sims Way)	West Expansion (WBYE)	TOTAL
# Removed	12	57*	36	105

*May include up to 59 trees if 2 Madrona trees do not survive nearby utility trenching

Photo 1. Lombardy Poplars along Sims Way.

Photo 2. Typical Conditions. No suitable nesting habitat is present.

Table 7. Locations of Lombardy Poplars to be Removed.

Location at South Side of Sims Way	Poplars in Action Area
West of Haines Place	20
East of Haines Place to Safeway Gas Station	34
2611 Sims Way (Safeway Gas Station)	3
Total Lombardy Poplars	**57**

The Lombardy Poplars will be replaced by landscaping using a mixture of native trees and shrubs, in accordance with the landscaping plan.

Ground Disturbance

The proposed improvements to the stormwater treatment and conveyance system will cause temporary disturbance within the project area. However, as discussed in the Environmental Baseline section, habitat within the Port property is limited to the WBYE expansion area, dominated by invasive Himalayan Blackberry (*Rubus Armeniacus*) and Reed Canary Grass (*Phalaris Arundinacea*), interspersed with few native species, and subject to poor quality, untreated stormwater inputs from SR-20/Sims Way

(Widener & Associates, 2024a), and the backshore of Port Townsend Beach which is subject to invasion by noxious weeds (Widener & Associates, 2024b).

Stormwater Treatment

After installation of the new 4-stage biofiltration system and upgrades to the existing conveyance system, copper discharge will be reduced by 48 % and zinc discharge will be reduced by 33%, improving the baseline annual pollutant loading to Port Townsend Bay.

Delayed Consequences

Delayed consequences are indirect effects of the proposed action that occur later in time that are still reasonably certain to occur.

Reduction of Pollutant Loading

Long-term, the Stormwater improvements will reduce the discharge of pollutants to Port Townsend Bay. Based on the 5-year term of the BYGP, the proposed Boat Haven projects will prevent the discharge of 470 kg of copper and 210 kg of zinc per permit term.

Cumulative Effects

Cumulative effects are the effects of future state, local, or private (but not federal) activities (unrelated to the proposed project) that are reasonably certain to occur within the action area of a proposed project.

There is one development project located near the Stormwater, WBYE, and Sims Way project areas, to construct connecting segments for the existing Larry Scott Memorial trail. The Puget Sound to Pacific Partnership awarded a RAISE grant to conduct a feasibility study and create the preliminary design of the two connecting segments that affect the Boatyard. One segment is the connector (J-282) between the Larry Scott Memorial Trail and the Haines Place Park-and-Ride; the other is the segment of Puget Sound to Pacific Partnership Trail (J-284) that runs through the Boat Haven Boatyard. The Port is a co-applicant of the project which is led by the City of Port Angeles. No adverse cumulative impacts are anticipated as the Port considered the potential for adverse cumulative effects to result from its capital projects in advance of resolving to pursue the undertakings. Development of the trail connectors will provide the community with new connections in an active transportation corridor which may result in a beneficial reduction of vehicular emissions and stormwater pollutant contributions.

Cumulative effects from future state, local, or private entities may occur in vicinity of the project area that are not anticipated for this project. However, the project vicinity is largely developed, including a state highway. Adjacent land uses, including the Boatyard, are well established and the adjacent Kah Tai Lagoon nature park is preserved by local land use regulations including the Comprehensive Plan and Zoning Code. All future public and private development will be required to comply with federal, state, and local environmental permitting requirements for protection of land, air, and water resources, including current standards and best management practices for stormwater runoff treatment and flow control.

5.0 Effect Determinations and Conclusion

Based on the analysis provided in this BA, the project biologist advises that the proposed project will have **no effect** on listed and proposed species and their critical habitats. A summary of the effect determinations is provided in Table 8.

Table 8. Summary of Effect Determinations for Species and Critical Habitats.

Species	DPS/ESU	Jurisdiction	Status	Effect Determination
Marbled Murrelet (*Brachyramphus marmoratus*)	--	USFWS	Threatened	NE
Bull Trout (*Salvelinus confluentus*)	U.S.A., coterminous, (lower 48 states)	USFWS	Threatened	NE
Chum Salmon (*Oncorhynchus keta*)	Hood Canal summer-run ESU	NMFS	Threatened	NE
Chum Salmon DCH	Hood Canal summer-run ESU	NMFS	Designated	NE
Chinook Salmon (*Oncorhynchus tshawytscha*)	Puget Sound ESU	NMFS	Threatened	NE
Chinook Salmon DCH	Puget Sound ESU	NMFS	Designated	NE
Steelhead Trout (*Oncorhynchus mykiss*)	Puget Sound DPS	NMFS	Threatened	NE
Bocaccio (*Sebastes paucispinis*)	Puget Sound-Georgia Basin DPS	NMFS	Endangered	NE
Bocaccio DCH	Puget Sound-Georgia Basin DPS	NMFS	Designated	NE
Killer Whale (*Orcinus orca*)	Southern Resident DPS	NMFS	Endangered	NE
Killer Whale DCH	Southern Resident DPS	NMFS	Designated	NE

Effect Determinations for Species

The effect determinations and rationale for species are described in the following sections.

Marbled Murrelet (Brachyramphus marmoratus)

The project will have **no effect** on the Marbled Murrelet for the following reasons:

- No suitable marbled murrelet nesting habitat occurs within 0.25-miles of the project or action areas.
- The noise generating activities of the project are consistent with existing, year-round operations at the Port.
- During the January 29, 2024, and April 11, 2024, inspections of the Lombardy Poplars to be removed, there was no evidence of avian nests or rookeries in any of the trees.

Bull Trout (*Salvelinus confluentus*) U.S.A., coterminous, (lower 48 states)

The project will have **no effect** on the bull trout for the following reasons:

- Any project related vegetation impacts will be mitigated to ensure no net loss of ecological function.
- Stormwater will continue to be discharged from the Boatyard. However, the pollutant load of stormwater discharge will be reduced by the new 4-stage biofiltration system.

Chum Salmon (*Oncorhynchus keta*) Hood Canal summer-run ESU

The project will have **no effect** on Chum salmon for the following reasons:

- Any project related vegetation impacts will be mitigated to ensure no net loss of ecological function.
- Stormwater will continue to be discharged from the Boatyard. However, the pollutant load of stormwater discharge will be reduced by the new 4-stage biofiltration system.

Chinook Salmon (*Onchorhynchus tshawytscha*) Puget Sound ESU

The project will have **no effect** on the Chinook salmon for the following reasons:

- Any project related vegetation impacts will be mitigated to ensure no net loss of ecological function.
- Stormwater will continue to be discharged from the Boatyard. However, the pollutant load of stormwater discharge will be reduced by the new 4-stage biofiltration system.

Steelhead Trout (*Onchorhynchus mykiss*) Puget Sound DPS

The project will have **no effect** on Steelhead trout for the following reasons:

- Any project related vegetation impacts will be mitigated to ensure no net loss of ecological function.
- Stormwater will continue to be discharged from the Boatyard. However, the pollutant load of stormwater discharge will be reduced by the new 4-stage biofiltration system.

Bocaccio (*Sebastes paucispinis*) Puget Sound – Georgia Basin DPS
The project will have **no effect** on bocaccio for the following reasons:

- Any project related vegetation impacts will be mitigated to ensure no net loss of ecological function.
- Stormwater will continue to be discharged from the Boatyard. However, the pollutant load of stormwater discharge will be reduced by the new 4-stage biofiltration system.

Killer Whale (*Orcinus orca*) Southern Resident DPS
The project will have **no effect** on SRKW for the following reasons:

- The project will have no effect on the quantity or quality of SRKW prey (Chinook salmon).
- Stormwater will continue to be discharged from the Boatyard. However, the pollutant load of stormwater discharge will be reduced by the new 4-stage biofiltration system.

Effect Determinations for Critical Habitats

The effect determinations and rationale for critical habitats are described in the following sections.

Salmon (*Oncorhynchus sp.*)
Chum (*Oncorhynchus keta*) Hood Canal summer-run ESU & Chinook (*Onchorhynchus tshawytscha*) Puget Sound ESU

The project will have **no effect** on Chum or Chinook salmon DCH for the following reasons:

- The project will not adversely impact estuarine (PBF 4) or nearshore (PBF 5) marine waters.
- Stormwater will continue to be discharged from the Boatyard. However, the pollutant load of stormwater discharge will be reduced by the new 4-stage biofiltration system.

Bocaccio (*Sebastes paucispinis*) Puget Sound – Georgia Basin DPS
The project will have **no effect** on bocaccio DCH for the following reasons:

- The project will not adversely impact the quantity, quality, and availability of prey species (PBF 1).
- The project will not adversely affect water quality or DO (PBF 2).
- Stormwater will continue to be discharged from the Boatyard. However, the pollutant load of stormwater discharge will be reduced by the new 4-stage biofiltration system.

Killer Whale (*Orcinus orca*) Southern Resident DPS
The project will have **no effect** on SRKW DCH for the following reasons:

- The project will not adversely affect water quality (PBF 1).
- Stormwater will continue to be discharged from the Boatyard. However, the pollutant load of stormwater discharge will be reduced by the new 4-stage biofiltration system.
- The project will have no effect on the quantity or quality of SRKW prey (Chinook salmon) (PBF 2).

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Appendix A – Essential Fish Habitat Assessment

This Essential Fish Habitat (EFH) Assessment evaluates the effects of the Boat Haven Stormwater Improvement (Stormwater), the Western Boatyard Expansion (WBYE), and the Sims Way Gateway and Boatyard Expansion (Sims Way) projects upon the Pacific Coast Groundfish, Coastal Pelagic Species, and Pacific Coast Salmon fisheries (Appendix G). This analysis is based upon the findings of the preceding Biological Assessment (BA), dated May2024.

Action Agency

The Port of Port Townsend

Project Name

Boat Haven Infrastructure and Maintenance Projects: Boat Haven Stormwater Improvements, the Western Boatyard Expansion, and the Sims Way Gateway and Boatyard Expansion projects.

EFH 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 essential fish habitat (EFH). The objective of this EFH assessment is to determine whether or not 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 to designated EFH resulting from the proposed action.

Description of the Proposed Action

The Port of Port Townsend proposes to make proactive improvements to the Boat Haven Marina Boatyard stormwater conveyance and treatment system to treat runoff from the entire Boatyard, including its new capital projects: the Western Boatyard Expansion and the Sims Way Gateway and Boatyard Expansion. Please refer to the Project Description in the BA document for additional details.

Potential Adverse Effects of the Proposed Action

- Temporarily elevated levels of airborne noise.
- Temporary and permanent vegetation removal.
- Potential temporary impacts to water quality related to turbidity and sedimentation during construction.

Long-term Reduction of Stormwater Pollutant Loading

After installation of the new 4-stage biofiltration system and upgrades to the existing conveyance system, copper discharge will be reduced by 48 % and zinc discharge will be reduced by 33% annually, improving the baseline annual pollutant loading to Port Townsend Bay. Based on the 5-year term of the BYGP, the proposed Boat Haven projects will prevent the discharge of 470 kg of copper and 210 kg of zinc per permit term.

EFH Conservation Measures

- Compliance with State water quality standards through a Storm Water Pollution Prevention Plan (SWPPP), which includes a Temporary Erosion and Sediment Control (TESC) plan, spill control, runoff detention, and treatment.
- Monitoring water quality discharge following National Pollution Discharge Elimination System requirements from all discharge points.
- Clearly delineating vegetative clearing limits with high visibility flags and/or fencing.
- Permanent vegetation impacts will be mitigated on-site in a higher-value coastal marine location to assure no-net-loss of ecological function results from the project.
- To the maximum extent practicable, locating staging areas in upland areas with appropriate temporary erosion, turbidity, and sediment controls.

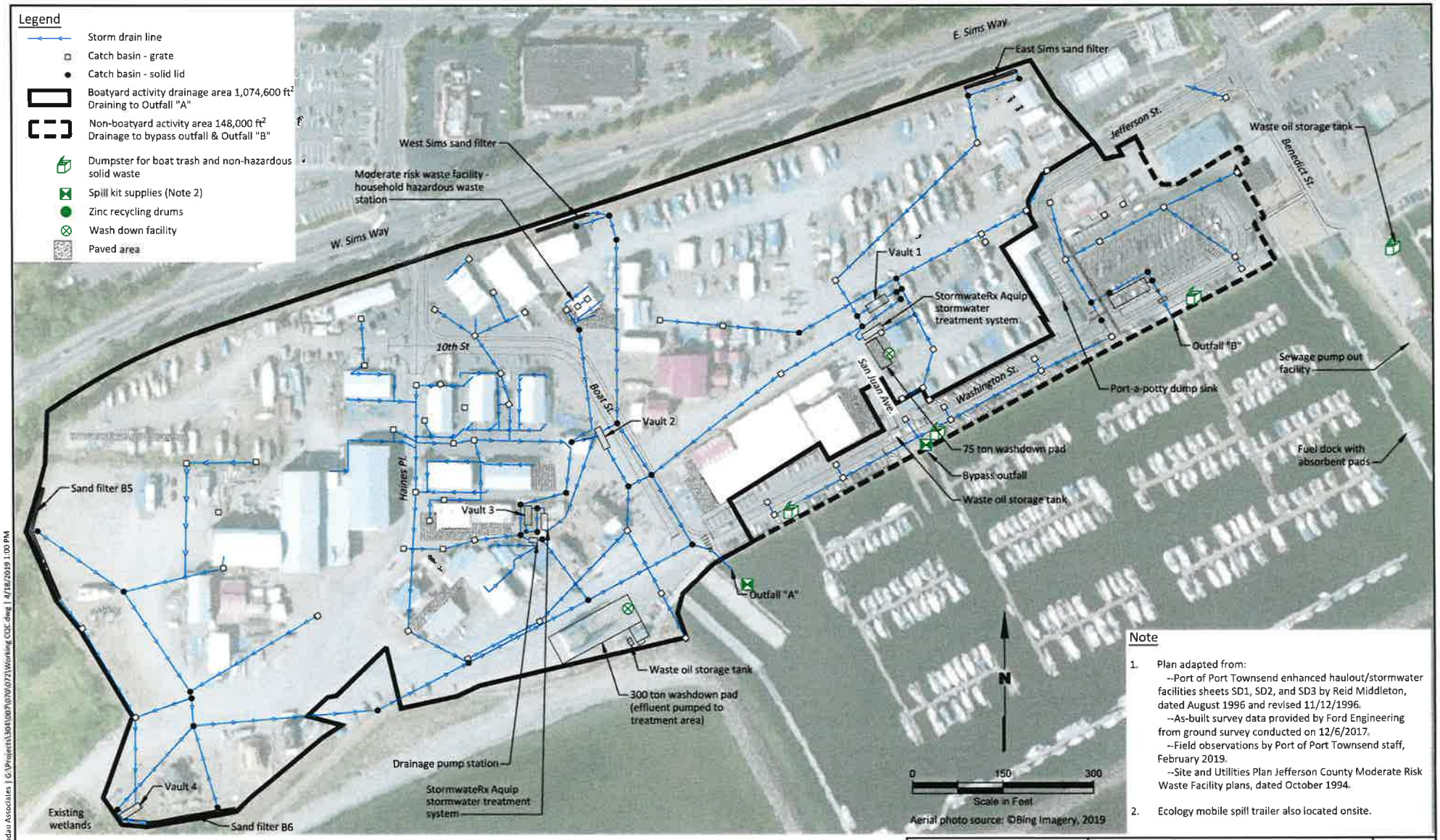
Conclusion and Effect Determinations

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) includes a mandate that the National Marine Fisheries Service (NMFS) must identify Essential Fish Habitat (EFH) for federally managed marine fish, and federal agencies must consult with NMFS on all activities, or proposed activities, authorized, funded, or undertaken by the agency that may adversely affect EFH.

