CITY OF ILWACO

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Type of Fee	
Receipt #	
Received By	

MASTER PLANNING PERMIT APPLICATION FORM

Application form must be accompanied by the **Master Planning Application Checklist** and all **application fees.**

GENERAL INFORMATION	
Type of Application	Shoreline Substantial Development Permit
Name of Project	Port of Ilwaco Marina Maintenance Dredging

APPLICANT			
Name/Company	Tina Hayes (Port Manager) - Port of Ilwaco		
Address	P.O. Box 307	City/State/Zip	Ilwaco, WA 89624
Telephone	360-642-3143	Cell Phone	
Fax		Email	thayes@portofilwaco.org
If owner is different from applicant, what is the legal relationship of the applicant to the owner that entitles the applicant to make applications?			
Applicant's Signature		Date	

REPRESENTATIVE (if different from Applicant)			
Name/Company	Allison Kinney - Moffatt & Nichol		
Address	915 Broadway Street, Suite 310	City/State/Zip	Vancouver, WA 98660
Telephone	206-501-2325	Cell Phone	319-936-5369
Fax		Email	akinney@moffattnichol.com

CONTACT PERSON/ENTITY (designate a single person/entity to receive determinations and notices from the city.		
Name	Same as Representative	
Address		City/State/Zip
Telephone		Cell Phone
Fax		Email

OWNER(S) (if different from Applicant)			
Name	Same as Applicant		
Address			
City/State/Zip			
Telephone		Fax	
Email			
We, the undersigned, grant the applicant permission to use our property in the manner described in this application.			
Owner's Signature		Date	
Owner's Signature		Date	

PROPERTY INFORMATION	
Property Address/Location	165 Howerton Way SE
Assessor Parcel Nos.	See section 5f of attached Joint Aquatic Permit Application
Current Zoning	Upland areas adjacent to the marina are zoned M1 - Light Industrial, and C-2 Low Density Commercial
Current Land Use	Marina/Dredged Material Upland Placement Site
Proposed Land Use	Marina/Dredged Material Upland Placement Site

LEGAL/FINANCIAL RESPONSIBILITY/AUTHORITY TO ENTER PROPERTY

I/we acknowledge that by signing this application I/we are authorizing employees or agents of the City of Ilwaco to enter onto the property which is the subject of this application during the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, for the sole purpose of making any inspection of the limited area of the property which is necessary to process this application, including follow-up inspections after permit issuance. In the event the City determines that such an inspection is necessary during a different time or day, the applicant(s) further agrees that the City employees or agents may enter the property during such other times and days as necessary for such inspection upon 24 hours' notice to the applicant(s), which notice will be deemed received when given either verbally or in writing.

We, the undersigned, attest under penalty of perjury that the information in this application is true and accurate. We also acknowledge that it is our responsibility to understand and comply with all applicable federal, state and local regulations. Further, we agree that we shall be financially responsible for any and all engineering and planning services or other professional consulting/legal services deemed necessary by the city for the complete permit and plan review. These additional fees, if any, shall be paid in full prior to final signing of any permits, final plats, Mylar's, etc. (IMC 15-08-065).

Signature	Tina Hayes	Date	03/05/2025
Signature		Date	

ATTACHMENT A: MASTER PLANNING APPLICATION CHECKLIST

CITY OF ILWACO	120 First Avenue North PO Box 548 Ilwaco, WA 98624 Phone: 360.624.3145 Fax: 360.642.3155 www.ilwaco-wa.gov	OFFICE USE ONLY

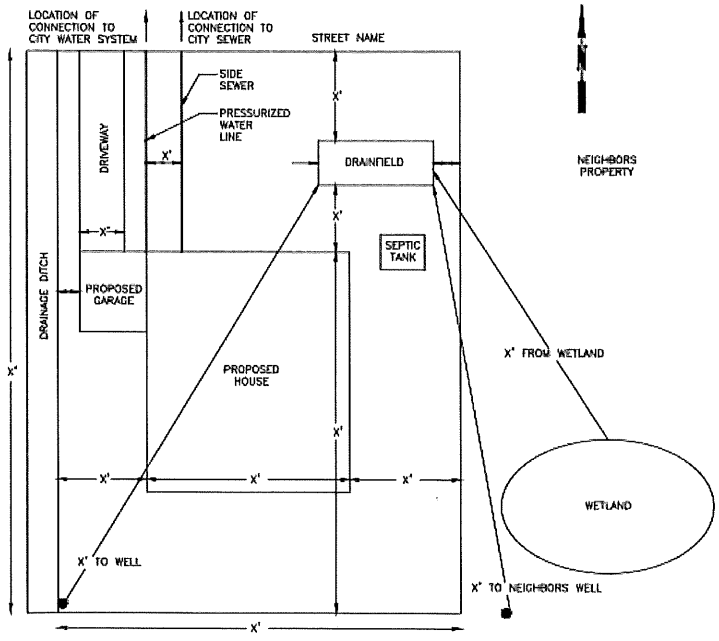
PROJECT / PROPERTY INFORMATION
Tax Parcel ID #: See Section 5f of Attached JARPA form
Project / Value:
OWNER / APPLICANT INFORMATION
Owner: Port of Ilwaco
Applicant: Port of Ilwaco
Contractor:
PROJECT INFORMATION - Failure to provide complete information will lead to a rejection of your permit
1. List of existing improvements, structures, and dimensions: See Section 5o of attached JARPA
2. Site Plan (See Site Plan Requirement Checklist) Attached? YES ☒ NO ☐
3. Is the proposed development one phase of a larger project or larger development?: If yes, describe the entire project in detail:
4. Is there any surface water body on or within 300 feet of the proposed site, or within the immediate vicinity of the proposed site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands?: YES ☒ NO ☐
5. Does the property have an existing driveway?: YES ☐ NO ☐ Not applicable
6. Will fill material be placed near or within a drainage way (ditch, swale, channel, etc.)?: YES ☐ NO ☒
7. Are activities adjacent to unstable soils or slopes?: YES ☐ NO ☒
8. Will activities alter man-made or natural drainage features?: YES ☐ NO ☒
9. Will a sign be erected as a result of this project?: YES ☐ NO ☒
10. Will the project require working in a public right-of-way?: YES ☐ NO ☒
11. Does the project involve any clearing, filling, grading, paving, surface and/or dredging?: If Yes, answer the following. If No, go to number 13. yes.
A. If activities include clearing and grading greater than 1,000 sq. ft. Indicate SF: not applicable
B. Will activities involve placing of fill materials? YES ☒ NO ☐
C. If fill materials exceed 20 cubic yards. Indicate Cubic Yards: See Section 6b of attached JARPA
D. If activities involve earth removal exceeding 2 feet in depth (Excluding foundation excavations). Indicate Maximum Depth FT: -16ft mean lower low water (MLLW)
12. Will the proposed activity require connection to City Water or Sewer?: YES ☐ NO ☒
13. Has the proposed site been flagged/staked? YES ☐ NO ☒ If No, contact the City when flagged/staked.
14. Indicate amount of new impervious area (areas covered by buildings, pavement, concrete, gravel, etc) SF: none

CITY OF ILWACO

120 First Avenue North
PO Box 548 • Ilwaco, WA 98624
Phone: 360.642.3145
Fax: 360.642.3155
info@ilwaco-wa.gov
www.ilwaco-wa.gov

Example Site Plan

Follow Checklist when drawing site plan
Drawn to Scale 1" = 20ft
"X" = Distance
Note: Any changes to your site plan will require re-submittal and a re-submittal fee may be charged.



SITE PLAN REQUIREMENT CHECKLIST

All site plans shall be clearly and accurately drawn to scale on paper no larger than 11" x 17" and must indicate all of the information listed below. For ease of drawing the site plan, use the graph paper provided with your application packet. For each item, mark either "shown" or "N/A" as apporpriate for your project.

This checklist must be completed and included with all site plans. Any site plan without this checklist may be rejected and returned to the applicant for correction.

Parcel No.: _____

A. General Property Information

Shown	N/A	
X		Property Lines, including dimensions.
X		North arrow & site plan scale.
X		Marine waters, lakes and ponds, streams, creeks & wetlands.
X		Locations & dimensions of all existing structures on the property.
	X	Location of any existing wells & their 100' well radius.

B. Existing Property Improvements

	X	Location of side sewer.
	X	Location of water meter & service lines.
	X	Location of all existing drain fields on the site.
	X	Location of existing drainage systems.
	X	Location of all existing roads, driveways, utilities, easements, bridges.
	X	Location & dimensions of all proposed structures in relation to property lines, other structures, wetlands, etc.

C. Proposed Property Improvements

	X	Minimum zoning setbacks shown.
	X	Location of proposed water meter & service lines, and connection to city water main.
	X	Location of proposed side sewer and connection to city sewer.
	X	Location & dimensions of all proposed drainage systems.
	X	Location & dimensions of all roads, driveways, parking areas, utilities.
X		Location/extent of all clearing, grading, & filling

C ty of Ilwaco

REPORT
Produced For Port of Ilwaco
March 2025

moffatt & nichol

PORT OF ILWACO MARINA MAINTENANCE DREDGING

City of Ilwaco Shoreline Substantial Development Permit
Project Narrative

Document Verification

Client	Port of Ilwaco
Project name	Port of Ilwaco Marina Maintenance Dredging
Document title	City of Ilwaco Shoreline Substantial Development Permit Project Narrative
Status	Final Report
Date	March 2025
Project number	213282

Revision	Description	Issued by	Date	Checked
00	Draft Shoreline Substantial Development Permit Project Narrative	A. Kinney	3/04/2025	V. England
01	Shoreline Substantial Development Permit Project Narrative	A. Kinney	03/05/2025	T. Hayes

Produced by:

Moffatt & Nichol
915 Broadway Street, Suite 100
Vancouver, Washington 98660
www.moffattnichol.com

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Glossary

AMM	Avoidance and Minimization Measures
BE	Biological Evaluation
BMPs	Best Management Practices
CY	Cubic Yards
C-1	Core Commercial
C-2	Low Density Commercial
DNR	Department of Natural Resources
Ecology	Washington State Department of Ecology
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FNC	Federal Navigation Channel
ft	Feet
HPA	Hydraulic Project Approval
IMC	Ilwaco Municipal Code
JARPA	Joint Aquatic Resources Permit Application
MLLW	Mean Lower Low Water
NMFS	National Marine Fisheries Service
NWI	National Wetland Inventory
NWP	Nationwide Permit
OHWM	Ordinary High Water Mark
Port	Port of Ilwaco
PSET	Portland Sediment Evaluation Team
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SMA	Shoreline Management Act
SMP	Shoreline Master Program
SSDP	Shoreline Substantial Development Permit
UPS	Upland Placement Site
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WQC	Water Quality Certification

1. INTRODUCTION

The Port of Ilwaco (Port) is located in Ilwaco, Washington, on the north shoreline of the Columbia River in Baker Bay. Annual maintenance dredging is necessary to keep the marina actively operating. Historically the Port has dredged targeted areas of the marina depending on the need, upland placement site (UPS) capacity, budget, and availability of dredging equipment to complete the work within the designated in-water work window. This has resulted in removing only 1 to 3 feet (ft) of accumulated sediment annually from the highest priority areas. Maintenance dredging of the entire marina to the fully permitted depths has not been an option for the Port in the last ten years primarily due to limited placement site capacity and budgetary constraints.

The Port of Ilwaco Marina (marina) is cherished by the local community and allows access to the Columbia River for recreational opportunities such as fishing, cruising, and commercial fishing/crabbing. Periodic maintenance dredging is necessary to keep the Port of Ilwaco Marina actively operating. The marina is an important local economic resource as it supports the commercial fishing and crabbing industry. These employment opportunities are only viable as long as the marina is dredged and accessible to these commercial vessels.

The Port's marina is also used by several state and federal agencies to access the Columbia River including the U.S. Army Corps of Engineers (USACE), the United States Coast Guard (USCG), and Washington Department of Fish and Wildlife (WDFW). The USCG currently uses the Port's travel lift and boat yard for vessel maintanence, as well as a point of deployment. The USCG is also proposing to use the Port's marina for mooring vessels during planned future maintenance and repair of docks at their Cape Disappointment Station. The marina represents a potential point of deployment for rapid access to the Columbia River for the local police department, USCG, and other state and federal emergency responders which significantly reduces response times for incidents that may occur in the River.

The purpose of the project is to remove accumulated sediment and restore depths in the marina to accommodate the vessel drafts of the Port's customers; and to restore capacity of the Port's existing UPS. The UPS is nearing capacity and needs to be rehabilitated through removal of the material that is currently stored onsite. The Port is proposing to restore capacity of the UPS for placement of future dredged material by removing the dredged material that is currently stored there and placing it at the proposed in-water flow lane placement sites. Removing the material currently stored at the UPS would rehabilitate the UPS to allow for placement of dredged material from future dredge events. The use of the UPS allows the Port to proceed with targeted annual maintenance dredging within their limited budget cycles.

The Port requests a new 10-year maintenance dredging permit that will allow for on-going dredging of the marina and placement of dredged material either upland and/or at existing in-water flow lane placement sites. It should be noted that the Port is pursuing the option to place dredged material that is suitable for in-water disposal (either from the marina or from the UPS) at three existing flow-lane sites in Clatsop County, Oregon. Use of the Columbia River flow lane sites will be permitted separately in accordance with the state of Oregon, local and federal permitting authorities.

Project activities are also anticipated to require a Shoreline Substantial Development Permit (SSDP) from the City of Ilwaco (under the authority of the City of Ilwaco Shoreline Master Program [SMP] and the Washington State Shoreline Management Act [SMA]) and a State Environmental Policy Act (SEPA) determination completed by the City of Ilwaco.

The purpose of this report is to demonstrate compliance with the City of Ilwaco SMP. The focus of this memorandum includes activities that would occur within the jurisdiction of the City of Ilwaco (dredging and placement activities within the existing UPS) as placement within the proposed flow-lane placement sites would occur within the jurisdiction of Clatsop County, Oregon.

2. PROJECT DESCRIPTION

The project will require dredging of material from below the ordinary high-water mark (OHWM) of the Columbia River and will require Sections 10 and 404 permits from the USACE. This represents a federal nexus and requires that the USACE consult with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) to assess the potential for effects to species or critical habitats listed under Section 7 of the Endangered Species Act (ESA) and to Essential Fish Habitat (under the provisions of the Magnuson-Stevens Act) as well as the following permits and approvals:

- Hydraulic Project Approval (HPA) from the WDFW,
- A shoreline substantial development permit from the City of Ilwaco,
- 401 Water Quality Certificate (WQC) from the Washington State Department of Ecology (Ecology),
- Washington SEPA Determination from the City of Ilwaco,
- Washington Department of Natural Resources (DNR) Right of Entry/Aquatic Use Authorization,
- Sediment Quality Review/disposal suitability determination from the Portland Sediment Evaluation Team (PSET) (Received: Dated 13 December 2024; included as an attachment to the Joint Aquatic Resources Permit Application [JARPA]).

The full project description including dredging volumes, dredging and placement methods/equipment, and Best Management Practices can be found in the attached SEPA Checklist and Project JARPA. The overall proposed project includes:

1. Completing maintenance dredging in the previously authorized dredge footprint to the previously authorized depths of -8 feet Mean Lower Low Water (MLLW), -10 ft MLLW, and -16 ft MLLW;
2. Dredging 280,288 cubic yards (CY) (one-time capital dredge event) and an annual maximum of 50,000 CY of sediment from within the marina using either hydraulic or mechanical dredging equipment (clamshell or bucket on extended reach excavator)[1];
3. Authorizing flow lane placement of suitable[2] dredged material at three existing Columbia River in-water placement sites in Clatsop County, Oregon via bottom dump barge. (See Sheets 8 through 11). ** Note: The Columbia River flow lane sites will be permitted separately in accordance with the state of Oregon, local and federal permitting authorities.;
4. Authorizing removal of the previously dredged suitable material that is currently stored at the UPS (approximately 70,000 CY) for placement into the above listed Columbia River flow lane placement sites;
5. Authorizing placement of suitable dredged material at currently authorized UPS;
6. Authorizing a total dredge volume of up to 735,000 CY[3] for a new 10-year USACE permit;
7. Authorizing placement of approximately 4,410 CY of clean sand within the marina[4]; and

[1] The one-time capital dredge event is funding dependent and may occur during any single year that the permit is valid. The proposed annual maximum maintenance dredging volume (not including the one-time capital dredge event volume) would be a maximum of 50,000 CY

[2] Only material that is suitable for in-water placement will be placed in the flow lane sites. (2024 PSET Suitability Determination)

[3] The Port's SDM includes approval of a maximum dredge volume of up to 735,000 CY. This volume is based the one-time capital dredge event (280,288 CY) and material currently stored at the upland placement site (70,000 CY), plus historic annual dredge volumes over the life of a 10-year permit. The annual maintenance dredging will not exceed 50,000 CY in a given year. The Port is currently authorized to dredge the marina under existing permits, as such the total volume of material that may be dredged over the life of the requested 10-year permits may be less that the calculated volume but would not exceed 735,000 CY.

[4] The 13 December 2024 PSET Suitability Determination Memorandum indicates that a 1-foot layer of clean sand will be required if post-dredge surface sediment sampling indicates that the post-dredge surface around sampling station SP-ll is not suitable for unconfined aquatic exposure (See Attached Suitability

8. Authorizing nighttime activities because dredging operations could include night shifts.

Dredging Work Windows:

It is anticipated that 1 November to 28 February will be the in-water work window for the new dredging permits consistent with state and federal guidance and requirements for fish protections.

2.1. Existing Conditions

The site consists of a marina located along the north shore of Baker Bay adjacent to the City of Ilwaco. The site and its vicinity are shown on Sheet 1. Baker Bay is located on the Washington side (north side) of the Columbia River and is an estuary for the Wallacut and Chinook rivers.

Vegetation and terrestrial habitat conditions are limited at the project site. The shoreline along the majority of the marina is armoured with riprap or bulkhead structures, and terrestrial vegetation is limited to sparse, low-growing vegetation growing amongst the riprap. There is limited habitat for terrestrial wildlife species, and limited functioning riparian habitat at the site because the site is located within the waters of a busy, working marina.

Primarily small and patchy areas of eelgrass were observed in the Ilwaco Marina during the 2022 eelgrass survey completed for the project (GeoEngineers, 2022, included as an attachment to the JARPA[5]). The majority of observed eelgrass is observed near docks G and H. The eelgrass was only observed in those areas where annual maintenance dredging has not been completed in several years and sedimentation has resulted in high points where eelgrass can establish transitory beds that are actively disturbed by marina vessel traffic throughout the year. These beds likely occur here due to an extended period of deposition from the Columbia River based on the lack of regular marina-wide dredging, which has created suitable growing conditions (depth) (GeoEngineers 2022). Ilwaco marina's maintenance dredging has been limited to annual targeted dredging by budget constraints. Additionally, eelgrass beds are not known to naturally occur at the mouth of the Columbia River due to high turbidity levels which create unsuitable growing conditions. It is assumed that the breakwaters have reduced turbidity levels within the marina, which has allowed eelgrass beds to grow here. Given the location of these beds within a busy, active marina, the ecological benefits associated with these beds are anticipated to be limited and transitory. Mitigation for impacts to eelgrass beds within the marina is not anticipated to be required based on their patchy and transitory nature, location in a heavily modified environment of the active Marina, and presence enabled by the conditions due to the periodic and targeted nature of maintenance dredging to authorized depths in the Marina limited by the Port's budgetary cycles.

Determination Memorandum in the JARPA). The volume of material was based on area of unsuitable material (approximately 119,097 sq. ft.) and 1 foot of clean sand.

[5] GeoEngineers. 2022. Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey.

3. JURISDICTIONAL DESIGNATIONS AND REGULATED AREAS

3.1. Zoning and Shoreline Environment Designations

Upland areas adjacent to the marina are zoned by the City as Light Industrial (M1) to the west and northwest, and Low Density Commercial (C-2) to the east and northeast (including the existing UPS The shoreline designation for upland areas adjacent to the marina is High-Intensity. The marina itself has an Aquatic shoreline environment designation.

Section 15.36.010 of the Ilwaco Municipal Code (IMC) states that the light industrial district provides areas for light industrial uses and services requiring outdoor yards for storage or sales. Allowed uses generally do not have exterior nuisance factors such as noise, glare and industrial wastes. Buffers from other land uses or roadways may be required to result in less friction with other uses.

Section 15.33.010 of the IMC states that the intent of the C-2 district is to provide for less dense commercial development than that in the core commercial (C-1) district. The purpose of C-1 development is to provide a mix of residential and commercial uses.

The Ilwaco SMP states that the purpose of the High-Intensity environment is to provide for high-intensity water oriented commercial, transportation, and industrial uses while protecting existing ecological functions and restoring ecological functions in areas that have been previously degraded."

Management policies for the High-Intensity Shoreline Designation include giving priority first to water dependant uses, prioritizing full use of the existing high intensity shoreline designation areas before expanding the high use designation, providing visual and physical public access, implementing aesthetic objectives, and no net loss of ecological functions.

The proposed project is consistent with the management policies of the high-intensity shoreline designation because it includes maintaining an existing use within the shoreline jurisdiction without expansion, supports on-going public access to the shoreline, would not result in a change of the visual or aesthetic character of the shoreline and will not result in a net loss of shoreline ecological functions as demonstrated in Section 3.2 below.

The Ilwaco SMP states that the purpose of the Aquatic environment is to protect, restore, and manage the unique characteristics and resources of areas waterward of the OHWM.

Management policies related to the Aquatic shoreline environmental designation include restrictions on new over-water structures, requirements to minimize interference with surface navigation, to consider impacts to public views, and to allow for the safe, unobstructed passage of fish and wildlife, not net loss of ecological functions, management of waterways to prevent impacts to water quality or hydrographic conditions.

The proposed project is consistent with the management policies of the Aquatic shoreline designation because it does not include new or expanded over water structures, would allow for continued safe navigation, will not impact public access or views, and will not result in impacts to fish and wildlife habitat, water quality, or a loss of shoreline ecological function as demonstrated in Section 3.2 below.

3.2. Critical Areas

This section provides an overview of Critical Areas provisions of the Ilwaco SMP and demonstrates how the Project is compliant with the policy of "no net loss" (SMP Section 4.1.2(1)) and required mitigation (SMP Section 4.1.2(2)).

SMP Appendix B Section B.6 provides information related to the review process for critical areas. The review process includes submittal of the identification form and states that "If the Shoreline Administrator determines there are critical areas within or adjacent to the Project area, but the best available science shows that the proposed activity is unlikely to degrade the functions or values of the critical area, the

Shoreline Administrator may waive the requirement for a critical area report." The remainder of this section demonstrates why it is unlikely that the proposed Project will degrade the functions or values of critical areas. The Port is requesting the Shoreline Administrator waive the requirement for a critical area report.

The following the sections discuss the presence or absence of critical areas within or adjacent to the project area and potential impacts to critical areas they could occur as a result of the proposed project.

Wetlands

Review of the USFWS National Wetlands Inventory (NWI) Wetlands Mapper indicates that wetlands mapped in the vicinity of the Project include the marine waters of the Port classified as an Estuarine and Marine Deepwater and Estuarine Marine Wetland, and wetlands mapped east of the marina at the UPS. These wetlands are mapped as Freshwater Emergent Wetland and Freshwater Pond.

Estuarine wetlands have been documented in the vicinity of the project area as shown in the Aquatic Critical Areas Assessment and Microvegetation/Eelgrass Survey completed by GeoEngineers (GeoEngineers 2022, included as an attachment to the JARPA). However, these wetlands are outside of the proposed project boundaries and would not be impacted by the proposed project.

The UPS is a regularly disturbed, engineered, dredged material placement site that has been designed to de-water and store dredged material. This site does not contain the necessary vegetative, hydrologic, or hydric soil characteristics of a wetland.

Wetlands are not present within the marina or UPS, nor would wetlands or wetland buffers be impacted directly or indirectly as a result of the proposed project. This critical area is not addressed further.

Frequently Flooded Areas

According to the Federal Emergency Management Agency (FEMA)'s National Flood Hazard Layer the marina and associated dredge prism are situated within in the AE flood zone, but the UPS is not. The removal of dredged material within the marina and placement within the existing UPS will not result in alterations to the flood zone that would result in increased risk of flooding. The Project will not impact frequently flooded areas.

Frequently flooded areas will not be impacted directly or indirectly as a result of the proposed project. This critical area is not addressed further.

Geological Hazard Areas

The proposed Project does not include any new development. The requested permits only allow dredging and placement within an existing, previously authorized, dredge footprint and engineered upland dredged material placement site. The dredge prism is entirely below the OHWM and does not pose risk to erosion. The UPS is an engineered site with berms designed to store and de-water dredged material and are not likely susceptible to erosion that represents a geologic hazard. Review of the Washington Geological Hazard Portal shows that the Project site is not within a landslide hazard area. The Project site is within a Tsunami Hazard Area and a Seismic Hazard Area.

The Performance Standards stated in the SMP for Tsunami and Seismic Hazard Areas state that, *all development within areas that meet the classification criteria for seismic or tsunami hazard areas shall comply with the model codes as approved and adopted by the State Building Code Council, together with any amendments or additions*. The proposed Project does not include any new structures, alterations to existing structures, or development and therefore the Project is not applicable to the provisions of the model codes as approved and adopted by the State Building Code Counsil. The proposed Project will not result in any adverse impacts to geological hazard areas.

Geological hazard areas will not be impacted directly or indirectly as a result of the proposed project. This critical area is not addressed further.

Fish and Wildlife Conservation Areas

The project site includes three of the eleven categories of fish and wildlife habitat conservation areas regulated under the SMP: Areas with which State or Federally Designated Endangered, Threatened, and Sensitive Species have a Primary Association, State Priority Habitats and Areas Associated with State Priority Species, and Waters of the State.[6]

A Biological Evaluation (BE) has been completed to evaluate potential impacts to threatened and endangered species (included as an attachment to the JARPA). The BE evaluated potential direct and indirect impacts to ESA-listed species and associated habitat that could occur as a result of the Project. Potential impacts/resources evaluated include water quality, noise, benthic habitat, aquatic habitat, turbidity, and prey species. The Project BE concluded that Direct and indirect adverse impacts to protected species could occur but are unlikely to occur given the extent of the proposed maintenance dredging, associated placement activities, and proposed Avoidance and Minimization Measures (AMMs) (See attached JARPA).

State Priority Habitats and Areas Associated with State Priority Species within or near the Project site include purple martin nesting, estuarian and marine wetland, aquatic habitat, and freshwater emergent wetland at the UPS. Purple martins are known to nest in rotten piles in the marina. The Project does not include any changes to marina structures and wetland habitat is not present within the Project area as discussed in Section 3.2. These fish and wildlife habitat conservation areas will not be impacted as a result of the proposed project.

Substantial impacts are not anticipated to occur as a result of the proposed Project. Maintenance dredging would occur within the existing active marina, within the previously approved dredge prism and to the previously authorized dredge depth. Dredged material would be placed at the Port's existing UPS. The marina is confined by a rubble mound breakwater and neither the marina or the UPS are anticipated to provide optimal habitat. Best Management Practices (BMPs) will be implemented during construction activities to avoid and minimize the potential for inadvertent impacts to the aquatic environment including adherence to the approved in-water work window (Section 1.4 of the BE and 8a of the JARPA).

Fish and Wildlife Conservation Areas present within the Project area (ESA-listed species) have been evaluated in the BE. The Project BE concluded that direct and indirect adverse impacts could occur to protected species but are unlikely to occur given the extent of the proposed maintenance dredging, associated placement activities, and proposed AMMs. See the BE (included as in attachment to the JARPA) for additional details. The proposed Project is not anticipated to result in long-term or permanent adverse impacts this critical area.

3.2.1. Mitigation Sequencing and No Net Loss

SMP Appendix B, Section G.2 (*Mitigation Sequencing*) states that applicants shall demonstrate that all reasonable efforts have been examined with the intent to avoid and minimize impacts to critical areas. When an alteration to a critical area is proposed, such alteration shall be avoided, minimized, or compensated for in the following sequential order of preference:

1. *Avoiding the impact altogether by not taking a certain action or parts of an action;*

[6] Remaining fish and wildlife criteria not found within or near the Project site include Habitats and Species of Local Importance, Commercial and Recreational Shellfish Areas, Kelp and Eelgrass Beds and Herring and Spelt Spawning areas, Naturally Occurring Ponds under 20 Acres, Lakes, Ponds, Streams, and Rivers Planted with Game Fish by a Governmental or Tribal Entity, State Natural Area Preserves and Natural Resource Conservation Areas, Areas of Rare Plant Species and High Quality Ecosystems, and Land Useful or Essential for Preserving Connections Between Habitat Blocks and Open Spaces.

2. *Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as Project redesign, relocation, or timing, to avoid or reduce impacts;*

3. *Rectifying the impact to wetlands, critical aquifer recharge areas, frequently flooded areas, and habitat conservation areas by repairing, rehabilitating, or restoring the affected environment to the historical conditions or the conditions existing at the time at the time of the initiation of the Project;*

4. *Minimizing or eliminating the hazard by restoring or stabilizing the hazard area through engineered or other methods;*

5. *Reducing or eliminating the impact or hazard over time by preservation and maintenance operations during the life of the action;*

6. *Compensating for the impact to wetlands, critical aquifer recharge areas, frequently flooded areas, and habitat conservation areas by replacing, enhancing, or providing substitute resources or environments; and*

7. *Monitoring the hazard or other required mitigation and taking remedial action when necessary.*

The project has been designed to avoid and minimize impacts to the maximum extent feasible. Initially the Port evaluated placing dredged material at a proposed beneficial use site located in water southeast of the Port of Chinook's marina. However, the proposed beneficial use placement site was eliminated due to eelgrass present at the proposed site and associated mitigation requirements that the Port could not accommodate.

Potential impacts that may occur as a result of the proposed project include temporary, localized water quality impacts (turbidity) and temporary impacts to marginal benthic habitat (discussed in Section 5 of the Project BE attached to the JARPA). However, long-term adverse impacts are not anticipated and BMPs will be implemented to avoid the potential for inadvertent adverse impacts.

Mitigation is not proposed for maintenance dredging and dredged material placement. Maintenance dredging to previously approved depths will occur at the marina within the maintained and previously permitted dredge prism boundary, and dredge material placement will occur at either the Port's existing UPS or in-water at the existing Columbia River flow lane placement sites within Clatsop County, Oregon. All in-water work will occur during the approved in-water work window and only material characterized as suitable for in-water placement will be placed at the flow lane sites.

The proposed project is consistent with the provisions of the SMP requiring adherence to mitigation sequencing. The Port opted to avoid impacts altogether by not taking certain actions (elimination of the nearshore beneficial use site), will minimize impacts by limiting the degree or magnitude of the actions by using appropriate technology (implementation of BMPs during construction); and is reducing unnecessary impacts by conducting maintenance activities that allow for the continued use of the existing marina. The proposed project will not result in a net loss of ecological functions or values.

3.3. State Environmental Policy Act Review

The Port is requesting SEPA review by the City as the lead agency for the Project under SEPA. A SEPA checklist has been completed and is included with this submittal package for City review.

4. REGULATORY COMPLIANCE

This section demonstrates compliance with applicable state and city requirements for approval of a SSDP.

4.1. State Shoreline Management Act Policies

4.1.1. Revised Code of Washington (RCW) Chapter 90.58

4.1.1.1. Legislative findings—State policy enunciated—Use preference (RCW 90.58.020)

The legislature declares that the interest of all of the people shall be paramount in the management of shorelines of statewide significance. The department, in adopting guidelines for shorelines of statewide significance, and local government, in developing master programs for shorelines of statewide significance, shall give preference to uses in the following order of preference which:

1. *Recognize and protect the statewide interest over local interest;*
2. *Preserve the natural character of the shoreline;*
3. *Result in long term over short term benefit;*
4. *Protect the resources and ecology of the shoreline;*
5. *Increase public access to publicly owned areas of the shorelines;*
6. *Increase recreational opportunities for the public in the shoreline;*
7. *Provide for any other element as defined in Revised Code of Washington (RCW) 90.58.100 deemed appropriate or necessary.*

Response: The policies of RCW 90.58.020 are primarily meant to shape a local government's SMP (in this case the City of Ilwaco) in terms of how uses are prioritized within the shoreline. Water-dependent uses requiring a shoreline location receive the highest priority for a shoreline location, followed by water-related/enjoyment uses, while non-water-dependent uses receive the lowest priority. The proposed Project will occur in an existing marina (protecting resources and ecology of currently undeveloped portions of the shoreline); will provide continued public accessibility to the existing marina/shoreline; will support the economic interest of the City of Ilwaco; and will provide continued recreational opportunities through use of the marina. The proposed Project meets the requirements of the SMP as demonstrated throughout Section 4, and meets the policies of RCW 90.58.020, as it proposes a use that will meet objectives (1) through (7) above.

4.1.2. Washington Administrative Code (WAC) Chapter 173-27

4.1.2.1. Review Criteria for All Development (WAC 173-27-140)

A. No authorization to undertake use or development on shorelines of the state shall be granted by the local government unless upon review the use or development is determined to be consistent with the policy and provisions of the Shoreline Management Act and the master program.

Response: The SMA promotes water-dependent and water-related uses in areas designated as shorelines of the state. The SMA specifically states "uses shall be preferred which are… unique to or dependent upon use of the state's shoreline".

> *… shall be given priority for… Ports, shoreline recreational uses including but not limited to parks, marinas, piers, and other improvements facilitating public access to shorelines of the state, industrial and commercial developments which are particularly dependent on their location on or use of the shorelines of the state and other development that will provide an opportunity for substantial numbers of the people to enjoy the shorelines of the state. (RCW 90.58.020)*

The proposed Project involves maintenance dredging within an existing marina and dredged material placement within the existing UPS to support existing permitted water-dependant use and is therefore consistent with the policies and provisions of the SMA.

4.1.2.2. Review Criteria for Substantial Development Permits (WAC 173-27-150)

Consistent with this permit request, the review criteria required by the SMA are discussed below; city regulations pertaining to this request are discussed in Section 4.2.

> *(1) A substantial development permit shall be granted only when the development proposed is consistent with:*
>
> *(a) The policies and procedures of the act;*

Response: The marina supports recreational, commercial, and Port uses that are water dependent in nature and therefore the Project is consistent with the intent of the SMA. The SMA encourages water-oriented development (water-dependent, water-related, and water enjoyment) within shoreline areas and discourages non-water-dependent uses. Water-dependent uses are given the highest priority followed by water-related and water-enjoyment uses, as stated in RCW 90.58.020. The purpose of the proposed Project is maintenance dredging and dredged material placement to ensure safe continued access to the marine for commercial, recreational, and Port uses. Therefore, the Project meets the objectives of the SMA to encourage water-dependent and water-oriented uses in the State's shorelines. Consistency with these and other city policies is outlined further in Section 4.2.

> *(b) The provisions of this regulation; and*

Response: In compliance with this regulation, the packet containing this narrative constitutes a complete SSDP application.

> *(c) The applicable master program adopted or approved for the area. Provided, that where no master program has been approved for an area, the development shall be reviewed for consistency with the provisions of chapter 173-26 WAC, and to the extent feasible, any draft or approved master program which can be reasonably ascertained as representing the policy of the local government.*

Response: The Project is in compliance with the adopted City of Ilwaco SMP as demonstrated in Section 4.2.

4.2. Ilwaco Shoreline Master Program

The following sections detail how the proposed Project is consistent with the goals, policies, and regulations of the City of Ilwaco SMP.

4.2.1. Shoreline Master Program General Policies (SMP Chapter 4.1)

4.2.1.1. Archaeology and Historic Resources (SMP Section 4.1.1)

Policies

1) *Shoreline features should be protected to prevent the destruction of, or damage to, any site having archaeological, historic, cultural, or scientific value through coordination and consultation with the appropriate local, state, tribal and federal authorities.*

2) *Cooperation among public and private parties is to be encouraged in the identification, protection, and management of cultural resources.*

    a. *Owners of property containing previously identified historic, cultural or archaeological sites are encouraged to make development plans known well in advance of application, so that appropriate agencies such as the Washington State Department of Archaeology and Historic Preservation, affected tribes and others may have ample time to assess the site and make arrangements to preserve historical, cultural and archaeological values as applicable.*

3) *As appropriate, such sites should be preserved and/or restored for study, education and/or public enjoyment to the maximum possible extent. When and/or where appropriate, access to such sites should be made available to parties of interest. Access to such sites must be designed and managed in a manner that gives maximum protection to the resource*

Response: There are no known landmarks, features, or other evidence of Indian or historic use or occupation. The proposed Project includes only maintenance dredging of accumulated sediment within the previously authorized dredge prism and to previously authorized dredged depths, and placement of dredged material within the existing UPS. Project activities are not anticipated to impact cultural and/or historic resources (See the Cultural Resources Report attached to the JARPA).

4.2.1.2. Critical Areas (Section 4.1.2)

Policies

1) *The existing ecological functions and ecosystem-wide processes of critical areas should be protected.*

2) *Human uses and values that are compatible with the protection of the existing ecological functions and ecosystem-wide processes of critical areas, such as public access and aesthetic values, should be promoted provided that impacts to ecological functions are first avoided, and any unavoidable impacts are mitigated*

Response: The proposed Project is located within an existing marina that provides limited shoreline ecological functions. The proposed Project includes maintenance dredging of accumulated sediment within the previously authorized dredge prism and to previously authorized dredged depths, and placement of dredged material within the existing UPS. The proposed Project is not anticipated to have adverse impacts to the environment or result in a net loss of ecological functions and/or values. Please see Section 3.2 above for more detail.

4.2.1.3. Environmental Protection (Section 4.1.3)

Policies

1) *The City's Shoreline Master Program should assure, at a minimum, no net loss of ecological functions necessary to sustain shoreline natural resources.*

2) *To assure no net loss of shoreline ecological functions, individual uses and developments should be required to mitigate environmental impacts not otherwise avoided or minimized by compliance with the City's Shoreline Master Program or other applicable regulations.*

Response: The proposed project will not result in a net loss of shoreline ecological functions or values as demonstrated in Section 3.2 above. Please see Section 8c of the attached JARPA and Section 3.2 above for additional details.

4.2.1.4. Flood Hazard Reduction (SMP Section 4.06)

Polices

1) When evaluating alternate flood control measures, the removal or relocation of structures in flood-prone areas should be considered.

2) Where feasible, preference should be given to non-structural flood hazard reduction measures over structural measures.

3) River and stream processes should be returned to a more natural state where feasible and appropriate, including the removal of artificial restrictions to natural channel migration and the restoration of off-channel hydrological connections.

(4) Flood hazard protection measures should not result in a net loss of ecological functions and ecosystem-wide processes associated with rivers and streams.

Response: The proposed Project does not include any new development. The requested permits only allow dredging and placement within an existing, previously authorized, dredge footprint and engineered upland dredged material placement site. The proposed Project does not include new structures or any elements that will impact flood hazard zones.

4.2.1.5. Public Access (SMP Section 4.1.5)

Polices

1) The public interest with regard to rights to access waters held in public trust by the state should be promoted and enhanced, while protecting private property rights and public safety.

2) The rights of navigation and space necessary for water-dependent uses should be protected.

3) To the greatest extent feasible consistent with the overall best interest of the state and the people generally, the public's opportunity to enjoy the physical and aesthetic qualities of shorelines of the state, including views of the water, should be protected.

(4) The design, construction, and operation of permitted uses in shorelines of the state should be regulated to minimize, insofar as practical, interference with the public's use of the water.

Response: The proposed Project would not result in impacts to public access to the shoreline, navigation, or the physical or aesthetic qualities of the shoreline. Maintenance dredging of the existing marina will support on-going public access to the shoreline for recreational and commercial uses.

4.2.1.6. Vegetation Conservation (SMP Section 4.1.6)

Polices

1) *Vegetation conservation should be undertaken to protect the ecological functions and ecosystem-wide processes performed by vegetation along shorelines. Vegetation conservation should also be undertaken to protect human safety and property, to increase the stability of shorelines, to reduce the need for structural shoreline stabilization measures, to improve the visual and aesthetic qualities of the shoreline, to protect plant and animal species and their habitats, and to enhance shoreline uses.*

Response: Maintenance dredging activities will take place entirely below the OHWM and will not adversely affect impact shoreline vegetation. The UPS is an engineered dredge placement, that is regularly disturbed by dredged material placement and has been designed to de-water and store dredged material. The UPS site does not provide significant shoreline ecological functions. The project will not result in impacts to shoreline vegetation that provide shoreline stability, visual or aesthetic value, or substantial habitat value.

4.2.1.7. Water Quality and Quantity (SMP Section 4.1.7)

Policies

1) *Impacts to water quality and quantity that would result in a net loss of shoreline ecological functions or in a significant impact to aesthetic qualities or recreational opportunities should be prevented.*

2) *Low impact development facilities that do not substantially change the character of the shoreline, such as vegetation filter strips, grass-lined swales, and vegetated bioretention and infiltration facilities, should be encouraged in association with development allowed in shoreline jurisdiction*

Response: The proposed Project will be completed in accordance with all federal, state, and local permit requirements. Including, but not limited to, the City of Ilwaco's SSDP and a 401 WQC issued by Ecology. Potential impacts to water quality include temporary, localized increases to turbidity during dredging. BMPs will be implemented during all project activities to limit turbidity to the maximum extent feasible. Short-term, localized increases in turbidity will not result in a net loss of ecological functions.

4.2.2. Shoreline Use, Development & Modification Policies (SMP Chapter 4.2)

This section addresses shoreline use, development and modification policies identified in the SMP that are applicable to the proposed project. Shoreline uses and developments that are not applicable to the proposed project have been omitted for the sake of brevity.

4.2.2.1. General shoreline use, development & modification policies (SMP Section 4.2.1)

Policies

1) *The development of property in shoreline jurisdiction should protect the public's health, safety, and welfare; the land and its vegetation and wildlife; and property rights while implementing the policies of the Shoreline Management Act.*

2) *The City, when determining allowable uses and resolving use conflicts on shorelines within jurisdiction, shall apply the following preferences and priorities in the order listed below.*

    a. *Reserve appropriate areas for protecting and restoring ecological functions to control pollution and prevent damage to the natural environment and public health.*

b. *Reserve shoreline areas for water-dependent and associated water-related uses.*

c. *Reserve shoreline areas for other water-related and water-enjoyment uses that are compatible with ecological protection and restoration objectives.*

d. *Locate single-family residential uses where they are appropriate and can be developed without significant impact to ecological functions or displacement of water-dependent uses.*

e. *Limit nonwater-oriented uses to those locations where the above described uses are inappropriate or where nonwater-oriented uses demonstrably contribute to the objectives of the Shoreline Management Act.*

Response: The proposed project includes maintenance dredging within the existing marina and dredged material placement at the existing UPS. The Project does not include temporary or permanent work along the shoreline that could result in adverse impacts to the public and/or ecological functions. Maintenance dredging is essential for marina operations and the proposed Project is a water-dependant use.

3) *For shorelines of statewide significance, the City shall give preference to uses, in the following order of preference, which:*

   a. *Recognize and protect the statewide interest over local interest;*

   b. *Preserve the natural character of the shoreline;*

   c. *Result in long-term over short-term benefit;*

   d. *Protect the resources and ecology of the shoreline;*

   e. *Increase public access to publicly owned areas of the shorelines;*

   f. *Increase recreational opportunities for the public in the shoreline;*

   g. *Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary*

Response: See Section 4 above.

4) *Use conflicts should be reduced by prohibiting or applying special conditions to uses that are not consistent with the control of pollution and prevention of damage to the natural environment or are not unique to or dependent upon use of the City's shoreline.*

5) *Only shoreline modifications that are appropriate to the specific type of shoreline and environmental conditions for which they are proposed should be allowed.*

6) *The adverse effects of shoreline modifications should be reduced and, as much as possible, shoreline modifications should be limited in number and extent.*

7) *Shoreline modifications, individually and cumulatively, should not result in a net loss of ecological functions. This should be achieved by giving preference to those types of shoreline modifications that have a lesser impact on ecological functions and requiring mitigation of identified impacts resulting from shoreline modifications.*

8) *Structural shoreline modifications should be allowed only where they are demonstrated to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage or are necessary for reconfiguration of the shoreline for mitigation or enhancement purposes.*

9) *The enhancement of impaired ecological functions should be planned for where feasible and appropriate, while accommodating permitted uses.*

Response: The proposed Project is a permitted use of the shoreline as demonstrated in SMP Table 7-1 Shoreline Use, Development and Modification Matrix. The proposed maintenance dredging and dredged material placement does not conflict with existing uses within or surrounding the marina. Maintenance dredging is appropriate to the shoreline designation as demonstrated in Section 3.1 and will not result in a net loss of ecological functions as demonstrated in Section 3.2 above. Maintenance dredging is necessary to maintain functionality and safety within the existing marina.

4.2.2.2. Dredging and Dredge Material Disposal (SMP Section 4.2.8)

Policies

1) *Dredging and dredge material disposal should be done in a manner that avoids, minimizes or mitigates significant ecological impacts.*

Response: See Section 3.2. The Project has been designed to avoid and minimize impacts to ecological functions to the maximum extent feasible. BMPs will be implemented during project construction to avoid and minimize the potential for inadvertent adverse impacts. The proposed project will not result in long-term or permanent adverse impacts to ecological functions.

2) *Dredging and dredge material disposal should be consistent with adopted regional interagency dredge material management plans and watershed management plans.*

Response: Dredge material was characterized in accordance with Northwest Regional Sediment Evaluation Team (RSET) and its final guidelines, Sediment Evaluation Framework (U.S. Army Corps of Engineers [USACE] et al., May 2018). The Portland Sediment Evaluation Team (PSET) issued a suitability determination memorandum on 13 December 2023 (included as an attachment to the JARPA).

3) *Uses of suitable dredge material that benefit shoreline resources are encouraged.*

Response: Dredged material may be placed at any of three flow lane placement sites within the Columbia River in Clatsop County, Oregon. Reintroducing lower Columbia River dredging material back into the river is considered a beneficial use because it helps to sustain the river's morphology and habitat[7]. The Columbia River flow lane sites will be permitted separately in accordance with the state of Oregon, local and federal permitting authorities.

4) *Placement of dredge material into the flow lane or in-water disposal site is encouraged to reduce the pressure for upland placement of dredge material whenever possible.*

Response: Dredged material that is suitable for unconfined aquatic placement will be placed at in-water placement sites whenever feasible based on funding, UPS capacity, and equipment availability to complete the work. The Columbia River flow lane sites will be permitted separately in accordance with the state of Oregon, local and federal permitting authorities.

4.2.3. General Regulations (SMP Chapter 6)

4.2.3.1. Archaeological, Historic & Cultural Sites (SMP Section 6.1)

[7] ERDC-C HL (Engineer Research and Development Center, Coastal & Hydraulics Laboratory), 2024. Regional Sediment Management. Available at: https://experience.arcgis.com/experience/008394d6b24944f0af4499a1511e7b85/.

Response: A cultural resources investigation was completed for the project and determined that there are no known Archaeological, Historic & Cultural Sites within the Project site. The cultural resources report is attached to the Project JARPA. The project will be completed in compliance with the policies and regulations of the SMP regarding archaeological, historic, and cultural sites, including but not limited to inadvertent discovery and any conditions of the SSDP.

4.2.3.2. Critical Areas (SMP Section 6.2)

Response: See Section 3.2.

4.2.3.3. Environmental Protection (SMP Section 6.3)

Response: See Section 3.2.1

4.2.3.4. Flood Hazard Reduction (SMP Section 6.4)

Response: Not applicable. Section 6.4(1) states that Flood hazard reduction provisions apply to actions taken to reduce flood damage or hazard and to uses, development, and shoreline modifications that may increase flood hazards. The proposed project does not include new development within the floodplain, actions to reduce flood damage or hazards, and/or any development or activities that may increase flood hazards.

4.2.3.5. Public Access (SMP Section 6.5)

Response: The proposed project includes maintenance dredging and dredged material placement. Maintenance dredging is necessary to maintain adequate draft for vessels that access the marina, including those use for public access to the shoreline.

4.2.3.6. Vegetation Conservation (SMP Section 6.5)

Response: Section 6.6(1) of the SMP states that vegetation conservation includes activities to protect vegetation along or near shorelines that contribute to the ecological functions of shoreline areas. Vegetation and terrestrial habitat conditions are limited at the project site. The shoreline along the majority of the marina is armoured with riprap or bulkhead structures, and terrestrial vegetation is limited to sparse, low-growing vegetation growing amongst the riprap. There is limited habitat for terrestrial wildlife species, and limited functioning riparian habitat at the site because the site is within the waters of a working marina. The UPS is sparsely vegetation and regularly disturbed by annual dredged material placement. The proposed project does not include removal of or impacts to existing shoreline vegetation.

4.2.3.7. Water Quality and Quantity (SMP Section 6.5)

Response: The project has been designed to avoid and minimize impacts to water quality to the maximum extent feasible. The proposed Project will be completed in accordance with all federal, state, and local permit requirements including, but not limited to, the City of Ilwaco's SSDP and a 401 Water Quality Certification issued by Ecology. Potential impacts to water quality include temporary, localized increases to turbidity during dredging. BMPs will be implemented during all project activities to limit turbidity to the maximum extent feasible (See JARPA Section 8a for a summary of BMPs).

4.2.4. Shoreline Use, Development & Modification Regulations (SMP Chapter 7)

SMP Table 7-1 indicates shoreline uses, development and modifications that may be allowed or are prohibited in shoreline jurisdiction within each environment designation. Maintenance dredging is identified as a permitted use within the Aquatic shoreline designation.

4.2.4.1. Dredging and Dredge Material Disposal (SMP Section 7.8)

1) *Applicability. As regulated by the City's Shoreline Master Program, dredging is the removal of bed material from below the ordinary high water mark or wetlands using*

other than unpowered, hand-held tools for one of the allowed dredging activities listed in regulation 7.8(3) below. Dredging and dredge material disposal provisions are not intended to cover other removals of bed material waterward of the ordinary high water mark or wetlands that are incidental to the construction of an otherwise authorized use or modification (e.g. shoreline crossings, bulkhead replacements). Such in-water substrate modifications should be conducted pursuant to applicable general and specific use, development and modification regulations of the City's Shoreline Master Program.

2) *New development. New development must be sited and designed to avoid or, if that is not possible, to minimize the need for new and maintenance dredging.*

Response: Not applicable. The proposed project includes maintenance dredging and dredged material placement within the existing marina and UPS. No new dredging is proposed as part of the project.

3) *Dredging, when allowed. Dredging may be allowed for the following purposes when significant ecological impacts are minimized and mitigation is provided:*

Response: SMP 7.8(3)(b) includes "Maintenance dredging of established navigation channels and basins provided dredging is restricted to maintaining previously dredged and/or existing authorized location, depth, and width" The proposed project includes maintenance dredging within the previously authorized dredged prism to previously authorized dredge depths.

4) *Dredging for fill material.*

Response: Not applicable. The project does not include dredging for the primary purpose of obtaining fill material.

5) *Dredge material disposal, upland. Upland dredge material disposal may be approved, provided:*

a. *The dredge material disposal complies with at least one of the following:*

i. *1. The dredge material disposal has been evaluated and approved by the interagency Dredge Management Material Program; or*

ii. *The dredge material disposal is consistent with the guidance from the U.S. Army Corps of Engineers/Environmental Protection Agency publication, Identifying, Planning, and Financing Beneficial Use Projects Using Dredged Material – Beneficial Use Planning Manual (EPA842-B-07-001, October 2007, or as amended).*

Response: Dredged material has been evaluated by the PSET. A Suitability Determination Memorandum from the DMMP is included as an attachment in the JARPA.

b. *A qualified professional demonstrates that the dredge material disposal will not result in significant or ongoing adverse impacts to water quality, fish and wildlife habitat conservation areas and other critical areas, flood holding capacity, natural drainage and water circulation patterns, significant plant communities, or shoreline public access.*

Response: Dredged material has been evaluated by the PSET. A Suitability Determination Memorandum from the DMMP is included as attachment in the JARPA.

c. *Surface runoff shall be controlled to protect water quality and prevent sedimentation of adjacent waterbodies, wetlands and drainageways. Disposal runoff water shall enter the receiving waterway through a controlled*

outfall at a location with adequate circulation and flushing. Underground springs and aquifers shall be identified and protected.

Response: The UPS is an engineered, bermed, placement site designed to dewater and store dredged material. The disposal site run off is discharged via outfall to the Columbia River and which is monitored during dredging and dredged material placement to ensure that discharge water meets applicable visual water quality reporting criteria.

d. Dikes shall be constructed and form a sufficiently large containment area to encourage property "ponding" and to prevent the return of dredged materials into the waterway or estuary.

Response: The UPS is engineered with berms designed to dewater and store dredged material and prevent harmful runoff from re-entering that waterway.

e. The final height and slope after each use of a land dredged material site:

i. 1. Shall not enlarge itself by sloughing and eroding into adjacent aquatic areas;

ii. 2. Shall minimize loss of material from the site during storms and freshets;

iii. 3. Shall not interfere with the view of nearby residences or the public.

Response: Not applicable. The proposed project does not include design or construction of a new UPS.

f. Approved upland dredge disposal sites may conduct site management activities, such as regular clearing and grading, as specified in agency approval documents. Such activities will be regulated as maintenance activities under the City's Shoreline Master Program, provided there are no impacts to water quality or other ecological functions outside of the dredge material disposal area. Vegetation clearing on a dredge disposal site shall not require compensatory mitigation.

Response: The UPS is an approved upland dredge site to hold dredged material and maintenance of the site will adhere to policies under the City's SMP. Dredge placement at the UPS will not result in impacts to water quality of ecological functions. See Section 3.2 for more information.

6) Dredge material disposal, in water. In-water dredge material disposal may be approved provided the dredge material disposal has been evaluated and approved by the interagency Dredge Management Material Program.

Response: Dredged material has been evaluated by the PSET. A Suitability Determination Memorandum from PSET is included as Attachment in the JARPA. Only material that has been found suitable for in-water disposal will be placed at the proposed flow-lane placement sites. The project does not include dredged material disposal within the jurisdiction of the City of Ilwaco. The Columbia River flow lane sites will be permitted separately in accordance with the state of Oregon, local and federal permitting authorities.

7) Avoid, minimize and mitigate.

a. Dredging and dredge material disposal shall be done in a manner that avoids or minimizes significant ecological impacts, and impacts that cannot be avoided shall be mitigated in a manner that assures no net loss of shoreline ecological functions.

Response: See Section 3.2.

b. Dredging and dredge material disposal shall be confined to the minimum area necessary to accomplish the intended purpose or use.

Response: Maintenance dredging is confined to a previously approved dredge prism and previously authorized dredge depth.

c. Dredging and dredge material disposal shall be scheduled to minimize impacts to biological productivity (including, but not limited to, fish runs, spawning, and benthic productivity).

Response: The Project has been designed to avoid and minimize impacts to the maximum extent feasible. All in-water project activities will occur during the approved in-water work window (anticipated to be 1 November to 28 February consistent with state and federal guidance and requirements for fish protections). BMPs will be implemented to avoid and minimize inadvertent impacts to the maximum extent feasible. See Section 3.2 and the Project BE (included as an attachment to the JARPA) for more details.

d. Erosion, sedimentation, increased flood hazard, and other undesirable changes in circulation shall be avoided. Tidal marshes, tidal flats, and other wetlands shall not be adversely affected.

Response: *See Section 3.2.*

8) Agency approvals. Dredging and dredge material disposal must be approved by all state and federal agencies with jurisdiction. Copies of all such approvals must be provided to the City.

Response: The proposed Project will obtain all agency approvals before construction. See attached JARPA for the entire application package. Copies of all such approvals will be provided to the City.

5. CONCLUSION

As demonstrated throughout this narrative and in the attached materials, the proposed modernization activities are consistent with the goals and policies of the SMP.

The Port of Ilwaco requests that the City of Ilwaco issue a Shoreline Substantial Development Permit in compliance with WAC 173-27 and the City's SMP.

6. REFERENCES

GeoEngineers. 2022. Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey.

Disclaimer

Moffatt & Nichol devoted effort consistent with (i) the level of diligence ordinarily exercised by competent professionals practicing in the area under the same or similar circumstances, and (ii) the time and budget available for its work, to ensure that the data contained in this report is accurate as of the date of its preparation. This study is based on estimates, assumptions and other information developed by Moffatt & Nichol from its independent research effort, general knowledge of the industry, and information provided by and consultations with the client and the client's representatives. No responsibility is assumed for inaccuracies in reporting by the Client, the Client's agents and representatives, or any third-party data source used in preparing or presenting this study. Moffatt & Nichol assumes no duty to update the information contained herein unless it is separately retained to do so pursuant to a written agreement signed by Moffatt & Nichol and the Client.

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SEPA Checklist and Joint Aquatic Resources Permit Application Package

SEPA ENVIRONMENTAL CHECKLIST

Purpose of Checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use “not applicable” or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of Checklist for Non-Project Proposals:

For non-project proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of Sections A and B, plus the SUPPLEMENTAL SHEET FOR NON-PROJECT ACTIONS (Part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B – Environmental Elements that do not contribute meaningfully to the analysis of the proposal.

A. Background [HELP]

1) Name of proposed project, if applicable:

   Port of Ilwaco Marina Maintenance Dredging

2) Name of applicant:

   Port of Ilwaco

3) Address and phone number of applicant and contact person:

   Tina Hayes, Port Manager – Port of Ilwaco

   360-642-3143; thayes@portofilwaco.org

   P.O. Box 307,

   Ilwaco, WA 98624

4) Date checklist prepared:

   2 January 2025

5) Agency requesting checklist:

   City of Ilwaco

6) Proposed timing or schedule (including phasing, if applicable):

   Dredging will occur annually within the approved in-water work window. It is anticipated that 1 November to 28 February will be the in-water work window for the new dredging permits consistent with state and federal guidance and requirements for fish protections.

7) Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

   No. There are no plans for future additions, expansion, or further activity related to or connected with this proposal at this time. If any future plans are anticipated, an additional SEPA checklist will be prepared to provide project details.

8) List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

- Joint Aquatic Resources Permit Application for the U.S. Army Corps of Engineers (USACE) and Washington Department of Fish and Wildlife (WDFW)/U.S. Fish and Wildlife Service (USFWS) permits
- Biological Assessment
- Dredged Material Characterization Report
- Dredged Material Suitability Determination by the Portland Sediment Evaluation Team (PSET, 2024), (See attached Joint Aquatic Resources Permit application [JARPA] attachments)
- Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey (GeoEngineers 2022, Included as an attachment to the JARPA).
- Water Quality Monitoring Plan (WQMP)
- Oregon Department of State Lands Functions and Values Assessment Memorandum

9) Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No.

10) List any government approvals or permits that will be needed for your proposal, if known.

- USACE Section 10/404 permit
- Dredged Material Suitability Determination by the Portland Sediment Evaluation Team (PSET, 2024)
- City of Ilwaco Shoreline Substantial Development Permit
- Washington Department of Ecology (Ecology) 401 Water Quality Certification
- Ecology Coastal Zone Management Consistency
- WDFW Hydraulic Project Approval
- U.S. Fish and Wildlife Service/National Marine Fisheries Service Endangered Species Act Section 7 Consultation/Biological Opinion
- Department of Archaeology and Historic Preservation National Historic Preservation Act Section 106

Proposed Flow Lane Placement Sites – Located in Oregon

- USACE Section 408 review – approved (Dated 10 August 2023; Included as an attachment to the JARPA)
- Oregon Department of State Lands Removal/Fill Permit
- Oregon Department of Environmental Quality (ODEQ) 401 Water Quality Certification
- ODEQ Coastal Zone Management Consistency
- Clatsop County Conditional Use Permit

11) Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Background/Site Description

The Port of Ilwaco Marina is cherished by the local community and allows access to the Columbia River for recreational opportunities, such as fishing, cruising, and commercial fishing/crabbing. Periodic maintenance dredging is necessary to keep the Port of Ilwaco Marina actively operating. The marina is an important local economic resource, as it supports the commercial fishing and crabbing industry. These employment opportunities are only viable if the marina is dredged and accessible to these commercial vessels.

The Port's marina is also used by several state and federal agencies to access the Columbia River including the USACE, the United States Coast Guard (USCG), and WDFW. The USCG currently uses the Port's travel lift and boat yard for vessel maintenance, as well as a point of deployment. The USCG is also proposing to use the Port's marina for mooring vessels during planned future maintenance and repair of docks at their Cape Disappointment Station. The marina represents a potential point of deployment for rapid access to the Columbia River for the local police department, USCG, and other state and federal emergency responders which significantly reduces response times for incidents that may occur in the river.

Historically the Port has dredged targeted areas of the marina depending on the need, upland placement site capacity, budget, and availability of dredging equipment to complete the work within the designated in-water work window. This has resulted in removing only 1 to 3 feet (ft) of accumulated sediment annually from the highest priority areas. Dredging to the fully permitted depths has not been an option for the Port in the last ten years primarily due to limited placement site capacity and budgetary constraints.

The purpose of the project is to remove accumulated sediment and restore depths in the marina to accommodate the vessel drafts of the Port's customers; and to restore capacity of the Port's existing upland placement site. The upland placement site is nearing capacity and needs to be rehabilitated through removal of the material that is currently stored onsite. The Port is proposing to restore capacity of the upland placement site for placement of future dredged material by removing the dredged material that is currently stored there and placing it at the proposed in-water flow lane placement sites. Removing the material currently stored at the upland placement site would rehabilitate the upland placement site to allow for placement of dredged material from future dredge events. The use of the upland placement site allows the Port to proceed with targeted annual maintenance dredging within their limited budget cycles.

Maintenance dredging at the Port of Ilwaco Marina is currently authorized by a USACE permit (NWP-2004-78-5) to dredge up to 500,000 cubic yards (CY) over a 10-year period that expires in 2026. Additional associated permits and approvals include:

- Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW) (Permit Number: 2021-6-291+01, Issued 7 July 2021),
- A shoreline exemption from the City of Ilwaco (Dated 30 March 2016),
- 401 Water Quality Certificate (WQC) from the Washington State Department of Ecology (Ecology) (Order #13270, Dated 21 July 2026),
- SEPA Determination of Non-significance (DNS) (City of Ilwaco - Dated 30 March 2016),
- Washington Department of Natural Resources (DNR) Right of Entry/Aquatic Use

Authorization (Port Management Agreement No. 20-080001; 12 August 2014),

- Endangered Species Act (ESA) Consultation from National Marine Fisheries Service (NMFS) (WCR-2016-3986, dated 13 July 2016) and the USFWS, and
- Sediment Quality Review/disposal suitability determination from the Portland Sediment Evaluation Team (PSET) (Dated 13 December 2024).

The existing permits and approvals authorize maintenance dredging to -8 ft mean lower low water (MLLW), -10 ft MLLW, and -16 ft MLLW and placement of the dredged material at the upland placement site located adjacent to the marina (See Sheets 3 through 7).

Maintenance dredging has historically been completed annually at the marina using hydraulic (cutter suction dredge) methods and dredged material has been placed upland via pipeline.

Project Description

The Port requests a new 10-year maintenance dredging permit that will allow for placement of dredged material either upland and/or at existing in-water flow lane placement sites.

The project will require placement of dredge material below the ordinary high water mark (OHWM) of the Columbia River and will require Sections 10 and 404 permits from the USACE. This represents a federal nexus and requires that the USACE consult with the services to assess the potential for effects to species or critical habitats listed under Section 7 of the ESA and to Essential Fish Habitat (under the provisions of the Magnuson-Stevens Act).

The proposed project includes:

1. Conducting maintenance dredging to the previously authorized dredge footprint to the previously authorized depths of -8 feet MLLW, -10 feet MLLW, and -16 feet MLLW;
2. Dredging 280,288 CY (one-time capital dredge event) and an annual maximum of 50,000 CY of sediment from within the marina using either hydraulic or mechanical dredging equipment (clamshell or bucket on extended reach excavator)[1];
3. Authorizing flow lane placement at three existing Columbia River in-water placement sites in Clatsop County, Oregon via bottom dump barge. (See Sheets 8 through 11). ** Note: The Columbia River flow lane sites will be permitted separately in accordance with the state of Oregon, local and federal permitting authorities.;
4. Authorizing removal of the previously dredged material that is currently stored at the upland placement site (approximately 70,000 CY) for placement into the above listed Columbia River flow lane placement sites;
5. Authorizing placement of dredged material at currently authorized upland placement site;
6. Authorizing a total dredge volume of up to 735,000 CY[2] for a new 10-year USACE permit;
7. Authorizing placement of approximately 4,410 CY of clean sand within the marina[3]; and

[1] The one-time capital dredge event is funding dependent and may occur during any single year that the permit is valid. The proposed annual maximum maintenance dredging volume (not including the one-time capital dredge event volume) would be a maximum of 50,000 CY

[2] The Port's SDM includes approval of a maximum dredge volume of up to 735,000 CY. This volume is based the one-time capital dredge event (280,288 CY) and material currently stored at the upland placement site (70,000 CY), plus historic annual dredge volumes over the life of a 10-year permit. The annual maintenance dredging will not exceed 50,000 CY in a given year. The Port is currently authorized to dredge the marina under existing permits, as such the total volume of material that may be dredged over the life of the requested 10-year permits may be less that the calculated volume but would not exceed 735,000 CY.

[3] The 13 December 2024 Portland Sediment Evaluation Team (PSET) Suitability Determination Memorandum indicates that a 1-foot layer of clean sand will be required if post-dredge surface sediment sampling indicates that the post-dredge surface around sampling

8. Authorizing nighttime activities because dredging operations could include night shifts.

It is anticipated that 1 November to 28 February will be the in-water work window for the new dredging permits consistent with state and federal guidance and requirements for fish protections. .

12) Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The proposed project location is at the Ilwaco Marina located at Waterfront Way and Outer Harbor Way SE in Ilwaco, Washington.

Section: 33/34; Township: 10N; Range 11W

The approximate coordinates of the of the Project site are as follows:

- Port of Ilwaco Marina: 46.30442 N Lat./-124.03852 W long,
- OR Flow Lane Site 1. (BB-3): 46.260522 N Lat./-124.038520 W long;
- OR Flow Lane Site 2. (Upper Desdemona Sands): 46.244791 N Lat./-123.990356 W long;
- OR Flow Lane Site 3. (Upper Desdemona – Area D): 46.237760 N Lat./-123.958552 W long.

The project site includes the following tax parcel numbers.

Owner	Parcel Number(s)
Port of Ilwaco	73031000004, 73048003114, 73031011001, 73031011000, 73031014000, 73031000005, 73031015000, 73031000002, 73031017001, 73031000003, 73031018001
State of Washington	73031008000, 73031013000
Ilwaco Landing Fishermen	73031208000

Please see Figure 1 for a vicinity map, Figure 2 for a site plan, and Figure 3 for a tax lot map.

station SP-II is not suitable for unconfined aquatic exposure (See Attached Suitability Determination Memorandum). The volume of material was based on area of unsuitable material (approximately 119,097 sq. ft.) and 1 foot of clean sand.

B. Environmental Elements [HELP]

1. ***Earth*** [help]

   a. General description of the site:

   (circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

   A mooring basin with depths ranging from 0 to -10 ft MLLW, and authorized depth of -8 ft MLLW, -10 ft MLLW, and -16 ft MLLW.

   b. What is the steepest slope on the site (approximate percent slope)?

   The riprap banks of the marina have a 20% slope.

   c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

   Sediment within the marina consists of silt and clay with sand.

   d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

   No, there are no indications of a history of unstable soils in the area.

   e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

   The proposal includes dredging the Port of Ilwaco marina within the Columbia River (Baker Bay) and placing the dredged material either upland and/or in-water flow lane placement sites located adjacent to the marina as described below.

Dredging

The Port requests a new permit for continued maintenance dredging of the marina, including a one-time capital dredge event and annual maintenance dredging of up to 50,000 CY of material to provide safe navigation and to meet the needs of its marina customers.

The Port requests a maintenance dredging permit to be issued for the 2025/2026 in-water work window (Sections 10 and 404), a Section 401 Water Quality Certification (Ecology), a new 5-year HPA from WDFW, and a new shoreline permit from the City of Ilwaco for up to 735,000 CY[4] of dredging at the marina.

Dredging at the marina will occur within the previously approved dredge prism and to the previously authorized depths of -8 ft MLLW, -10 ft MLLW, and -16 ft MLLW. The capital dredge event volume, maximum annual dredge volume and the average annual dredge volume are shown in Table 1 below.

[4] The Port's SDM includes approval of a maximum dredge volume of up to 735,000 CY. This volume is based the one-time capital dredge event (280,288 CY) and material currently stored at the upland placement site (70,000 CY), plus historic annual dredge volumes over the life of a 10-year permit. The annual maintenance dredging will not exceed 50,000 CY in a given year.

Table 1. Summary of Annual Maximum and Average Dredge Volumes

Site	One-time capital dredge event (CY)	Maximum amount of material (CY) to be dredged each year[5]	Average annual amount of material (CY) to be dredged each year
Ilwaco Marina Dredge prism	280,288 CY	50,000 CY	20,000 CY

Placement

The Port's upland placement site is nearing capacity and the Port needs additional capacity for placement during future dredging events. All of the material stored at the upland placement site has been found suitable for open water placement (PSET 13 December 2024; included as an attachment to the JARPA). Therefore, the Port proposes to place dredged material that is suitable for in-water disposal (either from the marina or from the upland placement site) at three existing flow-lane sites in Clatsop County, Oregon (see attached Sheets 8 through 11).

The Port will place dredged material from future dredge events at either the existing flow-lane sites in Clatsop County, Oregon or their currently permitted upland placement site – when additional capacity has been restored. The Port will use different placement sites each year based on a combination of factors such as funding, the equipment used by the Port or a selected contractor, and the rate of dispersion at the proposed in-water site(s). All of the placement sites are needed to meet the Port's overall dredging needs over the 10-year life of the permit.

Only dredged material that has been deemed suitable for in-water placement by the PSET will be placed at the in-water placement sites.

The amount of material and acreage of impact for the proposed dredged material placement is provided in Table 2 below.

[5] This volume is what is currently permitted.

Table 2. Summary of Amount of Dredged Material and Placement Site Acreage of Impact

Placement Site	Marina: One-time initial (capital) dredge event (CY)	One time placement of previously dredged material from upland site (CY)	Maintenance Dredge: Average Annual Volume (CY)	Placement Site: Average Annual Acreage of impact
Oregon Flow Lane Site 1: "BB-3"	280,288	70,000	20,000	8.7 acres
Oregon Flow Lane Site 2:				
Oregon Flow Lane Site 3: "Area D"				
Upland Site	--	--	20,000	3 acres

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

The proposed maintenance dredging would restore slopes similar to those established and maintained on site since dredging first began. The best management practices (BMPs) that will be used to minimize slope sloughing are described below in section B.1.2. Appropriate erosion control measures will be used in association with upland placement and dewatering and are described in Section B.1.2.

1) About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

There will be no impervious surfaces created by this project.

2) Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The following best management practices (BMPs) and conservation measures will be implemented to minimize environmental impacts during dredging and placement.

Endangered Species Act BMPs

Work will be completed during the fish protection work window as authorized by federal and state agencies.

The work will be conducted to ensure no impingement of juvenile salmonids by dredging equipment, clamshell or hydraulic dredge. Regular observation of sediment aboard the barge or at the placement areas will be conducted. If impingement is occurring, clamshell operations would be adjusted (slowed) to increase opportunity for juveniles to avoid the bucket and/or suction head and the hydraulic dredge will be lowered deeper into the sand to minimize water entrainment.

Turbidity BMPs

Construction activities will be performed in compliance with Surface Water Quality Standards for the State of Washington (WAC 173-201A) or other conditions as specified in the WQC.

Appropriate BMPs will be employed to minimize sediment loss and turbidity generation during dredging. BMPs may include, but are not limited to, the following:

- Smooth closure of the bucket when at the bottom (mechanical dredging only)
- No stockpiling of dredged material on the riverbed
- Maintain suction head of hydraulic dredge at the riverbed to the extent practicable (hydraulic only)
- Other conditions as specified in the WQC

Enhanced BMPs may be implemented to control turbidity and may include, but are not limited to, the following:

- Slowing the velocity (i.e., cycle time) of the ascending loaded clamshell bucket through the water column
- Pausing the dredge bucket near the bottom while descending and near the water line while ascending

Hazmat/SPCC BMPs

- *Dredge vessel personnel will be trained in hazardous material handling and spill response, and will be equipped with appropriate response tools, including adsorbent oil booms. If a spill occurs, spill cleanup and containment efforts will begin immediately and will take precedence over normal work.*
- *The dredging contractor will be responsible for the preparation of a Spill, Prevention, Control, and Countermeasure (SPCC) Plan to be used for the duration of the project. The plan shall be submitted to the project engineer prior to the commencement of any construction activities. A copy of the plan with any updates will be maintained at the work site by the contractor.*
- *The SPCC Plan shall identify construction planning elements and recognize potential spill sources at the site. The SPCC Plan shall outline responsive actions in the event of a spill or release and shall describe notification and reporting procedures. The SPCC Plan shall outline contractor management elements, such as personnel responsibilities, project site security, site inspections, and training.*
- *The SPCC Plan will outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. These items include, but are not limited to, gasoline, oils, and chemicals. Hazardous materials are defined in RCW 70.105.010 under "hazardous substance."*

Upland Placement Site BMPs

- Discharge pipes at the upland placement site will be extended or moved as necessary to maintain an efficient ponding configuration within the placement site. Coarser dredged material will be stockpiled around the perimeter, where practical, to avoid reducing pond size unnecessarily.
- The dredging rate will not reach a level that results in noncompliance with the effluent limitations and/or water quality criteria at the discharge point. The level of settleable solids in the discharge will be in accordance with the WQC.
- A buffer plate or other means will be used to reduce flow discharge of the hydraulic dredge at

the placement area if necessary.
- Drainage from the dredged material will be discharged to Baker Bay in accordance with the water quality criteria specified in the WQC.

Unsuitable Material

Two areas within the marina have been identified as unsuitable for unconfined aquatic placement (PSET December 2024) including:

- An approximately 119,100 sq. ft. area in the northeast corner of the marina representing approximately 9,560 CY; and
- The upper 1-foot of material adjacent to the former Ilwaco Landing Seafood Processing crab dock which burned down in January 2024. This area is approximately 105,340 sq. ft. and represents approximately 3,900 CY.

BMPs for dredging and placement of material associated with these areas include:

- 25-foot buffers around unsuitable material will be implemented when dredging adjacent suitable material to prevent comingling of unsuitable material from material that may be placed in-water.
- Unsuitable material will be disposed of at a permitted upland landfill facility.

  If unsuitable material is temporarily stored at the Port's upland placement site prior to being transported for disposal at an upland facility, unsuitable material will be isolated from suitable material and will be confined and covered in such a way as to prevent stormwater coming into contact with the unsuitable material and associated runoff. The unsuitable material stockpile will also be secured to prevent public access and minimize wildlife contact.

2. ***Air*** [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

A hydraulic dredge operated with a diesel engine will be used. Diesel emissions will be present causing odor and emission at the site during dredging. These types of emissions are common along the Columbia River, and are caused by barge traffic, grain ships, and containerized units that travel up and down river. The diesel emissions are not expected to increase above typical conditions at the dredging/placement site. The diesel emissions will be short-term and temporary.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No – there are no sources of off-site emissions or odor that will affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

The emissions associated with project construction activities will be short-lived and localized. The dredge and/or barges or any support vessels will not be allowed to idle when work is not actively occurring to the maximum extent feasible. No additional measures are proposed to reduce or control emissions.

3. ***Water*** [help]

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.
The marina is located on the north shore of the Columbia River in Ilwaco, Washington. The marina and proposed in-water placement sites are shown on the Vicinity Map (attached as Sheet 1). The project site is not located within a wetland area.

2) Will the project require any work over, in, or adjacent to (within 200 ft) the described waters? If yes, please describe and attach available plans.

Yes, the project will be completed within the waters of Baker Bay as shown on Sheets 1 through 11.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

See Section B.1.e

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No. The proposal will not require surface water withdrawals or diversions.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Yes, dredging will occur within Baker Bay and sediment placement will occur at the upland disposal facility or at existing in-water flow lane placement sites located in the Columbia River.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No waste materials will be discharged into surface waters as a result of this project.

b. Ground Water: [help]

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will be withdrawn from subsurface areas for this project.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.
No waste materials will be discharged into the ground as a result of this project.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Runoff from the upland dredged material placement will flow into Baker Bay. The upland placement facility has been properly designed, constructed, and maintained to contain the dredge slurry. The dredging rate will not reach a level of noncompliance with the effluent limitations and/or water quality criteria determined by Ecology at the discharge point to Baker Bay. Weir heights will be raised as necessary to provide efficient ponding and will be of sufficient height and length to maintain a water depth of two inches to a maximum of 4 in. over the weir at maximum dredging flows. The dredge material discharge pipe will be extended or moved as necessary to maintain an efficient ponding configuration.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No. Waste materials will not be allowed to enter the ground or surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

No. The project will not affect drainage patterns in the vicinity of the site. The proposed maintenance dredging will be conducted in the waters of the Columbia River/Baker Bay and the drainage from the upland placement site has been previously established.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Primary and secondary dewatering cells were built within the disposal facility to reduce runoff. Please also refer to Section B.1 for BMPs to control impacts during dredging and placement of dredged material.

*4. **Plants*** [help]

a. Check the types of vegetation found on the site:

____deciduous tree: alder, maple, aspen, other

____evergreen tree: fir, cedar, pine, other

____shrubs

_x__grass

____pasture

____crop or grain

____orchards, vineyards or other permanent crops.

____wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

_x__water plants: water lily, eelgrass, milfoil, other

____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Vegetation and terrestrial habitat conditions are limited at the project site. The shoreline along the majority of the marina is armored with riprap or bulkhead structures, and terrestrial vegetation is limited to sparse, low-growing vegetation growing amongst the riprap. There is limited habitat for terrestrial wildlife species, and limited functioning riparian habitat at the site because the site is within the waters of a working marina.

Eelgrass was observed in the Ilwaco Marina during the 2022 eelgrass survey completed for the project (GeoEngineers, 2022 included as an attachment to the JARPA)[6]. The majority of observed eelgrass is observed near docks G and H. The identified beds are small and patchy in nature (GeoEngineers 2022). The eelgrass was only observed in those areas where annual maintenance dredging has not been completed in several years and sedimentation has resulted in high points where eelgrass can establish transitory beds that are actively disturbed by marina vessel traffic throughout the year. These beds likely occur here due to an extended period of deposition from the Columbia River based on the lack of regular Marina-wide dredging, which has created suitable growing conditions (depth) (GeoEngineers 2022). Ilwaco Marina's maintenance dredging has been limited to annual targeted dredging by budget constraints. Additionally, eelgrass beds are not known to naturally occur at the mouth of the Columbia River due to high turbidity levels which create unsuitable growing conditions. It is assumed that the breakwaters have reduced turbidity levels within the Marina, which has allowed eelgrass beds to grow here. Given the location of these beds within a busy, active Marina, the ecological benefits associated with these beds are anticipated to be limited and transitory. Mitigation for impacts to eelgrass beds within the Marina is not anticipated to be required based on their patchy and transitory nature, location in a heavily modified environment of the active Marina, and presence enabled by the conditions due to the periodic and targeted nature of maintenance dredging to authorized depths in the Marina limited by the Port's budgetary cycles.

c. List threatened and endangered species known to be on or near the site.