The project as proposed **will not adversely affect** the Pacific Coast Groundfish, Coastal Pelagic Species, and Pacific Coast Salmon fisheries because:

- The Boatyard will continue to discharge stormwater; however, long-term, the project will reduce stormwater pollutant loading to Port Townsend Bay in Puget Sound.
- Potential temporary impacts related to water quality during construction will be avoided and minimized through BMPs as specified in the TESC, SPCC, and SWPPP plans prepared for the project.

Appendix B – Existing Stormwater System



Note

1. Plan adapted from:
   --Port of Port Townsend enhanced haulout/stormwater facilities sheets SD1, SD2, and SD3 by Reid Middleton, dated August 1996 and revised 11/12/1996.
   --As-built survey data provided by Ford Engineering from ground survey conducted on 12/6/2017.
   --Field observations by Port of Port Townsend staff, February 2019.
   --Site and Utilities Plan Jefferson County Moderate Risk Waste Facility plans, dated October 1994.
2. Ecology mobile spill trailer also located onsite.

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LANDAU ASSOCIATES

Port Townsend Boatyard Port Townsend, Washington	**SWPPP Site Map**	Figure 2

Appendix C – Proposed Stormwater System

PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON

BOAT HAVEN BOATYARD
STORMWATER IMPROVEMENT PROJECT

LOCATION MAP
SCALE: NTS

VICINITY MAP
SCALE: NTS

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Kennedy Jenks

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PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON
BOAT HAVEN BOATYARD
STORMWATER IMPROVEMENT PROJECT
Kennedy Jenks

COVER, LOCATION & VICINITY MAPS, AND DRAWING INDEX

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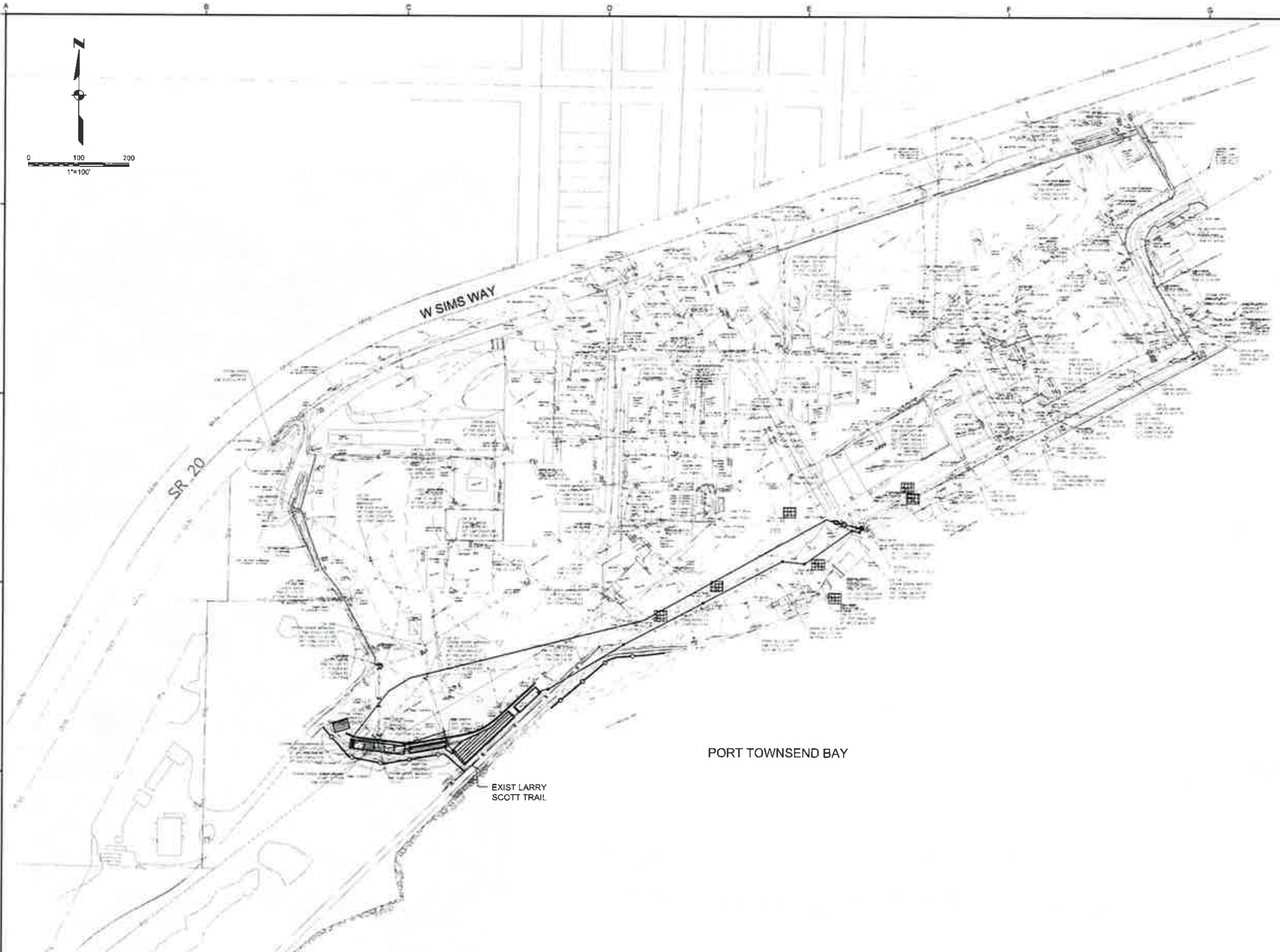

EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL CONDUCT ALL EROSION AND SEDIMENT CONTROL PRACTICES IN ACCORDANCE WITH THE SPECIFICATIONS AND CONSTRUCTION SWPPP.
2. THE IMPLEMENTATION OF TESC PLANS AND THE CONSTRUCTION MAINTENANCE, REPLACEMENT, UPGRADING, AND REMOVAL OF TESC FACILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETE AND APPROVED.
3. CONTRACTOR SHALL PERFORM ALL TESC MEASURES AS NECESSARY TO ENSURE NO AGGREGATE, PAVEMENT, SOIL, OR OTHER MATERIALS ARE TRACKED OUT OF THE WORK AREA. TESC FACILITIES SHALL BE UPGRADED AS NECESSARY TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DOES NOT LEAVE THE WORK LIMITS.
4. CONTRACTOR SHALL INSTALL STORMWATER INLET PROTECTION FOR ALL INLETS WITHIN THE WORK LIMITS AND WITHIN 100 FEET OF THE WORK LIMITS AND ALL HAUL ROUTES. SEE DETAIL 1 ON SHEET C-102. INLET PROTECTION SHALL BE MAINTAINED UNTIL THE INLET IS DEMOLISHED (IF CALLED FOR) OR UNTIL ALL CONSTRUCTION IS COMPLETE AND APPROVED, AS APPLICABLE.
5. AT NO TIME SHALL MORE THAN 1 FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN THE STORMWATER INLET PROTECTION.
6. ALL PROPOSED TESC FACILITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
7. ALL TESC FACILITIES SHALL BE CONSTRUCTED PRIOR TO CONSTRUCTION ACTIVITIES AND IN SUCH A MANNER AS TO ENSURE THAT CONSTRUCTION STORMWATER DOES NOT ENTER THE DRAINAGE SYSTEM OR ADJACENT WATER BODY, OR VIOLATE APPLICABLE WATER QUALITY STANDARDS.
8. STABILIZATION SHALL BE PROVIDED FOR STOCKPILE(S) AND UPGRADED AS NECESSARY TO MINIMIZE SEDIMENT LOSSES, AS SHOWN IN DETAIL 2 OF SHEET C-102.
9. STOCKPILE, CONTRACTOR LAYDOWN, AND MATERIAL STAGING LOCATIONS SHALL BE IDENTIFIED IN THE FIELD WITH THE CONTRACTING AGENCY PRIOR TO CONSTRUCTION. STOCKPILES(S) SHALL BE SURROUNDED BY ECOLOGY BLOCKS, BARRICADES, HIGH VISIBILITY FENCING AND/OR OTHER MEASURES TO PROVIDE FOR PUBLIC, PORT, AND CONTRACTOR SAFETY.
10. TRACK OUT FROM THE STOCKPILE SHALL BE MINIMIZED, AND PRIOR TO FINAL CLOSEOUT, STOCKPILE AREA SHALL BE CLEARED OF ACCUMULATED OR STRAY SEDIMENT.
11. TRACK OUT ONTO PUBLIC ROADS SHALL BE PREVENTED. IN THE EVENT IT OCCURS, A SWEEPER TRUCK OR OTHER TESC MEASURES SHALL BE USED TO COLLECT AND REMOVE ANY TRACKED OUT SEDIMENT FROM PUBLIC ROADS BY THE END OF THE WORK DAY.
12. ORANGE HIGH VISIBILITY POLYETHYLENE/POLYPROPYLENE CONSTRUCTION FENCING SHALL BE SECURED TO EXIST LARRY SCOTT TRAIL FENCE.

LEGEND

- CATCH BASIN FILTER (1 / C-102)
- CONCRETE WASHOUT (3 / C-102)
- SILT FENCE (4 / C-102)
- HIGH VISIBILITY CONSTRUCTION FENCE SEE NOTE 12

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SAMANTHA NICOLE MALLIK KARPA — STATE OF WASHINGTON — PROFESSIONAL ENGINEER

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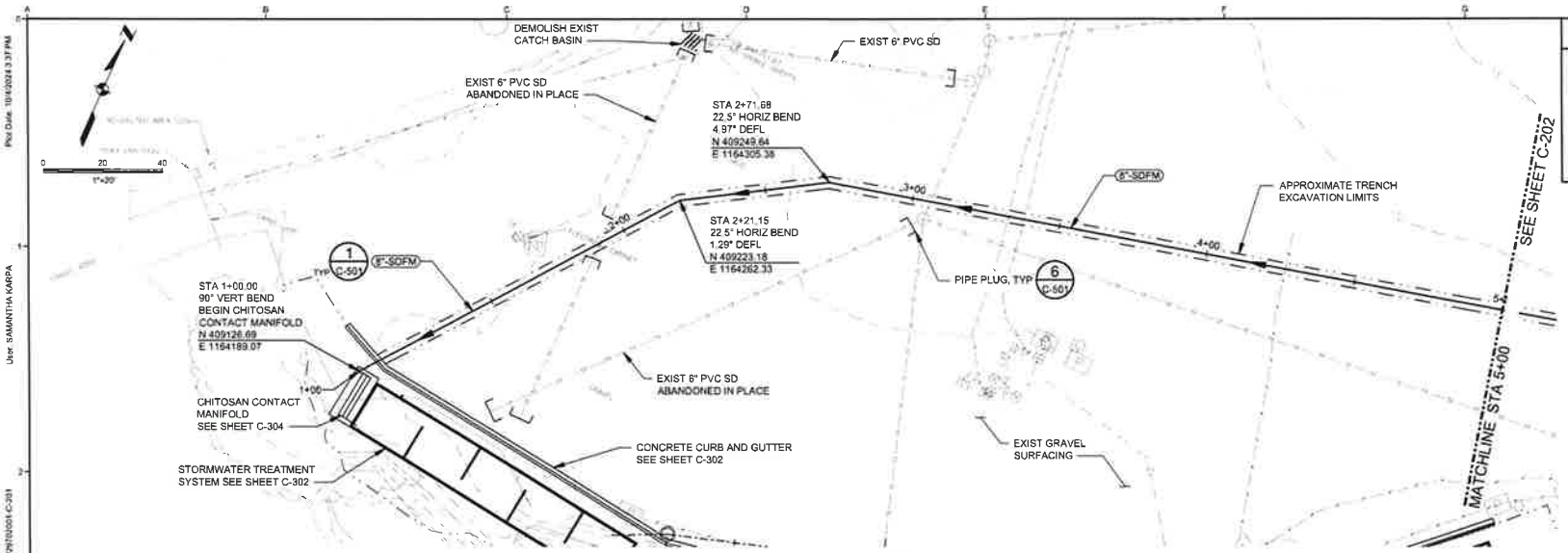
PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON
BOAT HAVEN BOATYARD
STORMWATER IMPROVEMENT PROJECT

Kennedy Jenks

EROSION AND SEDIMENT CONTROL PLAN AND NOTES

SCALE 1" = 100'
JOB NO 2297020.01
DATE OCTOBER 2024
SHEET 11 OF 48
C-101



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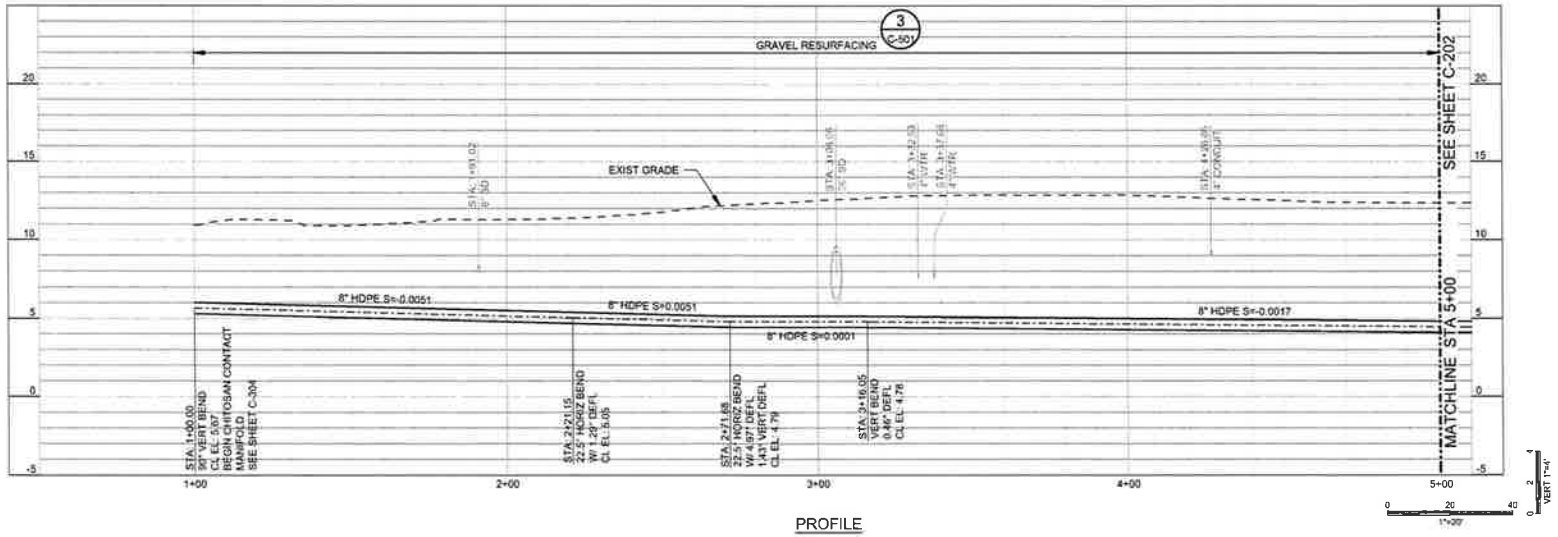

PROFILE

KEY PLAN
SCALE: NTS

GENERAL SHEET NOTES

1. UTILITY LOCATIONS SHOWN IN DRAWINGS ARE APPROXIMATE AND MAY NOT INCLUDE ALL UTILITIES OR FULL EXTENT OF UTILITY LINES.
2. FOR UTILITIES ENCOUNTERED WITH 12" OR LESS CLEARANCE WITH PROPOSED STORM DRAIN FORCE MAIN, SEE 5 C-501