There are no threatened or endangered plant species known to be on or near the site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

No vegetation is anticipated to be present because the project activities are primarily located within Baker Bay. There is no opportunity to preserve vegetation as part of this proposal.

e. List all noxious weeds and invasive species known to be on or near the site.

None known.

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

birds: hawk, heron, eagle, songbirds, other:

mammals: deer, bear, elk, beaver, other:

fish: bass, salmon, trout, herring, shellfish, other _____

Species observed on or near the proposed project site include shorebirds, salmon, trout, as well as other common fish and bird species.

b. List any threatened and endangered species known to be on or near the site.

Review of USFWS Information for Planning and Consultation (IPaC) database and National Oceanic and Atmospheric Administration (NOAA) Protected Resources App indicate that the

[6] GeoEngineers. 2022. Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey.

species listed below do or may occur in the vicinity of the project area. Species lists are typically generated based on known or expected range of individual species, however, identification in the dataset does not guarantee that species do occur in the vicinity of the project area (USFWS 2024). See the Biological Evaluation (included as an attachment to the JARPA) for additional information.

Species	ESU/DPS	Scientific Name	Agency	Federal Status	Critical Habitat
Chinook Salmon	Lower Columbia River evolutionarily significant unit (ESU)	*Oncorhynchus tshawytcha*	NMFS	Threatened	Occurs in Action Area
	Snake River fall-run ESU			Threatened	
	Snake River spring/summer-run ESU			Threatened	
	Upper Columbia River spring-run ESU			Endangered	
	Upper Willamette River ESU			Threatened	
Chum Salmon	Columbia River ESU	*O. keta*	NMFS	Threatened	Occurs in Action Area
Coho Salmon	Lower Columbia River ESU	*O. kisutch*	NMFS	Threatened	Occurs in Action Area
Sockeye Salmon	Snake River ESU	*O. nerka*	NMFS	Endangered	Occurs in Action Area
Steelhead	Lower Columbia River Distinct Population Segment (DPS)	*Onocorhynchus myskiss*	NMFS	Threatened	Occurs in Action Area
	Middle Columbia River DPS			Threatened	
	Snake River Basin DPS			Threatened	
	Upper Columbia River DPS			Threatened	
	Upper Willamette River DPS			Threatened	
Green sturgeon	Southern DPS	*Acipenser medirostris*	NMFS	Threatened	Occurs in Action Area
Eulachon	Southern DPS	*Thaleichthys pacificus*	NMFS	Threatened	Occurs in Action Area
Sea turtles	Leatherback	*Dermochelys coriacea*	NMFS	Endangered	None in Action Area
Killer Whale	Southern Resident	*Orcincus orca*	NMFS	Endangered	None in Action Area
Humpback Whale	Central America DPS	*Megaptera novaeangliae*	NMFS	Endangered	None in Action Area
	Mexico DP			Threatened	None in Action Area
Bull Trout	N/A	*Salvelinus confluentus*	USFWS	Threatened	Occurs in Action Area
Western Snowy Plover	N/A	*Charadrius nivosus*	USFWS	Threatened	None in Action Area
Marbled Murrelet	N/A	*Brachyramphus marmoratus*	USFWS	Threatened	None in Action Area
Streaked Horned Lark	N/A	*Eremophila alpestris strigata*	USFWS	Threatened	None in Action Area

Source: USFWS Information for Planning and Consultation (IPaC) database (USFWS 2022) and the NOAA Fisheries Protected Resources App (NOAA 2022).

c. Is the site part of a migration route? If so, explain.

Yes. Portions of the Action Area in the Lower Columbia River may be used as migratory corridors for fish species such as Chinook salmon (*Oncorhynchus tshawytcha*), chum salmon (Oncorhynchus keta), Coho salmon (Oncorhynchus kisutch), Sockeye salmon (Oncorhynchus nerka), and steelhead (*Onocorhynchus myskiss*). The Project area is also situated within the Pacific Flyway for migratory birds.

d. Proposed measures to preserve or enhance wildlife, if any:

No permanent loss of habitat functions or effects to listed species are anticipated based upon previous and reinitiated ESA Consultations (USACE No. 99-1252; NWP-2004-78-5, NMFS No. WSB-01-024); and based on dredging methods, dredged material placement methods to retain sediment in the river to the extent practicable, and on use of BMPs (See Section B.1).

e. List any invasive animal species known to be on or near the site.

New Zealand mudsnail, Asian clam, freshwater hydroid (*Cordulophora caspia*), copepod (*Tachidius triangularis*), Chinese mitten crab, American shad, goldfish, and nutria (Washington Invasive Species Council, 2024).

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Project energy needs consist of fuel for the dredging and placement equipment.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The project will not affect the potential of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

The project is not expected to increase existing energy demands. No energy conservation features are included in the plans for this proposal.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

It is possible but unlikely that fuel or lubricants from the dredging and construction equipment could enter the water if the equipment were damaged. The contractor will prepare a SPCC Plan to identify procedures to be implemented to avoid, minimize, and if necessary respond to a release.

1) Describe any known or possible contamination at the site from present or past uses.

The marina dredge prism and upland placement site material was characterized in

2024. The Port sampled the marina and upland placement sites in October 2023 per a PSET-approved SAP. On January 22, 2024, a fire occurred at the Ilwaco Landing crab dock. To support dredging the marina post-fire, the PSET requested a tiered sampling for dioxins and furans in surface sediments in proximity to the dock. The PSET approved the SAP Addendum on May 23, 2024. Samples were collected May 30, 2024, for dioxins and furans analysis.

The PSET issued a suitability determination on 13 December 2024 (included as an attachment to the JARPA). Results of the characterization as provided in the Suitability Determination are summarized below.

- Chemical concentrations in the dredge prism and upland site composite samples, excluding the crab dock and Station SP-11, were below the SEF marine screening levels (SLs) and Oregon Department of Environmental Quality (ODEQ's) screening level values. As such, the Port of Ilwaco marina and upland placement site dredged prism materials are suitable for unconfined, aquatic placement per the 2018 SEF guidance without additional testing.
- The Port's dredge area adjacent to the crab dock (1A, 1B, upper 1-foot, yellow polygon) and Station SP-11 (full dredge prism, pink polygon), are not suitable for unconfined in-water placement without further testing. Upland disposal is required.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

There are no hazardous liquid transmission pipelines located within the project area according to the National Pipeline Mapping System public viewer webpage (https://pvnpms.phmsa.dot.gov/PublicViewer/).

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Fuel for construction equipment and barges will be stored and used during the dredging activities. BMPs will be implemented during construction to minimize the potential for spills or mechanical failures to occur and to minimize the potential for adverse effects from hazardous chemicals to workers.

4) Describe special emergency services that might be required.
Ecology or the U.S. Coast Guard would provide additional resources in the event of an oil spill.

5) Proposed measures to reduce or control environmental health hazards, if any:
A site-specific SPCC plan will be completed and followed for all of the project work. A spill kit that includes absorbent materials and absorbent booms will be on hand at all times during the project. Contractors will be required to be trained in spill response, will check equipment for leaks on a daily basis, and will respond immediately to any spills that occur during project work See Section B.2 .for additional Hazmat BMPs.

a. *Noise*

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

The site is an operating marina located in the business district of Ilwaco, Washington. Boat and upland vehicle traffic noise exists most hours of the day.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Short-term noise associated with dredging operations will occur during both daylight and nighttime hours during project work. The project noise will likely be consistent with boat and upland vehicle traffic noise currently present in the project area.

3) Proposed measures to reduce or control noise impacts, if any:

The project is not expected to increase existing noise levels. Measures to reduce/control noise are not included in this proposal.

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Facilities at the site include moorage for over 800 charter, commercial, recreational, and sport fishing vessels; two fuel docks; and public boat ramp. The adjacent upland properties are occupied by seafood processing facilities, retail businesses, recreational boating services, boat maintenance facilities, the City of Ilwaco wastewater treatment facility, and the Port's upland dredge material disposal site. The proposed project will maintain the operating capabilities of the marina.

The Port's marina is also used by several state and federal agencies to access the Columbia River including the USACE, the United States Coast Guard (USCG), and WDFW. The USCG currently uses the Port's travel lift and boat yard for vessel maintenance, as well as a point of deployment. The USCG is also proposing to use the Port's marina for mooring vessels during planned future maintenance and repair of docks at their Cape Disappointment Station. The marina represents a potential point of deployment for rapid access to the Columbia River for the local police department, USCG, and other state and federal emergency responders which significantly reduces response times for incidents that may occur in the river.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or non-forest use?

No – the site has not been used for agriculture.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No – the area surrounding the site is occupied by commercial businesses.

c. Describe any structures on the site.

Structures at the marina include floating docks for vessel moorage, a public boat ramp, and fuel docks. There are no structures within the in-water dredged material placement sites.

d. Will any structures be demolished? If so, what?

There will be no structures demolished for the proposed project.

e. What is the current zoning classification of the site?

Low-density commercial and light industrial.

f. What is the current comprehensive plan designation of the site?

Commercial and industrial.

g. If applicable, what is the current shoreline master program designation of the site?

High intensity.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

The site is considered a critical area for wildlife habitat and frequently flooded areas.

i. Approximately how many people would reside or work in the completed project?

There will be no change to the number of people working or residing in the completed project.

j. Approximately how many people would the completed project displace?

The proposed project will not displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any:

The proposed project will not displace any people; therefore, no measures are proposed to reduce displacement impacts.

l. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

The project is compatible with surrounding land uses.

m. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The site will continue to operate as a marina.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing units will be created as part of the proposed project.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing units will be eliminated with this proposal.

c. Proposed measures to reduce or control housing impacts, if any:

No measures will be employed to reduce or control housing impacts because no impacts to house are proposed as part of the project.

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

There are no proposed buildings/structures for the project.

b. What views in the immediate vicinity would be altered or obstructed?

No views will be permanently altered or obstructed as a result of the project.

c. Proposed measures to reduce or control aesthetic impacts, if any:

No aesthetic impacts are proposed as a result of the project and therefore, no measures to reduce or control aesthetic impacts are proposed.

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

The majority of the project work will occur during daylight hours; however, project work may extend into evening hours due to shortened daylight hours in the winter and extended work shifts if necessary to complete the project (12-hour shifts). The dredge is equipped with lighting that is consistent with the general industrial surroundings of the marina.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Safety hazards related to light or glare are not anticipated.

c. What existing off-site sources of light or glare may affect your proposal?

There are no existing off-site sources of light or glare that will affect the proposal.

d. Proposed measures to reduce or control light and glare impacts, if any:

Short-term and temporary lighting will be needed for nighttime dredging and placement (if performed). Lights will be shielded and directed toward work areas and no off-site glare impacts are expected to result from its use. Lighting will be directed down and away from adjacent natural areas to avoid potential hazards to fish and wildlife during placement that could occur at night.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity?

Recreational boaters and anglers use the Columbia River near the project site The marina and boat launch are used for recreational boating and fishing.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Impacts to recreation as part of the project are not anticipated. The marina supports recreational activities and dredging is necessary to maintain draft for vessels that use the marina.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Not applicable. There are no measures proposed to reduce or control impacts on recreation.

13. Historic and Cultural Preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45-years-old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

There are no known places on or near the site that are proposed for national, state, or local preservation.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

There are no records of architectural and/or archaeological data at the project site based on WillametteCRA's Cultural Resources Investigation (WillametteCRA 2022) and review of the Washington Information System for Architectural and Archaeological Records Data (WISAARD) web site.

c. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

No potential adverse effects on historic or cultural resources are anticipated. The possibility that historic or cultural resources will be encountered at the project site is low because it is regularly dredged.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Waterfront Way and Outer Harbor Way SE serve the site.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The Pacific Transit System serves Pacific County and has a bus stop at the Port of Ilwaco.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

No parking spaces are proposed or eliminated by the project.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

The proposal does not require any new roads or streets.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The project will occur in the marina where recreational and commercial boat traffic pass on a daily basis.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?

The completed project will not significantly increase the number of vehicular trips per day at the site. Peak volumes will stay the same.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No. The project will not affect the movement of agricultural and forest products on roads or streets.

h. Proposed measures to reduce or control transportation impacts, if any:

The proposed project will comply with all applicable transportation-related codes and regulations.

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

In case of an accident, possible fire department and emergency response vehicles will be necessary to transport individuals to the hospital.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Not applicable. There are no measures proposed to reduce or control transportation impacts.

16. Utilities [help]

a. Circle utilities currently available at the site:

electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

Utilities are not needed for the project activities.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

No utilities will be added to the site upon completion of the project. The project does not include any work-related existing or new facilities.

C. Signature [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Tina Hayes

Name of Signee: Tina Hayes

Position and Agency/Organization: Manager Port of Dwaco

Date Submitted: 02/21/2025

D. Supplemental Sheet for Non-Project Actions [HELP]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

   Proposed measures to avoid or reduce such increases are:

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Proposed measures to reduce or respond to such demand(s) are:

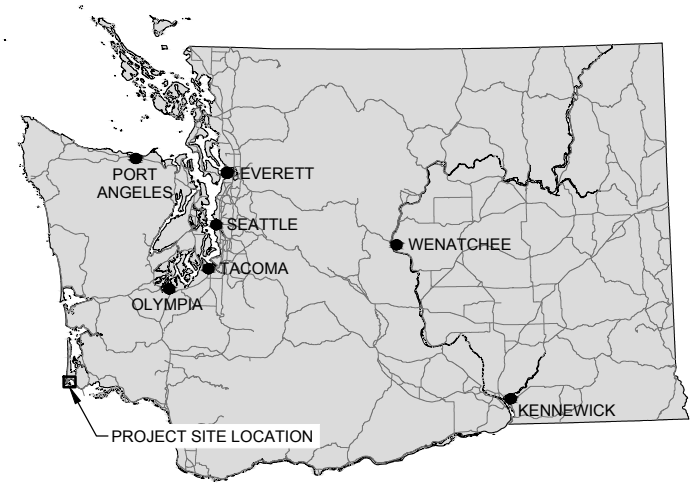
7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

Attachments

- Project Sheets 1 through 11
- Joint Aquatic Resources Permit Application (JARPA)
    - JARPA Attachments
        - Sheet 1 through 11
        - Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey
        - PSET Suitability Determination
        - USACE Section 408 Authorization Email
        - Water Quality Monitoring Plan
        - Cultural Resources Report
        - Biological Evaluation

Sheets 1 through 11

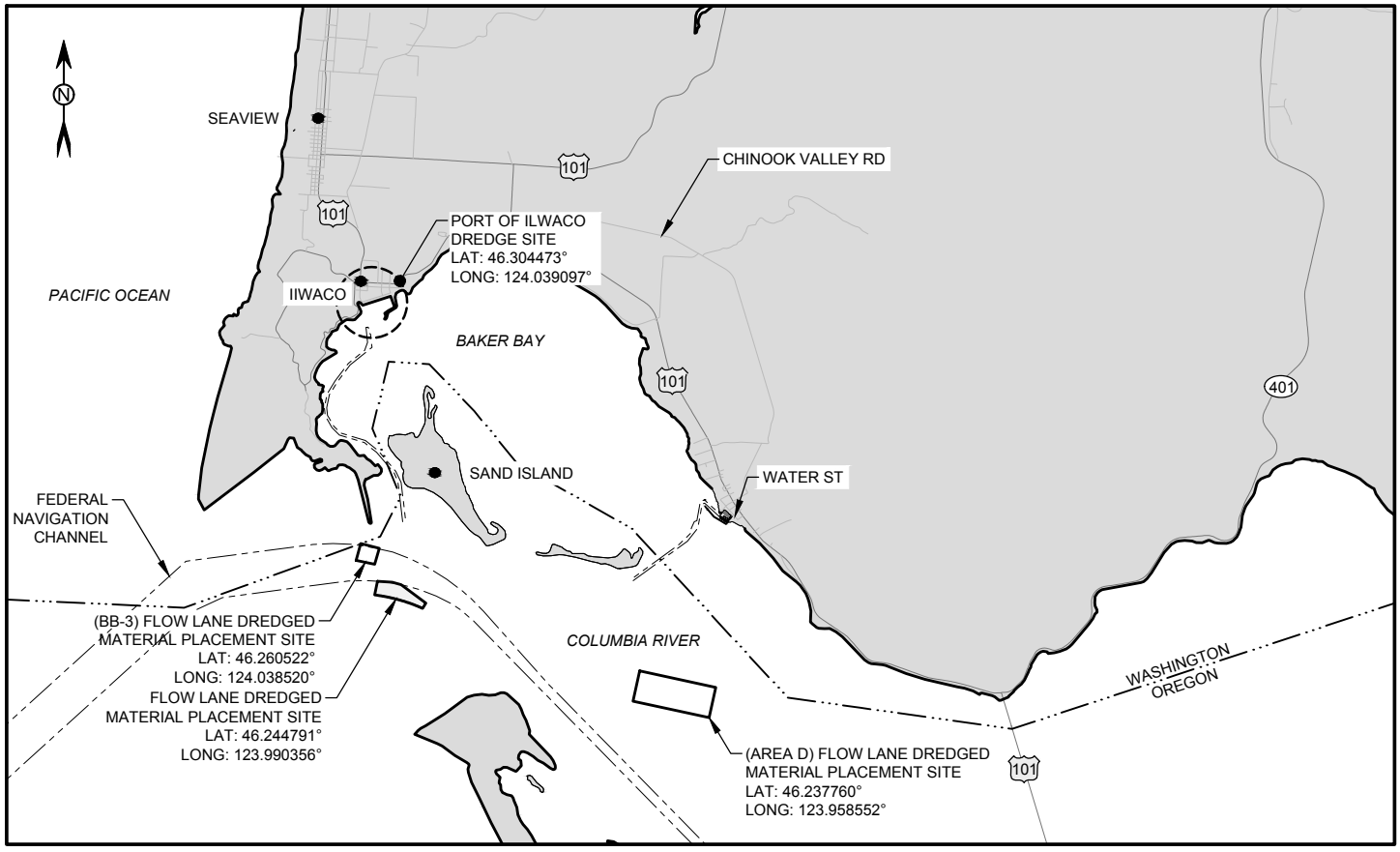
S33 T10N R11W



WASHINGTON KEY MAP

SHEET INDEX

SHEET NO.	TITLE
1	Cover Sheet
2	Parcel Map
3	Site Plan - Proposed Dredging
4	Sections - Dredge 1
5	Sections - Dredge 2
6	Site Plan - Upland Placement Site
7	Sections - Upland Placement Site
8	Site Plan - Flow Lane Placement Site 1
9	Site Plan - Flow Lane Placement Site 2
10	Site Plan - Flow Lane Placement Site 3
11	Sections - Flow Lane Placement Site



PROJECT SITE LOCATION

0 6,000 12,000

SCALE IN FEET

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Cover Sheet

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 1 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Parcel Map

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

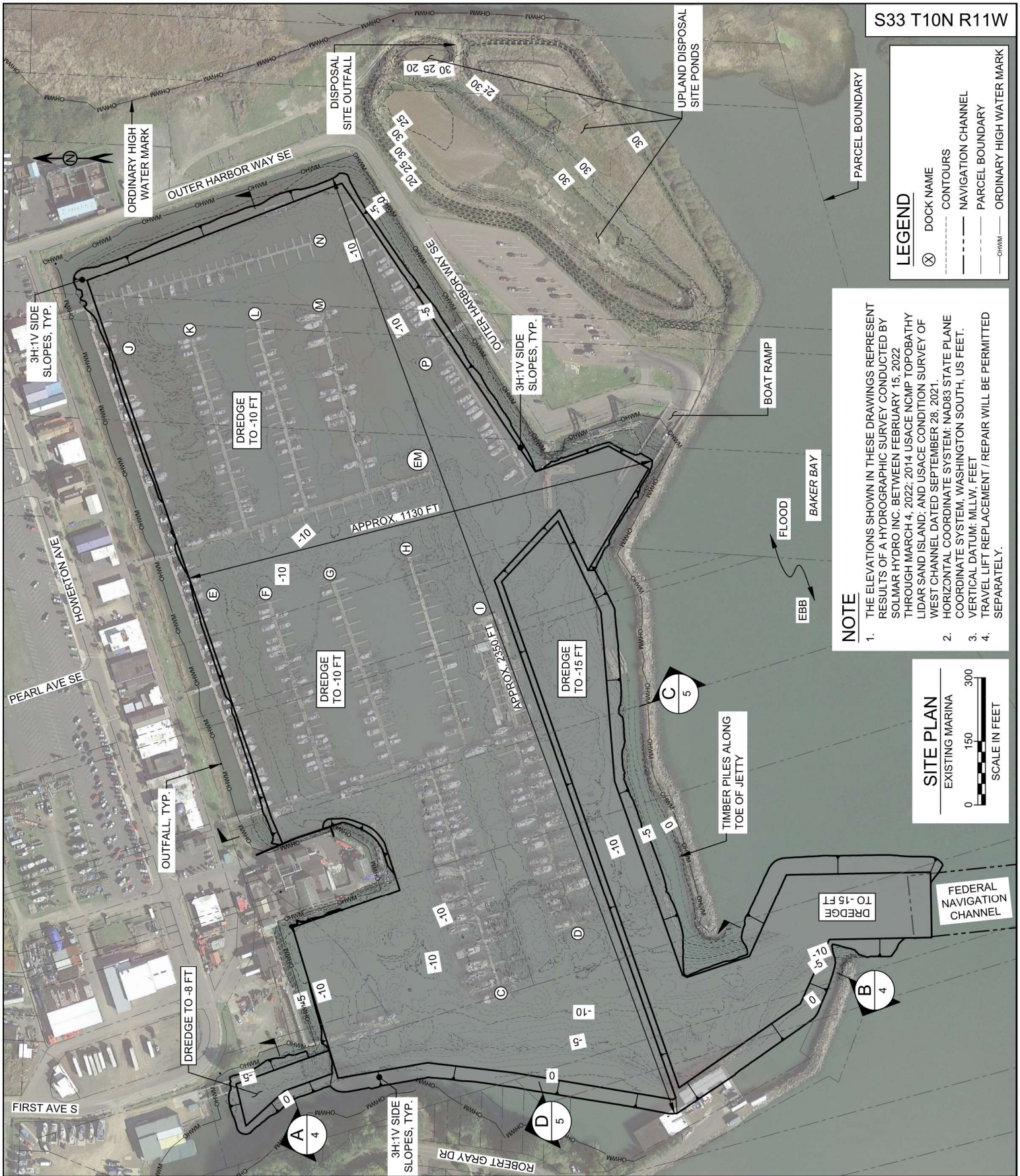
IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 2 OF 11

DATE: 1/10/25



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Site Plan - Proposed Dredging

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

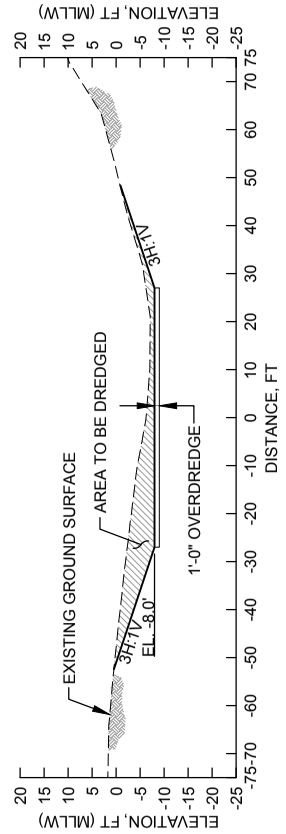
AT: ILWACO

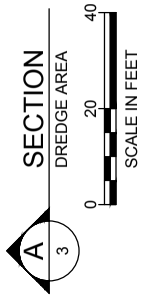
COUNTY: PACIFIC

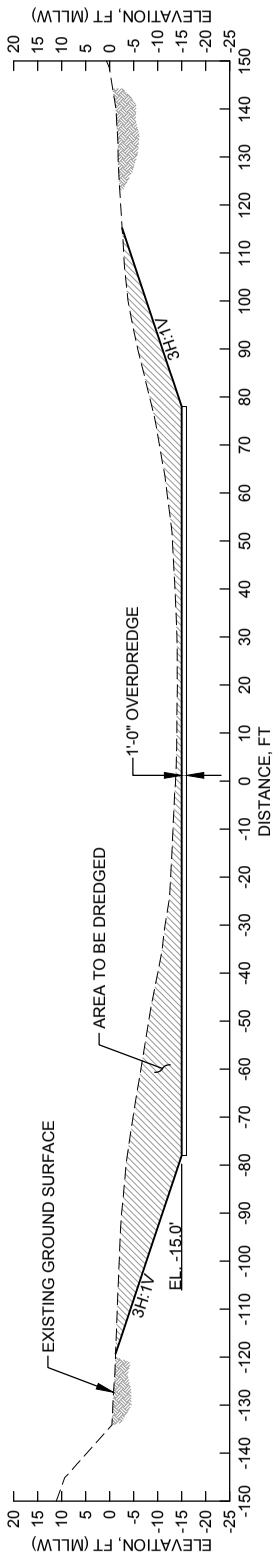
SHEET 3 OF 11

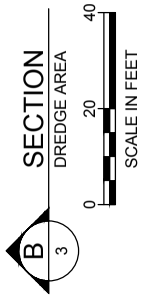
DATE: 1/10/25

S33 T10N R11W









PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Dredge 1

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

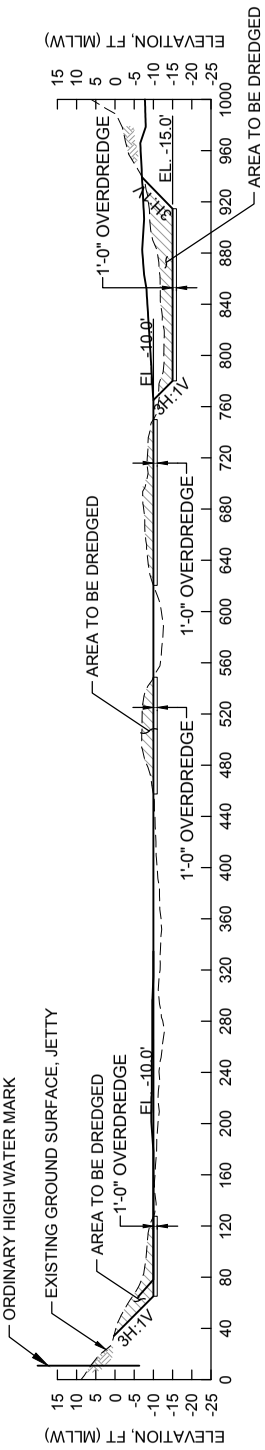
IN: BAKER BAY

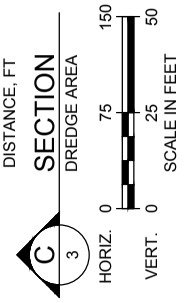
AT: ILWACO

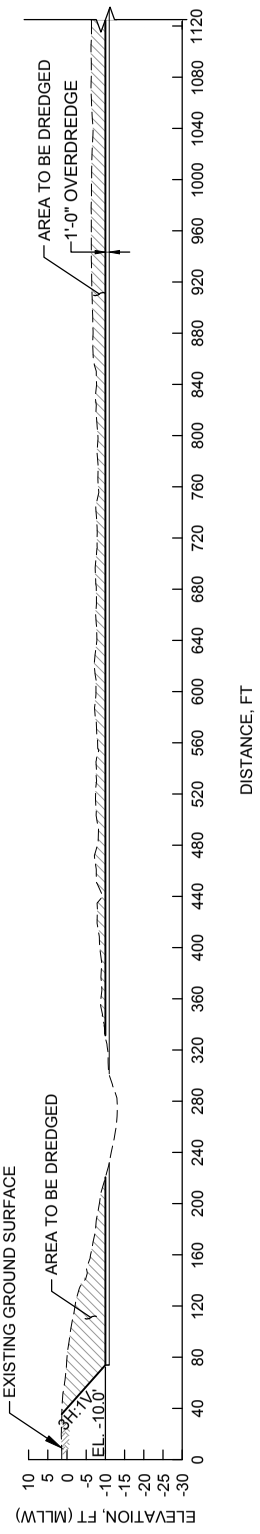
COUNTY: PACIFIC

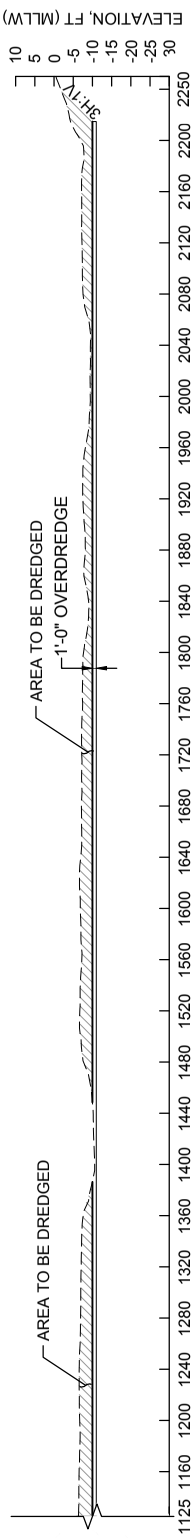
SHEET 4 OF 11

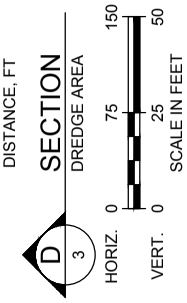
DATE: 1/10/25











PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Dredge 2

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 5 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Upland Placement Site

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 6 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Sections - Upland Placement Site

APPLICATION BY:
Port of Ilwaco

A
6
SECTION
UPLAND PLACEMENT AREA

HORIZ. 0 75 150
VERT. 0 25 50
SCALE IN FEET

B
6
SECTION
UPLAND PLACEMENT AREA

HORIZ. 0 75 150
VERT. 0 25 50
SCALE IN FEET

LEGEND

- BENEFICIAL USE PLACEMENT AREA
- EXISTING GROUND SURFACE
- EXCAVATION CUT

NOTE

1. EXISTING VEGETATION LOCATED WITHIN THE UPLAND PLACEMENT SITE EXCAVATION AREA TO BE CLEARED AND GRUBBED AND DISPOSED OF AT AN APPROVED LOCATION PRIOR TO MATERIAL REMOVAL FOR FLOW LANE PLACEMENT.

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

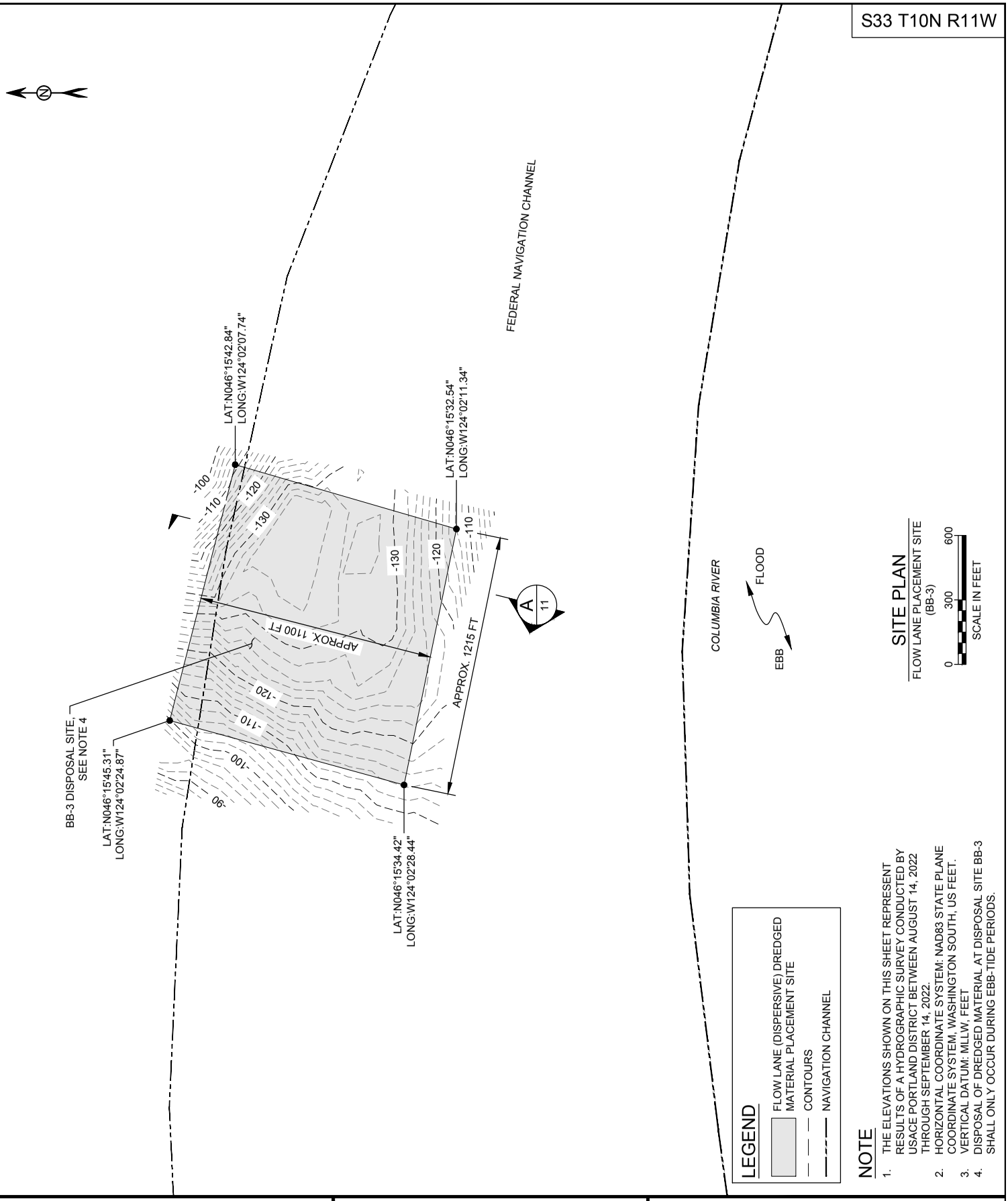
IN: BAKER BAY
AT: ILWACO
COUNTY: PACIFIC

SHEET 7 OF 11

DATE: 1/10/25

S33 T10N R11W

S33 T10N R11W



LEGEND

- FLOW LANE (DISPERSIVE) DREDGED MATERIAL PLACEMENT SITE
- CONTOURS
- NAVIGATION CHANNEL

NOTE

1. THE ELEVATIONS SHOWN ON THIS SHEET REPRESENT RESULTS OF A HYDROGRAPHIC SURVEY CONDUCTED BY USACE PORTLAND DISTRICT BETWEEN AUGUST 14, 2022 THROUGH SEPTEMBER 14, 2022.
2. HORIZONTAL COORDINATE SYSTEM: NAD83 STATE PLANE COORDINATE SYSTEM, WASHINGTON SOUTH, US FEET.
3. VERTICAL DATUM: MLLW, FEET
4. DISPOSAL OF DREDGED MATERIAL AT DISPOSAL SITE BB-3 SHALL ONLY OCCUR DURING EBB-TIDE PERIODS.