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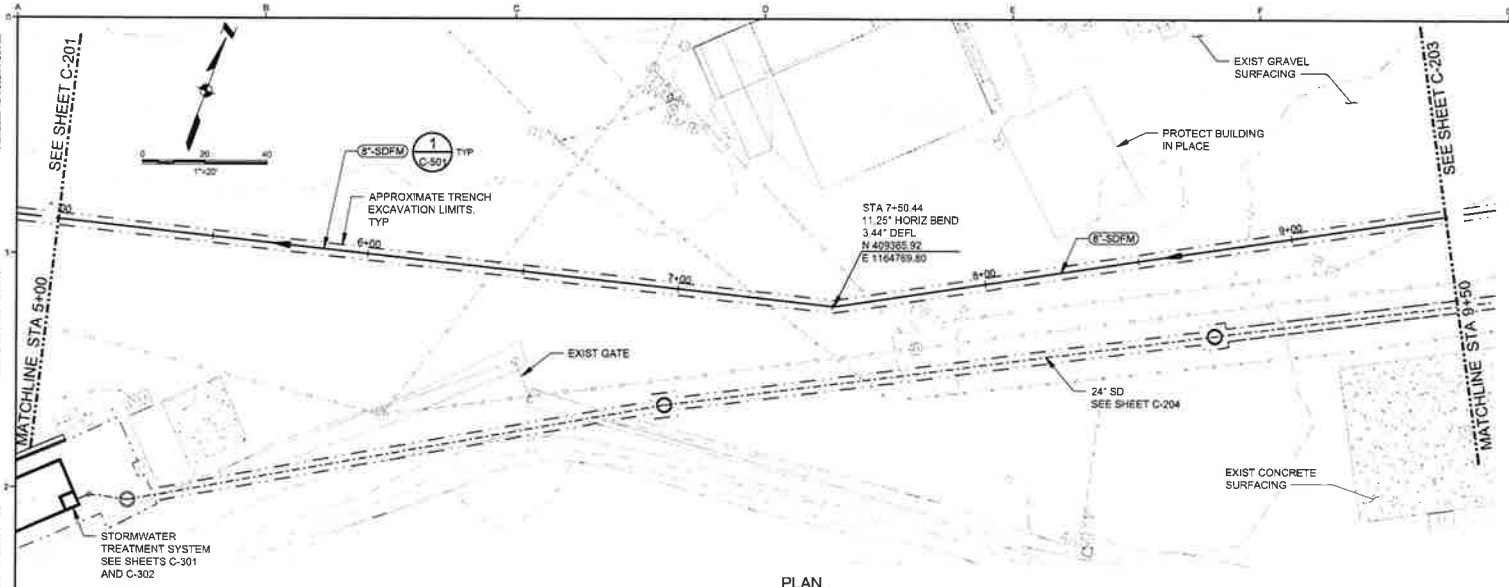
PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON
BOAT HAVEN BOATYARD
STORMWATER IMPROVEMENT PROJECT
Kennedy Jenks

STORMWATER CONVEYANCE
PLAN AND PROFILE 8" SDFM
STA 1+00 TO STA 5+00

SCALE	1" = 20'
JOB NO	229T020.01
DATE	OCTOBER 2024
SHEET	13 OF 48

C-201



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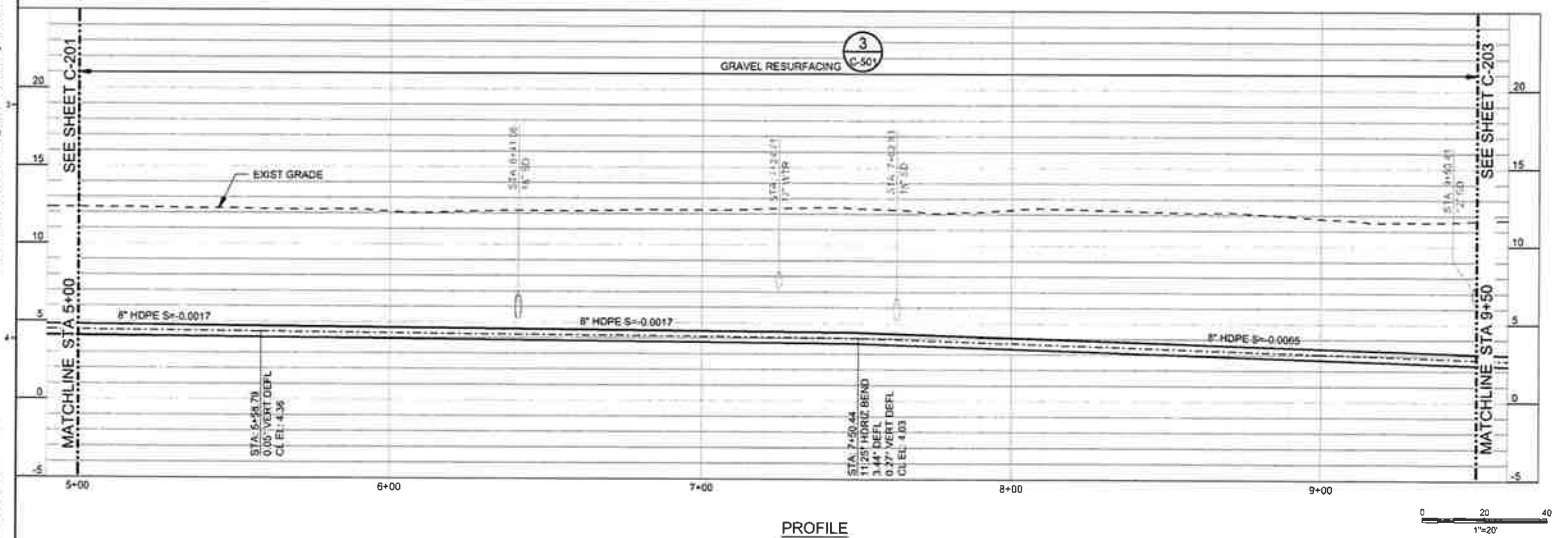

PROFILE

KEY PLAN
SCALE: NTS

GENERAL SHEET NOTES

1. UTILITY LOCATIONS SHOWN IN DRAWINGS ARE APPROXIMATE AND MAY NOT INCLUDE ALL UTILITIES OR FULL EXTENT OF UTILITY LINES.
2. FOR UTILITIES ENCOUNTERED WITH 12" OR LESS CLEARANCE WITH PROPOSED STORM DRAIN FORCE MAIN, SEE 5 / C-501

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SCALES
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0 25mm
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SAMANTHA NICOLE MATSON
OREGON
EXPIRES: 12/31/2025

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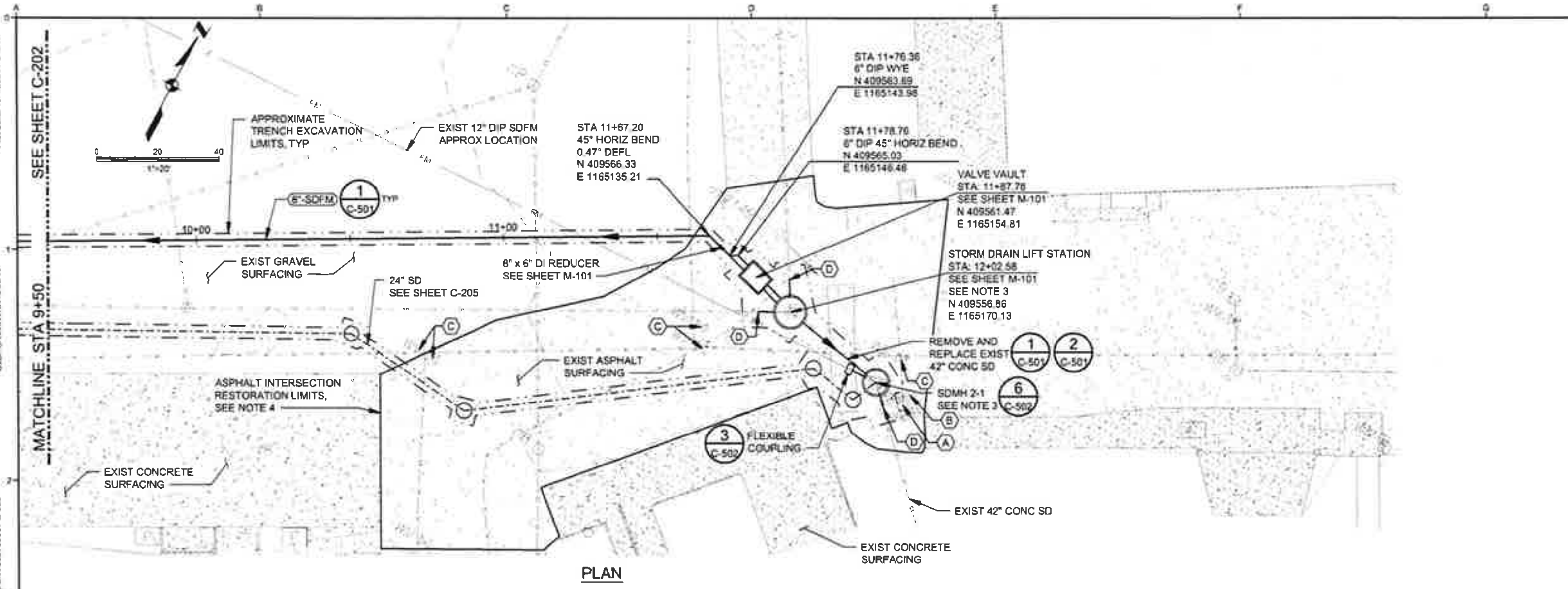
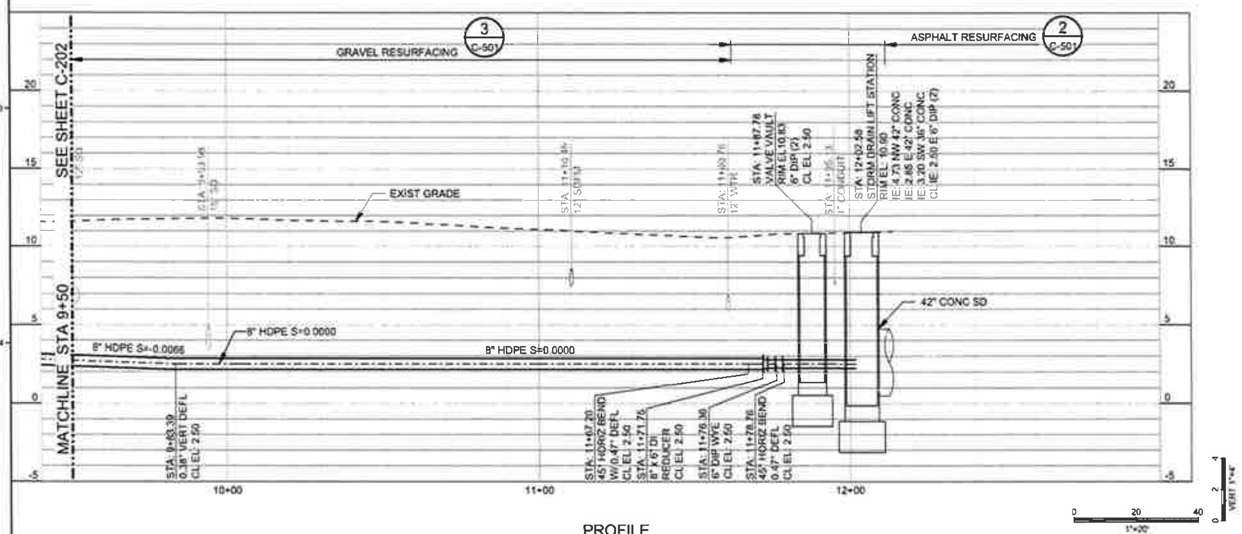
PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON
BOAT HAVEN BOATYARD
STORMWATER IMPROVEMENT PROJECT
KJ Kennedy Jenks

STORMWATER CONVEYANCE
PLAN AND PROFILE 8" SDFM
STA 5+00 TO STA 9+50

SCALE 1" = 20'
JOB NO 229T020.01
DATE OCTOBER 2024
SHEET 14 OF 45
C-202



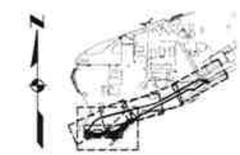


GENERAL SHEET NOTES

1. UTILITY LOCATIONS SHOWN IN DRAWINGS ARE APPROXIMATE AND MAY NOT INCLUDE ALL UTILITIES OR FULL EXTENT OF UTILITY LINES.
2. FOR UTILITIES ENCOUNTERED WITH 12" OR LESS CLEARANCE WITH PROPOSED FORCE MAIN, SEE 5/C-501.
3. REMOVE AND REPLACE EXIST SDMH.
4. EXIST ASPHALT SURFACING WITHIN INTERSECTION SHALL BE 2" MILL AND OVERLAY USING PG 70-22. EXACT RESTORATION LIMITS TO BE DETERMINED IN THE FIELD WITH THE CONTRACTING AGENCY.

SHEET KEYNOTES

A. PROTECT FIRE HYDRANT IN PLACE.
B. REMOVE AND REPLACE EXISTING BOLLARDS (6 TOTAL).
C. PROTECT WATER VALVE IN PLACE.
D. CONNECT TO EXIST RCP WITHIN 3 FEET OF MANHOLE. SAWCUT AND PROVIDE NEW JOINT.



KEY PLAN
SCALE: NTS

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SCALES
1"
25mm
IF THIS BAR IS NOT DIMENSION SHOWN ADJUST SCALES ACCORDINGLY

Preliminary
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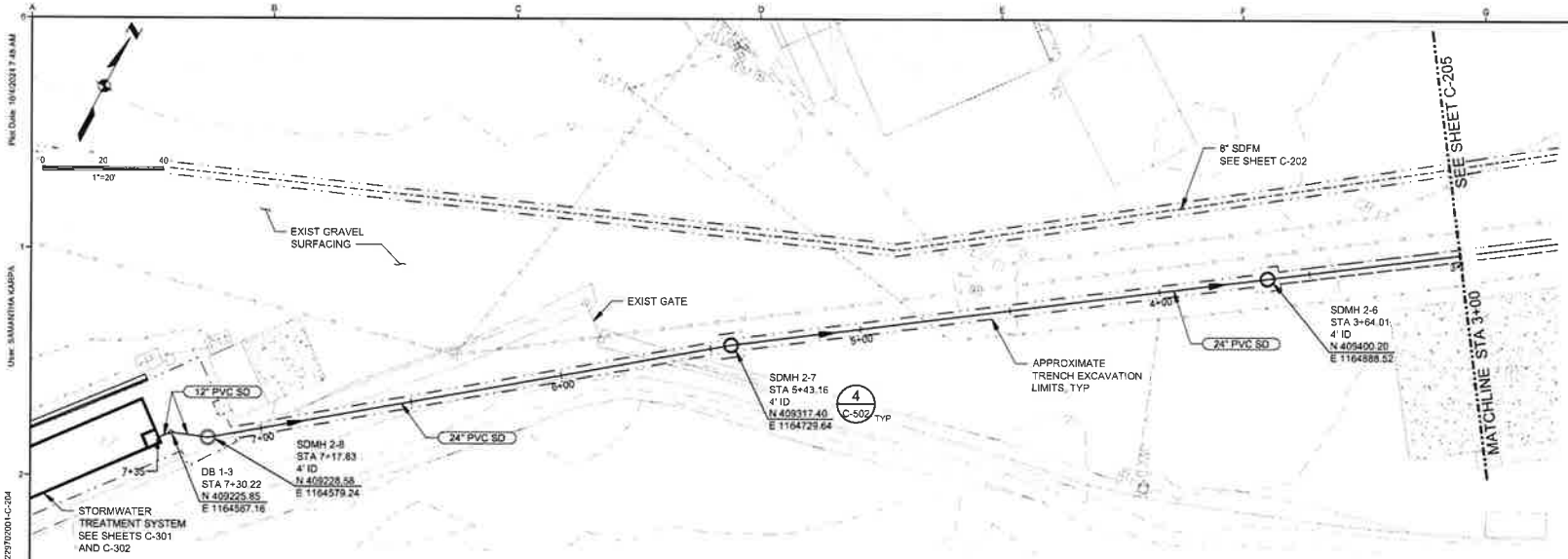
DESIGNED SNK
DRAWN CEC
CHECKED

PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON
BOAT HAVEN BOATYARD
STORMWATER IMPROVEMENT PROJECT

Kennedy Jenks

STORMWATER CONVEYANCE
PLAN AND PROFILE 8" SDFM
STA 9+50 TO END

SCALE 1" = 20'
JOB NO 2297020.01
DATE OCTOBER 2024
SHEET 15 OF 45
C-203



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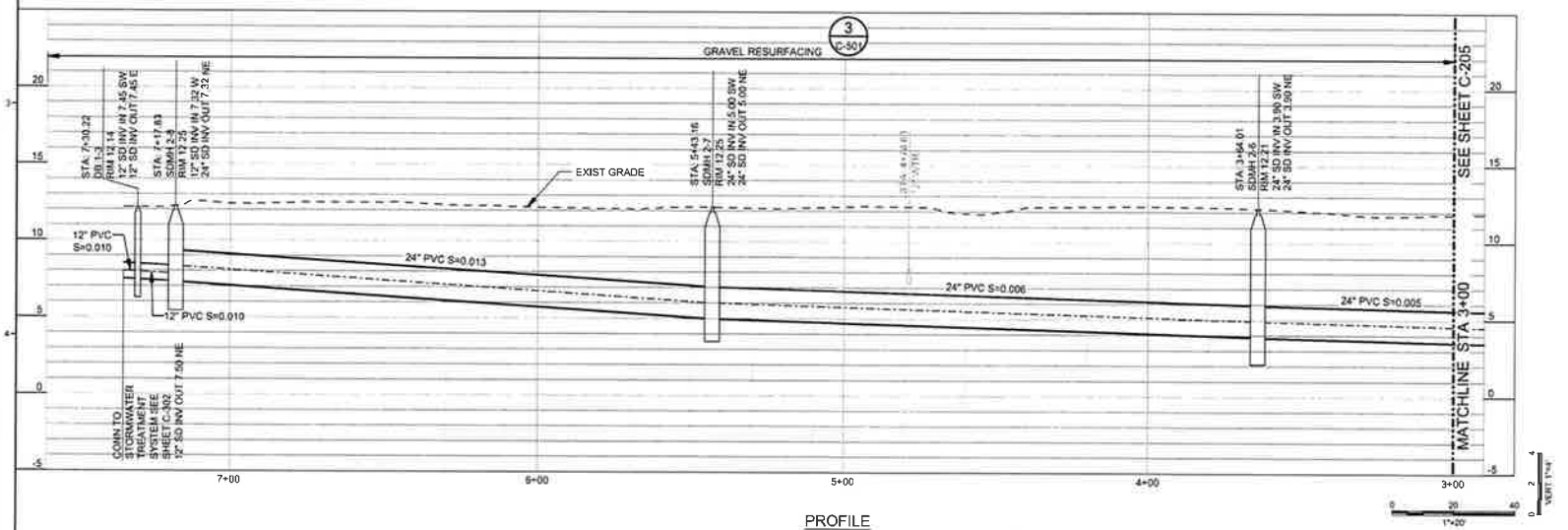

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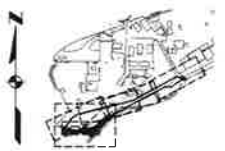

KEY PLAN
SCALE: NTS

GENERAL SHEET NOTES

1. UTILITY LOCATIONS SHOWN IN DRAWINGS ARE APPROXIMATE AND MAY NOT INCLUDE ALL UTILITIES OR FULL EXTENT OF UTILITY LINES.
2. FOR UTILITIES ENCOUNTERED WITH 12" OR LESS CLEARANCE WITH PROPOSED STORM DRAIN GRAVITY MAIN, SEE 5/C-501

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NO	REVISION	DATE	BY

SCALES
0 1"
0 25mm
IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

SAMANTHA NICOLE KARPA
PROFESSIONAL ENGINEER

Preliminary
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DESIGNED: SNK
DRAWN: CEC
CHECKED:

PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON
BOAT HAVEN BOATYARD
STORMWATER IMPROVEMENT PROJECT
Kennedy Jenks

STORMWATER CONVEYANCE
PLAN AND PROFILE 24" SD
STA 3+00 TO STA 7+50

SCALE: 1" = 20'
JOB NO: 2297020.01
DATE: OCTOBER 2024
SHEET 16 OF 48
C-204

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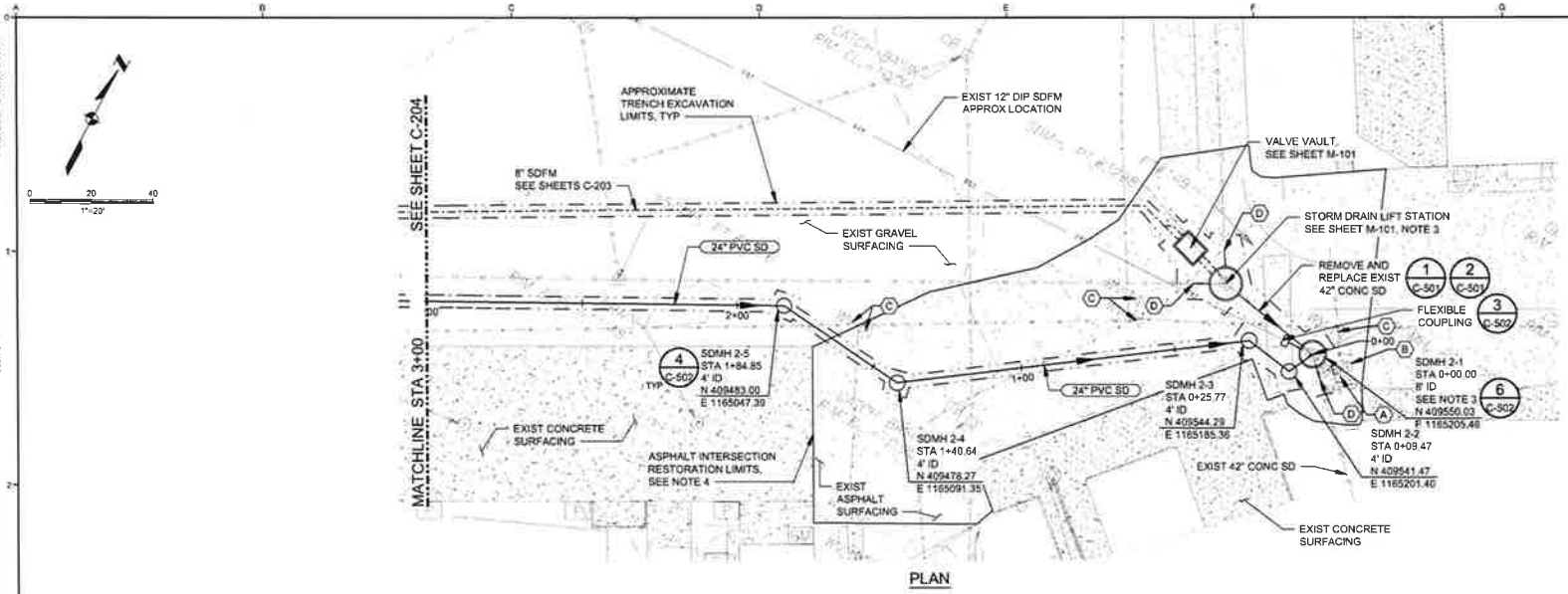

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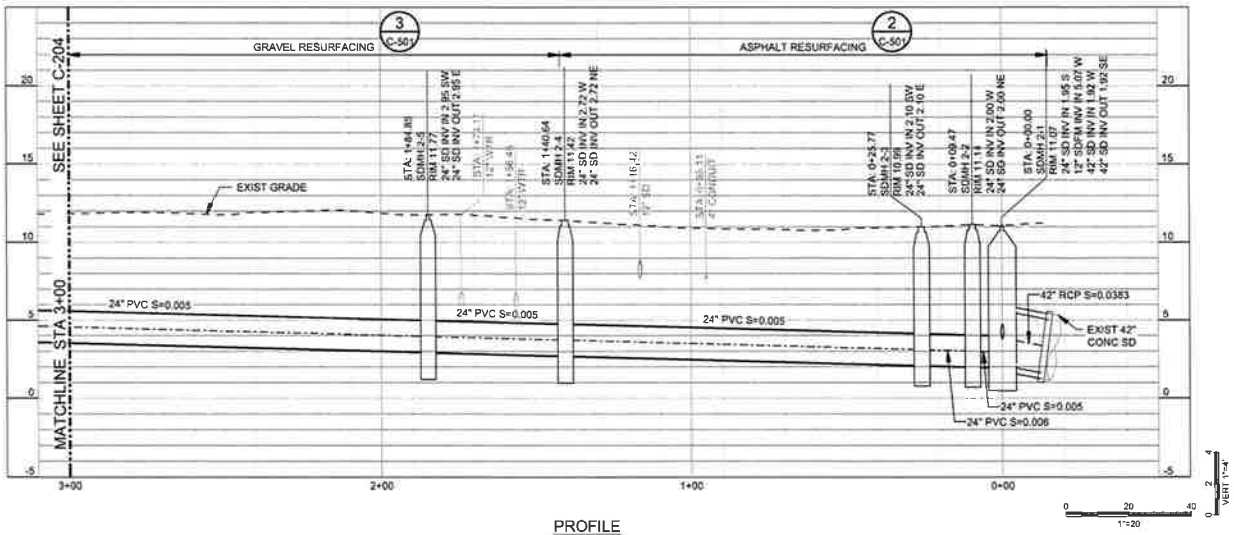

PROFILE

KEY PLAN
SCALE: NTS

GENERAL SHEET NOTES

1. UTILITY LOCATIONS SHOWN IN DRAWINGS ARE APPROXIMATE AND MAY NOT INCLUDE ALL UTILITIES OR FULL EXTENT OF UTILITY LINES.
2. FOR UTILITIES ENCOUNTERED WITH 12" OR LESS CLEARANCE WITH PROPOSED STORM DRAIN GRAVITY MAIN, SEE 5/C-501
3. REMOVE AND REPLACE EXISTING SDMH.
4. EXIST ASPHALT SURFACING WITHIN INTERSECTION SHALL BE 2" MILL AND OVERLAY USING PG 70-22. EXACT RESTORATION LIMITS TO BE DETERMINED IN THE FIELD WITH THE CONTRACTING AGENCY.

SHEET KEYNOTES

A. PROTECT FIRE HYDRANT IN PLACE
B. REMOVE AND REPLACE EXISTING BOLLARDS (6 TOTAL)
C. PROTECT WATER VALVE IN PLACE.
D. CONNECT TO EXIST RCP WITHIN 3 FEET OF MANHOLE. SAWCUT AND PROVIDE NEW JOINT.

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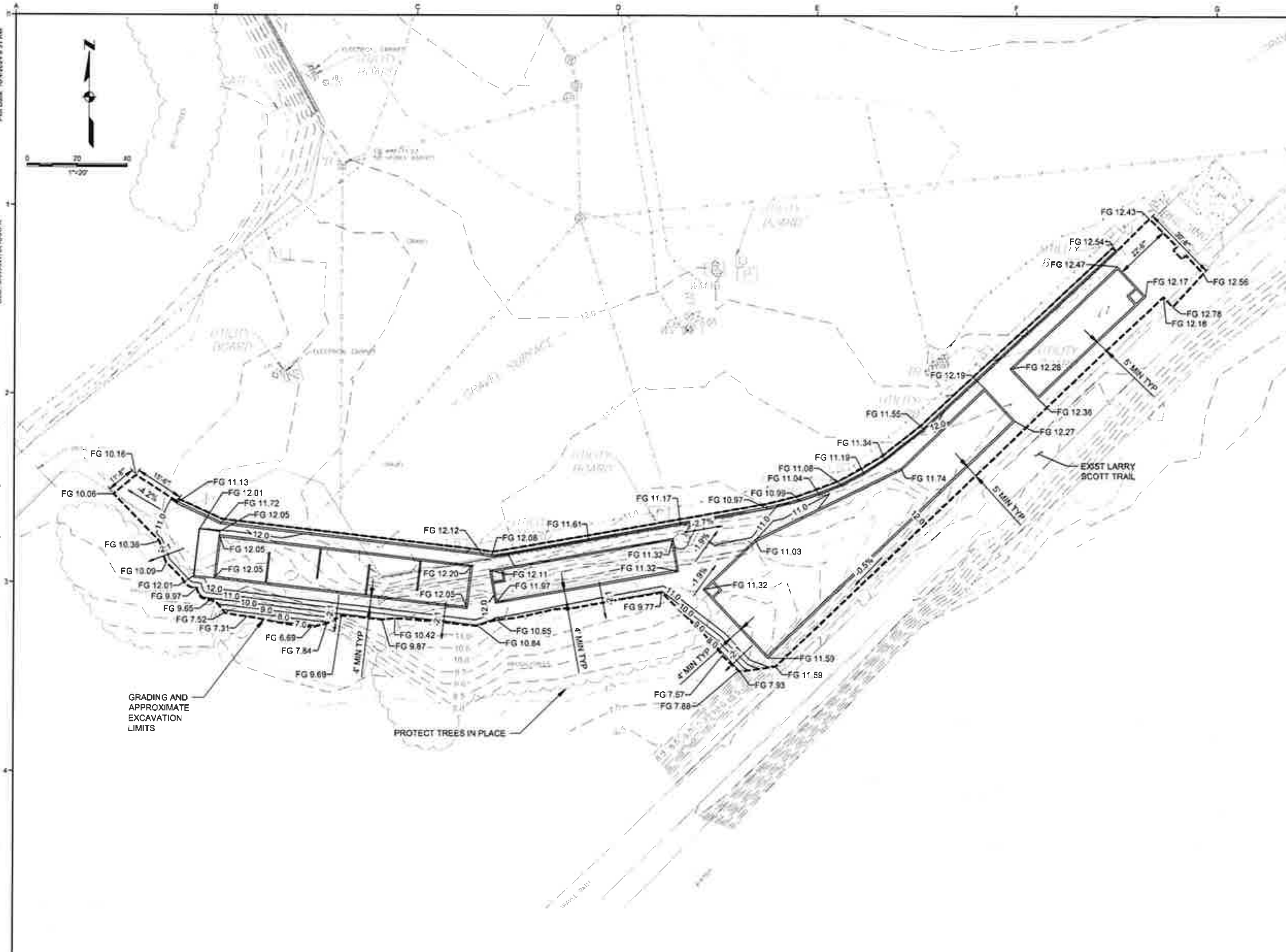
PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON
BOAT HAVEN BOATYARD
STORMWATER IMPROVEMENT PROJECT
Kennedy Jenks