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Flow Lane Placement Site 1 (BB-3)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

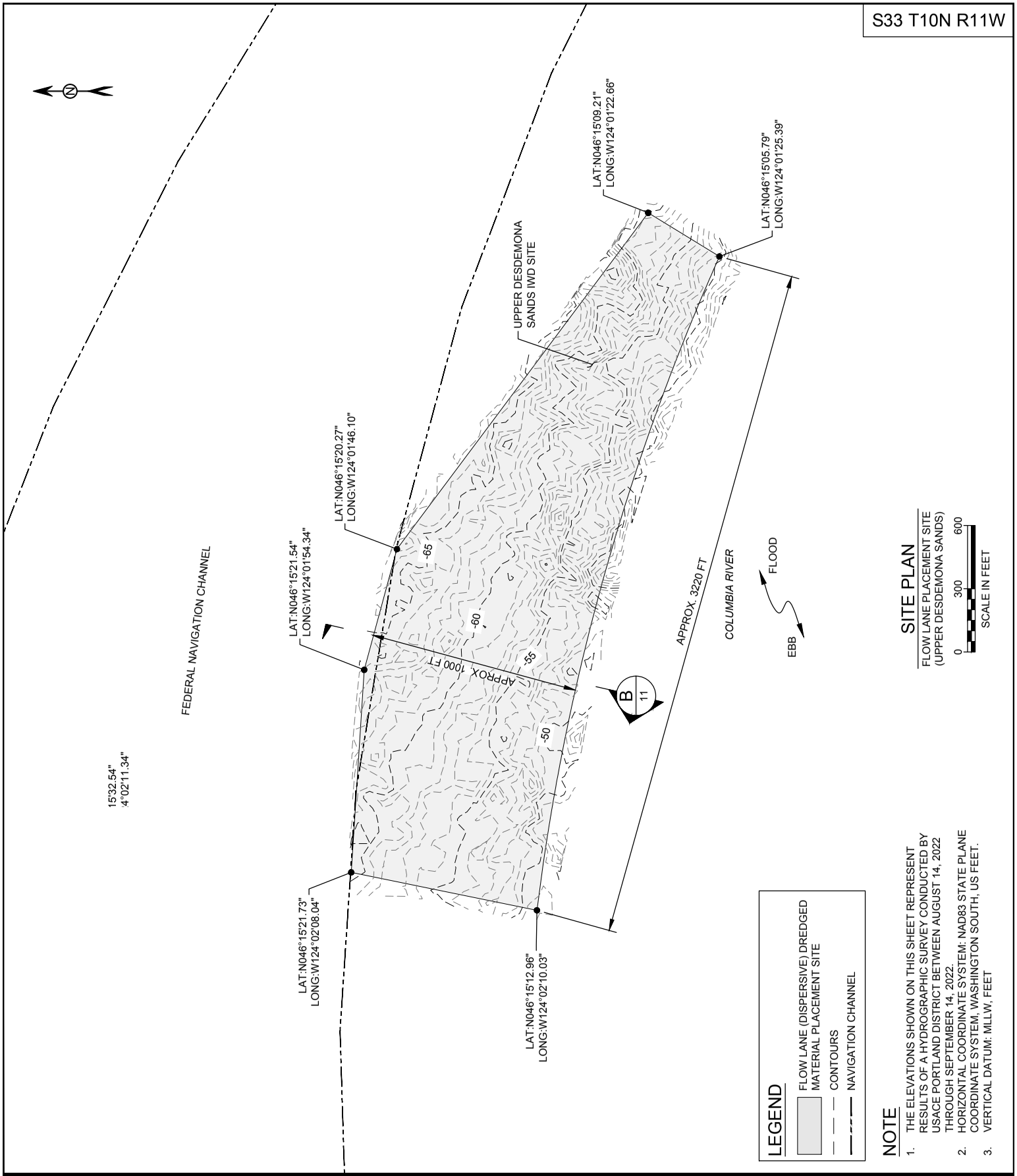
AT: ILWACO

COUNTY: PACIFIC

SHEET 8 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Flow Lane Placement Site 2
(Upper Desdemona Sands)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

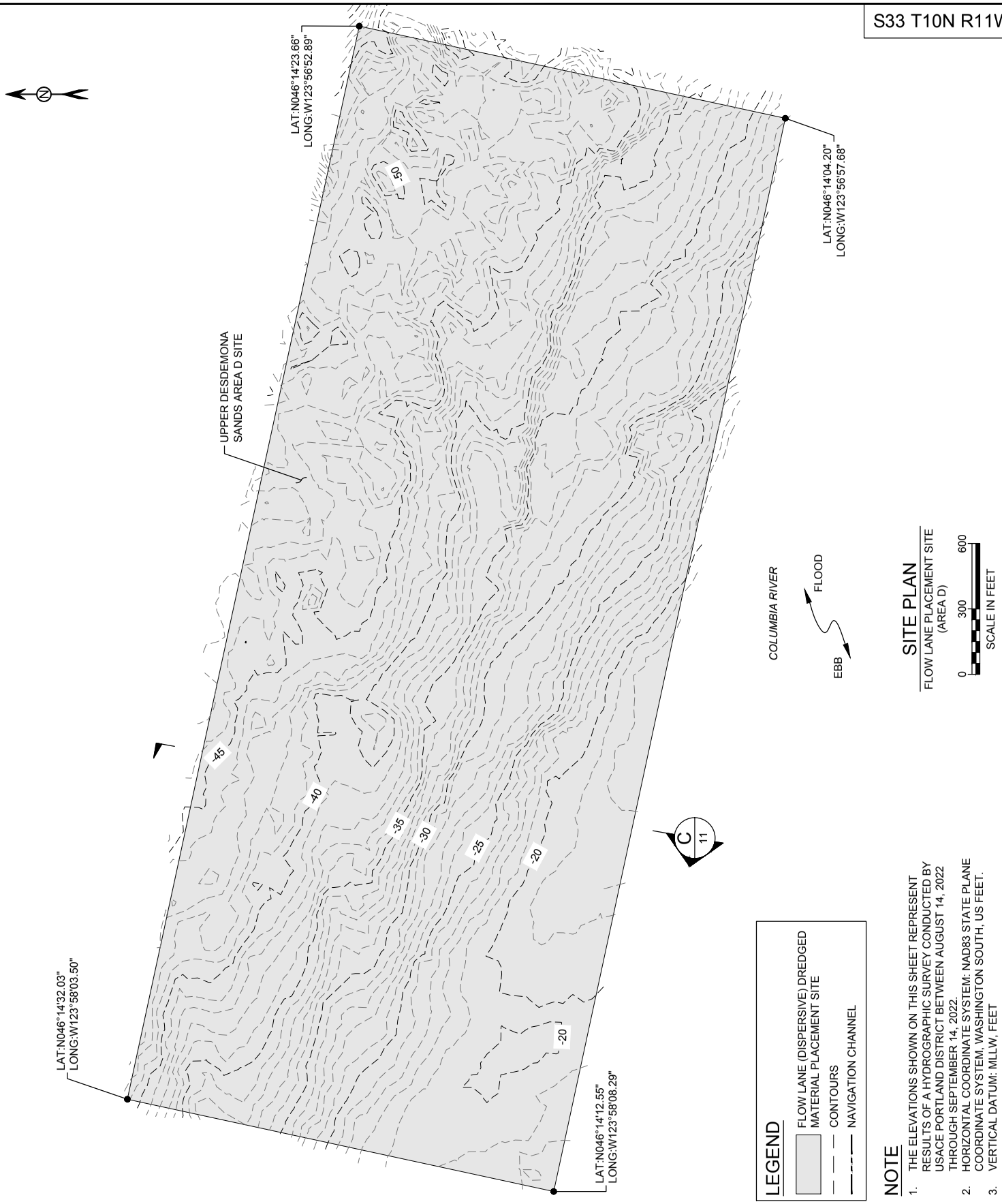
AT: ILWACO

COUNTY: PACIFIC

SHEET 9 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Site Plan - Flow Lane Placement Site 3 (Area D)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

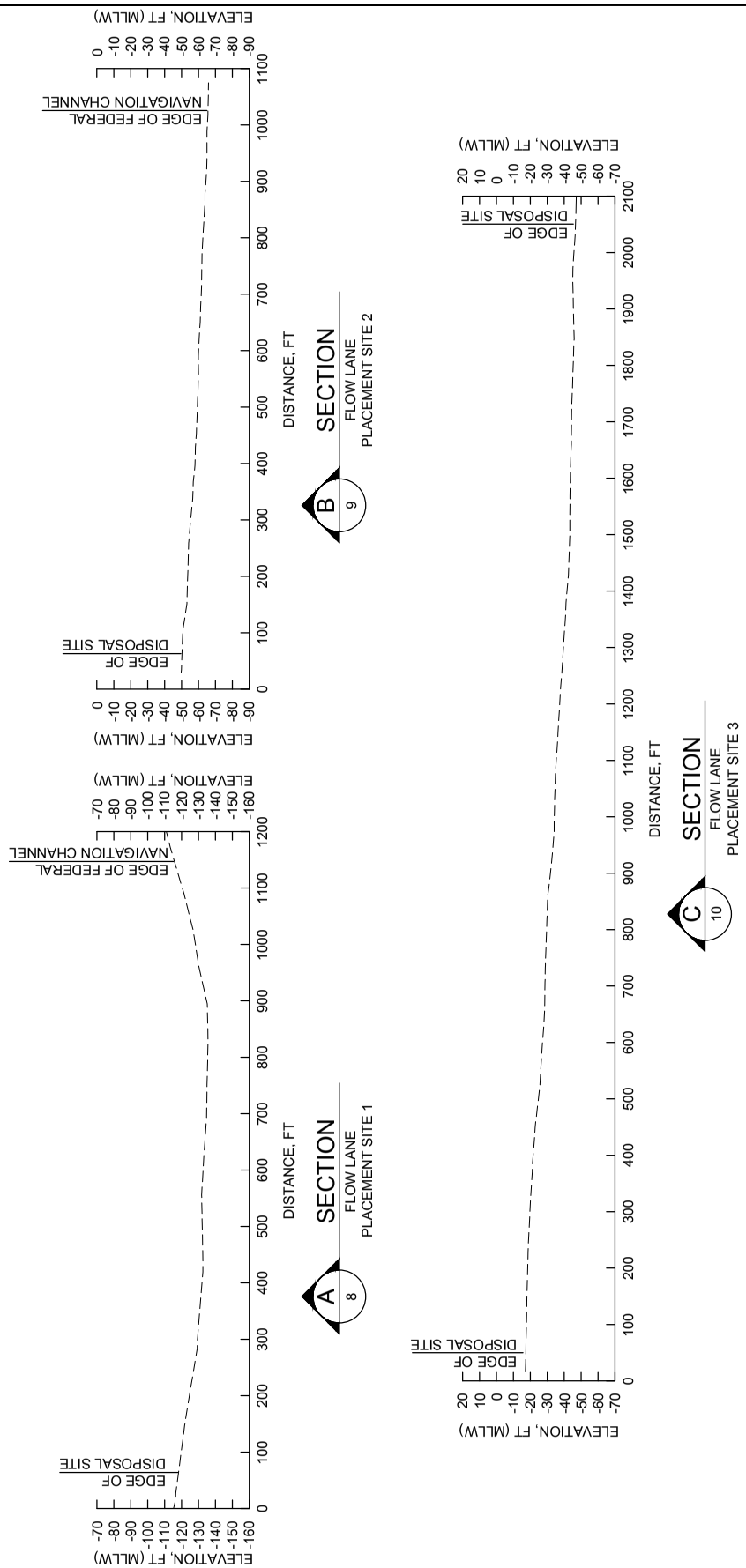
AT: ILWACO

COUNTY: PACIFIC

SHEET 10 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Flow Lane Placement Site

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 11 OF 11

DATE: 1/10/25

Joint Aquatic Resources Permit Application

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) Form[1,2] [help]

US Army Corps of Engineers ®
Seattle District

USE BLACK OR BLUE INK TO ENTER ANSWERS IN THE WHITE SPACES BELOW.

AGENCY USE ONLY

Date received:

Agency reference #: _____

Tax Parcel #(s): _____

_____

Part 1–Project Identification

1. Project Name (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) [help]
Port of Ilwaco Marina Maintenance Dredging – (NWP-2004-78-5)

Part 2–Applicant

The person and/or organization responsible for the project. [help]

2a. Name (Last, First, Middle)			
Hayes, Tina			
2b. Organization (If applicable)			
Port of Ilwaco			
2c. Mailing Address (Street or PO Box)			
P.O. Box 307			
2d. City, State, Zip			
Ilwaco, WA 98624			
2e. Phone (1)	**2f.** Phone (2)	**2g.** Fax	**2h.** E-mail
360-642-3143			thayes@portofilwaco.org

[1]Additional forms may be required for the following permits:
- If your project may qualify for Department of the Army authorization through a Regional General Permit (RGP), contact the U.S. Army Corps of Engineers for application information (206) 764-3495.
- Not all cities and counties accept the JARPA for their local Shoreline permits. If you need a Shoreline permit, contact the appropriate city or county government to make sure they accept the JARPA.

[2]To access an online JARPA form with [help] screens, go to http://www.epermitting.wa.gov/site/alias__resourcecenter/jarpa_jarpa_form/9984/jarpa_form.aspx.

For other help, contact the Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.

Part 3–Authorized Agent or Contact

Person authorized to represent the applicant about the project. (Note: Authorized agent(s) must sign 11b of this application.) [help]

3a. Name (Last, First, Middle)			
Kinney, Allison			
3b. Organization (If applicable)			
Moffatt & Nichol			
3c. Mailing Address (Street or PO Box)			
915 Broadway Street, Suite 100			
3d. City, State, Zip			
Vancouver, WA 98660			
3e. Phone (1)	**3f.** Phone (2)	**3g.** Fax	**3h.** E-mail
206-501-2325	319-936-5369		akinney@moffattnichol.com

Part 4–Property Owner(s)

Contact information for people or organizations owning the property(ies) where the project will occur. Consider both **upland and aquatic** ownership because the upland owners may not own the adjacent aquatic land. [help]

☒ Same as applicant. (Skip to Part 5.)

☐ Repair or maintenance activities on existing rights-of-way or easements. (Skip to Part 5.)

☐ There are multiple upland property owners. Complete the section below and fill out JARPA Attachment A for each additional property owner.

☒ Your project is on Department of Natural Resources (DNR)-managed aquatic lands. If you don't know, contact the DNR at (360) 902-1100 to determine aquatic land ownership. If yes, complete JARPA Attachment E to apply for the Aquatic Use Authorization.

4a. Name (Last, First, Middle)			
4b. Organization (If applicable)			
4c. Mailing Address (Street or PO Box)			
4d. City, State, Zip			
4e. Phone (1)	**4f.** Phone (2)	**4g.** Fax	**4h.** E-mail

Part 5–Project Location(s)

Identifying information about the property or properties where the project will occur. [help]

☐ There are multiple project locations (e.g. linear projects). Complete the section below and use JARPA Attachment B for each additional project location.

5a. Indicate the type of ownership of the property. (Check all that apply.) [help]

☐ Private
☐ Federal
☒ Publicly owned (state, county, city, special districts like schools, ports, etc.)
☐ Tribal
☒ Department of Natural Resources (DNR) – managed aquatic lands (Complete JARPA Attachment E)

5b. Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5p.) [help]

165 Howerton Way SE

5c. City, State, Zip (If the project is not in a city or town, provide the name of the nearest city or town.) [help]

Ilwaco, WA 98624

5d. County [help]

Pacific County for Dredging; Clatsop County Oregon for Flow Lane Placement**[3]

5e. Provide the section, township, and range for the project location. [help]

Site	Section	Township	Range
Dredge	33/34	10N	11W
Flow Lane Placement	36	9N/10N	11W

5f. Provide the latitude and longitude of the project location. [help]

- Example: 47.03922 N lat. / -122.89142 W long. (Use decimal degrees - NAD 83)

Location	Latitude/Longitude
Port of Ilwaco Marina	46.30442 N lat. / -124.03852 W long.
Port of Ilwaco Upland Placement Site	46.26928 N lat./ 123.944372 W long
OR Flow Lane Site 1 – "BB-3"	46.260522 N lat./ -124.038520 W long.
OR Flow Lane Site 2 – "Upper Desdemona Sands"	46.244791 N lat /-123.990356 W long.
OR Flow Lane Site 3 – "Area D"	46.237760 N lat / -123.958552 W long.

*The Columbia River flow lane sites will be permitted separately through the appropriate state and local jurisdictions.

5g. List the tax parcel number(s) for the project location. [help]

- The local county assessor's office can provide this information.

See Sheet 2 for parcel map and table below for parcel numbers and owners.

[3] ** The Oregon Flow Lane Sites will be permitted under the applicable local, state and federal permitting guidelines.

Owner	Parcel Number(s)
Port of Ilwaco	73031000004, 73048003114, 73031011001, 73031011000, 73031014000, 73031000005, 73031015000, 73031000002, 73031017001, 73031000003, 73031018001
State of Washington	73031008000, 73031013000
Ilwaco Landing Fishermen	73031208000

5h. Contact information for all adjoining property owners. (If you need more space, use JARPA Attachment C.) [help]

Name	Mailing Address	Tax Parcel # (if known)
See JARPA Attachment C		

5i. List all wetlands on or adjacent to the project location. [help]

Not applicable

5j. List all waterbodies (other than wetlands) on or adjacent to the project location. [help]

Baker Bay on the north side of the Columbia River

5k. Is any part of the project area within a 100-year floodplain? [help]

☒ Yes ☐ No ☐ Don't know

5l. Briefly describe the vegetation and habitat conditions on the property. [help]

The project site is located at the north shoreline of Baker Bay. The site and its vicinity are shown on Sheet 1.

Baker Bay is located on the Washington side (north side) of the Columbia River and is an estuary for the Wallacut and Chinook rivers. The site consists of a marina on the western shoreline of Baker Bay adjacent to the city of Ilwaco.

Vegetation and terrestrial habitat conditions are limited at the project site. The shoreline along the majority of the marina is armored with riprap or bulkhead structures, and terrestrial vegetation is limited to sparse, low-growing vegetation growing amongst the riprap. There is limited habitat for terrestrial wildlife species, and limited functioning riparian habitat at the site because the site is within the waters of a working marina.

Eelgrass was observed in the Ilwaco Marina during the 2022 eelgrass survey completed for the project (GeoEngineers, 2022 see attached)[4]. The majority of observed eelgrass is observed near docks G and H. The identified beds are small and patchy in nature (GeoEngineers 2022). The eelgrass was only observed in those areas where annual maintenance dredging has not been completed in several years and sedimentation has resulted in high points where eelgrass can establish transitory beds that are actively disturbed by marina vessel traffic throughout the year. These beds likely occur here due to an extended period of deposition from the Columbia River based on the lack of regular Marina-wide dredging, which has created suitable growing conditions (depth) (GeoEngineers 2022). Ilwaco Marina's maintenance dredging has been limited to annual targeted dredging by budget constraints. Additionally, eelgrass beds are not known to naturally occur at the mouth of the Columbia River due to high turbidity levels which create unsuitable growing conditions. It is assumed that the breakwaters have reduced turbidity levels within the Marina, which has allowed eelgrass beds to grow here. Given the location of these beds within a busy, active Marina, the ecological benefits associated with these beds are anticipated to be limited and transitory. Mitigation for impacts to eelgrass beds within the Marina is not anticipated to be required based on their patchy and transitory nature, location in a heavily modified environment of the active Marina, and presence enabled by the conditions due to the periodic and

[4] GeoEngineers. 2022. Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey.

targeted nature of maintenance dredging to authorized depths in the Marina limited by the Port's budgetary cycles.

5m. Describe how the property is currently used. [help]

Facilities at the site include an active marina with moorage for more than 800 charter, commercial, private recreational, and sport fishing vessels; fuel docks; public boat ramp; and a boat yard (see Sheet 3).

5n. Describe how the adjacent properties are currently used. [help]

The adjacent upland properties are occupied by seafood processing, retail businesses, recreational boating services, boat maintenance facilities, the City of Ilwaco wastewater treatment facility, and the Port's upland dredged material disposal site.

It should be noted that on January 22, 2024, the Ilwaco Landing Seafood Processing Facility (located on the western most boundary of the marina) burned down. Ilwaco landing is a privately owned facility.

5o. Describe the structures (above and below ground) on the property, including their purpose(s) and current condition. [help]

The marina is approximately 850 feet by 1,900 feet. The operating marina includes concrete, wood, and composite docks and floating moorage slips. A two-lane concrete boat ramp is located on the south side of the marina and is open to the public. A commercial wharf, including fish processing facilities, is located on the northwest side of the marina basin. West of the wharf is a boat maintenance facility with a travel lift to transport vessels. The marina has one fueling dock located east of the boat ramp.

The majority of the shoreline is armored with riprap and/or low-lying vegetation. Two rock breakwaters bound the marina entrance to Baker Bay; one on the south side of the marina and one on the west side of the entrance.

5p. Provide driving directions from the closest highway to the project location, and attach a map. [help]

Heading north on US-101 from Astoria, Oregon, turn left onto Elizabeth Avenue SE. Continue 0.3 mile and the marina is on the right.

Part 6–Project Description

6a. Briefly summarize the overall project. You can provide more detail in 6b. [help]

Background/Site Description

The Port of Ilwaco (Port) is located on the north shoreline of the Columbia River in Baker Bay. Annual maintenance dredging is necessary to keep the marina actively operating. Historically the Port has dredged targeted areas of the marina depending on the need, upland placement site capacity, budget, and availability of dredging equipment to complete the work within the designated in-water work window. This has resulted in removing only 1 to 3 feet of accumulated sediment annually from the highest priority areas. Maintenance dredging of the entire marina to the fully permitted depths has not been an option for the Port in the last ten years primarily due to limited placement site capacity and budgetary constraints.

Maintenance dredging at the Port of Ilwaco marina is currently authorized by a US Army Corps of Engineers (Corps) permit (NWP-2004-78-5) to dredge up to 500,000 cubic yards over a 10-year period that expires in 2026. Additional associated permits and approvals include:

- Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW) (Permit Number: 2021-6-291+01, Issued 7 July 2021),
- A shoreline exemption from City of Ilwaco (Dated 30 March 2016) ,
- 401 Water Quality Certificate (WQC) from the Washington State Department of Ecology (Ecology) (Order #13270, Dated 21 July 2026),
- Washington State Environmental Policy Act (SEPA) Determination of Non-significance (DNS) (City of Ilwaco - Dated 30 March 2016),

- Washington Department of Natural Resources (DNR) Right of Entry/Aquatic Use Authorization (Port Management Agreement No. 20-080001; 12 August 2014),
- Endangered Species Act (ESA) Consultation from National Marine Fisheries Service (NMFS) (WCR-2016-3986, dated 13 July 2016) and the U.S. Fish and Wildlife Service (USFWS), and
- Sediment Quality Review/disposal suitability determination from the Portland Sediment Evaluation Team (PSET) (Dated 13 December 2024; see attached).

The existing permits and approvals authorize maintenance dredging to -8 feet MLLW, -10 feet MLLW, and -16 feet MLLW and placement of the dredged material at the upland placement site located adjacent to the marina (See Sheets 3 through 7).

Maintenance dredging has historically been completed annually at the marina using hydraulic (cutter suction dredge) methods and dredged material has been placed upland via pipeline.

Project Description

The Port requests a new 10-year maintenance dredging permit that will allow for placement of dredged material either upland and/or at existing in-water flow lane placement sites.

The project will require placement of dredge material below the ordinary high water mark (OHWM) of the Columbia River and will require Sections 10 and 404 permits from the USACE. This represents a federal nexus and requires that the USACE consult with the services to assess the potential for effects to species or critical habitats listed under Section 7 of the ESA and to Essential Fish Habitat (under the provisions of the Magnuson-Stevens Act).

The proposed project includes:

1. Conducting maintenance dredging to the previously authorized dredge footprint to the previously authorized depths of -8 feet MLLW, -10 feet MLLW, and -16 feet MLLW;
2. Dredging 280,288 CY (one-time capital dredge event) and an annual maximum of 50,000 CY of sediment from within the marina using either hydraulic or mechanical dredging equipment (clamshell or bucket on extended reach excavator)[5];
3. Authorizing flow lane placement at three existing Columbia River in-water placement sites in Clatsop County, Oregon via bottom dump barge. (See Sheets 8 through 11). ** Note: The Columbia River flow lane sites will be permitted separately in accordance with the state of Oregon, local and federal permitting authorities.;
4. Authorizing removal of the previously dredged material that is currently stored at the upland placement site (approximately 70,000 CY) for placement into the above listed Columbia River flow lane placement sites;
5. Authorizing placement of dredged material at currently authorized upland placement site;
6. Authorizing a total dredge volume of up to 735,000 CY[6] for a new 10-year USACE permit;
7. Authorizing placement of approximately 4,410 CY of clean sand within the marina[7]; and
8. Authorizing nighttime activities because dredging operations could include night shifts.

[5] The one-time capital dredge event is funding dependent and may occur during any single year that the permit is valid. The proposed annual maximum maintenance dredging volume (not including the one-time capital dredge event volume) would be a maximum of 50,000 CY

[6] The Port's SDM includes approval of a maximum dredge volume of up to 735,000 CY. This volume is based the one-time capital dredge event (280,288 CY) and material currently stored at the upland placement site (70,000 CY), plus historic annual dredge volumes over the life of a 10-year permit. The annual maintenance dredging will not exceed 50,000 CY in a given year. The Port is currently authorized to dredge the marina under existing permits, as such the total volume of material that may be dredged over the life of the requested 10-year permits may be less that the calculated volume but would not exceed 735,000 CY.

[7] The 13 December 2024 Portland Sediment Evaluation Team (PSET) Suitability Determination Memorandum indicates that a 1-foot layer of clean sand will be required if post-dredge surface sediment sampling indicates that the post-dredge surface around sampling station SP-ll is not suitable for unconfined aquatic exposure (See Attached Suitability Determination Memorandum). The volume of material was based on area of unsuitable material (approximately 119,097 sq. ft.) and 1 foot of clean sand.

Dredging Work Windows:

It is anticipated that 1 November to 28 February will be the in-water work window for the new dredging permits consistent with state and federal guidance and requirements for fish protections.

6b. Describe the purpose of the project and why you want or need to perform it. [help]

Purpose and Need

The Port of Ilwaco Marina is cherished by the local community and allows access to the Columbia River for recreational opportunities such as fishing, cruising, and commercial fishing/crabbing. Periodic maintenance dredging is necessary to keep the Port of Ilwaco Marina actively operating. The marina is an important local economic resource as it supports the commercial fishing and crabbing industry. These employment opportunities are only viable as long as the marina is dredged and accessible to these commercial vessels.

The Port's marina is also used by several state and federal agencies to access the Columbia River including the USACE, the United States Coast Guard (USCG), and WDFW. The USCG currently uses the Port's travel lift and boat yard for vessel maintanence, as well as a point of deployment. The USCG is also proposing to use the Port's marina for mooring vessels during planned future maintenance and repair of docks at their Cape Disappointment Station. The marina represents a potential point of deployment for rapid access to the Columbia River for the local police department, USCG, and other state and federal emergency responders which significantly reduces response times for incidents that may occur in the River.

The purpose of the project is to remove accumulated sediment and restore depths in the marina to accommodate the vessel drafts of the Port's customers; and to restore capacity of the Port's existing upland placement site. The upland placement site is nearing capacity and needs to be rehabilitated through removal of the material that is currently stored onsite. The Port is proposing to restore capacity of the upland placement site for placement of future dredged material by removing the dredged material that is currently stored there and placing it at the proposed in-water flow lane placement sites. Removing the material currently stored at the upland placement site would rehabilitate the upland placement site to allow for placement of dredged material from future dredge events. The use of the upland placement site allows the Port to proceed with targeted annual maintenance dredging within their limited budget cycles.

Dredging

The Port requests a new permit for continued maintenance dredging of the marina including a one-time capital dredge event and annual maintenance dredging of up to 50,000 CY of material/year to provide safe navigation and to meet the needs of its marina customers.

The Port requests a maintenance dredging permit to be issued for the 2025/2026 in-water work window (Sections 10 and 404), a Section 401 Water Quality Certification (Ecology), a new 5-year HPA from WDFW, and a new shoreline permit from City of Ilwaco for up to 735,000 CY[8] of dredging at the marina.

Dredging at the marina will occur within the previously approved dredge prism and to the previously authorized depths of -8 feet MLLW, -10 feet MLLW, and -16 feet MLLW. The capital dredge event volume, maximum annual dredge volume and the average annual dredge volume are shown in Table 1 below.

Table 1. Summary of Annual Maximum and Average Dredge Volumes

Site	One-time capital dredge event (CY)	Maximum amount of material (CY) to be dredged each year[9]	Average annual amount of material (CY) to be dredged each year
Ilwaco Marina Dredge prism	280,288 CY	50,000 CY	20,000 CY

[8] The Port's SDM includes approval of a maximum dredge volume of up to 735,000 CY. This volume is based the one-time capital dredge event (280,288 CY) and material currently stored at the upland placement site (70,000 CY), plus historic annual dredge volumes over the life of a 10-year permit. The annual maintenance dredging will not exceed 50,000 CY in a given year.

[9] This volume is what is currently permitted.

Placement

The Port's upland placement site is nearing capacity and the Port needs additional capacity for placement during future dredging events. All of the material stored at the upland placement site has been found suitable for open water placement (PSET 13 December 2024; see attached). Therefore, the Port proposes to place dredged material that is suitable for in-water disposal (either from the marina or from the upland placement site) at three existing flow-lane sites in Clatsop County, Oregon (see attached Sheets 8 through 11)[10].

The Port will place dredged material from future dredge events at either the existing flow-lane sites in Clatsop County, Oregon or their currently permitted upland placement site – when additional capacity has been restored. The Port will use different placement sites each year based on a combination of factors such as funding, the equipment used by the Port or a selected contractor, and the rate of dispersion at the proposed in-water site(s). All of the placement sites are needed to meet the Port's overall dredging needs over the 10-year life of the permit.

Only dredged material that has been deemed suitable for in-water placement by the PSET will be placed at the in-water placement sites.

The amount of material and acreage of impact for the proposed dredged material placement is provided in Table 2 below.

Table 2. Summary of Amount of Dredged Material and Placement Site Acreage of Impact

Placement Site	Marina: One-time initial (capital) dredge event (CY)	One time placement of previously dredged material from upland site (CY)	Maintenance Dredge: Average Annual Volume (CY)	Placement Site: Average Annual Acreage of impact
Oregon Flow Lane Site 1: "BB-3"	280,288	70,000	20,000	8.7 acres
Oregon Flow Lane Site 2:				
Oregon Flow Lane Site 3: "Area D"				
Upland Site	--	--	20,000	3 acres

6c. Indicate the project category. (Check all that apply) [help]

☒ Commercial ☐ Residential ☐ Institutional ☐ Transportation ☒ Recreational

☒ Maintenance ☐ Environmental Enhancement

[10] The Port of Ilwaco received approval from the Section 408 team to place dredged material within the proposed flow-lane sites on 10 August 2023. The approval states that "the proposed 10-year maintenance project should have no impact to the Federal Navigation Channel (FNC). Furthermore, there are no federal levee or revetment systems in the area of the project. Therefore, the Port's project will not affect the FNC or other civil works project." See attached.

6d. Indicate the major elements of your project. (Check all that apply) [help]

☐ Aquaculture	☐ Culvert	☐ Float	☐ Retaining Wall (upland)
☐ Bank Stabilization	☐ Dam / Weir	☐ Floating Home	☐ Road
☐ Boat House	☐ Dike / Levee / Jetty	☐ Geotechnical Survey	☐ Scientific Measurement Device
☐ Boat Launch	☐ Ditch	☐ Land Clearing	☐ Stairs
☐ Boat Lift	☐ Dock / Pier	☒ Marina / Moorage	☐ Stormwater facility
☐ Bridge	☒ Dredging	☐ Mining	☐ Swimming Pool
☐ Bulkhead	☐ Fence	☐ Outfall Structure	☐ Utility Line
☐ Buoy	☐ Ferry Terminal	☐ Piling/Dolphin	
☐ Channel Modification	☐ Fishway	☐ Raft	

☒ Other: Flow Lane Placement

6e. Describe how you plan to construct each project element checked in 6d. Include specific construction methods and equipment to be used. [help]

- Identify where each element will occur in relation to the nearest waterbody.
- Indicate which activities are within the 100-year floodplain.

Maintenance dredging at the Ilwaco marina will be completed using hydraulic (cutter suction dredge) or mechanical dredging methods (clamshell and/or bucket dredge).

A hydraulic dredge uses a cutterhead on the end of an arm that is buried typically 3 to 6 feet deep in the river bottom of the dredge prism and swings in a 250- to 300-foot arc in front of the dredge barge during dredging. Dredged material is sucked up through the cutterhead either piped to the upland placement area or to a barge for transport and placement in the in-water flow lane sites referenced in this JARPA.

A mechanical dredge removes material by scooping it up with a bucket. Mechanical dredges include clamshell or backhoe dredges. Mechanical dredging is performed using a bucket operated from a crane or derrick that is mounted on a barge or operated from shore. Sediment from the bucket is usually placed in an upland area or on a scow or bottom dump (split) barge or directly onto the upland placement site when it has capacity. Placement of the material at the in-water flow lane placement site will occur through the opening of the bottom doors or splitting the barge. The process of splitting is tightly controlled to minimize turbidity and to minimize the spread of material outside of the placement area.

6f. What are the anticipated start and end dates for project construction? (Month/Year) [help]

- If the project will be constructed in phases or stages, use JARPA Attachment D to list the start and end dates of each phase or stage.

Start Date: 1 November 2025 End Date: 28 February 2035 ☐ See JARPA Attachment D

6g. Fair market value of the project, including materials, labor, machine rentals, etc. [help]

Approximate annual costs $1,000,000

6h. Will any portion of the project receive federal funding? [help]

- **If yes**, list each agency providing funds.

☐ Yes ☒ No ☐ Don't know

Part 7–Wetlands: Impacts and Mitigation

☐ Check here if there are wetlands or wetland buffers on or adjacent to the project area.
(If there are none, skip to Part 8.) [help]

7a. Describe how the project has been designed to avoid and minimize adverse impacts to wetlands. [help]

☒ Not applicable

7b. Will the project impact wetlands? [help]

☐ Yes ☐ No ☐ Don't know

7c. Will the project impact wetland buffers? [help]

☐ Yes ☐ No ☐ Don't know

7d. Has a wetland delineation report been prepared? [help]

- **If Yes**, submit the report, including data sheets, with the JARPA package.

☐ Yes ☐ No

7e. Have the wetlands been rated using the Western Washington or Eastern Washington Wetland Rating System? [help]

- **If Yes**, submit the wetland rating forms and figures with the JARPA package.

☐ Yes ☐ No ☐ Don't know

7f. Have you prepared a mitigation plan to compensate for any adverse impacts to wetlands? [help]

- **If Yes**, submit the plan with the JARPA package and answer 7g.
- **If No, or Not applicable**, explain below why a mitigation plan should not be required.

☐ Yes ☐ No ☐ Don't know

7g. Summarize what the mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan. [help]

7h. Use the table below to list the type and rating of each wetland impacted, the extent and duration of the impact, and the type and amount of mitigation proposed. Or if you are submitting a mitigation plan with a similar table, you can state (below) where we can find this information in the plan. [help]

Activity (fill, drain, excavate, flood, etc.)	Wetland Name[1]	Wetland type and rating category[2]	Impact area (sq. ft. or Acres)	Duration of impact[3]	Proposed mitigation type[4]	Wetland mitigation area (sq. ft. or acres)

[1] If no official name for the wetland exists, create a unique name (such as "Wetland 1"). The name should be consistent with other project documents, such as a wetland delineation report.
[2] Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package.
[3] Indicate the days, months or years the wetland will be measurably impacted by the activity. Enter "permanent" if applicable.
[4] Creation (C), Re-establishment/Rehabilitation (R), Enhancement (E), Preservation (P), Mitigation Bank/In-lieu fee (B)

Page number(s) for similar information in the mitigation plan, if available: _____

7i. For all filling activities identified in 7h, describe the source and nature of the fill material, the amount in cubic yards that will be used, and how and where it will be placed into the wetland. [help]

Not applicable.

7j. For all excavating activities identified in 7h, describe the excavation method, type and amount of material in cubic yards you will remove, and where the material will be disposed. [help]

Not applicable.

Part 8–Waterbodies (other than wetlands): Impacts and Mitigation

In Part 8, "waterbodies" refers to non-wetland waterbodies. (See Part 7 for information related to wetlands.) [help]

☒ Check here if there are waterbodies on or adjacent to the project area. (If there are none, skip to Part 9.)

8a. Describe how the project is designed to avoid and minimize adverse impacts to the aquatic environment. [help]

☐ Not applicable

Avoidance and Minimization

The project has been designed to avoid and minimize impacts to the aquatic environment to the maximum extent feasible. Initially the Port evaluated placing dredged material at a proposed beneficial use site located in water southeast of the Port of Chinook's marina. However, the proposed beneficial use placement site was eliminated due to eelgrass present at the proposed site and associated mitigation requirements that the Port could not accommodate.

BEST MANAGEMENT PRACTICES (BMPs)

The following BMPs and conservation measures will be implemented to minimize environmental impacts during dredging:

Endangered Species Act BMPs

Work will be completed during the fish protection work window[11] as authorized by federal and state agencies.

The work will be conducted to ensure no impingement of juvenile salmonids by dredging equipment, clamshell or hydraulic dredge. Regular observation of sediment aboard the barge or at the placement areas will be conducted. If impingement is occurring, clamshell operations would be adjusted (slowed) to increase opportunity for juveniles to avoid the bucket and/or suction head and the hydraulic dredge will be lowered deeper into the sand to minimize water entrainment.

Turbidity BMPs

Construction activities will be performed in compliance with Surface Water Quality Standards for the State of Washington (WAC 173-201A) or other conditions as specified in the WQC.

Appropriate BMPs will be employed to minimize sediment loss and turbidity generation during dredging. BMPs may include, but are not limited to the following:

- Smooth closure of the bucket when at the bottom (mechanical dredging only)
- No stockpiling of dredged material on the riverbed
- Maintain suction head of hydraulic dredge at the riverbed to the extent practicable (hydraulic only)
- Other conditions as specified in the WQC

[11] It is anticipated that 1 November to 28 February will be the in-water work window for the new dredging permits.

Enhanced BMPs may be implemented to control turbidity and may include, but are not limited to, the following:

- Slowing the velocity (i.e., cycle time) of the ascending loaded clamshell bucket through the water column
- Pausing the dredge bucket near the bottom while descending and near the water line while ascending
- Placing filter material over the barge scuppers to clear return water

If sediment is placed on a barge for delivery to the placement areas, no spill of sediment from the barge will be allowed. The barge will be managed such that the dredged sediment load does not exceed the capacity of the barge. The load will be placed in the barge to maintain an even keel and avoid listing. Hay bales and/or filter fabric may be placed over the barge scuppers to help filter suspended sediment from the barge effluent, if needed.

Hazmat/SPCC BMPs

- Dredge vessel personnel will be trained in hazardous material handling and spill response, and will be equipped with appropriate response tools, including adsorbent oil booms. If a spill occurs, spill cleanup and containment efforts will begin immediately and will take precedence over normal work.
- The dredging contractor will be responsible for the preparation of a Spill, Prevention, Control, and Countermeasure (SPCC) Plan to be used for the duration of the project. The plan shall be submitted to the project engineer prior to the commencement of any construction activities. A copy of the plan with any updates will be maintained at the work site by the contractor.
- The SPCC Plan shall identify construction planning elements and recognize potential spill sources at the site. The SPCC Plan shall outline responsive actions in the event of a spill or release and shall describe notification and reporting procedures. The SPCC Plan shall outline contractor management elements, such as personnel responsibilities, project site security, site inspections, and training.
- The SPCC Plan will outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. These items include, but are not limited to, gasoline, oils, and chemicals. Hazardous materials are defined in RCW 70.105.010 under “hazardous substance.”

Placement Site BMPs

Upland Placement:

- Discharge pipes at the upland placement site will be extended or moved as necessary to maintain an efficient ponding configuration within the placement site. Coarser dredged material will be stockpiled around the perimeter, where practical, to avoid reducing pond size unnecessarily.
- The dredging rate will not reach a level that results in noncompliance with the effluent limitations and/or water quality criteria at the discharge point. The level of settleable solids in the discharge will be in accordance with the WQC.
- A buffer plate or other means will be used to reduce flow discharge of the hydraulic dredge at the placement area if necessary.
- Drainage from the dredged material will be discharged to Baker Bay in accordance with the water quality criteria specified in the WQC.

Flow Lane Placement:

- The placement activities will be visually monitored and the sites will be surveyed pre- and post-placement to ensure placed sediment is contained inside the specified boundaries.
- A contractor work plan with description of equipment, placement techniques, work sequence, processes, surveying, and monitoring of placement of dredged material will be a required

preconstruction submittal to be reviewed by the project engineer, the USACE and other agencies prior to starting construction.

- Contractor work plans will be submitted to and are subject to review and approval by the USACE and other permitting agencies and will be discussed and reviewed during the required pre-dredging conference for each event
- A horizontal placement tolerance of 3 feet will be applied to the placement of all dredged material within the placement area design template. Placement will be evaluated relative to this tolerance by the Port and the project engineer prior to acceptance of the work
- Cleanup of misplaced material, taking into account the tolerance listed above, outside of the project boundaries (both vertical and horizontal) will be the responsibility of the contractor
- Visual water quality monitoring and, if necessary, follow-up measurements will be conducted around the barge at the removal area to confirm that material is not being released.
- Sediment will be discharged at the riverbed to the extent practicable to minimize turbidity in the water column.

Only dredged material suitable and approved for in-water disposal based on a Suitability Determination issued by the PSET will be placed in water.

Unsuitable Material

Two areas within the marina have been identified as unsuitable for unconfined aquatic placement (PSET December 2024; see attached) including:

- An approximately 119,100 sq. ft. area in the northeast corner of the marina representing approximately 9,560 CY; and
- The upper 1-foot of material adjacent to the former Ilwaco Landing Seafood Processing crab dock which burned down in January 2024. This area is approximately 105,340 sq. ft. and represents approximately 3,900 CY.

BMPs for dredging and placement of material associated with these areas include:

- 25-foot buffers around unsuitable material will be implemented when dredging adjacent suitable material to prevent comingling of unsuitable material from material that may be placed in-water.
- Unsuitable material will be disposed of at a permitted upland landfill facility.
- If unsuitable material is temporarily stored at the Port's upland placement site prior to being transported for disposal at an upland facility, unsuitable material will be isolated from suitable material and will be confined and covered in such a way as to prevent stormwater coming into contact with the unsuitable material and associated runoff. The unsuitable material stockpile will also be secured to prevent public access and minimize wildlife contact.

8b. Will your project impact a waterbody or the area around a waterbody? [help]

☒ Yes ☐ No

Dredging and flow lane dredge placement will result in temporary, localized, and short-term increases to turbidity.

8c. Have you prepared a mitigation plan to compensate for the project's adverse impacts to non-wetland waterbodies? [help]

- **If Yes**, submit the plan with the JARPA package and answer 8d.
- **If No, or Not applicable,** explain below why a mitigation plan should not be required.

☐ Yes ☒ No ☐ Don't know

Mitigation is not proposed for maintenance dredging and dredge material placement at either the flow lane placement site(s) and/or upland placement activities. Maintenance dredging to previously approved depths will occur at the marina within the maintained and previously permitted dredge prism boundary, and in-water placement will occur at existing Columbia River flow lane placement sites. All in-water work will occur during the approved in-water work window.

There will be minimal adverse effects to aquatic resources of the Columbia River (species or habitat) by following BMPs and conservation measures as described in Section 8a of this document.

No permanent loss of habitat functions or effects to listed species are anticipated based upon previous and reinitiated ESA Consultations (USACE No. 99-1252; NWP-2004-78-5, NMFS No. WSB-01-024); and based on dredging methods, dredged material placement methods to retain sediment in the river to the extent practicable, and on use of BMPs.

The appropriate BMPs will be implemented to minimize sediment loss and turbidity generation during dredging and placement activities. Increases to turbidity during dredging and/or placement activities will be minor, temporary, and localized. The proposed work will be completed with BMPs implemented to minimize the potential for adverse impacts to water quality and the aquatic environment.