STORMWATER CONVEYANCE
PLAN AND PROFILE 24" SD
STA 3+00 TO STA 0+00

SCALE	1" = 20'
JOB NO.	2297020.01
DATE	OCTOBER 2024
SHEET	17 OF 45

C-205



GENERAL SHEET NOTES

1. EXISTING GRADE SHALL BE MATCHED AT THE GRADING LIMITS SHOWN.
2. GRADES SHOWN ARE TO TOP OF THE FINISHED SURFACE.

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SCALES
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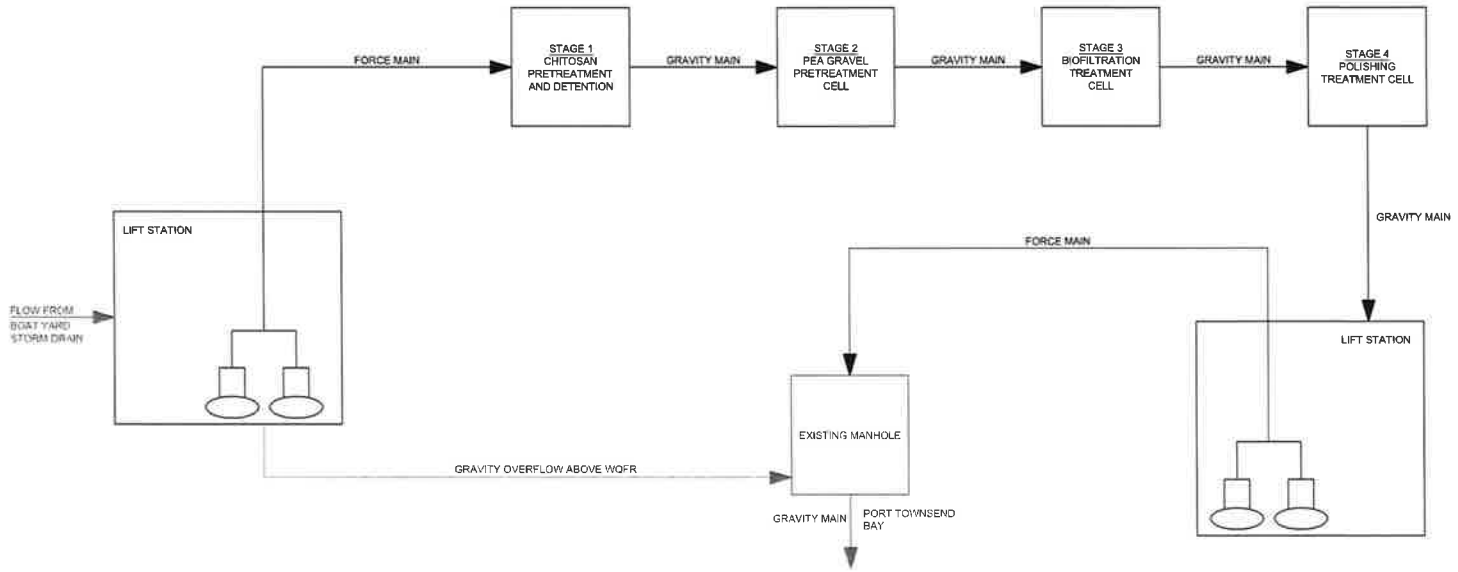
PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON
BOAT HAVEN BOATYARD
STORMWATER IMPROVEMENT PROJECT

Kennedy Jenks

GRADING PLAN

SCALE 1" = 20'
JOB NO 2297020.01
DATE OCTOBER 2024
SHEET 18 OF 48
C-301



NOTES:

1. DISCHARGES FROM THE PORT OF PORT TOWNSEND BOAT HAVEN MARINA ARE COVERED UNDER THE WASHINGTON STATE DEPARTMENT OF ECOLOGY NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM BOATYARD GENERAL PERMIT NUMBER WAG 031006.
2. STAGE 4 POLISHING TREATMENT CELL MAY BE OMITTED FROM THE INITIAL PHASE OF CONSTRUCTION BASED ON THE FINDINGS FROM ON-GOING TREATMENT PILOT STUDIES.
3. DISCHARGE TO OUTFALL A IS CURRENTLY SHOWN. ALTERNATIVE DISCHARGE LOCATIONS WILL BE EVALUATED UNDER A FUTURE PHASE OF DESIGN.

LEGEND:

EXISTING FEATURES

PROPOSED FEATURES

CONCEPTUAL DESIGN

PRELIMINARY DESIGN PHASE

NOT FOR CONSTRUCTION

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NO	REVISION	DATE	BY

SCALES

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PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON

BOAT HAVEN MARINA
STORMWATER IMPROVEMENTS

Kennedy Jenks

FLOW DIAGRAM

SCALE

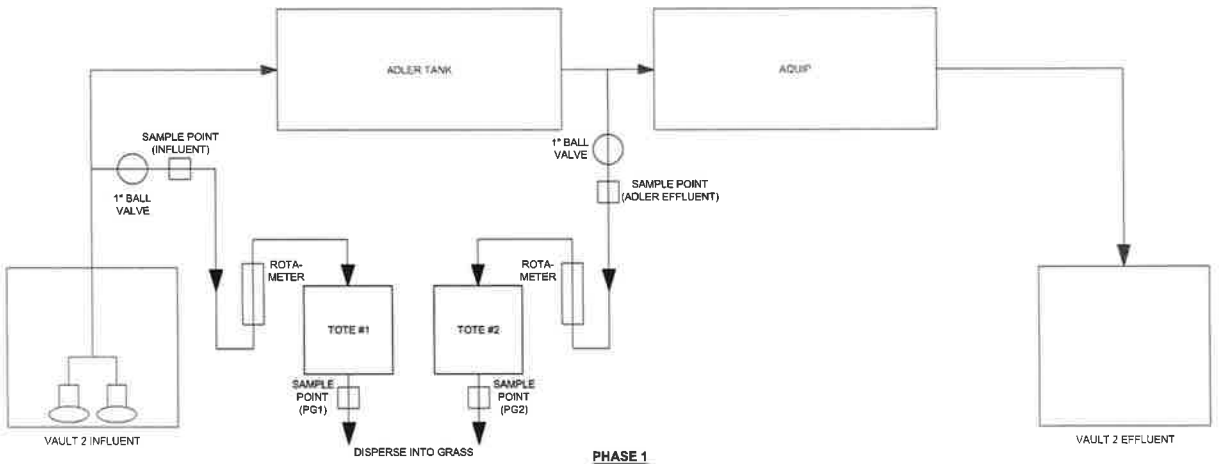
JOB NO. 2297020.00

DATE NOVEMBER 2023

SHEET OF —

FIGURE 2

Appendix D – Pilot Study



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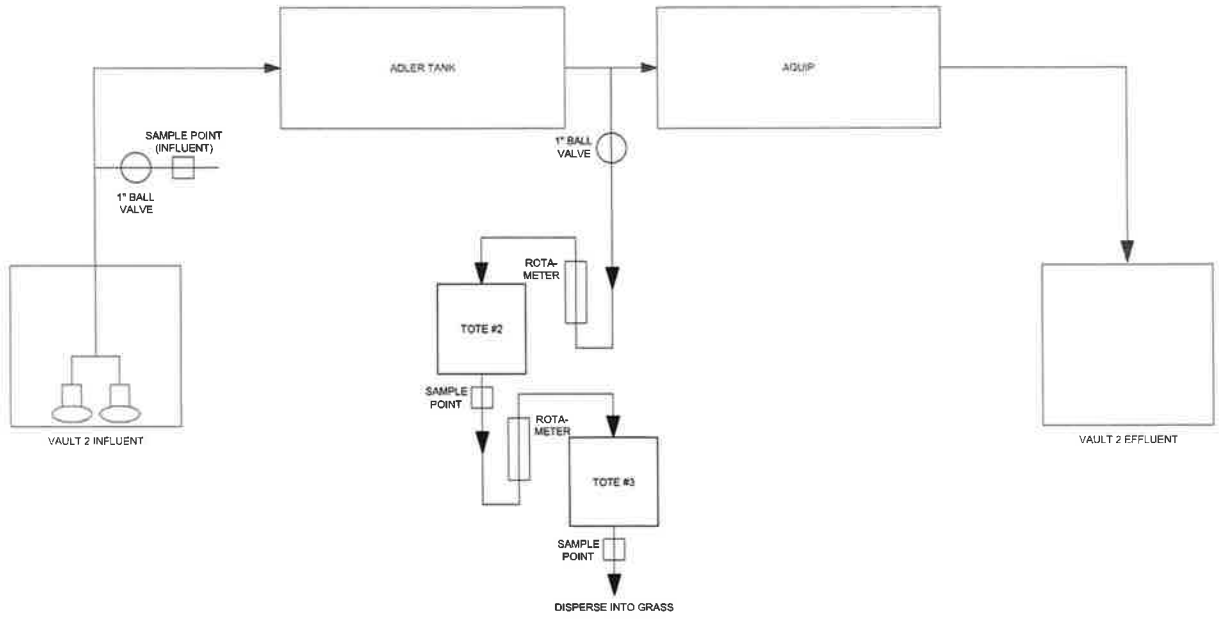

PHASE 2

CONCEPTUAL DESIGN

PRELIMINARY DESIGN PHASE
NOT FOR CONSTRUCTION

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NO	REVISION	DATE	BY

SCALES
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0 25mm
IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY

DESIGNED SNK
DRAWN SNK
CHECKED SNK

PORT OF PORT TOWNSEND
PORT TOWNSEND, WASHINGTON
BOAT HAVEN MARINA
STORMWATER IMPROVEMENTS

Kennedy Jenks

PILOT APPARATUS

SCALE
JOB NO 229702000
DATE NOVEMBER 2023
SHEET OF –

FIGURE 3

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User: SAMANTHA KARPA
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Appendix E – Stormwater BMP Maintenance Routine

Table 5-12 Maintenance standards for closed treatment systems (tanks/vaults).

Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
Storage area	Plugged air vents	One-half of the cross section of a vent is blocked at any point or the vent is damaged.	Vents are open and functioning.
	Debris and sediment	Accumulated sediment depth exceeds 10% of the diameter of the storage area for ½ length of storage vault or any point depth exceeds 15% of diameter. (Example: 72-inch storage tank requires cleaning when sediment reaches depth of 7 inches for more than ½ the length of the tank.)	All sediment and debris are removed from storage area.
	Joints between tank/pipe section	Openings or voids allow material to be transported into facility. (Will require engineering analysis to determine structural stability.)	All joints between tank/pipe sections are sealed.
	Tank/pipe bent out of shape	Any part of tank/pipe is bent out of shape for more than 10% of its design shape. (Review required by engineer to determine structural stability.)	Tank/pipe is repaired or replaced to design specifications.
	Vault structure: includes cracks in walls or bottom, damage to frame or top slab	Cracks are wider than ½ inch and there is evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the vault is not structurally sound.	Vault is replaced or repaired to design specifications and is structurally sound.
		Cracks are wider than ½ inch at the joint of any inlet/outlet pipe, or there is evidence of soil particles entering the vault through the walls.	No cracks are more than ¼-inch wide at the joint of the inlet/outlet pipe.
Manhole	Cover not in place	Cover is missing or only partially in place. Any open manhole requires maintenance.	Manhole is closed.
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than ½ inch of thread (may not apply to self-locking lids).	Mechanism opens with proper tools.
	Cover difficult to remove	One maintenance person cannot remove lid after applying normal lifting pressure. *Intent: To prevent cover from sealing off access to maintenance.*	Cover can be removed and reinstalled by one maintenance person.
	Ladder unsafe	Ladder is unsafe due to missing rungs, misalignment, unsecure attachment to structure wall, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.
Catch basins	See Table 5-15 (catch basins).	See Table 5-15 (catch basins).	See Table 5-15 (catch basins).

Table 5-14 Maintenance standards for catch basins.

Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
General	Trash and debris	Trash or debris is immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%.	No trash or debris is immediately in front of catch basin or on grate opening.
		Trash or debris (in the basin) exceeds 60% of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case is clearance less than 6 inches from the debris surface to the invert of the lowest pipe.	No trash or debris is in the catch basin.
		Trash or debris in any inlet or outlet pipe blocks more than ⅓ of its height.	Inlet and outlet pipes are free of trash or debris.
		Dead animals or vegetation could generate odors that might cause complaints or dangerous gases (such as methane).	No vegetation or dead animals are present within the catch basin.
	Sediment	Sediment (in the basin) exceeds 60% of the sump depth as measured from the bottom of the basin to invert of the lowest pipe into or out of the basin, but in no case is clearance less than 6 inches from the sediment surface to the invert of the lowest pipe.	No sediment is in the catch basin.
	Structure damage to frame and/or top slab	Top slab has holes larger than 2 square inches or cracks wider than ¼ inch. *Intent: To make sure no material is running into basin.*	Top slab is free of holes and cracks.
		Frame is not sitting flush on top slab (separation of more than ¾ inch of the frame from the top slab). Frame is not securely attached.	Frame is sitting flush on the riser rings or top slab and is firmly attached.
	Fractures or cracks in basin walls/bottom	Maintenance person judges that structure is unsound.	Basin is replaced or repaired to design standards.
		Grout fillet has separated or cracked wider than ½ inch and longer than 1 foot at the joint of any inlet/outlet pipe, or there is evidence that soil particles have entered catch basin through cracks.	Pipe is regrouted and secure at the basin wall.
	Settlement/ misalignment	Failure of basin has created a safety, function, or design problem.	Basin is replaced or repaired to design standards.
	Vegetation	Vegetation is growing across and blocking more than 10% of the basin opening.	No vegetation blocks the opening to the basin.
		Vegetation growing in inlet/outlet pipe joints is more than 6 inches tall and less than 6 inches apart.	No vegetation or root growth is present.
	Contamination and pollution	Oil, gasoline, contaminants, or other pollutants are evident. (Coordinate removal/cleanup with local water quality response agency.)	No pollution is present.
Catch basin cover	Cover not in place	Cover is missing or only partially in place. Any open catch basin requires maintenance.	Catch basin cover is closed.
	Locking mechanism not working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than ½ inch of thread.	Mechanism opens with proper tools.
Catch basin cover (continued)	Cover difficult to remove	One maintenance person cannot remove lid after applying normal lifting pressure. *Intent: To prevent cover from sealing off access to maintenance.*	Cover can be removed by one maintenance person.

Table 5-14 Maintenance standards for catch basins (continued).

Maintenance Component	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Ladder	Ladder unsafe	Ladder is unsafe due to missing rungs, insecure attachment to basin wall, misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance staff safe access.
Metal grates (if applicable)	Grate opening unsafe	Grate opening is wider than 7/8 inch.	Grate opening meets design standards.
	Trash and debris	Trash and debris block more than 20% of grate surface inletting capacity.	Grate is free of trash and debris.
	Damaged or missing	Grate is missing or components of the grate are broken.	Grate is in place and meets design standards.

Table 5-15 Maintenance standards for debris barriers (such as trash racks).

Maintenance Components	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance Is Performed
General	Trash and debris	Trash or debris plugs more than 20% of the openings in the barrier.	Barrier is cleared to design flow capacity.
Metal	Damaged/missing bars	Bars are bent out of shape more than 3 inches.	Bars are in place with no bends more than ¾ inch.
		Bars are missing or entire barrier is missing.	Bars are in place according to design.
		Bars are loose and rust is causing 50% deterioration to any part of barrier.	Barrier is replaced or repaired to design standards.
	Inlet/outlet pipe	Debris barrier is missing or not attached to pipe.	Barrier is firmly attached to pipe.

Table 5-18 Maintenance standards for vegetated filter strip.

Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Recommended Maintenance to Correct Problem
General	Sediment accumulation on grass	Sediment depth exceeds 2 inches.	Remove sediment deposits. Relevel so slope is even and flows pass evenly through strip.
	Vegetation	Grass becomes excessively tall (greater than 10 inches); nuisance weeds and other vegetation start to take over.	Mow grass and control nuisance vegetation so that flow is not impeded. Grass should be mowed to a height of 6 inches.
	Trash and debris	Trash and debris have accumulated on the vegetated filter strip.	Remove trash and debris from filter.
	Erosion/scouring	Areas have eroded or scoured due to flow channelization or high flows.	For ruts or bare areas less than 12 inches wide, repair the damaged area by filling with a 50/50 mixture of crushed gravel and compost. The grass will creep in over the rock in time. If bare areas are large, generally greater than 12 inches wide, the vegetated filter strip should be regraded and reseeded. For smaller bare areas, overseed when bare spots are evident.
	Flow spreader	Flow spreader is uneven or clogged so that flows are not uniformly distributed over entire filter width.	Level the spreader and clean so that flows are spread evenly over entire filter width.

Table 5-19 Maintenance standards for media filter drain.