Dredged material that is unsuitable for in-water placement (PSET December 2024) will be dredged and placed upland in a stockpile isolated from suitable material placed at the Port's upland placement site. The unsuitable material will remain stockpiled separately from the suitable material until it can be transported to a permitted landfill facility. The unsuitable areas will be kept separate from the suitable material during dredging by implementing PSET approved buffers that will be defined in the annual dredging plan and reviewed by PSET prior to each dredging event.

8d. Summarize what the mitigation plan is meant to accomplish. Describe how a watershed approach was used to design the plan.

- If you already completed 7g you do not need to restate your answer here. [help]

Not applicable

8e. Summarize impact(s) to each waterbody in the table below. [help]

Activity (clear, dredge, fill, pile drive, etc.)	Waterbody name[1]	Impact location[2]	Duration of impact[3]	Amount of material (cubic yards) to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
Dredge - Marina	Baker Bay	In-water	Temporary	Maximum total of 780,288 CY (280,288 CY one time; 50,000 CY annual maximum over the life of the permit)	approximately 2,134,064 sq. ft.
Placement - Oregon Flow Lane Site 1: "BB-3"	Columbia River	In-water	Temporary (flow lane)	280,288 CY one time capital dredge event; one-time 70,000 CY upland site restoration event; 50,000 CY[12] annual maximum over the life of the permit	1,336,500 sq. ft.
Placement - Oregon Flow Lane Site 2:	Columbia River	In-water	Temporary (flow lane)		3,220,000 sq. ft.
Placement - Oregon Flow Lane Site 3: "Area D"	Columbia River	In-water	Temporary (flow lane)		9,553,200 sq. ft.

[12] Dredged material may be placed at the existing upland placement site on an annual basis once capacity has been restored at the upland placement site.

Clean Sand Placement – Marina	Baker Bay	In-water	Permanent[13]	4,410 CY	119,097 sq. ft.

[1] If no official name for the waterbody exists, create a unique name (such as "Stream 1") The name should be consistent with other documents provided.
[2] Indicate whether the impact will occur in or adjacent to the waterbody. If adjacent, provide the distance between the impact and the waterbody and indicate whether the impact will occur within the 100-year flood plain.
[3] Indicate the days, months or years the waterbody will be measurably impacted by the work. Enter "permanent" if applicable.

8f. For all activities identified in 8e, describe the source and nature of the fill material, amount (in cubic yards) you will use, and how and where it will be placed into the waterbody. [help]

The source of material to be placed at the upland or in-water placement site is dredged material (Columbia River sand) from the Port of Ilwaco Marina. Dredge material placement will include a maximum total of 780,288 CY (280,288 CY one time; 50,000 CY annual maximum over the life of the permit)

Only material that has been deemed suitable for unconfined aquatic placement will be placed at the proposed flow lane placement sites. The PSET issued a suitability determination on 13 December 2024 (attached)

In general, flow lane placement is the placement of dredged material in deep and dynamic portions of a water body where it will become a natural element of the sediment transport system and will be assimilated into the system with no measurable impacts to either the sediment transport system or the environment.

Flow-lane placement will occur by opening the bottom of a split-hull barge. The placement process is controlled to minimize turbidity and the movement of the material.

The extraction of sediment from the river system during maintenance dredging throughout the river system detrimentally impacts the natural littoral transport system and, therefore, the sediment source for the coastal shoreline areas adjacent to the mouth of the Columbia River is currently suffering from sediment deprivation. Placement of sediment back into the river results in the transition of sediment into the river system with benefits of restoring natural littoral drift.

8g. For all excavating or dredging activities identified in 8e, describe the method for excavating or dredging, type and amount of material you will remove, and where the material will be disposed. [help]

Dredging operations will be completed using mechanical or hydraulic dredging methods.

A hydraulic dredge uses a cutterhead on the end of an arm that is buried typically 3 to 6 feet deep in the river bottom and swings in a 250- to 300-foot arc in front of the dredge. Dredged material is sucked up through the cutterhead and the pipes and deposited on a barge for transport to the placement area or deposited directly to the upland.

A mechanical dredge removes material by scooping it up with a bucket. Mechanical dredges include clamshell, dragline, and backhoe dredges. Mechanical dredging is performed using a bucket operated from a crane or derrick that is mounted on a barge or operated from shore. Sediment from the bucket is usually placed on a barge and transported to an in-water or upland placement or disposal site.

The dredged sediment will be placed at either the upland placement site (if there is sufficient capacity) or at the existing in-water placement sites in Clatsop County, Oregon. Dredged material would be placed at the flow lane placement sites via barge. Material may be placed at the upland placement site either via pipeline, or mechanical dredge methods.

8h. Have you prepared a Water Quality Monitoring Plan (WQMP) for all in-water work (below ordinary high water), over water work or discharges to waters of the state?

☒ Yes ☐ No

[13] A 1-foot layer of clean sand (up to approximately 4,410 CY) may be placed within the marina if post dredge surface sediment sampling indicates that the post dredge surface around sample station SP-ll is unsuitable for unconfined aquatic exposure. See attached Suitability Determination

If NO describe the monitoring that you will be conducting including parameters, equipment and locations, or explain why monitoring will not be necessary. [help]

Part 9–Additional Information

Any additional information you can provide helps the reviewer(s) understand your project. Complete as much of this section as you can. It is ok if you cannot answer a question.

9a. If you have already worked with any government agencies on this project, list them below. [help]

Agency Name	Contact Name	Phone	Most Recent Date of Contact
National Marine Fisheries Services	David Price	253-317-1498	12/9/2024
U.S. Army Corps of Engineers	Kinsey Friesen	503-577-8298	12/20/2024
U.S. Army Corps of Engineers	Julia Keiter	503-407-3353	12/31/2024
Portland Sediment Evaluation Team	James Holm	503- 808-4963	12/13/2024

9b. Are any of the wetlands or waterbodies identified in Part 7 or Part 8 of this JARPA on the Washington Department of Ecology's 303(d) List? [help]

- **If Yes,** list the parameter(s) below.
- If you don't know, use Washington Department of Ecology's Water Quality Assessment tools at: https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d.

☒ Yes ☐ No

Baker Bay in and adjacent to the marina is listed for Bacteria (Fecal Coliform) according to Ecology's Water Quality Atlas Map database.

9c. What U.S. Geological Survey Hydrological Unit Code (HUC) is the project in? [help]

- Go to http://cfpub.epa.gov/surf/locate/index.cfm to help identify the HUC.

17100106

9d. What Water Resource Inventory Area Number (WRIA #) is the project in? [help]

- Go to https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up to find the WRIA #.

WRIA 24 - Willapa

9e. Will the in-water construction work comply with the State of Washington water quality standards for turbidity? [help]

- Go to https://ecology.wa.gov/Water-Shorelines/Water-quality/Freshwater/Surface-water-quality-standards/Criteria for the standards.

☒ Yes ☐ No ☐ Not applicable

9f. If the project is within the jurisdiction of the Shoreline Management Act, what is the local shoreline environment designation? [help]

- If you don't know, contact the local planning department.
- For more information, go to: https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Shoreline-laws-rules-and-cases.

☐ Urban ☐ Natural ☐ Aquatic ☐ Conservancy ☒ Other: High Intensity

9g. What is the Washington Department of Natural Resources Water Type? [help]

- Go to http://www.dnr.wa.gov/forest-practices-water-typing for the Forest Practices Water Typing System.

☒ Shoreline ☐ Fish ☐ Non-Fish Perennial ☐ Non-Fish Seasonal

9h. Will this project be designed to meet the Washington Department of Ecology's most current stormwater manual? [help]

- **If No**, provide the name of the manual your project is designed to meet.

☒ Yes ☐ No

Name of manual: 2024 Stormwater Management Manual for Western Washington (SWMMWW)

9i. Does the project site have known contaminated sediment? [help]

- **If Yes**, please describe below.

☒ Yes ☐ No

The marina dredge prism and upland placement site material was characterized in 2024. The Port sampled the marina and upland placement sites in October 2023 per a PSET-approved SAP. On January 22, 2024, a fire occurred at the Ilwaco Landing crab dock. To support dredging the marina post-fire, the PSET requested a tiered sampling for dioxins and furans in surface sediments in proximity to the dock. The PSET approved the SAP Addendum on May 23, 2024. Samples were collected May 30, 2024, for dioxins and furans analysis.

The PSET issued a suitability determination on 13 December 2024 (Attached). Results of the characterization as provided in the Suitability Determination are summarized below.

- Chemical concentrations in the dredge prism and upland site composite samples, excluding the crab dock and Station SP-11, were below the SEF marine screening levels (SLs) and Oregon Department of Environmental Quality (ODEQ's) screening level values. As such, the Port of Ilwaco marina and upland placement site dredged prism materials are suitable for unconfined, aquatic placement per the 2018 SEF guidance without additional testing.
- The Port's dredge area adjacent to the crab dock (1A, 1B, upper 1-foot, yellow polygon) and Station SP-11 (full dredge prism, pink polygon), are not suitable for unconfined in-water placement without further testing. Upland disposal is required.

9j. If you know what the property was used for in the past, describe below. [help]

The site has been in operation since the 1950s. It was expanded in 1963 and in the 1980s. The 1980s expansion and improvements brought the marina to its present condition.

9k. Has a cultural resource (archaeological) survey been performed on the project area? [help]

- **If Yes**, attach it to your JARPA package.

☒ Yes ☐ No

9l. Name each species listed under the federal Endangered Species Act that occurs in the vicinity of the project area or might be affected by the proposed work. [help]

Review of USFWS Information for Planning and Consultation (IPaC) database and NOAA Protected Resources App indicate that the species listed below do or may occur in the vicinity of the project area. Species lists are typically generated based on known or expected range of individual species, however, identification in the dataset does not guarantee that species do occur in the vicinity of the project area (USFWS 2023). See the attached Biological Evaluation for additional information.

ESA-Listed Species with Potential to Occur Within the Project Action Area

Species	ESU/DPS	Scientific Name	Agency	Federal Status	Critical Habitat
Chinook Salmon	Lower Columbia River evolutionarily significant unit (ESU)	*Oncorhynchus tshawytcha*	NMFS	Threatened	Occurs in Action Area
	Snake River fall-run ESU			Threatened	
	Snake River spring/summer-run ESU			Threatened	
	Upper Columbia River spring-run ESU			Endangered	
	Upper Willamette River ESU			Threatened	
Chum Salmon	Columbia River ESU	*O. keta*	NMFS	Threatened	Occurs in Action Area
Coho Salmon	Lower Columbia River ESU	*O. kisutch*	NMFS	Threatened	Occurs in Action Area
Sockeye Salmon	Snake River ESU	*O. nerka*	NMFS	Endangered	Occurs in Action Area
Steelhead	Lower Columbia River Distinct Population Segment (DPS)	*Onocorhynchus myskiss*	NMFS	Threatened	Occurs in Action Area
	Middle Columbia River DPS			Threatened	
	Snake River Basin DPS			Threatened	
	Upper Columbia River DPS			Threatened	
	Upper Willamette River DPS			Threatened	
Green sturgeon	Southern DPS	*Acipenser medirostris*	NMFS	Threatened	Occurs in Action Area
Eulachon	Southern DPS	*Thaleichthys pacificus*	NMFS	Threatened	Occurs in Action Area
Sea turtles	Leatherback	*Dermochelys coriacea*	NMFS	Endangered	None in Action Area
Killer Whale	Southern Resident	*Orcincus orca*	NMFS	Endangered	None in Action Area
Humpback Whale	Central America DPS	*Megaptera novaeangliae*	NMFS	Endangered	None in Action Area
	Mexico DP			Threatened	None in Action Area
Bull Trout	N/A	*Salvelinus confluentus*	USFWS	Threatened	Occurs in Action Area
Western Snowy Plover	N/A	*Charadrius nivosus*	USFWS	Threatened	None in Action Area
Marbled Murrelet	N/A	*Brachyramphus marmoratus*	USFWS	Threatened	None in Action Area
Streaked Horned Lark	N/A	*Eremophila alpestris strigata*	USFWS	Threatened	None in Action Area

Source: USFWS Information for Planning and Consultation (IPaC) database (USFWS 2024) and the NOAA Fisheries Protected Resources App (NOAA 2042).

9m. Name each species or habitat on the Washington Department of Fish and Wildlife's Priority Habitats and Species List that might be affected by the proposed work. [help]

Review of the WDFW Priority Habitats and Species map viewer indicates that the following Priority Habitats and Species may occur in the vicinity of the Project site.

- Fall Chinook (*Oncorhynchus tshawytscha*)
- Winter Steelhead (*Oncorhynchus mykiss*)
- Coho Salmon (*Oncorhynchus kisutch*)
- Fall Chum (*Oncorhynchus keta*)
- Pink Salmon (*Oncorhynchus gorbuscha*)
- Sockeye Salmon (*Oncorhynchus nerka*)
- White Sturgeon (*Acipenser transmontanus*)
- Summer Chinook (*Oncorhynchus tshawytscha*)
- Green Sturgeon (*Acipenser medirostris*)
- Summer Steelhead (*Oncorhynchus mykiss*)
- Resident Coastal Cutthroat (*Oncorhynchus clarki*)
- Spring Chinook (*Oncorhynchus tshawytscha*)
- Dolly Varden/Bull Trout (*Salvelinus malma/S. conflentus*)
- Marbled murrelet (*Brachyramphus marmoratus*)
- Roosevelt Elk (*Cervus elaphus roosevelti*)
- Wetlands
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Northern Spotted Owl (*Strix occidentalis*)

Part 10–SEPA Compliance and Permits

Use the resources and checklist below to identify the permits you are applying for.

- Online Project Questionnaire at http://apps.oria.wa.gov/opas/.
- Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.
- For a list of addresses to send your JARPA to, click on agency addresses for completed JARPA.

10a. Compliance with the State Environmental Policy Act (SEPA). (Check all that apply.) [help]

- For more information about SEPA, go to https://ecology.wa.gov/regulations-permits/SEPA-environmental-review.

☐ A copy of the SEPA determination or letter of exemption is included with this application.

☒ A SEPA determination is pending with City of Ilwaco (lead agency).

☐ I am applying for a Fish Habitat Enhancement Exemption. (Check the box below in 10b.) [help]

☐ This project is exempt (choose type of exemption below).

☐ Categorical Exemption. Under what section of the SEPA administrative code (WAC) is it exempt?

_____

☐ Other: _____

☐ SEPA is pre-empted by federal law.

10b. Indicate the permits you are applying for. (Check all that apply.) [help]

LOCAL GOVERNMENT

Local Government Shoreline permits:

☒ Substantial Development ☐ Conditional Use ☐ Variance

☐ Shoreline Exemption Type (explain): _____

Other City/County permits:

☒ Floodplain Development Permit ☐ Critical Areas Ordinance

STATE GOVERNMENT

Washington Department of Fish and Wildlife:

☒ Hydraulic Project Approval (HPA) ☐ Fish Habitat Enhancement Exemption – Attach Exemption Form

Washington Department of Natural Resources:

☒ Aquatic Use Authorization

Complete JARPA Attachment E and submit a check for $25 payable to the Washington Department of Natural Resources. **Do not send cash.**

Washington Department of Ecology:

☒ Section 401 Water Quality Certification

☐ Authorization to impact waters of the state, including wetlands (Check this box if the proposed impacts are to waters not subject to the federal Clean Water Act)

FEDERAL AND TRIBAL GOVERNMENT

United States Department of the Army (U.S. Army Corps of Engineers):

☒ Section 404 (discharges into waters of the U.S.) ☒ Section 10 (work in navigable waters)

United States Coast Guard:

For projects or bridges over waters of the United States, contact the U.S. Coast Guard at:

☐ Bridge Permit: D13-SMB-D13-BRIDGES@uscg.mil

☐ Private Aids to Navigation (or other non-bridge permits): D13-SMB-D13-PATON@uscg.mil

United States Environmental Protection Agency:

☐ Section 401 Water Quality Certification (discharges into waters of the U.S.) on tribal lands where tribes do not have treatment as a state (TAS)

Tribal Permits: (Check with the tribe to see if there are other tribal permits, e.g., Tribal Environmental Protection Act, Shoreline Permits, Hydraulic Project Permits, or other in addition to CWA Section 401 WQC)

☐ Section 401 Water Quality Certification (discharges into waters of the U.S.) where the tribe has treatment as a state (TAS).

Part 11–Authorizing Signatures

Signatures are required before submitting the JARPA package. The JARPA package includes the JARPA form, project plans, photos, etc. [help]

11a. Applicant Signature (required) [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities, and I agree to start work only after I have received all necessary permits.

I hereby authorize the agent named in Part 3 of this application to act on my behalf in matters related to this application. JH (initial)

By initialing here, I state that I have the authority to grant access to the property. I also give my consent to the permitting agencies entering the property where the project is located to inspect the project site or any work related to the project. JH (initial)

Tina Hayes	Tina Hayes	02/21/2025
Applicant Printed Name	Applicant Signature	Date

11b. Authorized Agent Signature [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities and I agree to start work only after all necessary permits have been issued.

Allison Kinney		02/24/2025
Authorized Agent Printed Name	Authorized Agent Signature	Date

11c. Property Owner Signature (if not applicant) [help]
Not required if project is on existing rights-of-way or easements.

I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.

Property Owner Printed Name	Property Owner Signature	Date

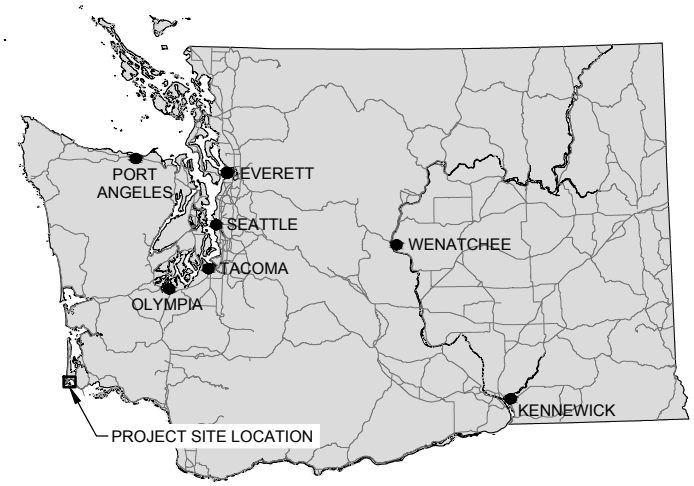
18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.

Attachments:

- Sheet 1 through 11
- Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey
- PSET Suitability Determination
- USACE Section 408 Authorization Email
- Water Quality Monitoring Plan
- Cultural Resources Report
- Biological Evaluation

Project Sheets 1 Through 11

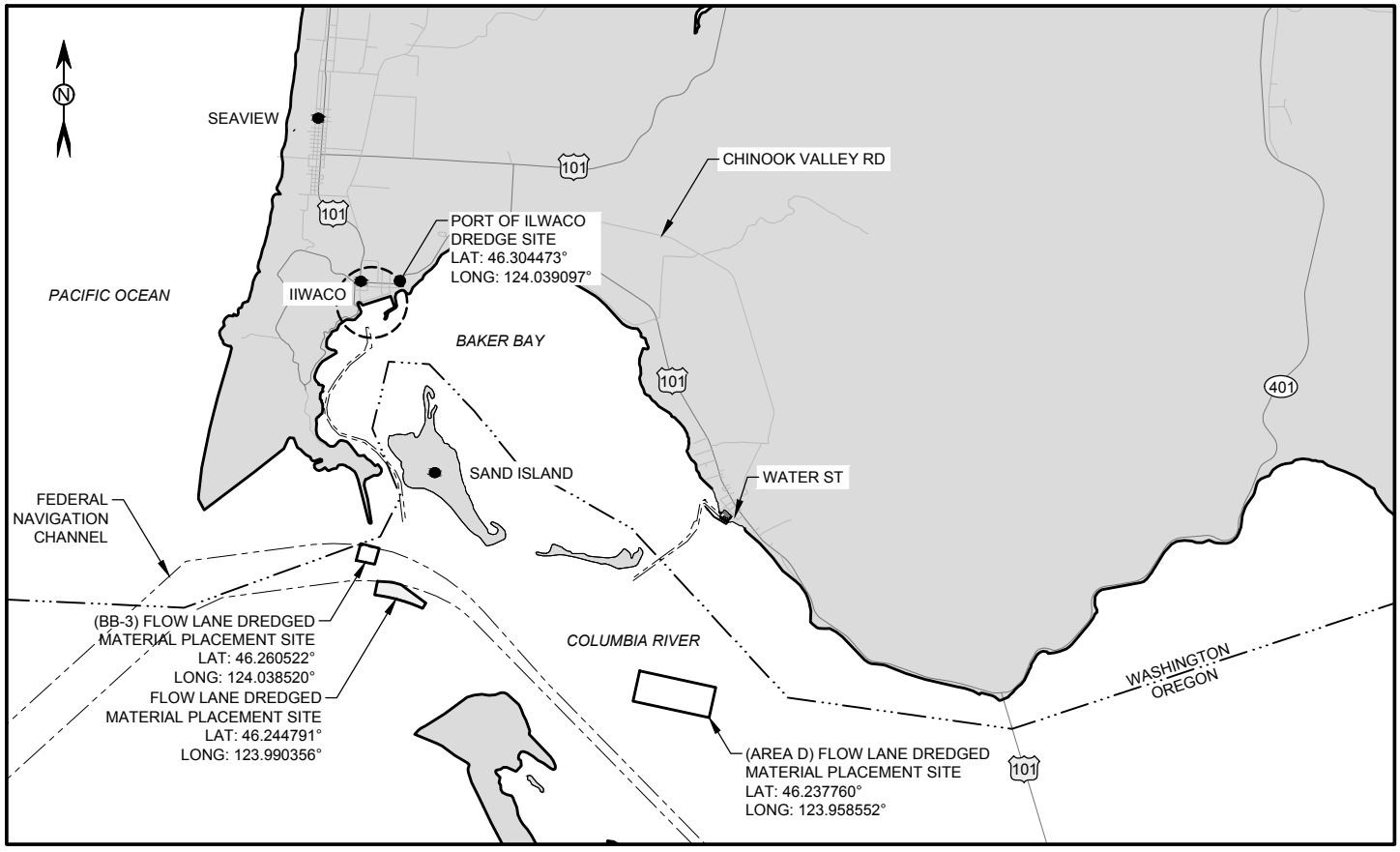
S33 T10N R11W



WASHINGTON KEY MAP

SHEET INDEX

SHEET NO.	TITLE
1	Cover Sheet
2	Parcel Map
3	Site Plan - Proposed Dredging
4	Sections - Dredge 1
5	Sections - Dredge 2
6	Site Plan - Upland Placement Site
7	Sections - Upland Placement Site
8	Site Plan - Flow Lane Placement Site 1
9	Site Plan - Flow Lane Placement Site 2
10	Site Plan - Flow Lane Placement Site 3
11	Sections - Flow Lane Placement Site



PROJECT SITE LOCATION

0 6,000 12,000

SCALE IN FEET

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Cover Sheet

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 1 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Parcel Map

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

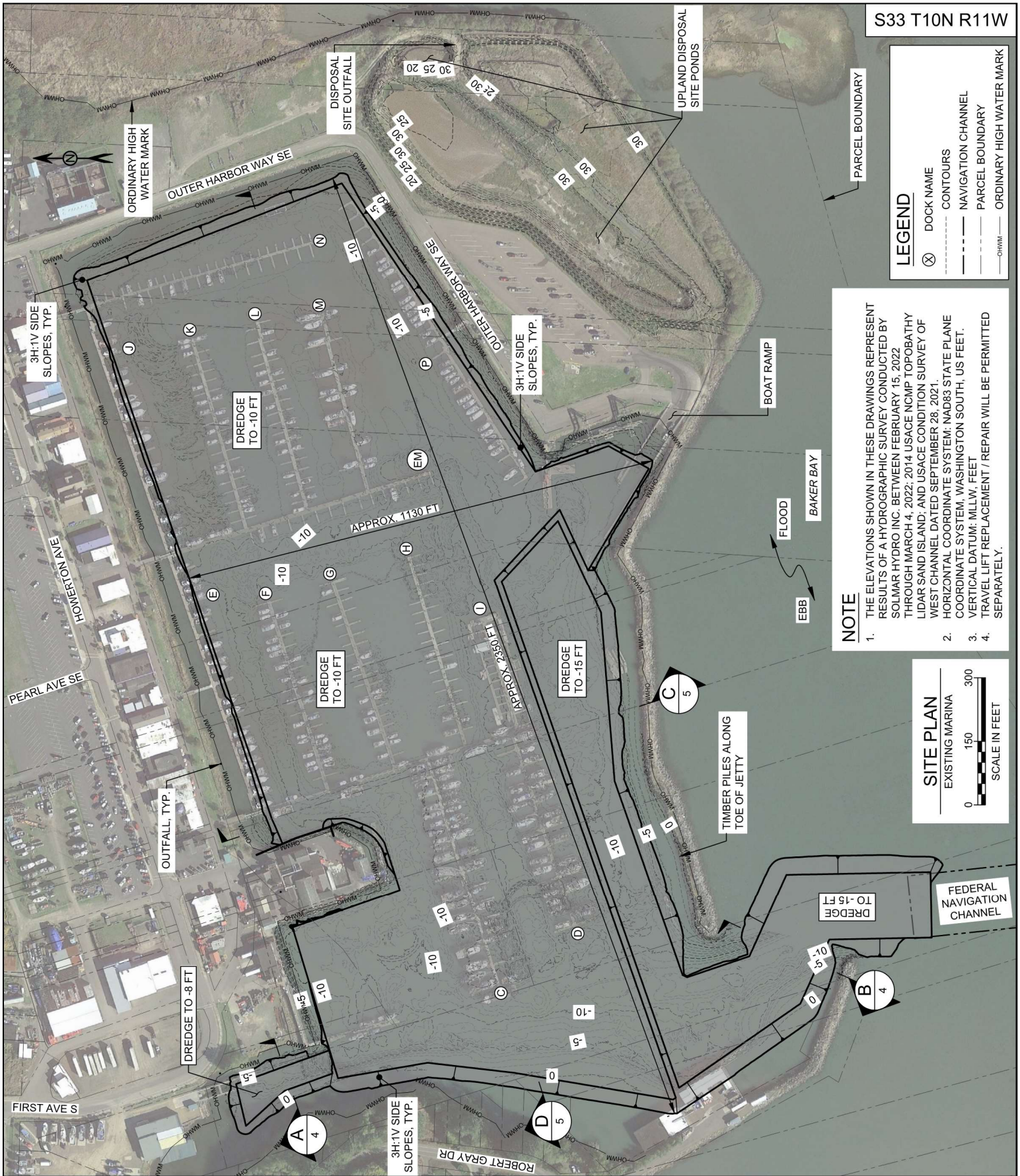
IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 2 OF 11

DATE: 1/10/25



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Site Plan - Proposed Dredging

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

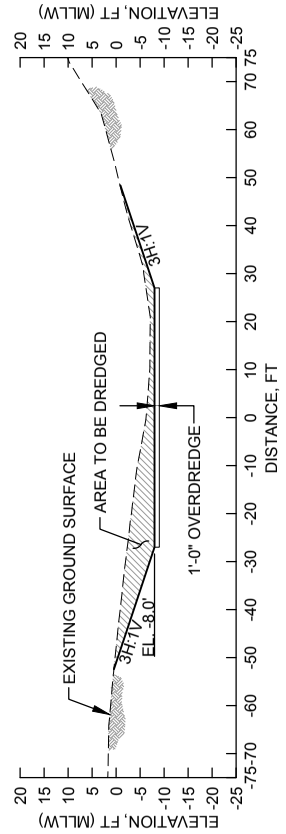
AT: ILWACO

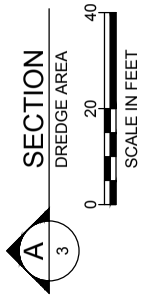
COUNTY: PACIFIC

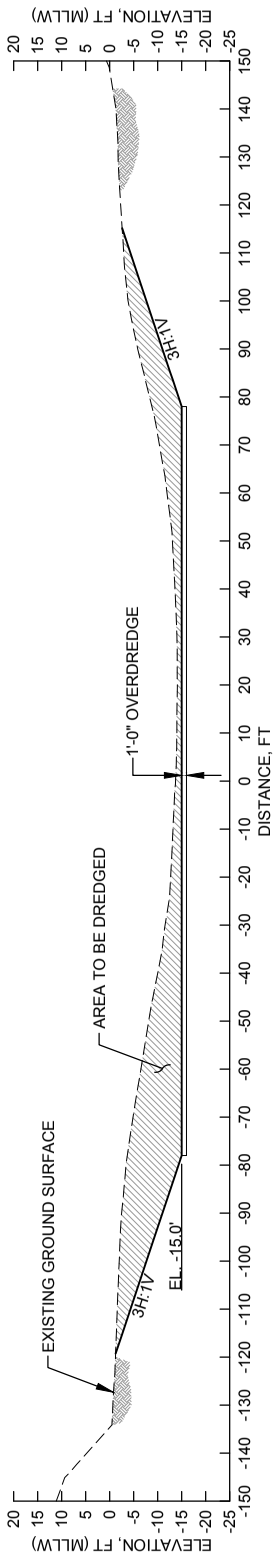
SHEET 3 OF 11

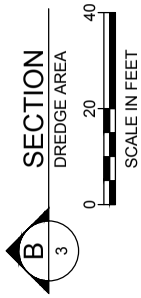
DATE: 1/10/25

S33 T10N R11W









PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Dredge 1

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

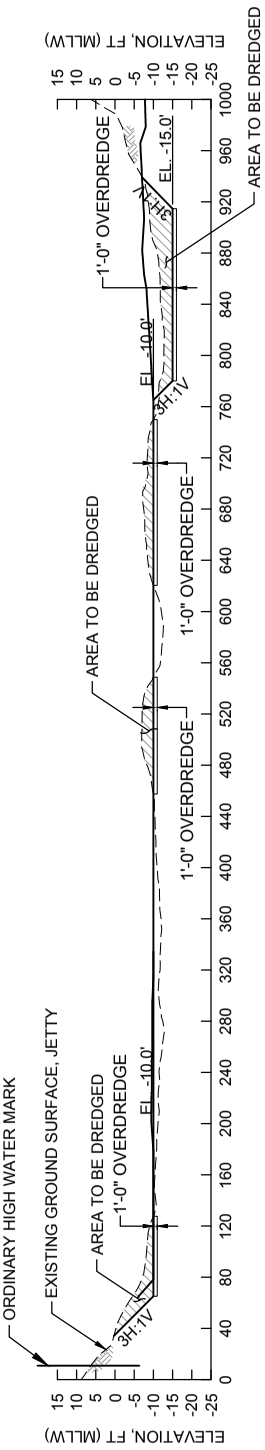
IN: BAKER BAY

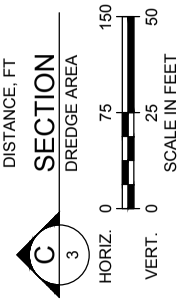
AT: ILWACO

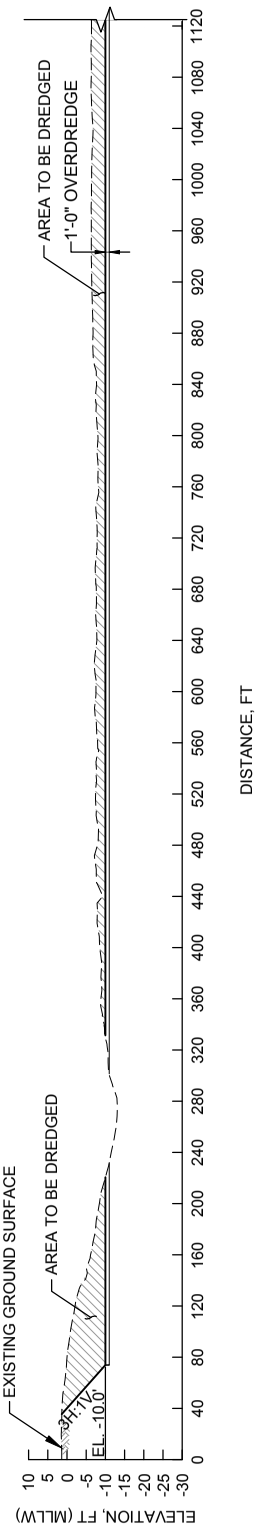
COUNTY: PACIFIC

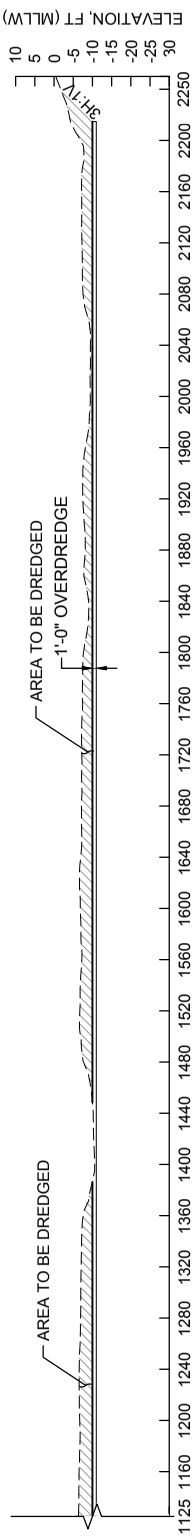
SHEET 4 OF 11

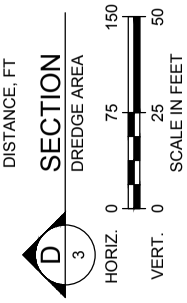
DATE: 1/10/25











PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Dredge 2

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 5 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Upland Placement Site

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 6 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Sections - Upland Placement Site

APPLICATION BY:
Port of Ilwaco

A
6
SECTION
UPLAND PLACEMENT AREA

HORIZ. 0 75 150
VERT. 0 25 50
SCALE IN FEET

B
6
SECTION
UPLAND PLACEMENT AREA

HORIZ. 0 75 150
VERT. 0 25 50
SCALE IN FEET

LEGEND

- BENEFICIAL USE PLACEMENT AREA
- EXISTING GROUND SURFACE
- EXCAVATION CUT

NOTE

1. EXISTING VEGETATION LOCATED WITHIN THE UPLAND PLACEMENT SITE EXCAVATION AREA TO BE CLEARED AND GRUBBED AND DISPOSED OF AT AN APPROVED LOCATION PRIOR TO MATERIAL REMOVAL FOR FLOW LANE PLACEMENT.

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

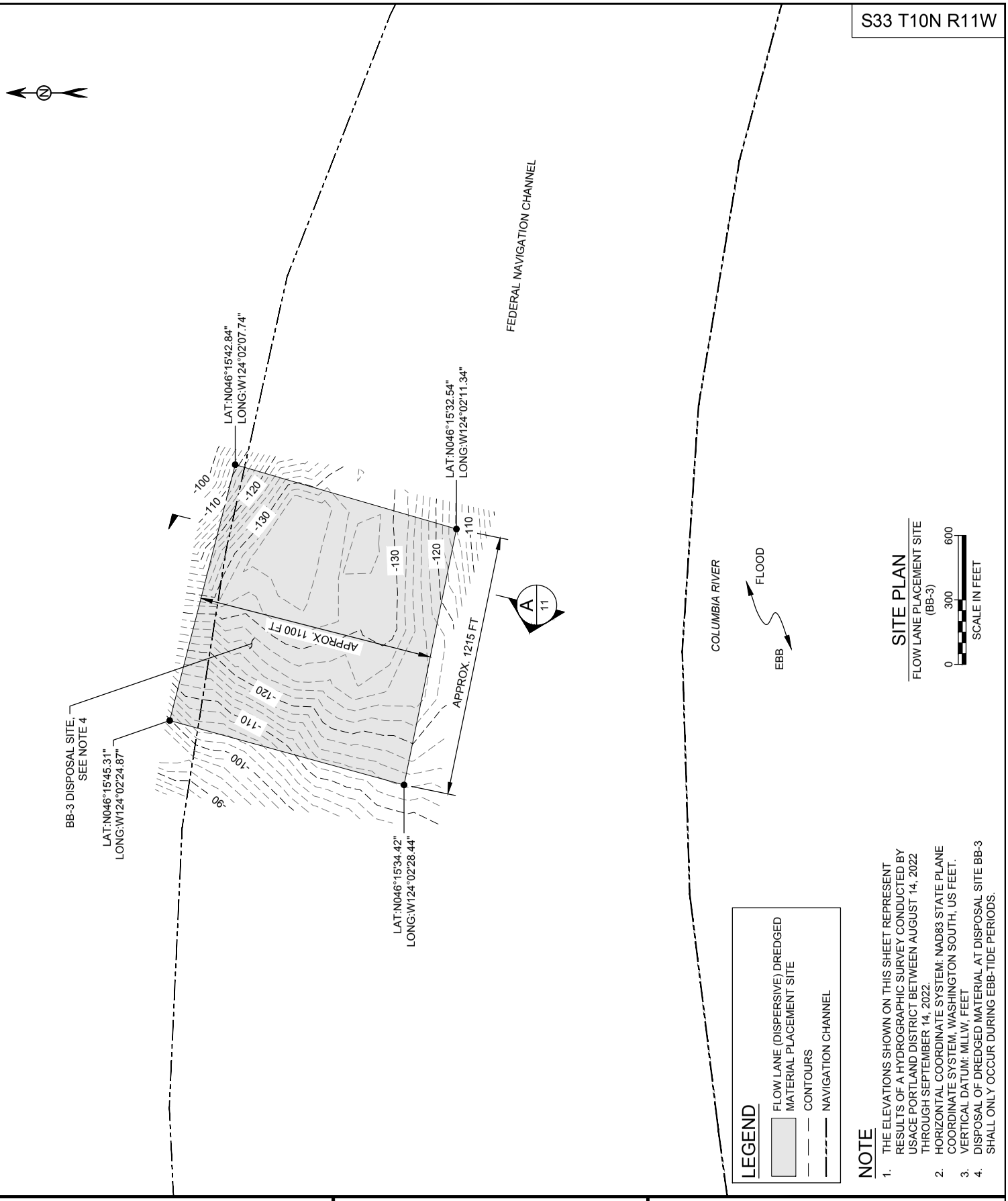
IN: BAKER BAY
AT: ILWACO
COUNTY: PACIFIC

SHEET 7 OF 11

DATE: 1/10/25

S33 T10N R11W

S33 T10N R11W



LEGEND

- FLOW LANE (DISPERSIVE) DREDGED MATERIAL PLACEMENT SITE
- CONTOURS
- NAVIGATION CHANNEL

NOTE

1. THE ELEVATIONS SHOWN ON THIS SHEET REPRESENT RESULTS OF A HYDROGRAPHIC SURVEY CONDUCTED BY USACE PORTLAND DISTRICT BETWEEN AUGUST 14, 2022 THROUGH SEPTEMBER 14, 2022.
2. HORIZONTAL COORDINATE SYSTEM: NAD83 STATE PLANE COORDINATE SYSTEM, WASHINGTON SOUTH, US FEET.
3. VERTICAL DATUM: MLLW, FEET
4. DISPOSAL OF DREDGED MATERIAL AT DISPOSAL SITE BB-3 SHALL ONLY OCCUR DURING EBB-TIDE PERIODS.