Maintenance Component	Defect or Problem	Condition When Maintenance is Needed	Recommended Maintenance to Correct Problem
General	Sediment accumulation on grass filter strip	Sediment depth exceeds 2 inches or creates uneven grading that interferes with sheet flow.	Remove sediment deposits on grass treatment area of the embankment. When finished, embankment should be level from side to side and drain freely toward the toe of the embankment slope. There should be no areas of standing water once inflow has ceased.
	No-vegetation zone/flow spreader	Flow spreader is uneven or clogged so that flows are not uniformly distributed over entire embankment width.	Level the spreader and clean so that flows are spread evenly over entire embankment width.
	Poor vegetation coverage	Grass is sparse or bare, or eroded patches are observed in more than 10% of the grass strip surface area.	Consult with roadside vegetation specialists to determine why grass growth is poor and correct the offending condition. Reseed into loosened, fertile soil or compost or replant with plugs of grass from the upper slope.
	Vegetation	Grass becomes excessively tall (greater than 10 inches); nuisance weeds and other vegetation start to take over.	Mow vegetation or remove nuisance vegetation so that flow is not impeded. Grass should be mowed to a height of 6 inches.
	Media filter drain mix replacement	Water is seen on the surface of the media filter drain mix from storms that are less than a 6-month, 24-hour precipitation event. Maintenance also needed on a 10-year cycle and during a preservation project.	Excavate and replace all of the media filter drain mix contained within the media filter drain.
	Excessive shading	Grass growth is poor because sunlight does not reach embankment.	If possible, trim back overhanging limbs and remove brushy vegetation on adjacent slopes.
	Trash and debris	Trash and debris have accumulated on embankment.	Remove trash and debris from embankment.
	Flooding of media filter drain	When media filter drain is inundated by flood water	Evaluate media filter drain material for acceptable infiltration rate and replace if media filter drain does not meet long-term infiltration rate standards.

Appendix F – Noise Analysis

Construction Noise Impact Assessment

A construction noise impact assessment was undertaken using the guidance in *Chapter 7 of the WSDOT Biological Assessment Preparation Manual, updated June 2023*.

TERRESTRIAL NOISE

Construction Noise:

Construction noise is estimated based on the three pieces of equipment with the loudest noise levels to be used by the project.

Equipment Description	dBA at 50 feet
Excavator	87
Dozer	85
Backhoe	80

Using the rules of decibel addition, the combined noise level for the operation of heavy construction equipment will be **90 dBA**.

Background Noise:

Census.gov lists the population density per square mile for the City of Port Townsend as 1,461.8 in 2020; background noise is estimated to be **50 dBA** exclusive of traffic.

Traffic Noise:

The posted speed limit along Sims Way within the project vicinity is 30 mph. The average daily traffic volume (ADT) in 2022 was approximately 14,000 vehicles per day. Using this value, traffic noise is estimated at **66 dBA** in the project area.

Construction Noise Attenuation to Background:

(Based upon soft conditions as the site is not adjacent to water and does not contain more than 90% concrete and asphalt.)

$D = Do * 10^{((\text{Construction Noise} - \text{Ambient Noise})/a)}$

$D = 50 * 10^{((90-50)/25)}$

D= **1,991 feet**

Traffic Noise Attenuation to Background:

(Based upon soft conditions as the site is not adjacent to water and does not contain more than 90% concrete and asphalt.)

$D = Do * 10^{((\text{Traffic Noise} - \text{Ambient Noise})/a)}$

$D = 50 * 10^{((66-50)/15)}$

D= **583 feet**

Extent of Project-Related Noise:

Construction Noise Attenuation to Background is greater than Traffic Noise Attenuation to Background, therefore the extent of project-related noise based upon attenuation to the dominant background will be **Construction Noise Attenuation to Background.** Therefore, the extent of project related noise is estimated at **1,991 feet or 0.38 miles**.

AQUATIC NOISE

No in-water work is proposed; therefore, the proposed project will not generate aquatic noise.

References

WSDOT. (2023). *Chapter 7 of the WSDOT Biological Assessment Preparation Manual*, updated June 2023. Retrieved February 13, 2024, from https://wsdot.wa.gov/sites/default/files/2021-10/Env-FW-BA_ManualCH07.pdf

U.S. Census. (2020). Quick Facts: Ferndale City, Washington. Accessed on February 13, 2024. Retrieved from https://www.census.gov/quickfacts/fact/table/ferndalecitywashington/PST045223

Appendix G – USFWS & NMFS Species & Habitat Lists

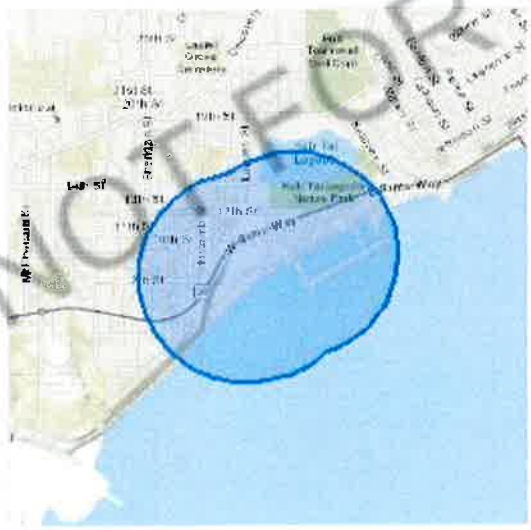
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Jefferson County, Washington



Local office

Washington Fish And Wildlife Office

(360) 753-9440
(360) 753-9405

510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. 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.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Marbled Murrelet Brachyramphus marmoratus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Yellow-billed Cuckoo Coccyzus americanus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Fishes

NAME	STATUS
Bull Trout Salvelinus confluentus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8212	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME

Bald Eagle Haliaeetus leucocephalus

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

BREEDING SEASON

Breeds Mar 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

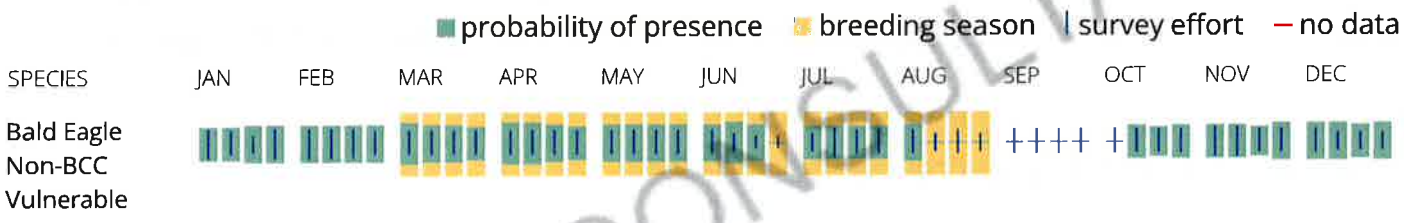
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your

list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Ancient Murrelet *Synthliboramphus antiquus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 10 to Sep 10
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31
Black Oystercatcher *Haematopus bachmani* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	Breeds Apr 15 to Oct 31
Black Swift *Cypseloides niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Black Turnstone *Arenaria melanocephala* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Brandt's Cormorant *Urile penicillatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 15 to Sep 15
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31

Cassin's Auklet *Ptychoramphus aleuticus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6967	Breeds Mar 21 to Sep 21
Chestnut-backed Chickadee *Poecile rufescens rufescens* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Jul 31
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Red Knot *Calidris canutus roselaari* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8880	Breeds elsewhere
Rufous Hummingbird *Selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds Jun 1 to Aug 10

Tufted Puffin Fratercula cirrhata — Breeds May 5 to Oct 5

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/430

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Western Gull Larus occidentalis — Breeds Apr 21 to Aug 25

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

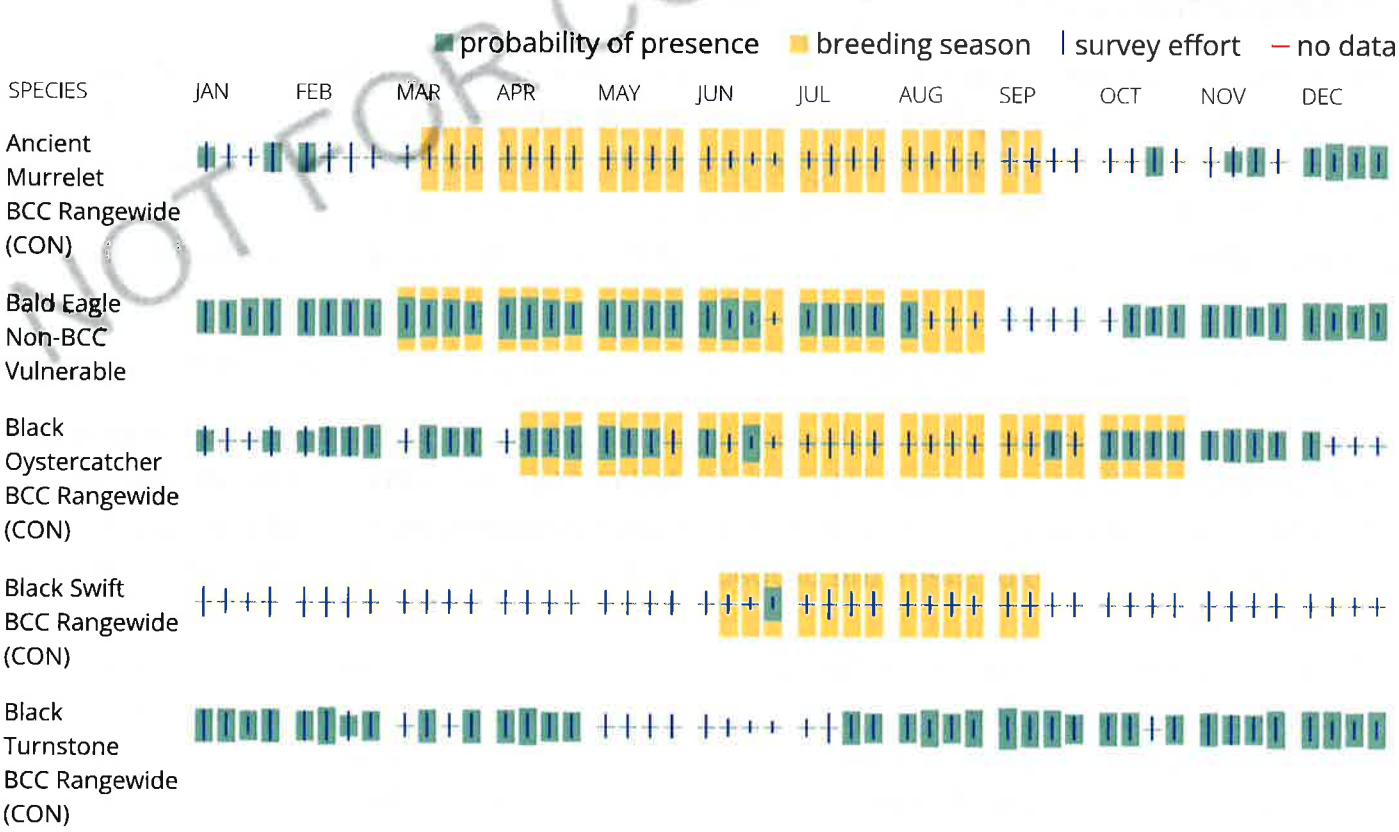
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

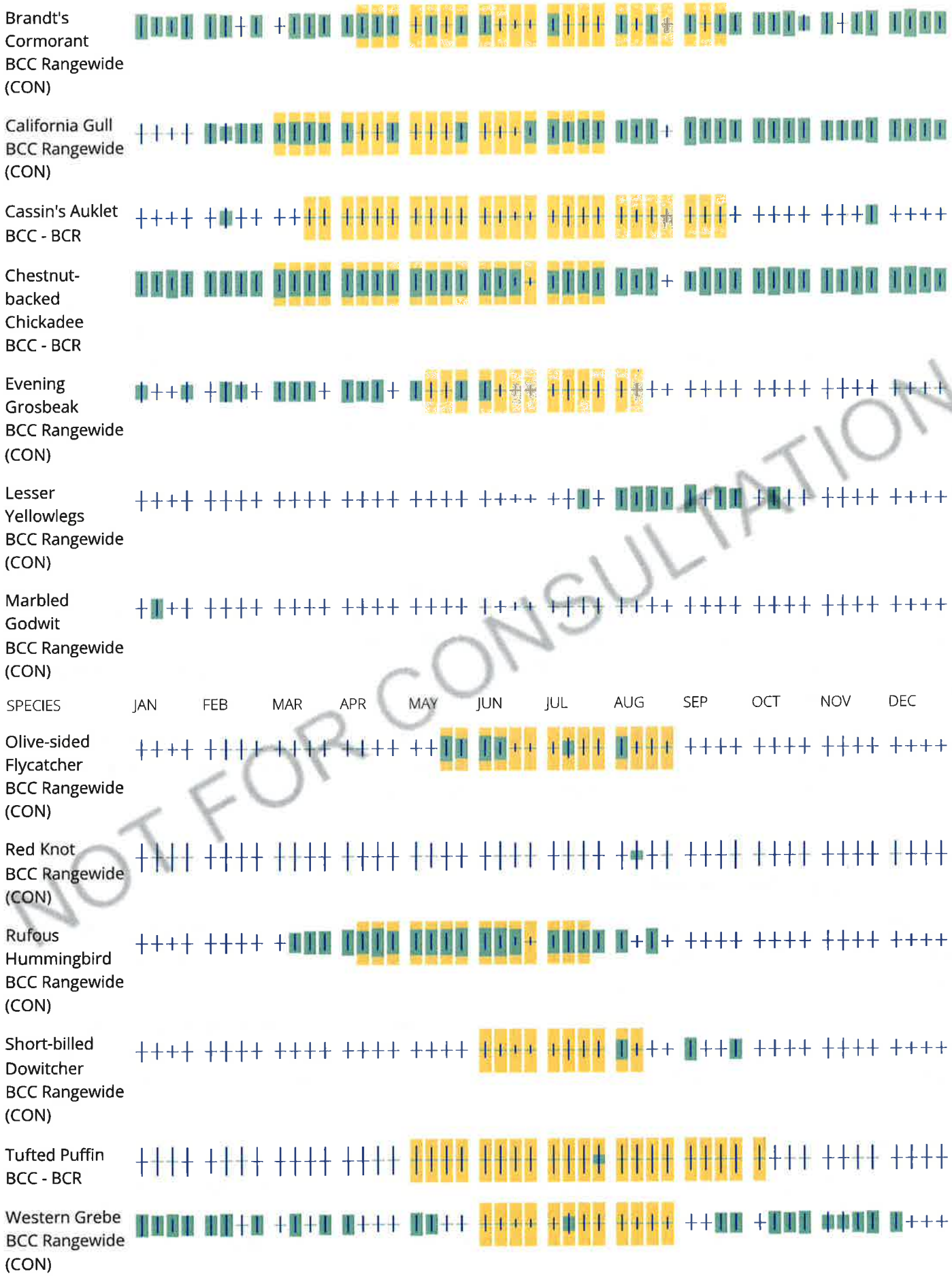
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