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Flow Lane Placement Site 1 (BB-3)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

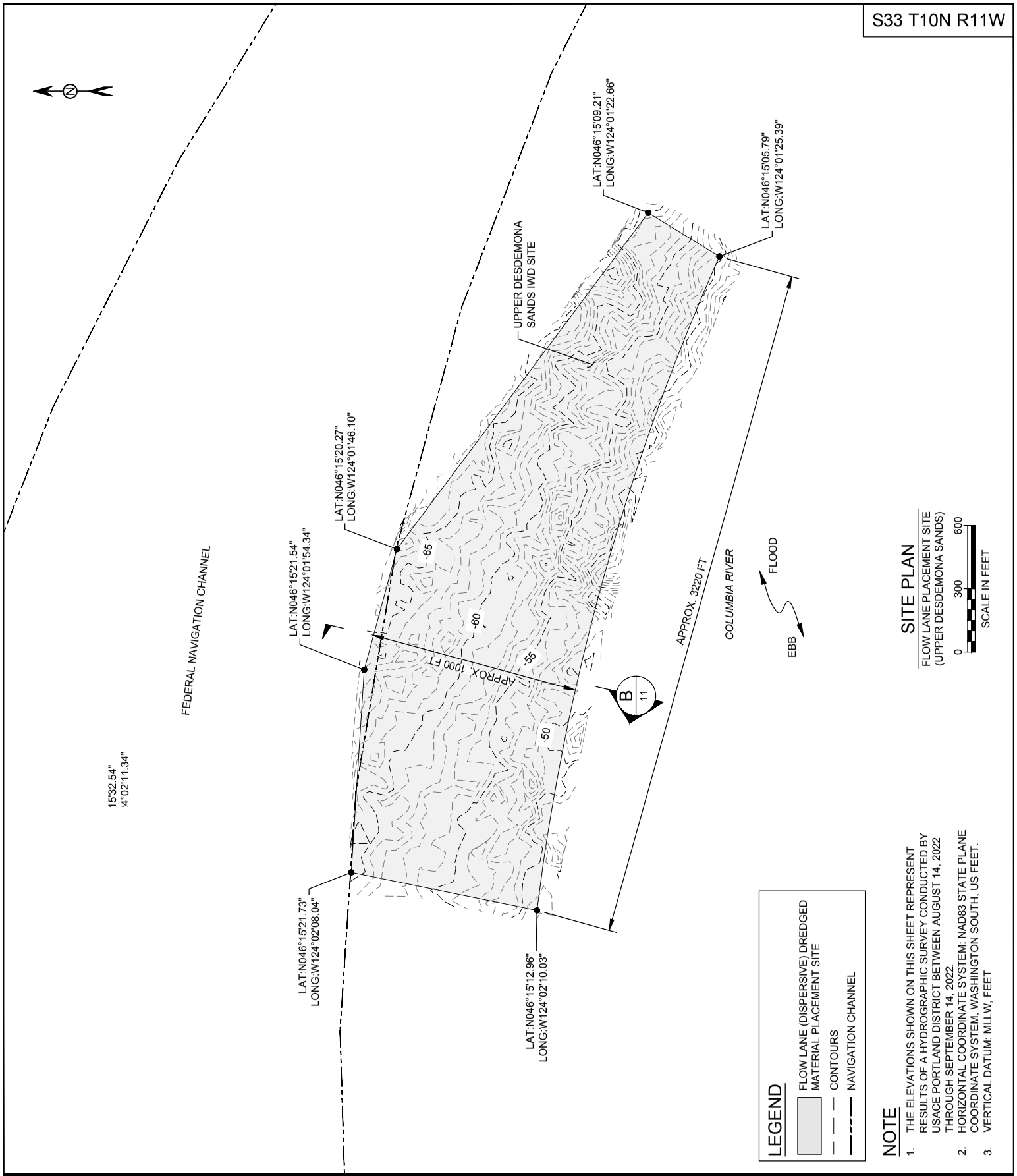
AT: ILWACO

COUNTY: PACIFIC

SHEET 8 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Flow Lane Placement Site 2
(Upper Desdemona Sands)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

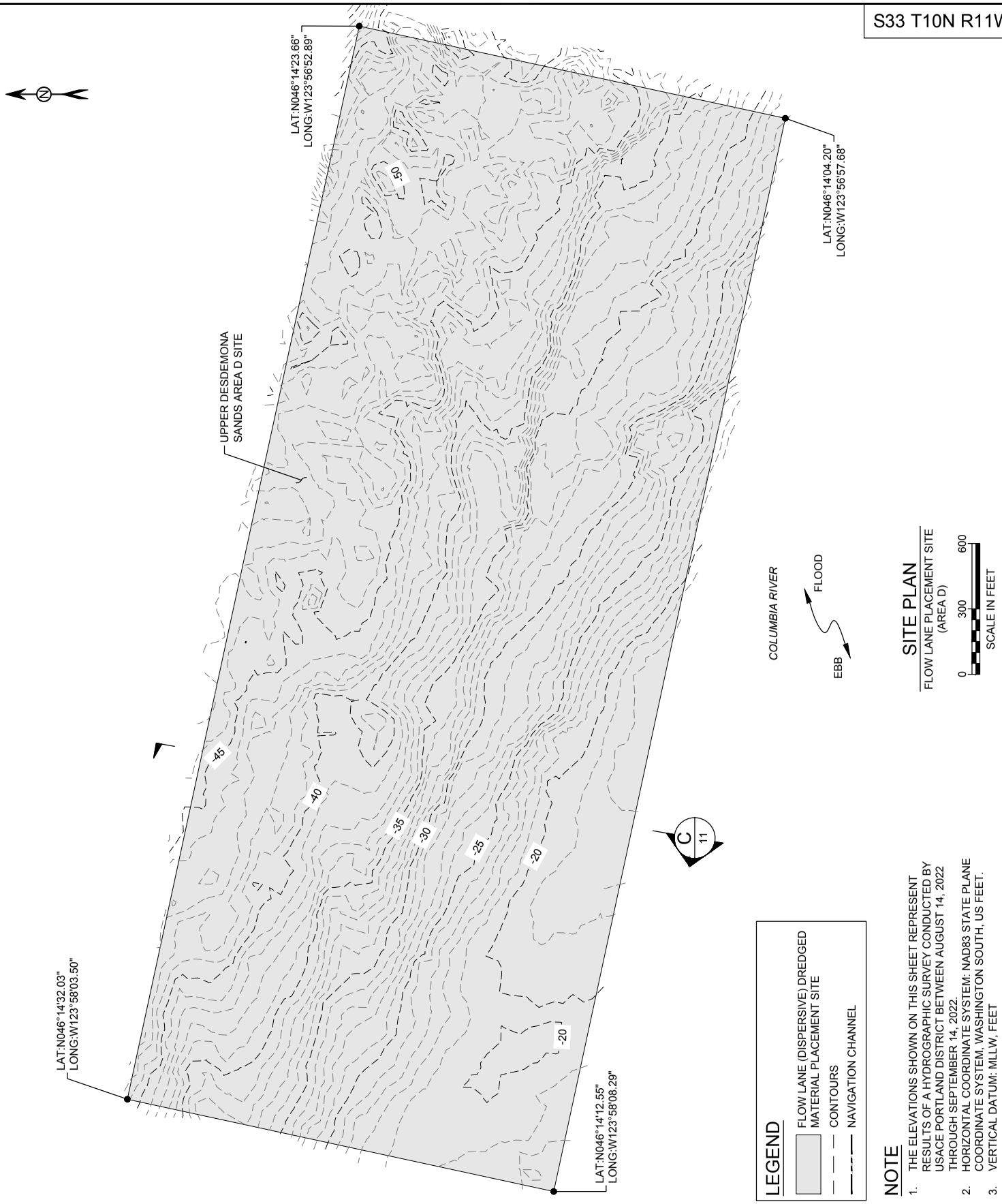
AT: ILWACO

COUNTY: PACIFIC

SHEET 9 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Site Plan - Flow Lane Placement Site 3 (Area D)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

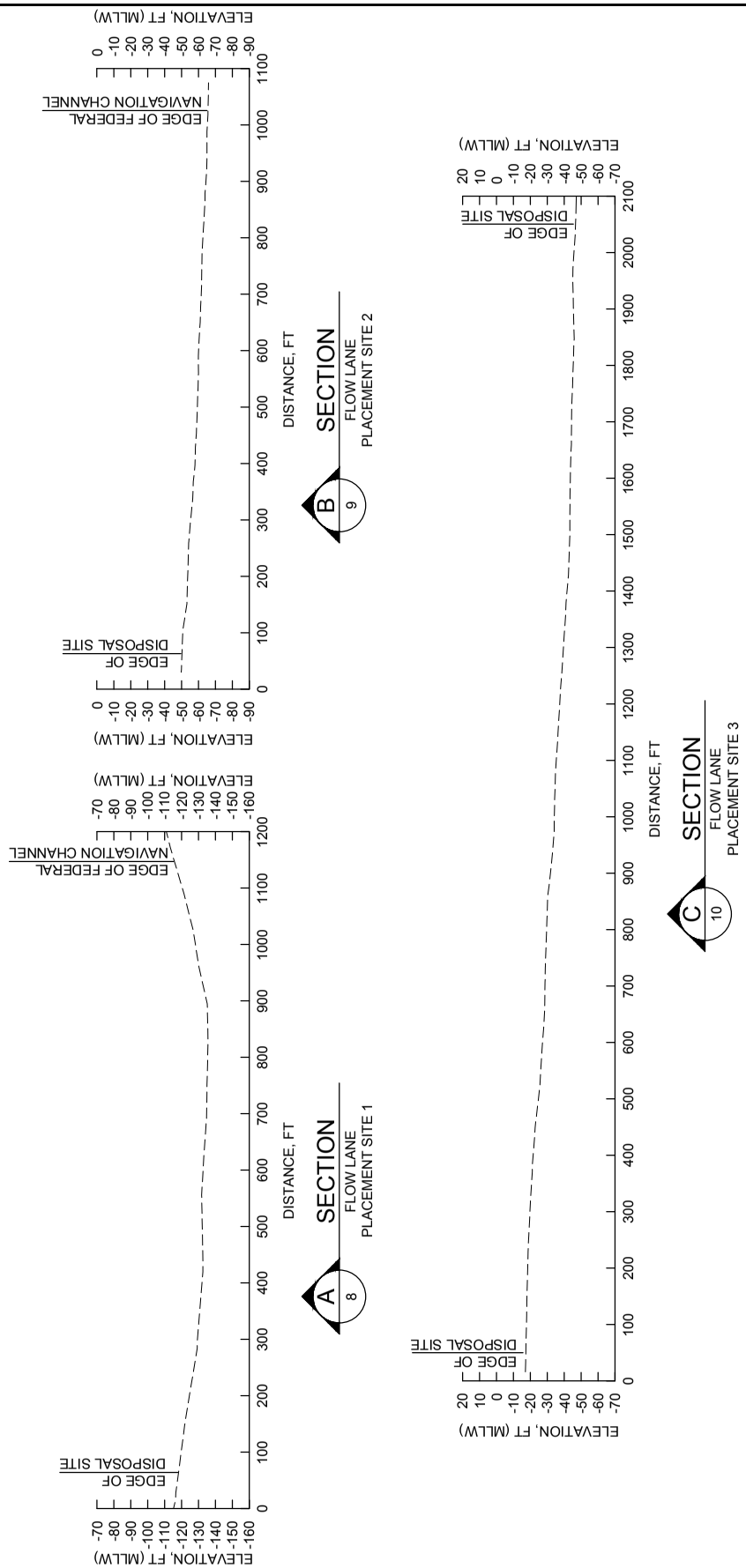
AT: ILWACO

COUNTY: PACIFIC

SHEET 10 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Flow Lane Placement Site

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 11 OF 11

DATE: 1/10/25

Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey

Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey

Port of Ilwaco
Ilwaco, Washington

for
Moffatt & Nichol

December 13, 2022

GeoEngineers

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GeoEngineers, Inc.
17425 NE Union Hill Road, Suite 250
Redmond, Washington 98052
425-861-6000

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Port of Ilwaco
Ilwaco, Washington

File No. 21551-003-01

December 13, 2022

Prepared for:

Moffat & Nichol
600 University Street, Suite 610
Seattle, WA 98101

Attention: Victoria England, LG

Prepared by:

GeoEngineers, Inc.
17425 NE Union Hill Road, Suite 250
Redmond, Washington 98052
425-861-6000

Jennifer L. Dadisman, PWS
Senior Biologist

Jason P. Stutes, PhD
Senior Marine Ecologist

Emily R. Hurn
Environmental Scientist

Fiona M. McNair, MRM, PWS
Associate Biologist and Wetland Scientist

JLD:JPS:ERH:FMM:tlm

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1.0 INTRODUCTION AND PROJECT UNDERSTANDING

GeoEngineers, Inc. (GeoEngineers) was contracted by Moffatt & Nichol on behalf of the Port of Ilwaco (Port) to perform wetland and stream delineation services and a macrovegetation/eelgrass survey for the Port of Ilwaco Dredging and Dredge Material Placement Project (project). The project and survey areas are located within Baker Bay, within and adjacent to the mouth of the Columbia River in Ilwaco, Washington (Figure 1, Vicinity Map). The Port of Ilwaco is proposing to dredge the marina basin as part of their ongoing maintenance to maintain marina operations, and potentially place dredge materials along the Baker Bay shoreline to the northeast of the marina.

This report has been prepared to summarize habitat surveys completed to document baseline habitat conditions (wetland, stream and estuarine macrovegetation) that may be affected by proposed project elements in accordance with Ilwaco Municipal Code (IMC) Chapter 15.18 (Critical Areas Ordinance) and according to the City of Ilwaco's Shoreline Master Program (SMP) (IMC Chapter 15.14). Per Washington Administrative Code (WAC) 220-110-250(3)(a,b), eelgrass and macroalgae are saltwater habitats of special concern and per IMC Chapter 15.14 they are critical saltwater habitats and therefore project proponents are required to document proximity of these habitats within the footprint and vicinity of the project. The habitat surveys included an eelgrass/macroalgae and wetland survey within the marina and within and adjacent to the proposed beneficial use site (proposed dredge disposal area). Both of these distinct survey areas are shown on Figure 1. The approximate marina dredge basin area is 62 acres, and the proposed beneficial use site encompasses a 78-acre area.

1.1. Project Location and Site Description

The project site is located at the Port of Ilwaco Marina at 165 Howerton Avenue, adjacent to the Columbia River (Figure 1). The proposed beneficial use site is located northeast of the marina on the Columbia River shoreline. The project area is bordered to the north by businesses, single-family homes and roadways and bordered to the south by the Columbia River. The project is located within Water Resources Inventory Area (WRIA) 24 (Willapa), and Section 34 of Township 10 North and Range 11 West of the Willamette Meridian (W.M.).

The general vicinity of the marina has been heavily influenced by development and recreational uses (marina and boating). Structures and development within the marina include docks, piers and riprap bulkheads.

2.0 DATA REVIEW

Environmental maps of the project area were collected and reviewed as part of a paper inventory. The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) online mapper (USFWS 2022) depicts an estuarine wetland along the shoreline within the project area. The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey identifies the marina and proposed beneficial use site areas as located in water and there is no soil type listed (USDA-NRCS 2022). NWI and soil survey information are included in Appendix A, Published Data Review.

Additional information was obtained from the Washington State Department of Natural Resources (DNR) Forest Practices Application Mapping Tool (FPAMT) and Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) data (DNR 2022; WDFW 2022). FPAMT depicts the marina as the Columbia River (a shoreline waterbody), maps a fish-bearing stream flowing into the northwest corner of the marina and maps another fish-bearing stream flowing into and through the proposed beneficial use site (DNR 2022). WDFW PHS data depicts the following priority species and habitats within ½-mile of the marina (WDFW 2022):

- Marbled murrelet (*Brachyramphus marmoratus*);
- Purple martin (*Progne subis*);
- Shorebird Concentrations;
- Waterfowl Concentrations;
- Wetlands;
- Estuarine and Marine wetlands;
- Freshwater Emergent Wetlands; and
- Freshwater Forested/Shrub Wetlands.

The U.S. Army Corps of Engineers (USACE) performed a comprehensive eelgrass survey of subtidal habitats within Baker Bay and Chinook in 2015 using BioSonics MX Aquatic Habitat Echosounder technologies. This survey documented a small population of eelgrass to the east of Sand Island (located approximately 2.6 miles southeast of the Ilwaco Marina) and larger beds to the west near Chinook (USACE 2015). The 2015 USACE survey did not include the marina or proposed beneficial use site but their findings document habitat in the vicinity of the project areas.

3.0 MACROVEGETATION/EELGRASS DELINEATION

The eelgrass/macrovegetation survey covered two survey areas: the footprint of the proposed dredge prism at the marina and the footprint of the proposed beneficial use site are located to the northeast. Surveys within these areas are necessary to document the potential effects of the proposed activities on eelgrass and macroalgal resources to help inform the design team and regional regulators. The following sections summarize the methods of the survey and the findings. Site photographs from the macrovegetation/eelgrass survey are provided in Appendix B, Site Photographs.

3.1. Eelgrass and Macrovegetation Survey Methods

The macrovegetation survey of this section of shoreline was conducted under the WDFW Eelgrass/Macroalgae Habitat Interim Survey Guidelines dated June 16, 2008 (WDFW 2008) and USACE4K Components of a Complete Eelgrass Delineation Report (USACE 2018). As per the protocols, the macrovegetation survey was initiated as a preliminary level survey (Tier 1 per USACE) using the geo-referenced hydroacoustic MX Aquatic Habitat Echosounder by BioSonics® aboard a vessel contracted with Gravity Marine. This system is comprised of a downward looking single beam transducer head that is georeferenced using a Trimble R2 Integrated GNSS Receiver System. A Sontek Castaway conductivity, temperature and depth (CTD) was used to profile density (i.e., salinity) of the water column to determine

the speed of sound for the survey site. In addition to the echosounder, an Outland technology 4K towed video system was used to ground truth/field verify echosounder data and to document fish and invertebrate resources associated with various habitat types encountered. An eelgrass biologist was onboard during the survey to document the extent of subtidal eelgrass (namely *Zostera marina*) and macroalgae in the proposed project area along with other observations about habitat quality and species diversity. Geospatial data was postprocessed for eelgrass and macroalgae coverage using ESRI software to compile a geospatial (geographic information system [GIS]) database.

Within both the marina and proposed beneficial use site, BioSonics® equipment was used to survey transects across the entire dredge and proposed beneficial use footprints. BioSonics® transects completed in these areas are shown on Figure 2, Survey Area Effort, Wetland and Aquatic Vegetation Survey – Ilwaco Marina and Figure 3, Survey Effort, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site, respectively. To confirm presence/absence of macrovegetation, field verification was performed using underwater video camera equipment within the proposed dredge prism and beneficial use area (Figures 2 and 3).

In addition to the vessel-based survey methods described above, a foot-based survey was completed to assess the habitat conditions within the upper elevations of the proposed beneficial use site as these areas were not accessible with the vessel due to shallow water/low tide conditions. In order to have complete survey coverage of the proposed beneficial use site, any areas not directly surveyed by the boat-based survey, or the foot-based survey were verified visually (either from the upland or from the water side) to be devoid of macrovegetation during low tide. Figure 3 illustrates the extent of the nearshore foot-based survey, and the vessel transects completed with the BioSonics® equipment.

3.2. Eelgrass and Macrovegetation Survey Results

The project site was surveyed on June 15, 2022. Conditions were calm with light and variable wind with overcast skies. Tides ranged from -2.06 feet mean lower low water (MLLW) to +6.8 feet MLLW during the survey. Water column visibility during field verification performed with underwater video was low during the survey with approximately 2 to 5 feet of visibility. A summary of survey findings is provided below.

3.2.1. Marina

The preliminary survey results identified one main bed of eelgrass within the marina with smaller adjacent patches. The mapped eelgrass is distributed in shallow subtidal areas between approximate elevations -7 to -10 feet (North American Vertical Datum of 1988 [NAVD 88] vertical datum). The survey identified the eelgrass distribution primarily within the center of the marina, adjacent to the "G Dock" with smaller patches scattered to the south and east (Figure 4, Eelgrass Coverage, Wetland and Aquatic Vegetation Survey – Ilwaco Marina). This survey documented approximately 0.02 acres (983 square feet) of native eelgrass habitat within the marina (Figure 3).

Photographs of the macrovegetation portion of the site visit are provided in Appendix B, Figures B-5 and B-6.

3.2.2. Proposed Beneficial Use Area/Dredge Disposal Area

The preliminary survey results identified one patch of non-native eelgrass (*Zostera japonica*) and patchy rockweed (*Fucus distichus*) within the survey area associated with the proposed beneficial use site. No

native eelgrass (*Zostera marina*) was identified in the proposed beneficial use site. The distribution of these patches of submerged vegetation are shown on Figure 5, Macrovegetation Coverage, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site and occurred between the approximate elevations +1 and +3 feet NAVD88. Our survey documented approximately 4.6 acres (200,080 square feet) of patchy non-native (*Z. japonica*) eelgrass and 2.9 acres (126,750 square feet) of patchy rockweed habitat within the proposed beneficial use site (Figure 5). Rockweed encountered was always associated with shallow low elevation rocky outcrops (e.g., Appendix B, Figure B-3; Photograph 6). No kelp species were noted in either survey area. Photographs of the macrovegetation portion of the site visit are provided in Appendix B, Figures B-3 and B-4.

3.2.3. Invertebrate and Vertebrate Fauna

As underwater video was limited to field verification of BioSonics® flagged macrovegetation and visibility was generally reduced within the Columbia River estuary, large mobile invertebrates and vertebrates were not documented. However, lack of video documentation does not suggest these species are not present at the site. Eelgrass and macroalgal habitat provide cover and foraging habitat for crab and fish species and likely numerous species occupy the documented habitat.

3.2.4. Anthropogenic Elements

Throughout the marina portion of the survey area, derelict boats, petroleum sheen on the water surface and other garbage on the water surface was noted. In contrast, the proposed beneficial use site was predominantly absent of anthropogenic materials such as concrete, and derelict fishing gear; however, some tires and wood debris were observed. The majority of the documented habitat in the vicinity of the proposed beneficial use site was unimpacted by human development or activities.

3.3. Summary

Native eelgrass was documented within the proposed dredge footprint at the Port of Ilwaco marina. The presence of eelgrass habitat within the marina likely occurs due to sediment deposition from the Columbia River raising elevations within the marina dredge basin so they are suitable for eelgrass as it has been an extended period of time since the last marina-wide dredging event. The Port has completed maintenance dredging in small, targeted areas where deposition and prop wash have created high spots over the last several years. A marina-wide maintenance dredging episode has not been completed for many years. The survey also documented non-native eelgrass and macroalgae habitat (rockweed) within the proposed beneficial use/dredge disposal area. The native eelgrass and rockweed habitats are considered protected as Essential Fish Habitat (EFH) for both marine and anadromous fish under the Magnuson Stevens Fishery Conservation and Management Act (PFMC 1998 and PFMC 1999). These saltwater habitats are also protected under WACs 220-110-250(3)(a,b) and per IMC Chapter 15.14 (Shoreline Master Program).

4.0 WETLANDS AND STREAMS FIELD INVESTIGATION

GeoEngineers' biologist conducted a field assessment on June 15, 2022, to characterize wetland and stream features within the project area. The survey area for wetlands and streams focused on the approximately 2,000 feet of shoreline located northeast of the marina, landward of and along the northwest edge of the proposed beneficial use site. One estuarine wetland (Wetland A) and no streams were identified during the field investigation. The wetland delineation focused on the waterward side of

the wetland boundary. The landward boundary was delineated due to private property ownership. The ordinary high water mark (OHWM) of the Columbia River was determined during the previous geodetic survey. Representative photographs of the site have been included in Appendix B.

4.1. Methods

The delineation of aquatic critical areas (wetlands and streams) was conducted in accordance with guidelines presented in IMC, Chapter 15.18 Critical Areas and the Shoreline Master Program (IMC Chapter 15.14). The wetland delineation was also conducted with the use of the *USACE Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010). The OHWM of potential streams was evaluated by examining breaks in the topography, drift lines, shifts in vegetation and signs of water marks, according to USACE protocol as referenced from Regulatory Guidance Letter (No. 05-05), Ordinary High-Water Mark Identification, December 7, 2005 (Riley 2005) and according to the Washington State Department of Ecology (Ecology) 2016 guidance (Anderson et al. 2016).

GeoEngineers collected geographic coordinates of the wetland boundaries and sample plots using a hand-held global positioning system (GPS) device. Survey flags were not placed because identified wetland habitat was below the shoreline OHWM, where flags could be washed away. A total of two sample plots were established within the project area as part of the wetland assessment. Sample plot data forms are presented in Appendix C, Sample Plot Data Forms. The delineated wetland was categorized using the 2014 Washington State Wetland Rating System for Western Washington (Hruby 2014). The rating system is intended for use primarily with vegetated, freshwater, wetlands as identified using the federal wetland delineation manual and the appropriate regional supplements. The rating system categorizes estuarine wetlands but does not rate their functions. The wetland rating form is included in Appendix D, Ecology Wetland Rating Form.

The wetland was categorized, and the regulatory wetland buffer was identified according to the Shoreline Master Program (IMC Chapter 15.14) based on the wetland habitat characteristics, Ecology wetland rating, and the intensity of proposed land use. For the purposes of this report, it is assumed that the site will have a high-intensity land use based on the project plans. The City of Ilwaco will make the final determination of buffer widths.

4.2. Results

Within the marina there was some limited upland vegetation growing on fill materials above the riprap bulkhead. Upland vegetation included clover species (*Trifolium species*), Japanese knotweed (*Polygonum cuspidatum*), various grasses, dandelion (*Taraxacum officinale*) and creeping buttercup (*Ranunculus repens*). No wetlands were noted in or around the marina.

Outside of the marina in the vicinity of the proposed beneficial use site, one estuarine wetland was identified below the eastern marina riprap bulkhead extending east adjacent to the proposed beneficial use site; dominant vegetation identified within the estuarine wetland during the site visit included Lyngbye's sedge (*Carex lyngbyei*), three-square (*Schoenplectus pungens*) and silverweed (*Potenitilla anserina*). In addition to the estuarine wetland, the Columbia River estuary was documented. No streams were identified along the shoreline of Baker Bay within and adjacent to the proposed beneficial use site.

The field assessment mapping results are presented in Figure 6, Wetland Survey Findings, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site. Tables 1 and 2 on the following pages summarizes the wetland and Baker Bay features documented on the site and provides additional information regarding baseline conditions, rating details and regulatory requirements.

TABLE 1. WETLAND A SUMMARY

Shoreline Wetland – Information		
Location	Shoreline along proposed beneficial use site; northeast of existing marina	
WRIA	24 – Willapa	
Local Jurisdiction	Ilwaco	
Buffer Width[1]	200 feet	
Washington Ecology Categorization[2]	Category I	
Size	More than 2 acres	
Cowardin Class	Estuarine Emergent	
Description Summary		
Dominant Vegetation	**Herbaceous:** Lyngbye's sedge (*Carex lyngbyei*); three-square (*Schoenplectus pungens*); silverweed (*Potenitilla anserina*) **Shrub:** None **Tree:** None	
Soils	Meets criteria for hydric soil indicator sandy redox (S5) and hydrogen sulfide (A4).	
Hydrology	**Indicators:** Saturated, geomorphic position and facultative (FAC)-Neutral Test **Source:** Direct precipitation, runoff and tidal influences	
Wetland Functions Summary		
Water Quality	Moderate water quality functions because it is dominated by emergent vegetation. The wetland also has adjacent development with adjacent paved roads (i.e. sources of pollution). However, the wetland is directly adjacent to the marine influenced waters of the Columbia River with a direct outlet.	
Hydrologic	Moderate level for hydrologic functions due to vegetation coverage, and ability to slow water flow discharge and protect the shoreline from erosion.	
Habitat	Moderate to high level of habitat functions due to having direct connections to Columbia River, no vegetated connections to other upland or wetland areas, there is only one vegetation class (emergent) and special habitat features such as large woody debris.	
Buffer Condition	The wetland buffer is impacted and consists in part of paved roadways and single-family residences. There is direct observations and evidence of human uses within the buffer and portions of the buffer are dominated by invasives. In addition, boat use in the Columbia River disturbs the waterward side of the buffer.	

Notes:

1. According to IMC 15.18.030.G. Buffer width was identified according to the Ecology rating and a high intensity land use impact. The final buffer width is subject to approval by the jurisdictional authority.
2. Wetland category based on the Washington State Wetlands Rating System for Western Washington, (Hruby revised 2014). The wetland is greater than 1-acre in size, is relatively undisturbed and has tidal channels and depressions.

TABLE 2. BAKER BAY SUMMARY

Baker Bay – Information		
Location	Shoreline along proposed beneficial use site; east of marina	
WRIA	24 – Willapa	
Local Jurisdiction	Ilwaco	
DNR Stream Type[1]	S – Shoreline of the State	
Shoreline Type[2]	High Intensity A (adjacent to the marina) Shoreline Residential A (NE area of the investigation)	
Buffer Width[3]	Adjacent to High Intensity A: No buffer, and 50-foot structure setback. Adjacent to Shoreline Residential A: 100-foot buffer and 15-foot structure setback	
Average Channel Width[4]	5 to 6 miles wide in the lower reach (from the mouth to approximately 25 miles upstream)	
Gradient	Less than 5 percent	
Duration	Perennial and Tidally Influenced	
Description Summary		
Documented Fish Use[5]	Steelhead (*Oncorhynchus mykiss*), Bull Trout (*Salvelinus confluentus*), Coho Salmon (*Oncorhynchus kisutch*), Pink Salmon (*Oncorhynchus gorbuscha*), Chum Salmon (*Oncorhynchus keta*), Chinook Salmon (*Oncorhynchus tshawytscha*), Sockeye (*Oncorhynchus nerka*), Residential Coastal Cutthroat (*Oncorhynchus clarki*), White Sturgeon (*Acipenser transmontanus*), Green Sturgeon (*Acipenser medirostris*)	
Connectivity	Discharges to the Pacific Ocean	
Channel Description	5- to 6-mile-wide estuarine channel, 3.5 miles from the Pacific Ocean. Sand substrate.	
Buffer Condition	Riparian buffer within the project site consists of steeps slopes and native vegetation. Downstream from the project site the buffer contains rural residential development, landscape and native vegetation.	

Notes:

1. DNR FPAMT (DNR 2022).
2. City of Ilwaco Official Shorelines Map (IMC Chapter 15.14)
3. According to IMC Chapter 15.14, Appendix B, Table B3-1. The final buffer width is subject to approval by the jurisdictional authority.
4. Average Channel Width derived from estimates during the field investigation, aerial photographs and Light Detection and Ranging (LiDAR) data.
5. WDFW Priority Habitat and Species mapping application (WDFW 2022).

5.0 SUMMARY

GeoEngineers performed aquatic critical areas (wetlands and streams) assessment and a macrovegetation/eelgrass survey for the Port of Ilwaco Dredging and Dredge Material Placement Project. One estuarine wetland (Wetland A) was identified and delineated along the shoreline of the Columbia River. The wetland meets the characteristics to be a Category I estuarine system. According to Ilwaco Shoreline Master Program, the wetland will require a 200-foot buffer based on being an estuarine wetland with a high intensity of proposed adjacent land use. Native eelgrass (0.02 acres) was documented within the marina dredge prism. The eelgrass likely occurs within the marina due to an extended period of deposition from the Columbia River based on the lack of regular marina-wide dredging creating suitable growing conditions (depth) for the species to occur. Large, patchy areas of non-native eelgrass and brown algae were found in the upper elevations of the proposed beneficial use site.

6.0 LIMITATIONS

GeoEngineers has prepared this report in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for wetland delineation and macro vegetation surveys in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for the exclusive use of Moffatt & Nichol, authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state and federal) prior to design or construction of any development to obtain necessary permits and approvals.

7.0 REFERENCES

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FIGURES

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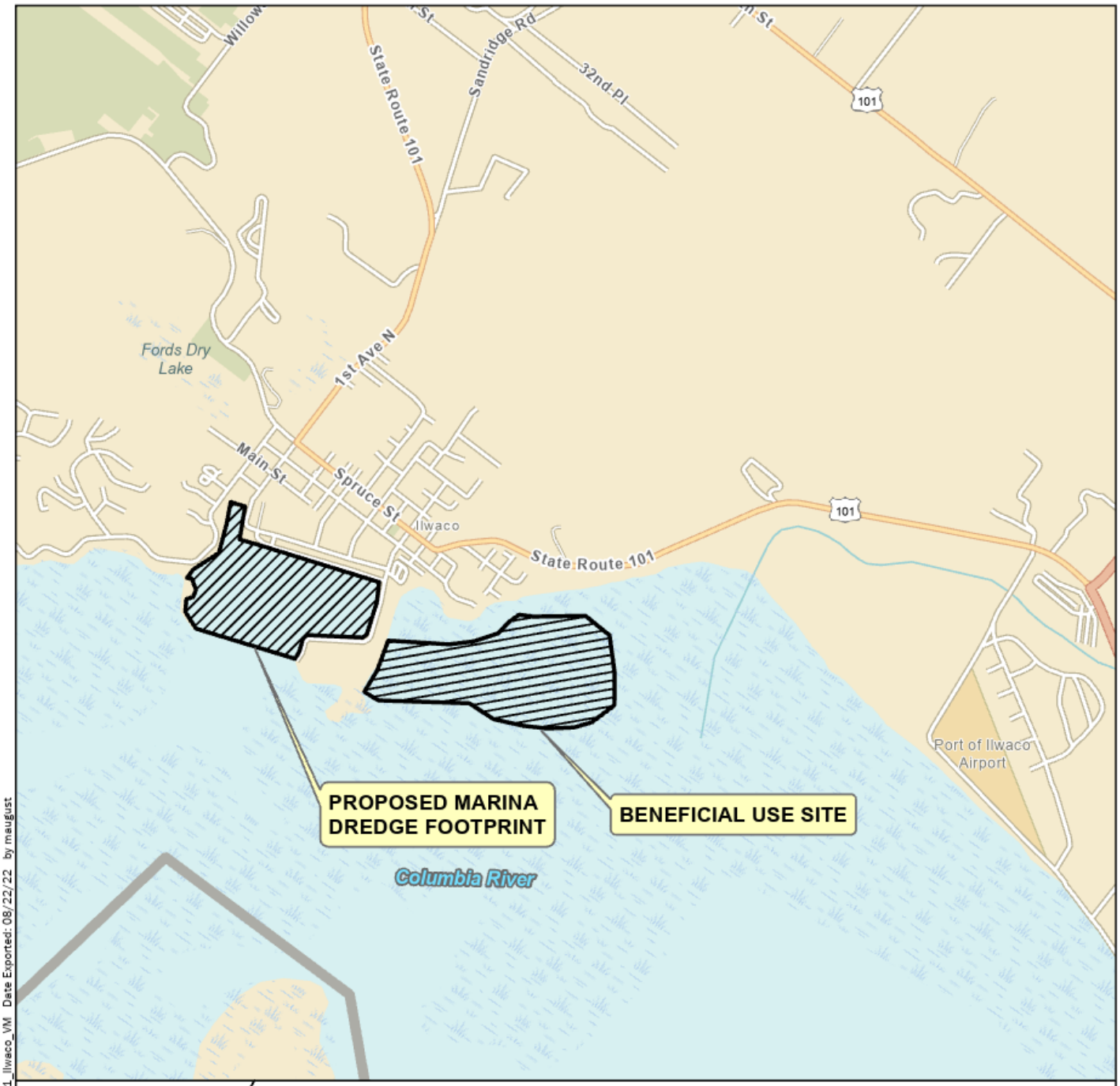

2,000 0 2,000

Feet

Vicinity Map

Port of Ilwaco Dredging and
Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 1

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\2155100301_Ilwaco_VM Date Exported: 08/22/22 by maugust

P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\21551003_F02_Ilwaco_zoom_video Date Exported: 12/12/22 by maugust

Notes:

1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. Vessel transects completed using BioSonics survey and underwater video equipment.
3. The locations of all features shown are approximate.
4. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Data Source: Bing Aerial Imagery

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Transect Point
- Field Verification Area
- Ordinary High Water Mark (OHWM)

200 0 200

Feet

Survey Effort, Wetland and Aquatic Vegetation Survey – Ilwaco Marina

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 2

Notes:

1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. Vessel transects completed using BioSonics survey and underwater video equipment.
3. Nearshore macrovegetation survey was completed on foot during a low tide.
4. The locations of all features shown are approximate.
5. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Bing Aerial Imagery

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Transect Point
- Field Verification Area
- Nearshore Macrovegetation Survey Area
- Ordinary High Water Mark (OHWM)

300 0 300

Feet

Survey Effort, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

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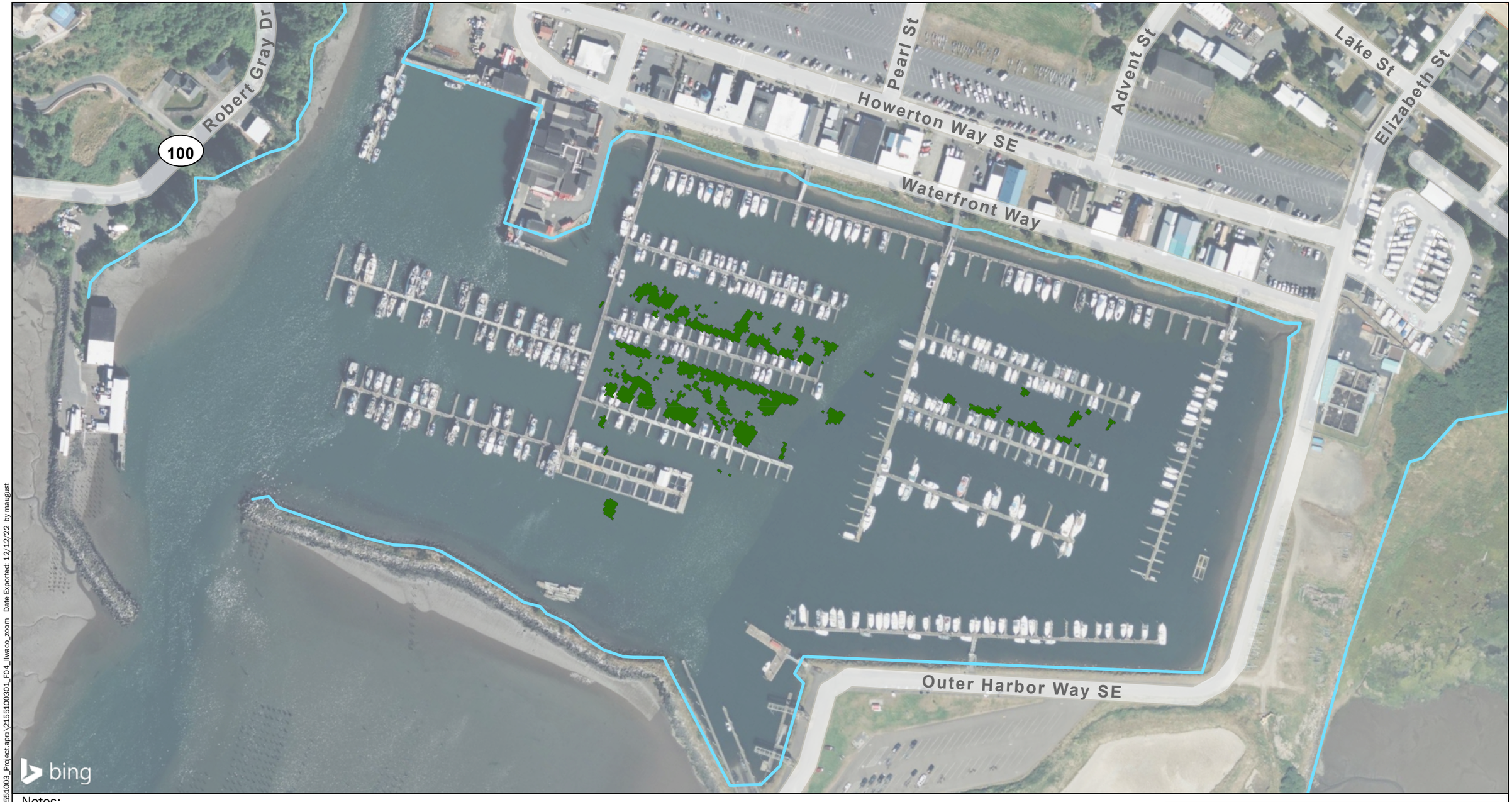
Figure 3

P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\21551003_F03_Ilwaco_video Date Exported: 12/12/22 by maugust



P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\21551003_F04_Ilwaco_zoom Date Exported: 12/12/22 by maugust

Notes:

1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. Vessel transects completed using BioSonics survey and underwater video equipment.
3. The locations of all features shown are approximate.
4. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Bing Aerial Imagery.

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Native Eelgrass Presence
- Ordinary High Water Mark (OHWM)

N W E S

200 0 200

Feet

Eelgrass Coverage, Wetland and Aquatic Vegetation Survey – Ilwaco Marina

Port of Ilwaco Dredging and
Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 4

Notes:
1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. The locations of all features shown are approximate.
3. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Bing Aerial Imagery

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Ilwaco Dredge Disposal Area
- Non-Native Eelgrass
- *Fucus distichus*
- Ordinary High Water Mark (OHWM)

300 0 300
Feet

Macrovegetation Coverage, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 5

P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\21551003_F05_Ilwaco_coverage Date Exported: 12/12/22 by maugust

Notes:

1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. Wetland survey completed by foot during a low tide.
3. The locations of all features shown are approximate.
4. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Sample Point
- Wetland Boundary
- Ordinary High Water Mark (OHWM)
- Wetland
- Ilwaco Dredge Disposal Area

300 0 300

Feet

Wetland Survey Findings, Wetland and Aquatic Vegetation Survey - Ilwaco Proposed Beneficial Use Site

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 6

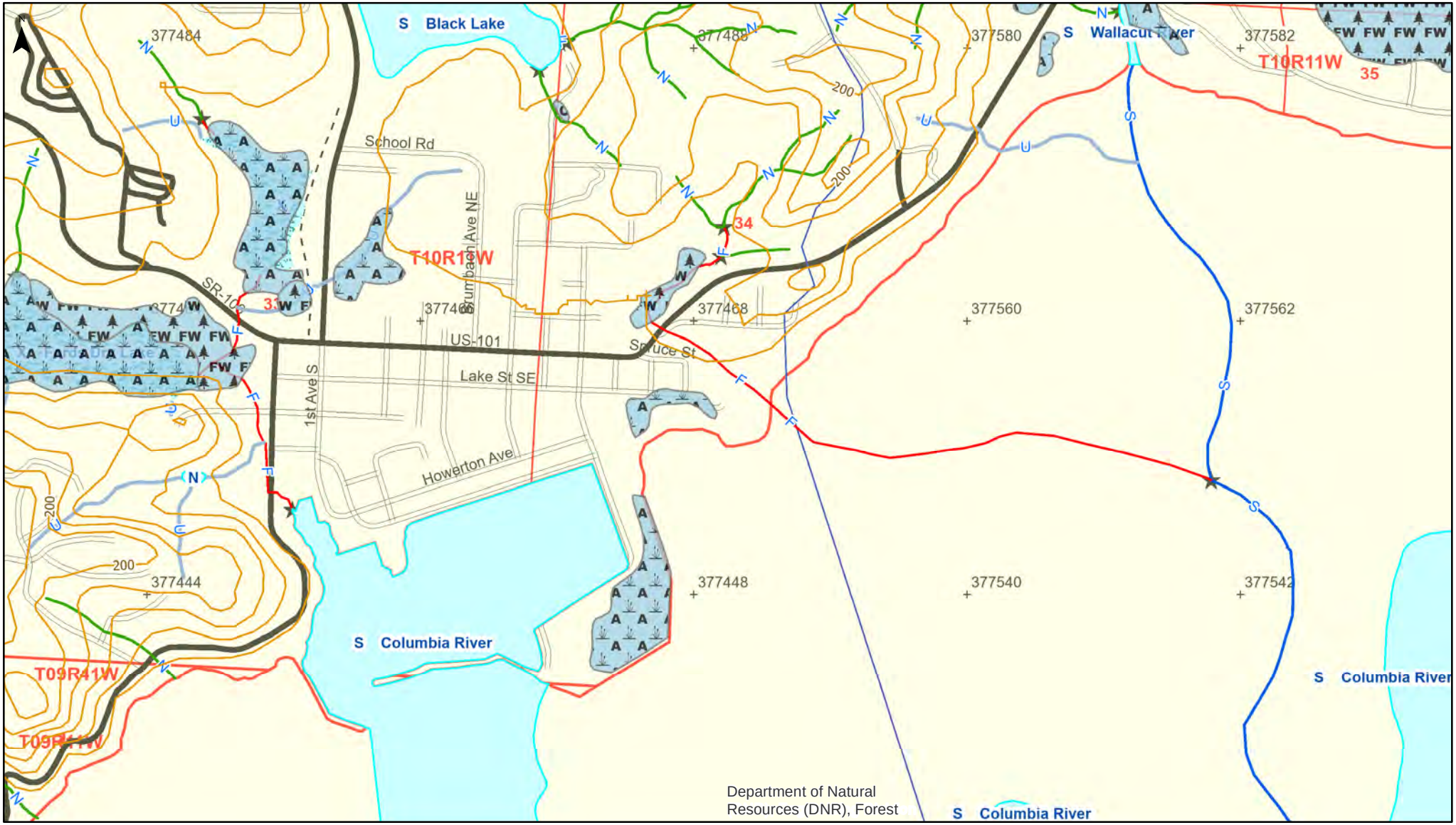
P:\21\21551003\GIS\215510003_Project\215510003_Project.aprx\2155100301_F06_Ilwaco_wetlands Date Exported: 12/12/22 by maugust

APPENDICES

GeoEngineers

APPENDIX A
Published Data Review

Forest Practices Water Type Map



Map Symbols

- New Stream
- Proposed Water Type
- Stream Removal
- Break between water types
- Start and End Point of Surveyed Reach
- Natural Fish Barrier
- Manmade Barrier
- End of Fish or Last Fish

Additional Information

Legal Description

S35 T10.0N R11.0W, S33 T10.0N R11.0W
S03 T09.0N R11.0W, S04 T09.0N R11.0W
S34 T10.0N R11.0W

WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

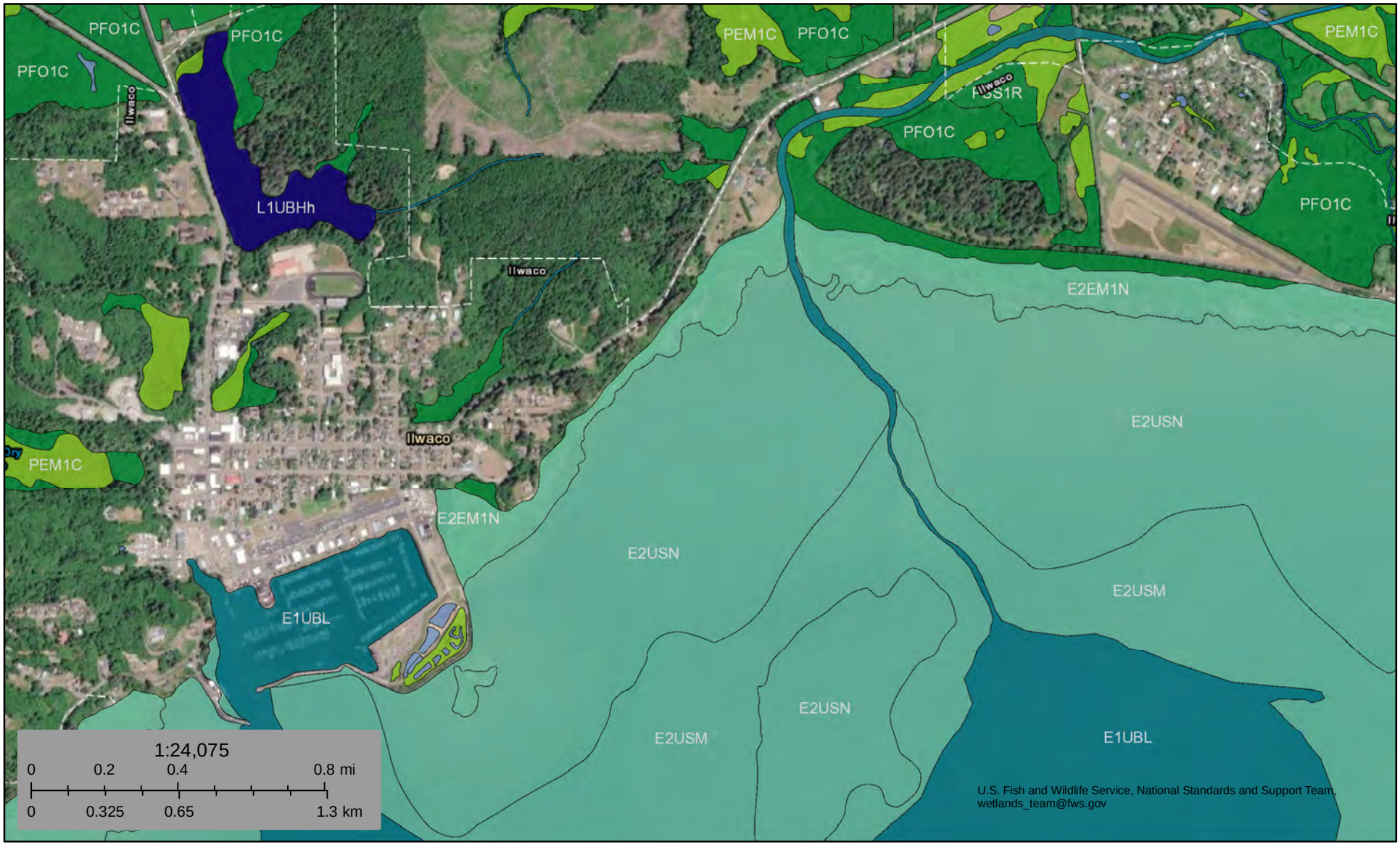
Extreme care was used during the compilation of this map to ensure its accuracy. However, due to changes in data and the need to rely on outside information, the Department of Natural Resources cannot accept responsibility for errors or omissions, and therefore, there are no warranties that accompany this material.

0 0.25 Miles

Date: 8/18/2022 Time: 6:21:47 PM

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands



June 29, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Soil Map—Grays Harbor County Area, Pacific and Wahkiakum Counties, Washington

Map Scale: 1:7,640 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grays Harbor County Area, Pacific and Wahkiakum Counties, Washington
Survey Area Data: Version 20, Aug 23, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

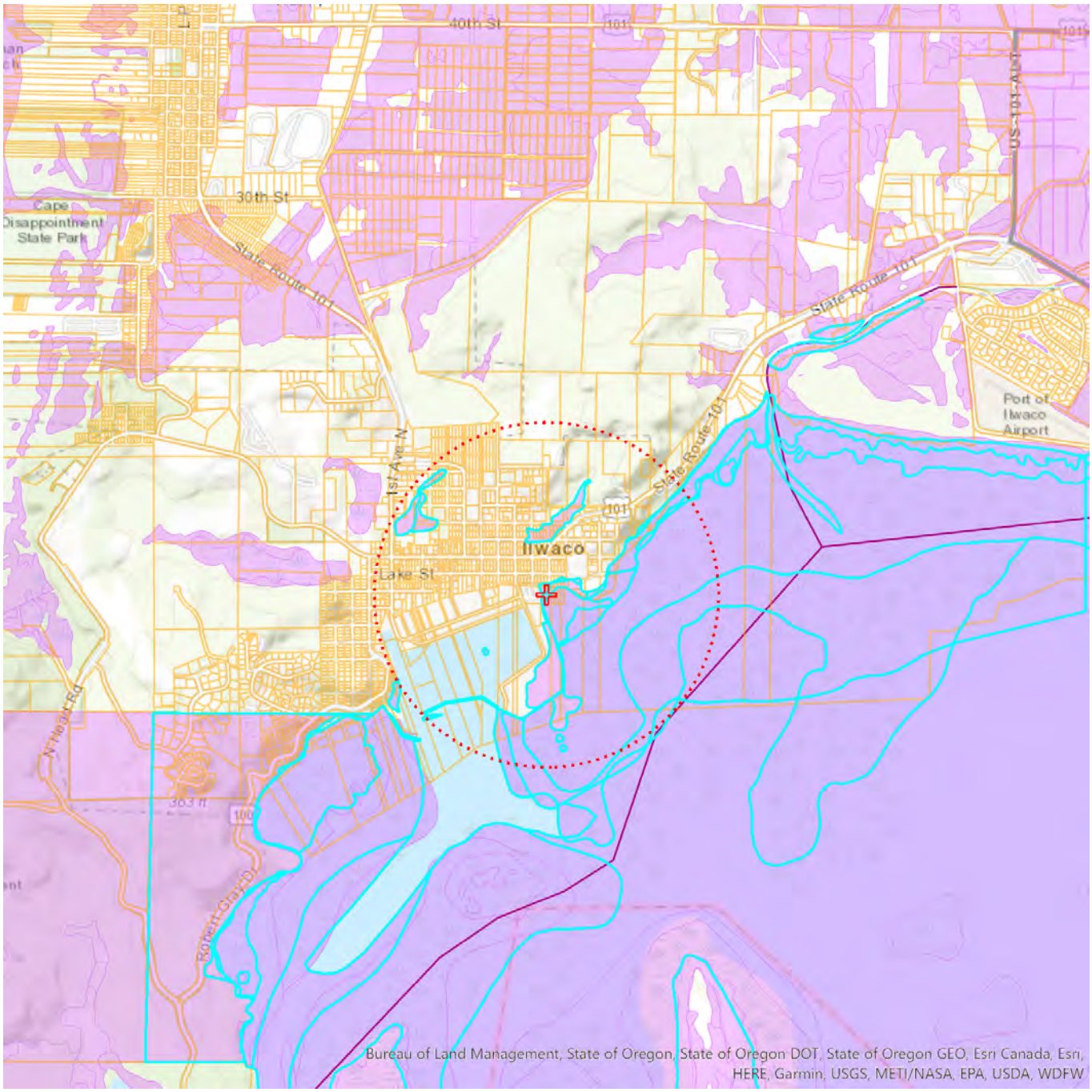
Date(s) aerial images were photographed: Jul 26, 2020—Jul 27, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
115	Palix silt loam, cool, 30 to 65 percent slopes	8.5	7.9%
147	Udorthents, level	15.9	14.7%
158	Willapa silt loam, cool, 1 to 8 percent slopes	9.6	8.9%
169	Water	74.0	68.5%
Totals for Area of Interest		**108.0**	**100.0%**

Priority Habitats and Species on the Web



Buffer radius: 0.5 Miles

Report Date: 06/29/2022

PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Sensitive Location
Marbled murrelet	Threatened	Endangered	No
Shorebird Concentrations	N/A	N/A	No
Waterfowl Concentrations	N/A	N/A	No
Wetlands	N/A	N/A	No
Purple martin	N/A	N/A	No
Estuarine and Marine Wetland	N/A	N/A	No
Freshwater Emergent Wetland	N/A	N/A	No
Freshwater Forested/Shrub Wetland	N/A	N/A	No

PHS Species/Habitats Details:

Marbled murrelet	
Scientific Name	*Brachyramphus marmoratus*
Priority Area	Breeding Survey
Site Name	T9-0N R11-0W S04
Accuracy	NA
Notes	Detection Status: 3
Source Dataset	WS_MMDetSect
Source Name	Not Given
Source Entity	WDFW Wildlife Program
Federal Status	Threatened
State Status	Endangered
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	Y
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00026
Geometry Type	Polygons

Shorebird Concentrations	
Priority Area	Regular Concentration
Site Name	BAKER BAY
Notes	SHOREBIRD CONCENTRATION AREAS
Source Record	904452
Source Dataset	PHSREGION
Source Name	SKRILETZ, JEFF
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00026
Geometry Type	Polygons

Waterfowl Concentrations	
Priority Area	Regular Concentration
Site Name	BAKER BAY
Accuracy	1/4 mile (Quarter Section)
Notes	WATERFOWL WINTERING CONCENTRATION AREA.
Source Record	902356
Source Dataset	PHSREGION
Source Name	SCHIRATO, GREG
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00026
Geometry Type	Polygons

Wetlands	
Priority Area	Aquatic Habitat
Site Name	REGION 6 SALTWATER WETLANDS
Accuracy	1/4 mile (Quarter Section)
Notes	COASTAL SALT MARSHES SALT MEADOWS AND BRACKISH MARSHES
Source Record	904451
Source Dataset	PHSREGION
Source Name	GUFLER DAVE
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Purple martin	
Scientific Name	*Progne subis*
Priority Area	Breeding Area
Site Name	ILWACO MARINA
Accuracy	GPS
Notes	NESTIN IN TOP OF ROTTEN PILINGS AT MARINA.
Source Record	4592
Source Dataset	WS_OccurPolygon
Source Date	WS_OccurPolygon
Source Name	SCHMIDT, T/WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	Y
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00026
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2RSPr
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2USM
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1As
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1C
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1C
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1Ch
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2USN
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1S
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

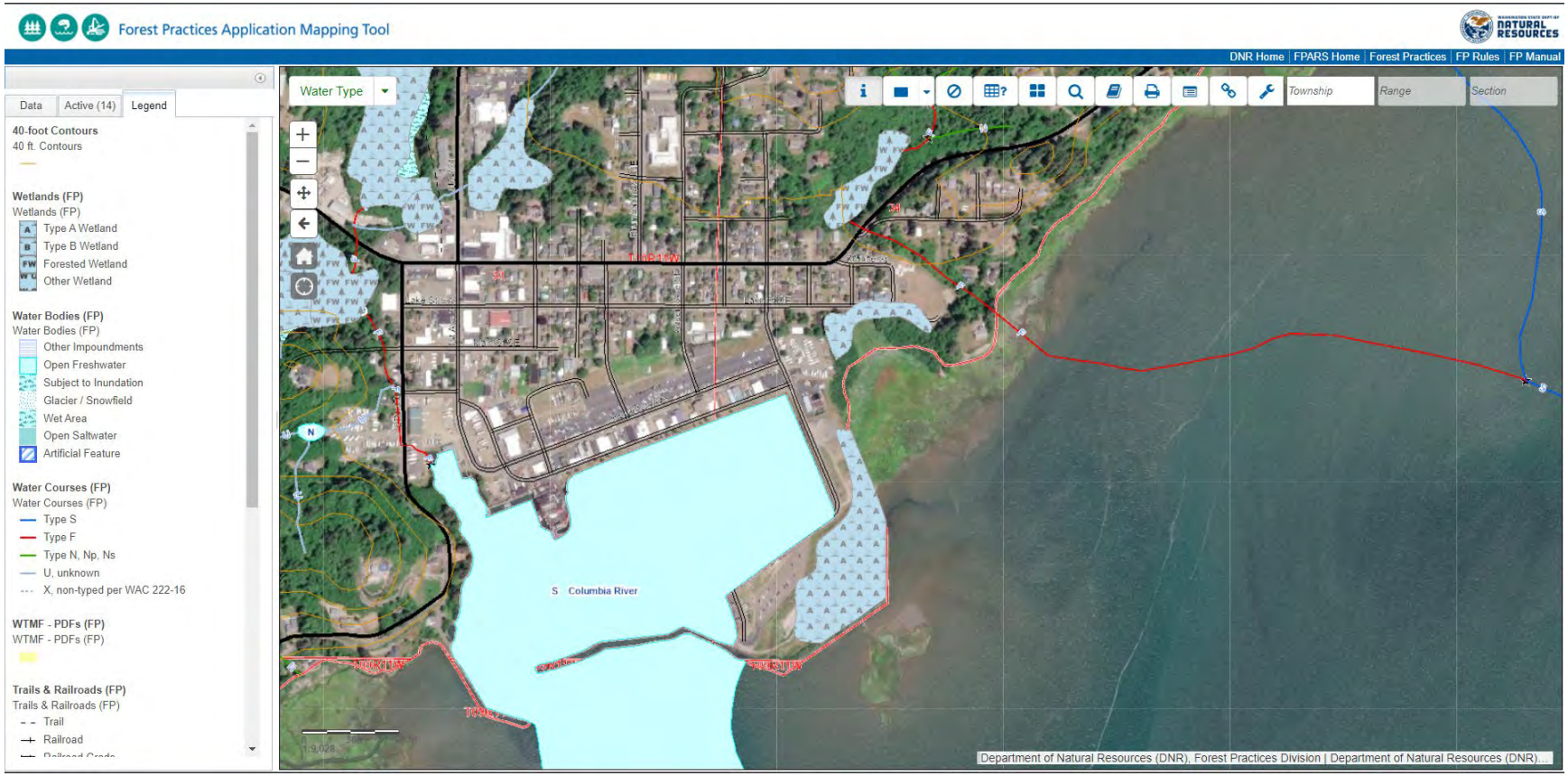
Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSSR
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSSR
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2USN
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

Washington Department of Natural Resources Forest Practicies Application Mapping Tool (FPARS).



APPENDIX B
Site Photographs

Photograph 1. Looking north just east of the marina. A riprap bulkhead protects the access road to the boat launch at the marina. (June 15, 2022)

Photograph 2. Looking north over the estuarine wetland (Wetland A). (June 15, 2022)

Site Photographs – Wetland Survey

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure B-1

21551-003-01 Date Exported: July 5, 2022

Photograph 3. Tidal channels and areas of open water were identified in the wetland. (June 15, 2022)

Photograph 4. Estuarine Wetland A near the eastern portion of the investigation area. (June 15, 2022)

Site Photographs – Wetland Survey

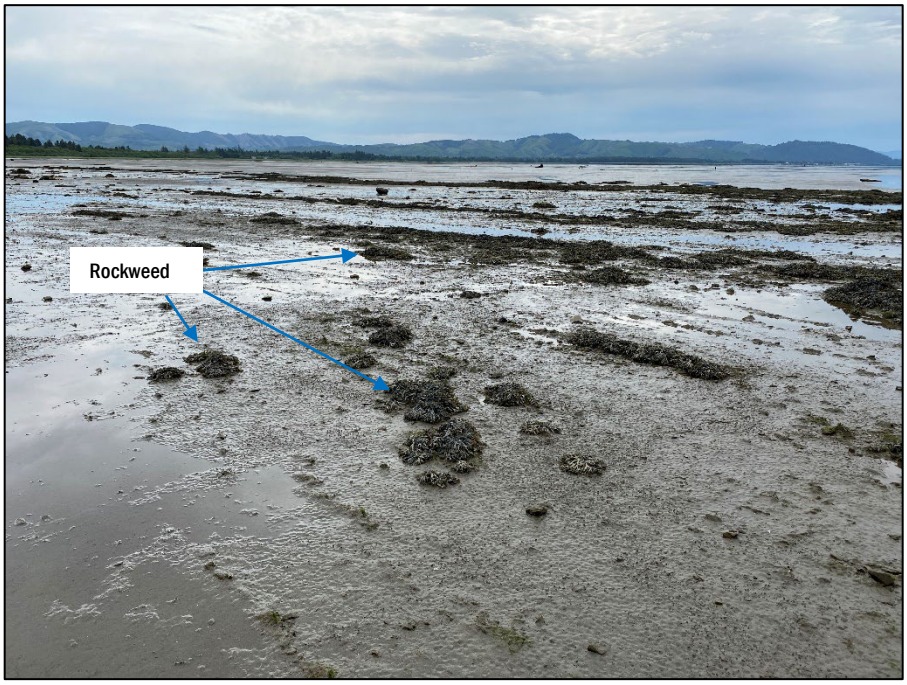
Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure B-2

0422-148-01 Date Exported: June 22, 2020

Photograph 5. Columbia River adjacent to the estuarine wetland and investigation area. (June 15, 2022)



Photograph 6. Rockweed patchy area near the western side of the investigation area within the Columbia River. (June 15, 2022)

Site Photographs – Macrovegetation Survey

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure B-3

0422-148-01 Date Exported: June 22, 2020

Photograph 7. Non-native eelgrass (*Zostera japonica*) on the east side of the investigation area. (June 15, 2022)

Photograph 8. Non-native eelgrass on the east side of the investigation area. (June 15, 2022)

Site Photographs – Macrovegetation Survey

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure B-4

0422-148-01 Date Exported: June 22, 2020

Photograph 9. Ilwaco marina surface conditions. Breakwater shown in the background. (June 15, 2022)

Photograph 10. Vessel for completing the macrovegetation surveys shown with towed underwater camera on deck of vessel. (June 15, 2022)

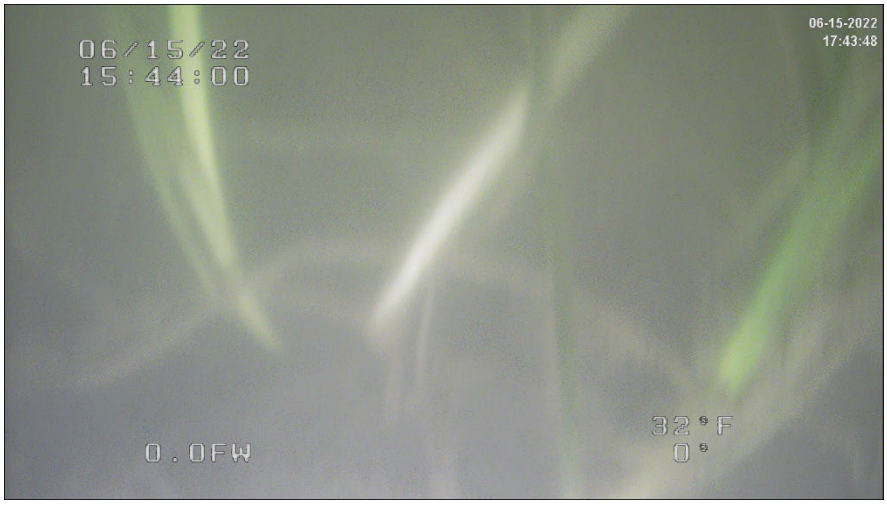
Site Photographs – Macrovegetation Survey

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

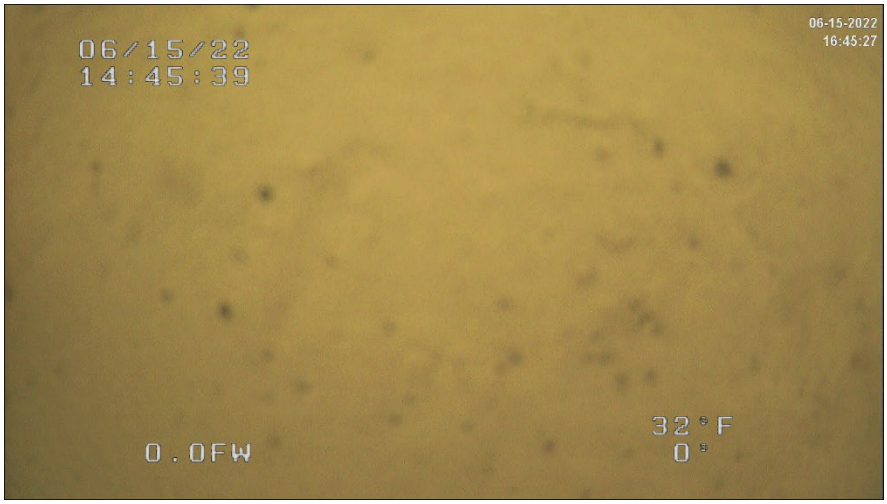
GeoEngineers

Figure B-5

0422-148-01 Date Exported: June 22, 2020



Photograph 11. Native eelgrass (*Zostera marina*) field verified during the survey within the Ilwaco marina. (June 15, 2022)



Photograph 12. Soft, mud bottom substrate conditions within the footprint of the proposed beneficial use area for the dredge material. No eelgrass was observed in this area. Siphon holes from clams visible in photo. (June 15, 2022)

0422-148-01 Date Exported: June 22, 2020

Site Photographs – Macrovegetation Survey	
Port of Ilwaco Dredging and Dredge Material Placement Project Ilwaco, Washington	
GeoEngineers	Figure B-6

APPENDIX C
Sample Plot Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Port of Ilwaco Wharf Bulkhead and Gangeway Access City/County: Ilwaco Sampling Date: 6.15.22

Applicant/Owner: Port of Ilwaco State: WA Sampling Point: SP-1

Investigator(s): J. Dadisman Section, Township, Range: Section 34, Township 10 North, Range 11 West

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Concave Slope (%): <5

Subregion (LRR): A Lat: Long: Datum:

Soil Map Unit Name: Water NWI Classification: EEM

Are climatic / hydrologic conditions on the site typical for this time of year? (●) Yes ( ) No (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? (●) Yes ( ) No

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	(●) Yes	( ) No	**Is the Sampled Area within a Wetland?**	(●) Yes ( ) No
Hydric Soil Present?	(●) Yes	( ) No		
Wetland Hydrology Present?	(●) Yes	( ) No		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft x 30ft)	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status
1.				
2.				
3.				
4.				
	= Total Cover			
Sapling/Shrub Stratum (Plot size: 5ft x 5ft)				
1.				
2.				
3.				
4.				
5.				
	= Total Cover			
Herb Stratum (Plot size: 5ft x 5ft)				
1. *Carex lyngbyei*	50	Y	45.5	OBL
2. *Schoenoplectus pungens*	40	Y	36.4	OBL
3. *Potentilla anserina*	20	N	18.2	OBL
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
	110 = Total Cover			
Woody Vine Stratum (Plot size: 30ft x 30ft)				
1.				
2.				
	= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	110	x 1 =	110
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		110 (B)

Prevalence Index = B/A = 1.000

Hydrophytic Vegetation Indicators:

- [✓] 1 - Rapid Test for Hydrophytic Vegetation
- [✓] 2 - Dominance Test is >50%
- [✓] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] 5 - Wetland Non-Vascular Plants[1]
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? (●) Yes ( ) No

Remarks:

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-13	2.5Y 4/1	95	5YR 4/4	5	C	M	Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☑ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? ◉ Yes ○ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? ○ Yes ◉ No Depth (inches):

Water Table Present? ◉ Yes ○ No Depth (inches): 11

Saturation Present? (includes capillary fringe) ◉ Yes ○ No Depth (inches): 0

Wetland Hydrology Present? ◉ Yes ○ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Port of Ilwaco Wharf Bulkhead and Gangeway Access | City/County: Ilwaco | Sampling Date: 6.15.22

Applicant/Owner: Port of Ilwaco | State: WA | Sampling Point: SP-2

Investigator(s): J. Dadisman | Section, Township, Range: Section 34, Township 10 North, Range 11 West

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%): <5

Subregion (LRR): A | Lat: | Long: | Datum:

Soil Map Unit Name: Water | NWI Classification: EEM

Are climatic / hydrologic conditions on the site typical for this time of year? (●) Yes ( ) No (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? (●) Yes ( ) No

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	(●) Yes	( ) No	**Is the Sampled Area within a Wetland?**	(●) Yes ( ) No
Hydric Soil Present?	(●) Yes	( ) No		
Wetland Hydrology Present?	(●) Yes	( ) No		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft x 30ft)	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status
1.				
2.				
3.				
4.				
	= Total Cover			
Sapling/Shrub Stratum (Plot size: 5ft x 5ft)				
1.				
2.				
3.				
4.				
5.				
	= Total Cover			
Herb Stratum (Plot size: 5ft x 5ft)				
1. *Carex lyngbyei*	100	Y	100.0	OBL
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
	100 = Total Cover			
Woody Vine Stratum (Plot size: 30ft x 30ft)				
1.				
2.				
	= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		100 (B)

Prevalence Index = B/A = 1.000

Hydrophytic Vegetation Indicators:

- [✓] 1 - Rapid Test for Hydrophytic Vegetation
- [✓] 2 - Dominance Test is >50%
- [✓] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] 5 - Wetland Non-Vascular Plants[1]
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? (●) Yes ( ) No

Remarks:

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-10	5Y	3/1	100						Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 10

Hydric Soil Present? ◉ Yes ○ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? ○ Yes ◉ No Depth (inches):

Water Table Present? ◉ Yes ○ No Depth (inches): 0

Saturation Present? (includes capillary fringe) ◉ Yes ○ No Depth (inches): 0

Wetland Hydrology Present? ◉ Yes ○ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX D
Ecology Wetland Rating Form

Wetland name or number _A__

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 6/15/22

Rated by J. Dadisman Trained by Ecology? X Yes ___No Date of training 6/2014

HGM Class used for rating Estuarine Wetland has multiple HGM classes?___Y ____N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ArcMap (see delineation figure in report)

OVERALL WETLAND CATEGORY ____ I ___ (based on functions___ or special characteristics_ X)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
	Circle the appropriate ratings									
Site Potential	H	M	L	H	M	L	H	M	L	
Landscape Potential	H	M	L	H	M	L	H	M	L	
Value	H	M	L	H	M	L	H	M	L	**TOTAL**
Score Based on Ratings										

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I** **II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I** **II** **III** **IV**
None of the above	

Wetland name or number A___

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number A___

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   NO – go to 3 **YES** – The wetland class is **Flats**
   *If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

   NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

   NO – go to 5 **YES –** The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number A___

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number A___

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? X The dominant water regime is tidal, X Vegetated, and X With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? X The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. X — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 2.4** No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No **= Is not a bog**	**Cat. I**

Wetland name or number A

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

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GeoEngineers

Suitability Determination

CENWP-NVW-W (Sediment Quality) 13 December 2024

Memorandum for: U.S. Army Corps of Engineers - Portland District, Regulatory Branch (CENWP-ODG, Friesen), Regulatory File No. NWP-2004-78-5, Port of Ilwaco, maintenance dredging project.

Subject: Portland Sediment Evaluation Team (PSET) Level 2A dredged material suitability determination memorandum (SDM) for maintenance dredging at the Port of Ilwaco (Port) in the town of Ilwaco, Pacific County, Washington. The Port is located on the northwestern shore of Baker Bay, near river mile (RM) 3.0 of the Columbia River.

Introduction: Per the May 2018 *Sediment Evaluation Framework for the Pacific Northwest* (SEF)[1], this SDM documents the consensus of the PSET agencies regarding the suitability of the Port of Ilwaco dredge prism (DP) for unconfined, aquatic placement and suitability of the post-dredge surface (PDS) for unconfined, aquatic exposure. The PSET reviewed the November 2024 *Port of Ilwaco Marina; Sediment Characterization; Dredged Material Characterization; USACE Permit No. NWP-2004-78-5* (SCR)[2], and the November 2024 *Port of Ilwaco Marina; Sediment Characterization Addendum; Dredged Material Characterization (SCRA)[3]; USACE Permit No. NWP-2004-78-5* prepared by Moffatt & Nichol (M&N). Sediment chemical testing results are summarized in the SCR; chemical analytical results were compared to the marine benthic toxicity screening levels (SEF SLs) published in the 2018 SEF. The PSET also used Washington State's practical quantitation limit of 5.0 ng/kg sum TEQ for dioxins and furans[4] and Oregon Department of Environmental Quality's (ODEQ's) sediment screening level value (SLV) for marine fish to evaluate bioaccumulation of PCBs[5].

PSET Sediment Suitability Summary:

Dredge Prism (DP):

☒Suitable – DMMUs 1 (partial), 2 (partial), 3 (partial), 4, and 5

☒Unsuitable – Portions of DMMUs 1 and 3 near Stations 1A/1B (crab dock); Portion of DMMU 2 at Station SP-11 (northeast corner)

Post-Dredge Surface (PDS):

☒Suitable – DMMUs 1 to 5 (post-dredge confirmation sampling required at SP-11 in DMMU 2)

☐Unsuitable

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[1] U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Washington Department of Ecology, Washington Department of Natural Resources, Oregon Department of Environmental Quality, Idaho Department of Environmental Quality, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. 2018. *Sediment Evaluation Framework for the Pacific Northwest*. Published May 2018, by the U.S. Army Corps of Engineers, Northwestern Division, 183 pp with Appendices.

[2] Moffatt and Nichol. 2024. *Port of Ilwaco Marina; Sediment Characterization; Dredged Material Characterization; USACE Permit No. NWP-2004-78-5.* Updated November 7, 2024, 427 pp with Figures, Tables, and Appendices.

[3] Moffatt and Nichol. 2024. *Port of Ilwaco Marina; Sediment Characterization Addendum; Dredged Material Characterization; USACE Permit No. NWP-2004-78-5*. Updated November 7, 2024, 598 pp with Tables, Figures, and Appendices.

[4] Sediment Cleanup User Manual, 2015. Sediment Cleanup Objective is the highest of natural background, PQL, or risk. For Columbia River, the highest value for tiered approach (Section 7.2.2.1) is PQL (Chapter 11 and table 11-1). Updated December 2021.

[5] Oregon Department of Environmental Quality. 2007. *Guidance for Assessing Bioaccumulative Chemicals of Concern in Sediment*. Updated April 3, 2007 by ODEQ Environmental Cleanup Program, 18 pp with Appendices.

SEF Special Conditions:

☒ **Data Recency Expiration**: Based on a "**Low-Moderate**" management area rank, the data recency for **DMMUs 1, 2, 3, 4 and 5** at the Port of Ilwaco expires in **October 2029**.

☒ Due to contamination at the crab dock (1-foot surface layer) and Station SP-11 (full dredge prism depth), **upland disposal** of **unsuitable** dredged materials from **portions of DMMUs 1, 2, and 3** (see SDM Figure 1) is required, unless marine biological testing (bioassays and bioaccumulation) is conducted per the SEF in coordination with the PSET.

☒ At least 30 days prior to dredging, submit a **Dredging and Disposal Quality Control Plan** consistent with this SDM, Corps permit, Endangered Species Act consultations from the USFWS and NMFS, and Washington Department of Ecology (Ecology) 401 certification, to the PSET, the Regulatory PM, and Washington Ecology for **approval prior to dredging**. A **pre-dredge conference call** with Ecology, the PSET, and the Regulatory PM is required at least **14 days prior to dredging each year** to discuss the Dredging and Disposal Quality Control Plan. Dredging, sequencing, positioning, post-dredge confirmation testing, PDS management, cover material placement, debris management, and dredged material placement will all need to be addressed with enough detail to provide assurance to the agencies that the Dredging and Disposal Quality Control Plan will be properly implemented.

☒ A **GIS layer or kmz file** of the **unsuitable areas** in DMMUs 1, 2, and 3 shall be submitted to the PSET, Corps, and Ecology prior to dredging those areas. The **upland disposal location** of **unsuitable sediments** shall be detailed in the Dredging and Disposal Quality Control Plan. **Areas of the upland sites** used for **disposal of unsuitable sediment cannot** be dredged and **placed inwater**.

☒ Pre-dredge and post-dredge **hydrographic surveys** of the dredge areas and in-water placement sites within 60 days of work.

☒ Due to elevated concentration of phthalates in **DMMU 2 (Station SP-11),** the post-dredge surface may be suitable for unconfined aquatic exposure if **post-dredge sampling** for SVOCs confirms concentrations are below the SEF marine screening levels (SLs). Two sampling stations in DMMU 2 shall be discretely analyzed for SVOCs, TOC, grain size, and total solids within 5 days of dredging. The results with detection and reporting limits must be submitted to PSET within 10 days of sampling. If results are not below marine SLs, a contingency post-dredge management plan will need to be coordinated and approved by the PSET. A **post-dredge surface SAP for DMMU 2** must be submitted to and approved by the PSET before dredging.

☒ If a clamshell or other **mechanical dredging method** is used, **debris management** (logs, rock, trees, man-made objects, trash) is mandatory for the aquatic placement of the dredged material. **Aquatic disposal of debris is prohibited**. Debris monitoring and reporting (observations, daily report forms, photographs, debris disposal site, or absence of debris) is required.