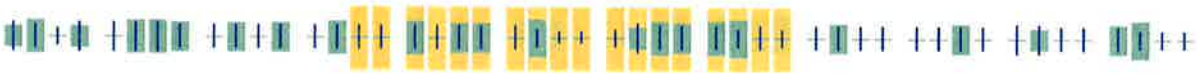
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird

on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key

component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

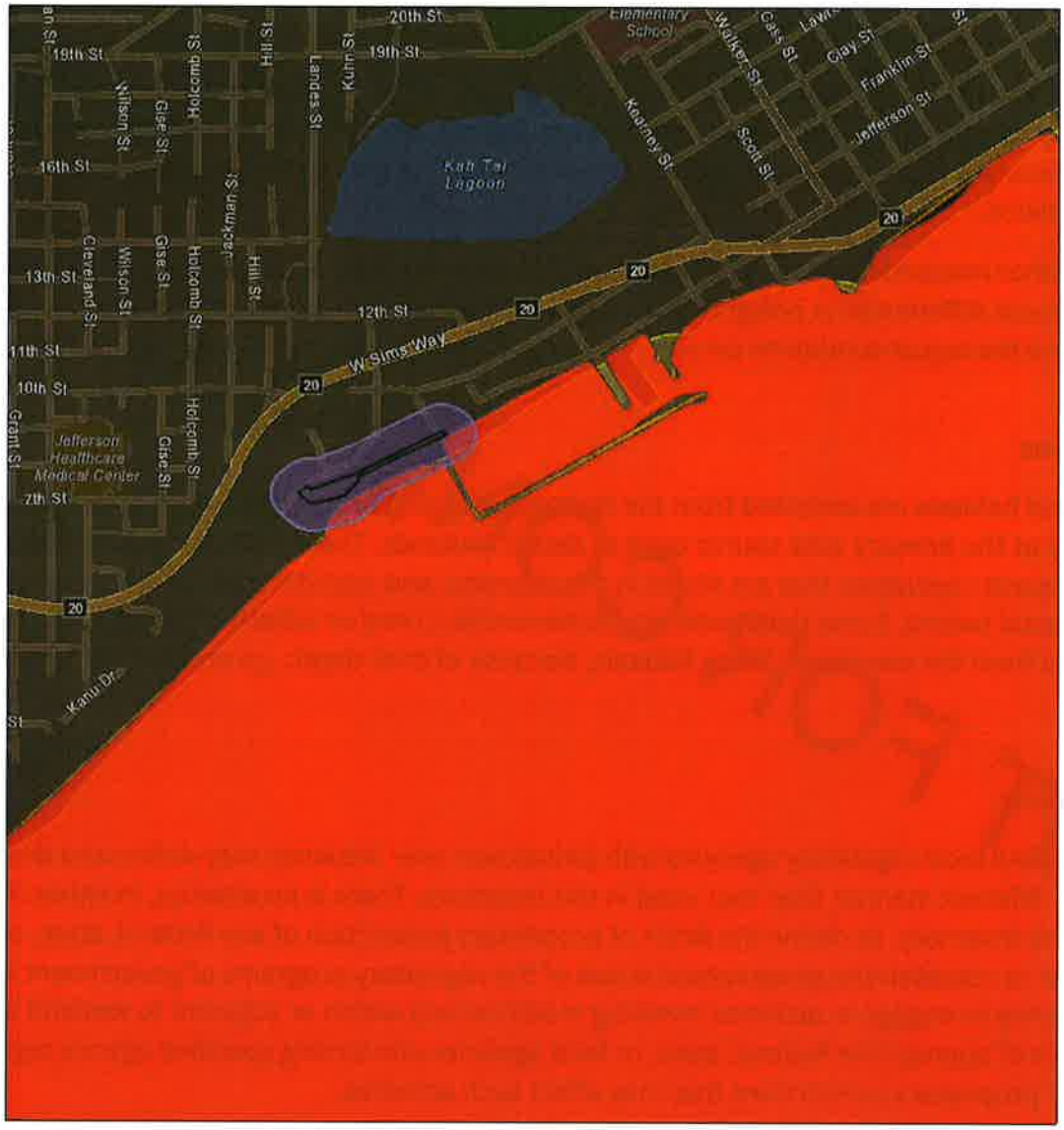
Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOAA FISHERIES West Coast Region Spatial Query Report: ESA and MSA

Area of Interest (AOI) Information: Boat Haven Stormwater Improvements

Area : 0.06 km²

May 15 2024 12:28:03 Pacific Daylight Time



All WCR critical habitat poly 20230717

EFH - Highly Migratory Species, Coastal Pelagic Species, Groundfish

EFH - Salmon

1:18,056

0 0.1 0.2 0.4 mi

0 0.15 0.3 0.6 km

Summary

Name	Count	Area(km²)	Length(km)
ESA Species Ranges	2	0.10	not applicable
ESA Critical Habitat - polygon	4	0.05	not applicable
ESA Critical Habitat - line	0	not applicable	0
MSA Habitat Areas of Particular Concern	7	0.01	not applicable
MSA Essential Fish Habitat - Areas Protected from Fishing	0	0	not applicable
MSA Essential Fish Habitat - HMS, CPS, Groundfish	8	0.02	not applicable
MSA Essential Fish Habitat - Salmon	1	0.05	not applicable

ESA Species Ranges

#	DPS	DPS_ID	Area(km²)
1	Salmon, chum (Hood Canal summer-run ESU)	CMHCS	0.05
2	Steelhead (Puget Sound DPS)	STPUG	0.05

ESA Critical Habitat - polygon

#	Listed Entity	Listing Status	Critical Habitat Status	Scientific Name	Area(km²)
1	Bocaccio [Puget Sound-Georgia Basin DPS]	Endangered	Final	Sebastes paucispinis	0.01
2	Salmon, Chinook [Puget Sound ESU]	Threatened	Final	Oncorhynchus tshawytscha	0.01
3	Salmon, chum [Hood Canal summer-run ESU]	Threatened	Final	Oncorhynchus keta	0.01
4	Whale, killer [Southern Resident DPS]	Endangered	Final	Orcinus orca	0.01

MSA Habitat Areas of Particular Concern

#	SITENAME_L	LIFESTAGE	TYPE	FMC	LTTD_TIT_1	Area(km²)
1	Estuaries	ALL	HAPC	PFMC	All NW/SW HAPCs	< 0.01
2	Seagrass	ALL	HAPC	PFMC	All NW/SW HAPCs	< 0.01

MSA Essential Fish Habitat - HMS, CPS, Groundfish

#	SITENAME_L	LIFESTAGE	TYPE	FMC	LTTD_TIT_1	Area(km²)
1	Groundfish	ALL	EFH	PFMC	Groundfish EFH (100% Habitat Suitability)	< 0.01
2	Finfish	ALL	EFH	PFMC	Finfish and Market Squid	< 0.01
3	Krill - Thysanoessa Spinifera	ALL	EFH	PFMC	Krill - Thysanoessa Spinifera	< 0.01
4	Coastal Pelagic Species	ALL	EFH	PFMC	Coastal Pelagic Species	< 0.01
5	Krill - Euphausia Pacifica	ALL	EFH	PFMC	Krill - Euphausia Pacifica	< 0.01
6	Other Krill Species	ALL	EFH	PFMC	Other Krill Species	< 0.01

MSA Essential Fish Habitat - Salmon

#	HUC_8_Name	HUC_8	ChinookEFH	Coho_EFH	Pink_EFH	Area(km²)
1	Puget Sound	17110019	Yes	Yes	Yes	0.05

The West Coast Region (WCR) Species and Habitat App displays spatial data for marine and anadromous species listed under the Endangered Species Act (ESA) and habitat areas protected under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The core datasets, managed by the WCR, are ESA-listed species ranges, critical habitat designations, and essential fish habitat (EFH). These datasets are intended to assist the public and our partners with visually interpreting federal regulations. However, these data do not constitute legal definitions. Please refer to NOAA Fisheries' Federal Register rules and the Code of Federal Regulations for legal definitions of threatened or endangered species, critical habitat designations, or essential fish habitat. Detailed information for EFH on the West Coast, including text descriptions, which are ultimately determinative of the limits of EFH, is contained in fishery management plans available on the Pacific Fishery Management Council website (pcouncil.org).

Not all ESA-listed species ranges, critical habitat designations, and essential fish habitat under the jurisdiction of NOAA Fisheries are displayed in this app. Only those within the West Coast Region that have available data are displayed. NOAA Fisheries' West Coast Region includes Idaho, Oregon, Washington, California, and U.S. marine waters adjacent to those states.

This tool ran the AOI query on spatial features that were diced to increase performance. The diced features should not be used for any purpose beyond the production of this summary report. Additionally, the tool utilized the Web Mercator (WKID 3857) projection to produce area and distance estimates for this report. The Web Mercator projection causes area and distance distortions at high latitudes. For equal area calculations or additional analysis needs, please download the source GIS data:
ESA Critical Habitat https://www.fisheries.noaa.gov/resource/map/critical-habitat-maps-and-gis-data-west-coast-region
ESA Ranges https://www.fisheries.noaa.gov/resource/map/species-ranges-salmon-and-steelhead-west-coast-region
MSA Essential Fish Habitat, EFH Areas Protected from Fishing, Habitat Areas of Particular Concern https://www.habitat.noaa.gov/application/efhinventory/index.html

IMPORTANT DATA CAVEAT The following ESA-listed species, within the West Coast Region, were not analyzed (i.e., they do not have range spatial data available): Abalone, black; Abalone, white; Sturgeon, green (Southern DPS); Eulachon (Southern DPS); Bocaccio (Puget Sound/Georgia Basin DPS); Rockfish, yelloweye (Puget Sound/Georgia Basin DPS); Salmon, Chinook (California Coastal ESU); Salmon, Chinook (Central Valley spring-run ESU); Salmon, Chinook (Sacramento River winter-run ESU); Salmon, coho (Southern Oregon/Northern California Coast ESU); Salmon, coho (Central California Coast ESU); Steelhead (Northern California DPS); Steelhead (Central California Coast DPS); Steelhead (California Central Valley DPS); Steelhead (South-Central California DPS); Steelhead (Southern California DPS); Sea turtle, green (East Pacific DPS); Sea turtle, loggerhead (North Pacific Ocean DPS); Sea turtle, leatherback; Sea turtle, olive ridley; Seal, Guadalupe fur; Whale, humpback (Central America DPS); Whale, humpback (Mexico DPS); Whale, killer (Southern Resident DPS); Whale, sei; Whale, sperm; Whale, blue; Whale, fin; Shark, oceanic whitetip.

IMPORTANT DATA CAVEAT The following ESA critical habitat designation, within the West Coast Region, was not analyzed (i.e., the designation does not have spatial data available): Salmon, coho (Southern Oregon/Northern California Coast ESU).

For more information on consultations visit:
ESA https://www.fisheries.noaa.gov/west-coast/consultations/esa-section-7-consultations-west-coast
MSA https://www.fisheries.noaa.gov/west-coast/habitat-conservation/essential-fish-habitat-west-coast
GIS point of contact: shanna.dunn@noaa.gov

Appendix H – Biology of Species

Marbled Murrelet (Brachyramphus marmoratus)

The marbled murrelet was federally listed as a threatened species on October 1, 1992 (57 FR 45328, USFWS 1992). Critical habitat was designated on November 4, 2011 (81 FR 51348). The species occurs from northern Monterey Bay in California, through British Columbia, Washington, and Oregon, to Bristol Bay, Alaska (USFWS, 2024).

Murrelets feed mainly in shallow, nearshore water (<30 meters [98 feet] deep). Marbled murrelet nests are most often observed to be within 12 miles of the ocean; however, they have been found as far as 50 miles from saltwater (Shohet et al 2008). Year-round marbled murrelet densities in the action area are low, ranging from 0.99 – 3.0 birds per square kilometer (USFWS).

Nesting marbled murrelets are not expected to be present as there are no suitable nesting sites in the action area. Further, the in-water work window for pile driving activities only slightly overlaps the nesting season; therefore, injurious noise levels will not be generated during the majority of the nesting season. Within the action area, foraging murrelets may be present as they are known to forage within 1.25-miles of the shoreline (WSDOT, 2023). However, non-nesting murrelets are thought to generally forage further from shore than when nesting (Peery et al 2009), presumably to avoid predators like bald eagles and great horned owls (Haynes et al 2010). This indicates that their presence in the project area is not likely.

Yellow-billed Cuckoo (*Coccyzus americanus*)

The Western DPS of Yellow-billed Cuckoo was first proposed for federal listing on October 3, 2013 (78 FR 61621) and officially listed as threatened on October 3, 2014 (79 FR 48547). On September 16, 2020, a "not warranted" 12-month finding was published (85 FR 57816) in response to a petition to delist the Yellow-billed Cuckoo (USFWS, 2021). The Western DPS of Yellow-billed Cuckoo remains listed as threatened.

Physical and biological features that are vital to the Western DPS of Yellow-billed Cuckoo include range-wide breeding habitat, an adequate prey base, and hydrologic processes that maintain and regenerate breeding habitat. An adequate prey base encompasses large insects, like cicadas, caterpillars, katydids, grasshoppers, large beetles, dragonflies, moth larvae, and spiders; lizards; and frogs available in nesting and post-breeding dispersal areas. Sediment movement and deposition, and the promotion of riparian tree growth and health are necessary hydrologic processes for critical habitats. (USFWS, 2014, 2021).

Currently, only limited areas of suitable habitat for the Yellow-billed Cuckoo remain in Washington State (WDFW, 2023b). Whatcom County, conversion of riparian zones along the Sumas River to non-forest use has significantly reduced the available riparian habitat (Smith, 2003). The Yellow-billed Cuckoo requires large, unfragmented riparian zones with deciduous trees and dense, shrubby cover adjacent to waterbodies like streams and wetlands (USFWS, 2023b; WDFW, 2023b; Wiles & Kalasz, 2017). Yellow-billed cuckoos are riparian obligates that breed within stands of mature riparian willows and cottonwoods greater than 50 acres (Halterman et al. 2015; Wiles and Kalasz 2017).

Because of this, the required habitat resources for the Yellow-billed Cuckoo are tied to dynamic stream and riparian processes and vary in quality and location between, or even within, years as a result. Resource variability may cause the Yellow-billed Cuckoo to relocate in pursuit of prey and habitat resources (USFWS, 2021).

Since 1940, the yellow-billed Cuckoo has been rare migrant and summer resident in Washington State. (WDFW, 2023b). Of the twenty confirmed sightings in Washington State since the 1950s, 16 were east of the Cascades and only 3 had taken place in the past decade (WDFW, 2023b; Wiles & Kalasz, 2017). Recovery efforts for the species in the U.S. is thought to be best directed to the remaining breeding habitats in the southwest (WDFW, 2023b). While there are small areas of suitable habitat present in the State, sightings of the Yellow-billed Cuckoo have not been reported in western Whatcom County since 1941 (Wiles & Kalasz, 2017). Cuckoos are presumed to be functionally extirpated in Washington State (WDFW, 2023b; Wiles & Kalasz, 2017).

Northwestern Pond Turtle (*Actinemys marmorata*)

The northwestern pond turtle (*Actinemys marmorata*) was proposed for listing under the ESA on October 3, 2023 (88 FR 68370). No critical habitat has been designated for this species. The northwestern pond turtle inhabits a range from the Puget Sound Lowlands in Washington to the Columbia River Gorge in Washington and Oregon, through western Oregon and California, and south to the Baja peninsula. Known populations in Washington include two sites in south Puget Sound (one in Mason County and one in Pierce County) and four in the Columbia River Gorge (WDFW 2024, WPTRCC 2024). No known populations are within the project action area.

Native to the west coast of the U.S., the northwestern pond turtle is medium sized with olive to dark brown or black coloring. Skin patterning can range from spots to lines, or dashes of brown or black (USFWS 2024). The northwestern pond turtle is omnivorous, feeding on a variety of food and prey including aquatic plants, amphibians, and insects (WDFW 2024). While primarily aquatic, the northwestern pond turtle also utilizes adjacent upland areas. Habitat requirements for the northwestern pond turtle include aquatic areas such as ponds, lakes, and streams for breeding, feeding, overwintering, sheltering, and dispersal; basking sites for thermoregulation and predator refugia; and adjacent upland areas for nesting, overwintering, aestivation, dispersal, and population connectivity (88 FR 68370, Hallock & McAllister 2005, WDFW 2024).

The northwestern pond turtle inhabits a variety of flowing and still water habitats throughout their range, but they are only known to inhabit ponds and lakes in Washington (Hallock & McAllister 2005, WDFW 2024). There are no ponds or lakes within the action area. Basking sites are a critical element of suitable habitat for the northwestern pond turtle as individuals will use rocks, sand, mud, logs, branches, and vegetation as an alternate to swimming for thermoregulation and refugia from predators (WPTRCC 2020, WDFW 2024). As soon as water temperatures allow basking, in late March to early April, the species becomes active. Adults remain active until late September to October when they move to upland areas or submerge in the substrate to overwinter (Hallock & McAllister 2005, WDFW 2024). Hatchlings in Washington overwinter in the nest. Mating behaviors typically occur from February to November with sex determination dependent upon incubation temperatures (WPTRCC 2020).

Bull trout (*Salvelinus confluentus*) U.S.A., coterminous, (lower 48 states)

Bull Trout were first proposed as an endangered species throughout its range in 1993 (58 FR 28849). This proposal for the DPS of coterminous U.S. bull trout was precluded in 1995 due to higher priority listing actions (60 FR 30825, USFWS, 2015). In 1998, five DPS of bull trout were recognized but only the Klamath River DPS and Columbia River DPS were federally listed (63 FR 31647). By November 1999, the remaining three DPS were added to the listing to encompass the entire coterminous U.S. population of bull trout, listed as threatened throughout its entire range (64 FR 58910).

At the time of the listing, bull trout were estimated to have been extirpated from 60% of their historic range (USFWS, 2015). However, in 2012, USFWS reported to Congress that the 5-year status review for bull trout indicated that the species is stable range-wide. This is likely due to the numerous conservation efforts that have been undertaken for bull trout recovery since the late 90s (USFWS, 2015). Conservation measures for bull trout recovery have been ongoing since 1999. They often mirror conservation efforts aimed at salmonid recovery as these groups face the same threats. The main actions of habitat recovery include removing migratory corridor barriers; revegetation of riparian zones with native species; installation of LWD in stream channels; instream flow enhancement; suppression of non-native species; and water quality improvement (USFWS, 2015).

Bull trout exhibit both resident and migratory life history strategies, although most bull trout are migratory. Both forms will spawn in tributary streams with juveniles remaining to rear for 1-4 years before migrating to rivers, lakes, or coastal environments to mature (64 FR 58910). Resident and migratory forms can produce either resident or migratory offspring, these forms are often found together (USFWS, 2004). Residents reach 6 to 12-inches in length and migratory forms grow up to 24-inches or more (63 FR 31647). Migratory bull trout often exhibit anadromous behavior although some are amphidromous, seasonally returning to freshwater environments for several years before returning to spawn. The amphidromous form appears to be a unique characteristic of the Coastal-Puget Sound population (70 FR 56212). When mature they begin their migration to their spawning tributaries in the late spring and early summer (USFWS, 2004).

Bull trout habitat requirements are based upon "the four C's": Cold, Clean, Complex, Connected habitat (USFWS, 2015). This includes sub-surface water connectivity to provide thermal refugia; water quality and quantity; impediment-free migration corridors; an abundant food base of terrestrial and aquatic organisms; complex environments with a variety of features such as large woody debris (LWD), side channels, and pools; cool water temperatures that do not exceed 59°F with thermal refugia; adequate spawning and rearing substrate, free of fine sediments; a natural hydrograph; water quality and quantity; and few non-native species with which to become prey, compete, or breed (USFWS, 2010).

Many factors have contributed to the decline of bull trout including habitat fragmentation, migratory corridor barriers, population isolation, competition with non-native species, and habitat degradation, especially for the sensitive spawning and rearing life stages (USFWS, 2004).

Chum Salmon (*Oncorhynchus keta*) Hood Canal summer-run ESU

The Hood Canal summer-run ESU of Chum salmon (including the eastern Strait of Juan de Fuca) were listed as threatened under the Endangered Species Act in 1999 (64 FR 14508). Critical habitat for the species was designated on September 2, 2005 (70 FR 52630). DCH is present in the action area (NOAA, 2024).

Threats to naturally spawned chum salmon include several human-induced factors (i.e., habitat degradation, water diversions, harvest, and artificial propagation) and the effects of natural factors (i.e., competition and predation) or environmental conditions such as as drought and poor ocean conditions (64 FR 14508). Due to ongoing recovery efforts, run sizes of summer chum have been increasing since the mid-1990s, with some of the highest returns on record occurring in recent years (Johnson et. al., 2008).

Chum salmon utilize the lower reaches of coastal streams near saltwater for spawning. Chum fry will rear in freshwater for a few days before moving downstream to the estuary to rear for several months before heading to the open ocean (WDFW, 2024).

Hood Canal summer-run chum have been documented spawning in Chimacum Creek, 4 miles to the south in Port Townsend Bay (WDFW, 2020). Because of the close proximity of documented presence in Chimacum Creek, migrating chum salmon may be present in the action area. However, as the species does not heavily utilize nearshore areas outside of natal stream estuaries before they migrate to the open ocean, they are not anticipated to linger in the aquatic zone of influence for prolonged periods of time.

Chinook Salmon (*Oncorhynchus tshawytscha*) Puget Sound ESU

In 1998, the Puget Sound population of Chinook salmon was first recognized as an evolutionary significant unit (ESU) and proposed for listing as threatened under the Endangered Species Act of 1973 (NMFS, 1998). NMFS issued a final rule in 1999 and a revised listing in 2005; the Puget Sound DPS of Chinook salmon remains listed as threatened (NMFS, 2005b).

The Puget Sound ESU of Chinook salmon represents populations that naturally spawned in rivers flowing into Puget Sound (NMFS, 2004b). The range of Puget Sound ESU extends east from the Elwha River to the Nooksack River and southward to southern Puget Sound. Historically, it is thought that the Puget Sound had as many as 37 independent spawning aggregations. Currently, only 22 independent populations are identified in Puget Sound (NMFS, 2007). Productivity is classified as in decline or below the replacement value (NMFS, 2007).

Status Reviews for the Puget Sound ESU of Chinook salmon in 2011 and 2016 revealed that most populations have been persistently declining. Recovery actions are ongoing, but they are expected to take years to decades before yielding significant increases in viability for the ESU (NOAA, 2016). Key habitat concerns were identified for Chinook salmon: water quality impairments from pollutant contamination; nearshore habitat loss; degradation of instream habitat, including reduction of habitat complexity, unnatural hydrograph, and insufficient stream flows; impairment of floodplain connectivity and function; and fish passage (NOAA, 2016).

Chinook, also called King salmon, are the largest of the Pacific salmonid species typically growing in excess of 40 pounds with common reports of Chinook exceeding 100 pounds (NMFS, 2007). Chinook are anadromous, hatching in freshwater before migrating to marine waters to feed and mature (NOAA, 2023). The diet of Chinook salmon varies throughout their life history and includes terrestrial and aquatic insects, amphipods, crustaceans, and other fish (NOAA, 2023). Due to their size, Chinook prefer larger streams with higher velocity flows and larger gravel substrate than other salmon species (NMFS, 2007). After deposition, eggs hatch within 32-159 days after deposition, but alevins do not emerge from the gravel for another 14 -21 days (NMFS, 2007). After emergence, fry will feed and grow in freshwater until outmigration (NOAA, 2023).

Most Puget Sound Chinook will migrate from freshwater to marine waters within the first year to utilize highly productive estuary and nearshore habitats (NMFS, 2007). The majority of Chinook salmon will mature in the marine environment for 1-6 years before returning to freshwater habitats to spawn (NMFS, 2007), but they usually mature between years 2 to 7 (NOAA, 2022). Reentrance to freshwater is suspected to be related to water temperature and flow conditions (NMFS, 2007). While Chinook typically return to their streams of origin, they may utilize nearby streams with similar habitat (NMFS, 2007). Chinook, like most Pacific salmon species, are semelparous, spawning once before dying and returning their nutrients to upstream habitats (NMFS, 2004b).

Physical and biological features that are essential to Chinook salmon include water quality and quantity to support freshwater spawning areas; freshwater rearing sites with adequate water quality and quantity, floodplain connectivity, and natural cover to avoid predation; freshwater migration corridors free of physical, chemical, or biological barriers; estuarine conditions with water quality and quantity, and salinity that support physiological transitions with natural cover to avoid predation; and offshore marine areas with water quality and forage conditions to support maturation (NMFS, 2005a).

Steelhead Trout (*Onchorhynchus mykiss*) Puget Sound DPS

The Puget Sound DPS of Steelhead trout was first listed as threatened on May 11, 2007, with an updated listing in 2014 (NOAA, 2023). The Puget Sound DPS of Steelhead trout encompasses all anadromous forms that naturally spawned below an impassable barrier in a stream flowing into Puget Sound (NOAA, 2023). The range of Puget Sound ESU extends east from the Elwha River to the Nooksack River and southward to southern Puget Sound (NMFS, 1998).

As of the 2016 5-Year Review, Puget Sound DPS of Steelhead trout was rated as having a "very low viability" as the biological risks this species faces, such as limited suitable habitat and warming waters, have not improved since federal listing (NOAA, 2016). Key habitat concerns were identified for the Puget Sound DPS of Steelhead trout: destruction and modification of habitat; reduction of habitat quality including changes in hydrology, water temperature, downstream gravel recruitment, and LWD recruitment; an altered hydrograph with higher peak flows and flood frequency during storms and a reduction of groundwater recharge to fuel summer flows; stream hydrology that promotes streambed scour, bank erosion, and sediment deposition; and channelization and armoring of stream channels (NOAA, 2016).

Steelhead trout exhibit both anadromous and non-anadromous (freshwater residents) life strategies and are often found in freshwater together as both can produce either form as offspring (NMFS, 2004b). Steelhead are also exothermic thus require cool water sources to regulate their temperature (NOAA, 2019). Prey for steelhead trout varies throughout their life cycle and includes zooplankton, fish eggs, small fish, crustaceans, mollusks, and both terrestrial and aquatic insects (Center for Biological Diversity, 2023).

All wild steelhead eggs hatch in gravel substrate within well-oxygenated, high-velocity streams (NOAA, 2023). Steelhead trout require slightly different habitat conditions throughout the rearing process. After emergence, slow velocity resting areas are critical for fry to escape high-velocity flows. As juveniles, steelhead move into the center of the channel where a more diverse variety of flow regimes, such as pools, riffles, and cascades can typically be found (NOAA, 2019). Anadromous forms may remain in freshwater for as many as 7 years before spending for 1-4 years in marine waters before returning to spawn (NOAA, 2022). Winter-run steelhead, which have documented presence in the action area, are considered the "ocean maturing" form as they return to freshwaters already mature and spawn shortly afterward (NMFS, 2004b). Unlike Pacific salmon, steelhead are iteroparous, meaning they can survive after spawning and are able to repeat their migration to and from marine waters to spawn multiple times in their lifetime. Steelhead on average live between 5-11 years (NMFS, 2004b; NOAA, 2022).

Physical and biological features that are essential for steelhead trout habitat include water quality and quantity to support freshwater spawning areas; freshwater rearing sites with adequate water quality and quantity, floodplain connectivity, and natural cover to avoid predation; freshwater migration corridors free of physical, chemical, or biological barriers; estuarine conditions with water quality and quantity, and salinity that support physiological transitions with natural cover to avoid predation; and offshore marine areas with water quality and forage conditions to support maturation (NMFS, 2005a). It has been documented that limited suitable habitat exists for the Puget Sound DPS of Steelhead trout (NOAA, 2016).

Bocaccio (Sebastes paucispinis) Puget Sound – Georgia Basin DPS

The Puget Sound – Georgia Basin DPS of Bocaccio was first listed as endangered on April 28, 2010 (75 FR 22276). Critical habitat was designated for the species on February 11, 2015 (79 FR 68042). DCH is present in nearshore and deepwater habitats within Guemes Channel and the larger action area.

Bocaccio ranges from Baja California to the Gulf of Alaska although they are most common between Oregon and northern Baja California (NOAA, n.d.a). The Puget Sound – Georgia basin DPS of bocaccio is affected by overfishing, both commercially and recreationally, and habitat degradation including water quality impairment due to low DO and elevated contaminants, and a lack of regulation (75 FR 22276).

Rockfish are iteroparous; the female bocaccio typically spawns one to three times per season, undergoing internal fertilization and embryo development to give birth to live larval young. Larvae subsist on zooplankton, copepods, small crustaceans, phytoplankton, krill, invertebrate eggs, and other invertebrates until they begin foraging on fish typically within the first year of life. Bocaccio larvae and young of the year will reside in the upper layers for several months before forming schools as juveniles in nearshore bottom habitats. Juveniles typically prefer rocky, cobble and sand areas or kelp forests

which provide cover from predation and foraging opportunities. Juveniles move to deeper offshore waters as they mature. Adults primarily utilize rocky habitats in deepwater, in excess of 90 feet, but have also been known to inhabit artificial structures and reefs. Adult bocaccio preferred prey is other rockfishes but they are also known to feed on squid, sablefish, anchovies, and lantern fish. Adults mature and start reproducing from 4 to 7 years old and may live past fifty (NOAA, n.d.a, 79 FR 68042).

PBFs for juvenile and adult bocaccio include quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities; and water quality and sufficient levels of dissolved oxygen to support growth, survival, reproduction, and feeding opportunities. Adults also require the type and amount of structure and rugosity that supports feeding opportunities and predator avoidance (79 FR 68042).

Killer Whale (*Orcinus orca*) Southern Resident DPS

A review of the NMFS status for Killer Whales revealed a DPS of Southern Resident Killer Whales (SRKW) were listed as endangered under the ESA on November 18, 2005 (70 FR 69903) and a recovery plan was instituted in 2008. Critical habitat was first designated for SRKW in inland waters of Washington State in 2006 (71 FR 69054). Critical habitat was revised in 2021 (86 FR 41668) to include coastal habitat areas along the West Coast from the U.S. international border with Canada to Point Sur, California.

SRKW travel extensively in the winter and early spring, ranging from Queen Charlotte Islands in British Columbia to Monterey Bay in California (Wiles, 2004). While SRKW occur in most marine waters in Washington State, they prefer to spend time in coastal waters where their preferred prey, Chinook salmon, can usually be found. The SRKW population is made up of three social groups or pods referred to as the J, K, and L pods. These pods historic distribution includes the waters surrounding the San Juan Islands and the eastern Strait of Juan de Fuca from late spring to fall (WDFW, 2024c).

The pods spend the late spring, summer, and fall in the Salish Sea feeding on salmon, particularly Chinook salmon. It is estimated that approximately 78% of Southern Resident killer whales' diet is Chinook Salmon, with approximately 19% being other Pacific salmonids and the remaining approximately 3% being non-salmonid fish (NMFS 2008). Unlike the transient ecotype of killer whales that feed on marine mammals, resident killer whales feed exclusively on fish.

The SRKW population continues to struggle despite protections, the 2020 population numbered only 72 individuals down from a minimum historical population of 140. Major challenges to this species include reduced prey availability, dependence upon healthy populations of salmon, primarily Chinook, disturbance by vessels and noise, and chemical pollution. (NOAA, 2022).

Little information is available about the courtship and mating rituals of killer whales in the wild. After birthing takes place underwater, calves will feed both underwater and at the surface for short periods lasting about 5 seconds. Older immature whales will often receive alloparental care after the mother births new calves (Wiles, 2004). Females mature between 10 to 13 years of age. Pregnancy lasts 15 to 18 months resulting in the birth of a single calf which will be exclusively nursed for the first year. Calves remain closely associated with the mother for the first two years of life. Mating, and consequently birthing, can take place at any time of the year. Little data is available on the birth rate of killer whales

but is presumed to be approximately every 5 years for about 25 years until menopause. The average life span for males is 30 years but they may live up to 60 years old. Females average 50 years but have been documented living to the age of 90 years in the wild (NOAA, n.d.d).

PBFs for the SRKW include water quality to support growth and development; prey species of sufficient quantity, quality, and availability to support individual growth, reproduction and development, as well as overall population growth; and passage conditions to allow for migration, resting, and foraging (86 FR 41668).

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