☒ Submit **post-dredge and placement report** with figures to PSET, Ecology, ODEQ, and the Regulatory PM approximately **60 days after** each dredge event (dates, locations, volumes, acreages, dredge depths, photographs, debris monitoring, biological observations, placement

site of suitable sediments, upland disposal site of unsuitable sediments, post-dredge sampling, and pre-dredge and post-dredge bathymetric surveys of the dredge area and aquatic placement site).

*** The PSET requests the Regulatory PM provide electronic copies of the Corps permit (NWP-2004-78-5) and associated 401 water quality certificates for our files ***

Reviewers: The PSET agencies include the U.S. Army Corps of Engineers (Corps), U.S. Environmental Protection Agency – Region 10 (EPA), National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife (USFWS), Washington Department of Ecology (Ecology), and ODEQ. Table 1 lists the PSET's review timeline for this project. Reviewers included:

☒ James Holm (Corps, Lead) ☒ Bridgette Lohrman (EPA, Co-Lead)
☒ Peter Anderson (ODEQ) ☒ Laura Inouye (Ecology) ☒ Dominic Yballe (Corps)
☒ Tom Hausmann (NMFS) ☒ Jeremy Buck (USFWS) ☒ Robin Van Meter (USFWS)
☒ Clayton Olinger (Corps)

Table 1. Review Timeline.

Draft Sampling and Analysis Plan (SAP) submitted to PSET	June 30, 2023
Draft SAP revisions request by PSET	July 21, 2023
Revised SAP submitted to PSET	September 25, 2023
Revised SAP revisions requested by PSET	October 5, 2023
Final SAP submitted to PSET[6]	October 10, 2023
SAP approved by PSET[7]	October 11, 2023
Pre-sampling SAP call	October 17, 2023
Sampling date(s)	October 23 to 26, 2023
Draft data submitted to PSET	December 8, 2023
Crab dock fire	January 22, 2024
Partial SDM issued by PSET[8]	January 29, 2024
Draft SCR received by PSET	March 26, 2024
SAP addendum requested by PSET due to crab dock fire	March 28, 2024
Draft SAP addendum submitted to PSET	April 26, 2024
SAP addendum revisions request by PSET	May 6, 2024
Final SAP addendum submitted to PSET[9]	May 20, 2024
SAP addendum approved by PSET[10]	May 23, 2024
Pre-sampling SAP addendum call	May 28, 2024
Sampling date(s)	May 30 2024
Draft SCR addendum submitted to PSET	September 27, 2024

[6] Moffatt and Nichol. *Sampling And Analysis Plan; Port of Ilwaco Marina, Dredged Material Characterization USACE Permit No. NWP-2004-78-5*. October 10, 2023. 54 pp + appendices.

[7] Portland Sediment Evaluation Team (PSET). 2023. [E-mail correspondence] *PSET Review: Port of Ilwaco (NWP-2004-78-5) SAP Approval.* E-mail sent by J. Holm (PSET Lead, Corps) October 11, 2023. 3 pp + attachment.

[8] Portland Sediment Evaluation Team (PSET). 2024. [E-mail correspondence] *PSET Review: Partial SDM - Port of Ilwaco 2024 dredging plan NWP-2004-78-5.* E-mail sent by J. Holm (PSET Lead, Corps) January 29, 2024. 3 pp + attachment.

[9] Moffatt and Nichol. *Sampling and Analysis Plan Addendum – Port of Ilwaco Marina (USACE Permit No. NWP-2004-78-5).* May 20, 2024. 81 pp + attachments.

[10] Portland Sediment Evaluation Team (PSET). 2024. [E-mail correspondence] *PSET Review: Port of Ilwaco SAPA Approval dioxins_furans (NWP-2004-78-5).* E-mail sent by J. Holm (PSET Lead, Corps) May 23, 2024. 3 pp + attachment.

Draft SCR and SCR addendum revisions requested by PSET	October 16, 2024
Final SCR and SCR addendum submitted to PSET	November 6, 2024
SDM submitted to Regulatory PM	December 13, 2024
Project management area ranking	Low-Moderate
Data recency determination*	6 years, October 2029

* If site conditions or the proposed project change, or if new information related contaminants of concerns is discovered, additional coordination with PSET is required to re-verify SDM.

Federal Regulatory Authorities:

☒ Section 10, Rivers and Harbors Act
☒ Section 404, Clean Water Act (CWA)
☒ Section 401, CWA
☒ Section 7, Endangered Species Act
☒ Section 305 of the Magnuson-Stevens Act
☒ Fish and Wildlife Coordination Act
☐ Section 103, Marine Protection, Research and Sanctuaries Act
☐ Comprehensive Environmental Response, Compensation, and Liability Act

Project Description: Table 2 summarizes the Port's dredging project. Maintenance dredging is needed to provide reliable navigation access and to restore capacity in the upland placement sites.

Table 2. Project Details.

Project location (latitude, longitude)	165 Howerton Ave, Ilwaco, Washington (46.304422° -124.038518°)
Waterbody/river mile	Baker Bay, Columbia River / RM 3.0
Total proposed dredging volume (cy)	Marina: ~735,000 (~280,288 initially; ~50,000 annually) Unsuitable sediment: ~3,900 (Crab dock), ~9,560 (SP-11) Upland sites: ~70,000 one-time event
Max. proposed dredging depths with overdredge (MLLW)	-8 and -10 and -16 (includes +2 ft. overdredge); Upland site: +12 ft
Dredge area (acres)	~6.5 (marina), ~2.5 (upland sites)
Dredging method(s)	Clamshell or hydraulic
Dredged material transport	Tug and barge or pipeline to upland sites
Proposed placement and disposal location(s)	Columbia River flow-lane placement, upland sites once capacity is reestablished, upland disposal areas for unsuitable sediments
Proposed dredging date(s)	Approved in-water work window
Dredged material mgmt. units (DMMUs)	5 DMMUs (3 marina, 2 upland sites)

Site History: See the 2023 SAP Section 2.3 for a description of the site history, and Section 1.0 of the SAPA for a description of the crab dock fire. Based on past and current site uses, sampling data, and nearby PSET reviews, M&N proposed to continue a "Low" rank for the Port's project. In October 2023, the PSET approved of the Port's SAP. The Port sampled the marina and upland placement sites in October 2023 per a PSET-approved SAP. On January 22, 2024, a fire occurred at the Ilwaco Landing crab dock adjacent to DMMUs 1 and 2. In

consideration of the fire, the PSET issued a partial suitability determination on 29 January 2024 for a one-time dredging event in portions of DMMUs 1, 2, and 3 that relied on upland placement of the dredged material; however, the Port was unable to dredge due to equipment failure. To support dredging the marina post-fire, the PSET requested a tiered sampling for dioxins and furans in surface sediments in proximity to the dock. The PSET approved the SAP Addendum on May 23, 2024. Samples were collected May 30, 2024, for dioxins and furans analysis.

Sampling and Analysis Description: The sampling and analytical program for the Port's marina is summarized in Table 3 per the 2018 SEF. Actual sample station locations for both the 2023 and 2024 sampling events are shown in SDM Figure 1. The Port collected grab samples representing the top six inches of the dredge prism from DMMU 1 and DMMU 2. In DMMU 3, the Port collected vibracore samples which varied in length from four to 16 feet long. The upland sites (DMMU 4, DMMU 5) were sampled to an elevation of +12 feet MLLW.

To assess contamination from the fire at the crab dock, the Port collected grab samples which sampled the top 6-inches of material.

Equal volumes from six stations were mixed to form one DP composite sample each from DMMU 1 and DMMU 2 (marina). Five stations were mixed to form one DP composite sample and one PDS composite sample for DMMU 3 (marina). Four stations were mixed to form each upland composite sample (DMMU 4, DMMU 5). For the dioxin and furans analysis, 10 discrete DP samples were collected across DMMUs 1, 2, and 3 and archived at the analytical laboratory. The Port analyzed four discrete samples (1A, 1B, 2B, and 2C) from the tiered locations nearest the crab dock for dioxins and furans.

Table 3. October 2023 and May 2024 Sampling and Analysis Description

Sampling Description										
Sample collection method		Power grab		Vibracore	Excavator, Hand Auger		Power Grab			
DMMU ID		DMMU 1 (Marina)	DMMU 2 (Marina)	DMMU 3 (Marina)	DMMU 4 (Upland)	DMMU 5 (Upland)	Crab dock Tier 1 (1A, 1B)		Crab dock Tier 2 (2B, 2C)	
DMMU volume (cy)		85,247	92,477	90,450	37,325	37,965	3,900		Included in DMMU's 1 & 2	
Proposed dredge depth (ft, MLLW)		-8, -10	-10	-16	+12	+12	Top 1 foot		Top 1 foot	
DMMU rank		Low-Moderate								
DP composite sample ID		DMMU 1	DMMU 2	DMMU 3	DMMU 4	DMMU 5	1A	1B	2B	2C
PDS composite sample ID		N/A	N/A	DMMU 3Z	N/A	N/A	N/A	N/A	N/A	N/A
Dredge Prism	Depth range (ft, MLLW)	-7.0 to -8.9	-6.2 to -8.8	-1.9 to -16.0	+24 to +12	+26 to +12	-1.3, -8.5		-9.6, -6.5	
	Composite (Y/N)	Y	Y	Y	Y	Y	N		N	
	Subsamples /DMMU	6	6	5	5	6^	1	1	1	1
	Subsample Archive (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y
PDS Layer	Depth range (ft, MLLW)	- N/A	N/A	-16.0 to -18.0	N/A	N/A	N/A	N/A	N/A	N/A
	Composite (Y/N)	N/A	N/A	5*	N/A	N/A	N/A	N/A	N/A	N/A
	Subsample /PDS-layer	N/A	N/A	5*	N/A	N/A	N/A	N/A	N/A	N/A
	Subsample Archive (Y/N)	N/A	N/A	Y*	N/A	N/A	N/A	N/A	N/A	N/A
Sediment Physical and Chemical Analysis per DMMU (No. DP/No. PDS)										
Grain size		1/-	1/-	1/-*	1/-	1/-	-/-	-/-	-/-	-/-
Total organic carbon		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Total solids		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Ammonia		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Total sulfides		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Metals, marine + mercury		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
PAHs		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
SVOCs (chlorinated hydrocarbons, phthalates, phenols, misc. extractables)		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Dimethyl phthalate		-/-	6#/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
Butyl benzyl phthalate		-/-	6#/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
bis(2-ethylhexyl) phthalate		-/-	-/-	-/-	-/-	6#/-	-/-	-/-	-/-	-/-
Pesticides		1/-	1/-	1/-	1/1	1/-	-/-	-/-	-/-	-/-
PCBs (Total Aroclors)		1/-	1/-	1/-	1/1	1/-	-/-	-/-	-/-	-/-
TPH (dx/rx)		1/-	1/-	1/-	1/1	1/-	-/-	-/-	-/-	-/-
Tributyltin		1/-	1/-	1/-	1/1	1/-	-/-	-/-	-/-	-/-
Dioxins/furans		-/-	-/-	-/-	-/-	-/-	1/-	1/-	1/-	1/-

* = PDS interval collected for composite and chemical analyses but inadvertently discarded before material were collected for archive or physical analyses; ^ = sediment from station UP-10 was excluded from the composite sample (DMMU 5) due minor hydraulic leak, a subsample was archived; # = subsamples discretely analyzed due to exceedance in the composite sample.

Deviations from the SAP: Deviations from the PSET-approved SAP are listed in SCR Section 2.2 and include the following:

Marina:

- The SP-3 sample location was moved greater than 25 feet west of the proposed station location because there was a lack of accumulation at the proposed sample site. This sample station relocation was coordinated during field sampling with James Holm (PSET lead).
- Material collected for the DMMU 3Z composite sample was inadvertently discarded without collecting sufficient material for grain size analysis and archive materials.
- The DMMU 2 composite sample exceeded the SEF SLs for dimethyl phthalate and butyl benzyl phthalate. Discrete analyses of sub-samples (SP-7 through -12) showed the exceedance was confined to Station SP-11.

Upland Sites:

- DMMU 5 composite sample exceeded the marine SEF SL for bis(2-ethylhexyl) phthalate. Discrete analysis of sub-samples (UPS-6 through UPS-11) did not detect concentrations above the SEF SL.
- A slight sheen was observed during the test pit excavation of sample station UPS-10. After inspection it was determined that hydraulic fluid was dripping from a broken hose coupling located on the excavator arm. The hydraulic fluid was contained by stopping work immediately and removing the excavator from the site. Additional details regarding the hydraulic fluid release include the following:
    - Allison Kinney (M&N Field Lead) spoke with James Holm (PSET Lead) at the time the leak was discovered and received verbal approval that it would be acceptable to the PSET to exclude the UPS-10 subsample from the DMMU 5 composite sample.
    - The estimated amount of hydraulic fluid that dripped from the hose is less than five ounces.
    - The hydraulic fluid used in the excavator is mineral oil with a carbon range of C15 to C50. The material safety data sheet for the hydraulic fluid is included as Appendix C.
    - The UPS-10 test pit was backfilled the next day with decontaminated equipment.
    - The UPS-10 sample was archived for potential future analysis if needed.
    - A hand auger was used to collect the UPS-11 sample station material to complete the DMMU 5 composite sample.

Results and Discussion: The sediment results for the Port's marina and upland sites are summarized in SDM Table 4. The chemical results are compared to the 2018 SEF marine SLs. Additionally, ODEQ's bioaccumulation SLV for marine fish (47 ug/kg) was used to evaluate PCB Total Aroclors and Ecology's PQL-based 5.0 ng/kg sum TEQ was used to evaluate dioxins/furans.

The dredge prism sediments in the northwest portion of the marina (DMMU 1) are 88.1% fine-grained material (67.9% silt, 20.2% clay), 8.7% sand and 3.3% gravel. Total organic carbon

(TOC) in the dredge prism sediments is approximately 1.8%. Total solids in the dredge prism sediments are approximately 39.5%.

The eastern marina dredge prism sediments (DMMU 2) are 73.1% fine-grained material (53.3% silt, 19.8% clay), 25.6% sand and 1.2% gravel. The TOC in the dredge prism sediments is approximately 1.8%. Total solids in the dredge prism sediments are approximately 38.2%.

The marina entrance dredge prism sediments (DMMU 3) are 87.5% fine-grained material (72.5% silt, 15% clay), 12.5% sand and 0.1% gravel. The TOC in the dredge prism sediments is approximately 1.3%. Total solids in the dredge prism sediments are approximately 52%. The post-dredge surface sample (DMMU 3Z) was inadvertently discarded before collecting sediments for physical analysis.

The western upland placement site sediments (DMMU 4) are composed of silt (48.4%) with clay (16.6%), gravel (0.06%) and sand (34.3%). The TOC in the western upland placement site sediments is approximately 1.8%. Total solids in DMMU 4 are approximately 68.8%.

The eastern upland site sediments (DMMU 5) are composed of silt (63.2%) with clay (16.1%), gravel (0.08%) and sand (20.0%). The TOC in the upland placement site sediments is approximately 1.5%. Total solids in DMMU 5 are approximately 64.8%.

Detected exceedances above SEF SLs or Ecology's 5 ng/kg sum TEQ for dioxins/furans include the following:

1. 2,3,7,8-TCDD sum TEQ in a portion of the surface sediments in DMMU 1 (Station 1A) and DMMU 3 (1B) next to the crab dock fire site.
    a. Due to the elevated 2,3,7,8-TCCD sum TEQs detected at Stations 1A (11.89 ng/kg) and 1B (6.24 mg/kg) above Ecology's accepted PQL, the surface sediments (~1 foot) surrounding the stations are unsuitable for unconfined aquatic placement without biological testing per the SEF (see the yellow polygon on SDM Figure 1).
2. Dimethyl phthalate and butyl benzyl phthalate in DMMU 2 at the northeast corner of the marina.
    a. The six subsamples for DMMU 2 were analyzed for dimethyl phthalate and butyl benzyl phthalate. Both parameters were detected above their SEF SLs only at Station SP-11. The dredged prism sediments surrounding Station SP-11 are unsuitable for unconfined aquatic placement without biological testing per the SEF (see the pink polygon on SDM Figure 1).
3. Bis(2-ethylhexyl) phthalate in DMMU 5 for the eastern upland site.
    a. The six subsamples for DMMU 5 were analyzed for bis(2-ethylhexyl) phthalate and no subsamples detected bis(2-ethylhexyl) phthalate above the SEF SLs. Therefore, DMMU 5 is suitable for unconfined aquatic placement without further testing per the SEF.

4. Total chlordane was not detected (U) in DMMU 3 and DMMU 3Z but had elevated method detection limits (MDLs) of 3.27 ug/kg U above the SEF SL of 2.8 ug/kg due to chromatographic interference and a 10 times dilution of the sample.
    a. The elevated MDL is only due to elevated trans-chlordane MDL of 3.27 ug/kg. No chlordane compounds were detected in any DMMU at the marina or upland sites.
    b. Total chlordane was not detected (U) in the 2016 SDM for the marina but also had an elevated MRL (3.7 ug/kg) due to chromatographic interference.
    c. No detections of total chlordane compounds are reported at the marina. Therefore, it is unlikely that chlordane compounds are present in DMMU 3 at concentrations above the SEF SL. Sediments at DMMU 3 are suitable for unconfined aquatic placement and exposure.

All other analytes were reported below SEF marine SLs (detected or non-detected with MRLs/MDLs below SLs). There were no exceedances of ODEQ's marine fish-based, marine bioaccumulative SLV for Total PCB Aroclors.

PSET Suitability Determination:

Dredge Prism – Chemical concentrations in the dredge prism and upland site composite samples, **excluding the crab dock and Station SP-11**, were below the SEF marine SLs and ODEQ's SLV as discussed above. As such, the Port of Ilwaco marina and upland placement site **dredged prism materials** are **suitable for unconfined, aquatic placement** per the 2018 SEF guidance without additional testing.

The Port's dredge area adjacent to the crab dock (**1A, 1B**, upper 1-foot, yellow polygon) and **Station SP-11** (full dredge prism, pink polygon), are **not suitable** for **unconfined in-water placement** without further testing. **Upland disposal is required**.

NOTE: If unsuitable materials from the crab dock and Station SP-11 are disposed of in the upland sites, the materials should be isolated from any material deemed suitable for in-water placement. If separation of the two types of material, unsuitable and suitable, is not done, none of the material in the upland site could be considered for in-water placement in the future.

Post-Dredge Surface – Based on the "Low-Moderate" management area rank, analytical results of the overlying dredge prism sediments, the results of the 2016 SDM, and known site history, the PSET is inferring that the Port of Ilwaco marina **post-dredge surfaces (except for Station SP-11)** are **suitable for unconfined, aquatic exposure** per the 2018 SEF guidance without additional testing.

Post-dredge surface sampling at Station SP-11 (pink polygon) **is required** to confirm unconfined, aquatic exposure suitability. If the PDS at Station SP-11 has elevated SVOCs concentrations, post-dredge surface management is required. Post-dredge surface management may include over dredging 1 foot and placement of a 1-foot layer of clean sand.

A post-dredge surface evaluation of the upland placement sites is not required.

Debris Management: Due to the Port and tenant operations, debris management is required when mechanical dredging (i.e. clamshell, excavator) occurs to remove and isolate unsuitable materials and debris (logs, trees, large wood fragments, consolidated rock, deleterious waste and any anthropogenic materials or trash) from the suitable sediments for aquatic placement. **Aquatic disposal of debris is prohibited.** Debris shall be disposed of or recycled at an appropriate upland site. Daily monitoring and reporting of debris management and observation is required for every dredge event, and a debris management section should be included in the dredging and disposal quality control plans. If no debris is found in two consecutive dredge events within the marina, then waiving the debris management requirement will be evaluated by PSET.

Contact: This memorandum was prepared by James Holm (PSET Lead, Corps) and reviewed by the participating PSET agencies, identified above. Questions regarding the PSET's suitability determination should be directed to James Holm by email at james.a.holm@usace.army.mil or by telephone at 503-808-4963.

Table 4. Sediment Analytical Summary – DMMU 1 to DMMU 5 with subsample and dioxins and furans results (sampled October 2023 and May 2024)

Sample ID (decision unit): Parameter	DMMU 1 (Marina DP)	DMMU 2 (Marina DP)	DMMU 3 (Marina DP)	DMMU 3Z (Marina PDS)	DMMU 4 (Upland)	DMMU 5 (Upland)	SEF marine SL (SLV †)
Grain size: gravel, sand, silt, clay (%)	3.3, 8.7, 67.9, 20.2	1.2, 25.6, 53.3, 19.8	0.1, 12.5, 72.5, 15.0	--	0.06, 34.3, 48.4, 16.6	0.08, 20.0, 63.2, 16.1	--
Total Solids (%)	39.5	38.2	52.0	57.3	68.8	64.8	--
Total Organic Carbon (%)	1.8	1.4	1.3	1.2	1.8	1.5	--
Ammonia (mg/kg)	22.1 J	21.0 J	208	199 H, D	30.6 D	36.0	--
Total Sulfides (mg/kg)	1,370	1,130	2,560	2,450 D	588	833	--
Metals (mg/kg)	Non-Detect, Detect <SLs U, J	Non-Detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U	Various
PAHs (ug/kg)	Non-Detect, Detect <SLs U, J	Non-detect, Detect <SLs J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Various
LPAHs (ug/kg)	169 J	232 J	88.4 J	124.1 J	74.7 J	176 J	5,200
HPAHs (ug/kg)	1,350	1,665	484.7	628.9	550	742.3	12,000
SVOCs (ug/kg) phenols, chlorinated hydrocarbons, misc. extractables), except parameters below	Detect <SLs U, J	Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Various
Dimethyl phthalate (sub-samples)	9.3	**1,490** (45.0 SP-07, 5.2 SP-08, 8.1 SP-09, 37.0 SP-10, **1,210 SP-11**, 14.5 SP-12)	1.0 U	1.0 U	3.0 J	2.5 J	71
Butyl benzyl phthalate (sub-samples)	7.5	**760** (20.0 SP-07, 20.0 SP-08, 20.0 SP-09, 20.0 SP-10, **344 SP-11**, 9.5 SP-12)	0.7 U	5.0 J	0.7 U	0.7 U	63
bis(2-ethylhexyl) phthalate (subs-samples)	132 B	231 B	34.2 J, B	19.6 J, B	20.6 J	**3,510 D** (80.1 UPS-6, 24.3 UPS-7, 39.4 UPS-8, 63.2 UPS-9, 55.3 UPS-610, 27.5 UPS-11)	1,300
Pesticides except below (ug/kg)	Non-detect, Detect <SLs U	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U	Non-detect, Detect <SLs U	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Various
4,4'-DDD	0.32 U	1.01 J	3.20 U	3.20 U	1.77 P1	1.04	16
4,4'-DDE	0.13 U	0.14 U	1.35 U	1.35 U	0.96 J	0.82 J	9
4,4'-DDT	0.32 U	0.34 U	3.25 U	3.25 U	0.32 U	0.32 U	12
Total Chlordane (trans-chlordane)	0.33 U (0.33 U)	0.34 U (0.34 U)	**3.27 U (3.27 U, D)**	**3.27 U (3.27 U, D)**	0.33 U (0.33 U)	0.33 U (0.33 U)	2.8
PCBs, Total Aroclors (ug/kg)	15.3	7.8	9.6 J	8.8	10.5 J	12.3	130 (47†)

TPH dx/rx (mg/kg)	97.6 / 455	61.6 / 217	55.5 D / 160 D	54.7 H / 99.6 H	41.8 / 154	41.8 D / 155 D	--
Bulk Tributyltin (ug/kg)	<0.446	<0.447	<0.447	<0.446	<0.447	2.76 J	73
Dioxins/Furans (ng/kg)	Stations 1A/1B	--	Stations 2B/2C	--	--	--	--
2,3,7,8-TCDD sum TEQ (ND=1/2 EDL / EMPC)	**11.89 / 6.24**	--	2.17 / 3.01	--	--	--	5.0
2,3,7,8-TCDD sum TEQ (ND=0)	**11.58 / 5.99**	--	2.03 / 3.00	--	--	--	

BOLD = detection exceeds SEF SL or bioaccumulation value; J = estimated concentration value detected between the method reporting limit and method detection limit; U = not detected (ND) at or above the method reporting limit or method detection limit, MRL/MDL reported; D = the reported value is from dilution; H = hold time was exceeded; TEQ = Toxicity Equivalence; EMPC = estimated maximum possible concentration qualifier for high resolution gas chromatography mass spectrometry (HRGCMS) dioxin; P1 = reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable. † = ODEQ fish-based, marine SLV.

Figure 1. Port of Ilwaco DMMU boundaries, bathymetry, stations, and unsuitable areas (sampled October 2023 and May 2024).

USACE Section 408 Authorization Email

From: Bird-Gauvin, Sally A CIV USARMY CENWP (USA)
To: Friesen, Kinsey M CIV USARMY CENWP (USA)
Cc: CENWP-PMF-Section408
Subject: Section 408 - No Alteration Determination
Date: Thursday, August 10, 2023 1:36:44 PM

Section 408 has reviewed 0208-FY23 Port of Ilwaco's application for the proposed new 10-Year Maintenance Dredging project (NWP-2004-78-5) and determine that there is No Alteration to a USACE Civil Works project. The proposed project consists of an initial (one-time) 280,288cy followed by an annual maximum of 50,000cy of sediment from within the Port of Ilwaco Marina using either hydraulic or mechanical dredging equipment. Placement of dredged material will either be in upland, in-water as beneficial use, or existing flow lane placement. The Port will actively coordinate with USACE prior to each dredge event and will use USACE approved sites in the manner prescribed. Surveys will be conducted in the placement sites after use. The Port will put out USCG Notice to Mariners to inform local traffic of their activity.

Based on the above mentioned navigation coordination that the Port will conduct during project operations, the proposed 10-year maintenance project should have no impact to the FNC. Furthermore, there are no federal levee or revetment systems in the area of the project. Therefore, the Port's project will not affect the FNC or other civil works project.

Please ensure that coordination each dredge event with the NWP Navigation Branch.

Any questions please let me know. Otherwise, consider this your notification of no alteration.

Thank you,

Sally

Sally Bird-Gauvin

Program Manager, 408 / IIS / FERC

US Army Corps of Engineers

Portland District

503-808-4765

Water Quality Monitoring Plan

WATER QUALITY MONITORING PLAN

Produced for the Port of Ilwaco

January 2025

PORT OF ILWACO MAINTENANCE DREDGING

Port of Ilwaco Marina, USACE Permit No. NWP-2004-78-5

Document Verification

Client	Port of Ilwaco
Project name	Port of Ilwaco Marina Maintenance Dredging – (NWP-2004-78-5)
Document title	Water Quality Monitoring Plan
Date	16 January 2025
Project number	213282

Produced by:
Moffatt & Nichol
915 Broadway Street Suite 310
Vancouver, Washington 98660
www.moffattnichol.com

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Glossary

BMPs	Best Management Practices
Ecology	Washington State Department of Ecology
NTU	nephelometric turbidity unit
Port	Port of Ilwaco
RM	River Mile
WAC	Washington Administrative Code
WQMP	Water Quality Monitoring Plan

1. Introduction

This document describes water quality monitoring activities that will be conducted during maintenance dredging completed by the Port of Ilwaco (Port) on the northern shoreline of Baker Bay. The project area is shown on Sheets 1 through 11 (Appendix A).

The objective of water quality monitoring is to monitor and control releases of suspended sediment, turbidity and sediment associated contaminants (if present) during dredging and discharge activities, and to ensure compliance with Washington State Water Quality Standards (173-201A Washington Administrative Code [WAC]). This document describes water quality monitoring parameters, methods, locations, and frequencies; evaluation criteria; and contingency response and notification procedures in the event a water quality criterion is exceeded during dredging and from effluent discharge from the upland dredged material placement site.

2. Project Description

2.1. Water Quality Criteria

The designated uses for the Columbia River between the river mouth (River Mile [RM] 0) and the Washington-Oregon border (RM 309.3), inclusive of the project site, include salmonid spawning, rearing, and migration; primary contact recreation; various water supply uses (domestic, industrial, agricultural, and stock water supply); and other miscellaneous uses, such as wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics (WAC 173-201A-602).

Turbidity is the primary water quality parameter of concern for dredging and upland placement. Table 1 presents the water quality standards for turbidity (173- 201A-200[1][e]). WAC 173-201A (1)(e)(i) provides a temporary area of mixing for turbidity if specific conditions are met. This temporary area of mixing extends 150 feet radially from the activity causing the turbidity.

TABLE 1: WATER QUALITY STANDARDS

Parameter		Water Quality Criterion
Turbidity	If less than 50 NTU	background turbidity plus 5 NTU
	If greater than 50 NTU	background turbidity plus 10 percent

NTU = nephelometric turbidity unit

3. Water Quality Monitoring Plan

This section describes the details of the proposed Water Quality Monitoring Plan (WQMP), including monitoring parameters, schedules, locations, depths, methods and documentation. The key elements of the WQMP are summarized in Table 2 and described in the following sections.

TABLE 2: MONITORING PARAMETERS, SCHEDULE, LOCATIONS, AND DEPTHS

Parameter	Measurement Type	Schedule	Location	Depth
Mechanical Dredging				
Turbidity for Dredging Activities	Visual	Tier 1:Twice per day, for three days followed by Tier 2: Twice a day, one day a week	- Compliance Station: 150 ft. radially of dredge - Early Warning Station: 75 ft. radially of dredge - Background Station: 300 ft. radially of dredge	Surface, mid-depth, and near bottom of water column
	Instrumented	If a turbidity plume is observed within the 75-foot early detection radius, instrumented monitoring will be implemented (see below for additional details)		
Turbidity for Discharge Activities	Visual	Tier 1:Twice per day, for three days followed by Tier 2: Twice a day, one day a week	- Compliance Station: Effluent discharge point to Baker Bay - Background Station: 300 ft. radially of discharge point	Surface, mid-depth, and near bottom of water column (as water depths permit)
	Instrumented	If a turbidity plume is observed at the discharge point, instrumented monitoring will be implemented (see below for additional details)		

3.1. Visual Monitoring

3.1.1. Monitoring Locations

Turbidity will be visually monitored at the following locations.

- The 75-foot early detection radius from dredging activities
- The Compliance Station for turbidity for dredging is at the compliance radius, 150 feet from the dredging activities
- The Compliance Station for turbidity for discharge activities is at the point where discharge return water enters Baker Bay
- The Background Station will be positioned outside the area of influence from the maintenance activities

Visual monitoring of turbidity will be conducted twice a day during hydraulic dredging, and discharge activities. If a turbidity plume is observed during visual monitoring within the 75-foot early detection radius for dredging activities or at the effluent discharge point during discharging activities, instrumented turbidity monitoring will be implemented immediately at the point of compliance to determine if turbidity is out of compliance with water quality standards and best management practices (BMPs) to control turbidity will be implemented as appropriate.

Contingency response actions (including stopping the dredging and/or discharge activities) will be triggered in the event that an exceedance of water quality standards at the point of compliance is indicated. Agency notifications will be triggered if the turbidity exceedance at the point of compliance continues. The contingency response and notification plan is provided in Section 4.0.

The contractor or environmental manager will keep a written record (including weather conditions, calibration measurements, photographs, etc.) of monitoring activities and inspections during visual monitoring. This data will be submitted to the Port of Ilwaco and the Washington Department of Ecology (Ecology).

The monitoring and inspection procedures outlined in the following subsections will be implemented during visual monitoring.

3.1.2. Monitoring Schedule

The frequency of visual monitoring will be as follows.

- Tier 1: Monitoring twice a day during dredging operations.
- Tier 2: If there are no exceedances of water quality criteria at the compliance boundary after three full days of monitoring/dredging, then monitoring will be reduced to the twice-daily measurements one day per week.
- Immediate visual confirmation by the environmental manager or their designee if notified by monitoring personnel of a potential water quality exceedance; and, if a visual exceedance is confirmed, follow-up instrumented monitoring will be implemented on an hourly basis until water quality returns to acceptable conditions.
- After the turbidity returns to acceptable conditions (and with approval from Ecology), the schedule will revert back to Tier 1/Tier 2 sequential monitoring.

3.1.3. Duration

Monitoring will occur immediately before the start of dredging to collect baseline measurements outside of the area of mixing. Monitoring will continue the duration of dredging activities.

3.2. Instrumented Monitoring

Instrumented monitoring (if necessary) will be performed using a portable water quality probe deployed from a boat and measurements will be taken hourly until the turbidity measurements meet water quality criteria. If any exceedances of water quality criteria are observed at any time during the monitoring program, and it is determined that the exceedance is caused by dredging and/or discharge activities rather than an ambient background condition, then the contingency response and notification procedures will be initiated, as described in Section 4.

3.2.1. Monitoring Depths

Instrumented monitoring (if needed) for turbidity will be completed at the surface, mid-depth, and near-bottom of the water column.

3.3. Monitoring Personnel

Monitoring will be completed by dredging personnel, the environmental manager, or a designated water quality technician.

3.4. Documentation and Reporting

The environmental manager will keep a written record of monitoring activities and inspections during both visual and instrumented monitoring.

All water quality monitoring will be recorded on the monitoring form with the following information. An example data sheet is provided as Appendix B.

- Dates and times of dredging
- Sample results (locations, times, and visual observation results or measured turbidity results)
- Summary of dredging activities, associated turbidity, and corrective actions taken to reduce turbidity

These records will be maintained in project files and provided to Ecology. All sample results will be submitted weekly (via e-mail) to the Ecology federal project coordinator during dredging. If sample results indicate a violation of water quality standards or if conditions of the 401 Water Quality Certification or the WQMP are not being followed, notification shall be made immediately to Ecology's federal project coordinator.

Sampling results and notifications shall be sent to the federal permit manager for this project (fednotification@ecy.wa.gov and lino461@ecy.wa.gov).

All communication and correspondence with Ecology will occur with the environmental manager. The environmental manager will be responsible for providing Ecology with the necessary notifications and results of the water quality monitoring on a weekly basis and at the conclusion of the monitoring period.

4. Contingency Response and Notification Plan

4.1. Contingency Measures

Personnel will immediately stop dredging and/or discharge activities and assess the source of the impact or exceedance in the event of an exceedance of water quality standards, as observed during visual or instrumented monitoring. Dredging and/or discharge activities will not resume until conditions are compliant with water quality standards. Personnel will implement operational modifications or other control measures once the source has been identified to prevent further occurrences.

Instrumented monitoring will continue hourly to confirm the control measures are effective and turbidity at the point of compliance has returned to acceptable levels.

4.1.1. Visible Turbidity Plume

Dredging and/or discharge activities will immediately be halted in the event that increased turbidity is observed at the compliance radius monitoring station(s). Maintenance operations and BMPs will be thoroughly inspected to identify the source of the turbidity exceedance and appropriate operational controls, engineering controls, or enhanced BMPs will be implemented to reduce turbidity to acceptable levels. Follow-up turbidity measurements using a turbidity meter will be collected to better assess compliance with water quality standards and to track the effectiveness of any supplemental controls or BMPs that may be implemented if observations indicate increased turbidity at the compliance monitoring station(s).

4.1.1.1. Follow Up Monitoring

Monitoring for turbidity using a turbidity meter will be implemented as a follow-up contingency measure in response to visual plume or metered exceedance at the compliance monitoring station(s).

Field measurements of turbidity will be compared with the water quality criteria specified in Section 2.1. Compliance with water quality criteria will be evaluated at the Compliance Station locations described in Section 3. An exceedance of water quality criteria at the Compliance Station will trigger the following actions.

1) Evaluate the concurrent measurements at the Background Station to determine whether the exceedance is caused by ambient conditions versus site-related construction activities.
2) Collect additional measurements after the initial exceedance is recorded at the Compliance Station to confirm the exceedance measurement.
3) Notify the environmental manager immediately after the exceedance is confirmed and is attributed to site dredging activities. The dredging and/or discharge activities will be modified and/or additional BMPs will be implemented to mitigate the exceedance. Turbidity will be monitored hourly until water quality returns to acceptable conditions. The extent of the plume (how far downstream) will be determined.
4) Notify Ecology of the exceedance, actions taken to mitigate the exceedance, and the results of the follow-up measurements. The actions necessary to continue dredging will be discussed with Ecology if the water quality exceedance continues to persist after additional BMPs or operational modifications are implemented. Actions to restart dredging may include some or all of the following.
    a) Implement more aggressive BMPs or operational modifications.
    b) Implement more intensive monitoring to better track the growth or dissipation of the plume.
    c) An extended work stoppage may be necessary to further assess the source of the exceedance, identify effective mitigation measures, and allow the water column to recover if options (a) or (b) are not successful at controlling the water quality exceedance.

4.1.2. Distressed or Dying Fish

Dredging will immediately stop if distressed or dying fish are observed at the construction site and are attributed to site activities. Ecology, the Washington Department of Fish and Wildlife, and the National Marine Fisheries Service will be contacted after dredging is stopped.

The condition of the fish (dead, dying, or erratic behavior); an estimate of the number, species, and size of fish in each condition; and the location of fish relative to construction operations will be noted. Samples will be frozen in secure storage under chain-of-custody for possible agency inspection if any dead listed species are present. Additional fish and water sampling may be conducted at the direction of the resource agencies.

4.1.3. Discharge of Oil, Fuel, or Chemicals

Dredging will stop and containment and cleanup efforts will begin immediately in the event of a discharge of oil, fuel, or chemicals (including wet concrete) into state waters. The cleanup efforts will be completed as soon as possible. Dredging may resume only after the source of the spill or leak has been identified and controlled, as long as the work does not interfere with, delay, or hinder the containment and cleanup efforts. Cleanup includes appropriate disposal of any spilled material and cleanup material. The following agencies will be immediately notified.

- Ecology's Spill Response Office at 360/407-6300
- Washington State Emergency Management at 800/258-5990
- National Response Center at 800/424-8802

4.2. Notification

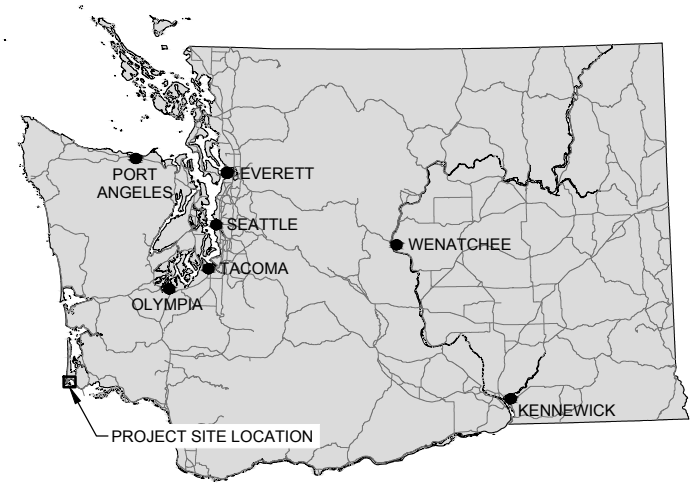
Project personnel will immediately notify the environmental manager or their designee, who will notify the federal permit manager at Ecology Headquarters Office of any in-water work that is out of compliance with the discharges approved under the Section 401 Water Quality Certification for this project. A detailed written

report will be submitted to Ecology within five days or as otherwise specified in the Section 401 Water Quality Certification. The report will include the following information.

- Nature and extent of the water quality exceedance, including detailed visual observations and, if appropriate, field parameter measurements.
- Identification of the likely cause of the exceedance.
- Description of control measures or BMPs implemented to mitigate the exceedance.
- Notifications to agency, including timing and names of agency personnel contacted.
- Documentation that control measures were effective at mitigating the water quality exceedance and stabilizing environmental conditions in the affected area.

Appendix A. Permit Application Drawings – Sheets 1 Through 11

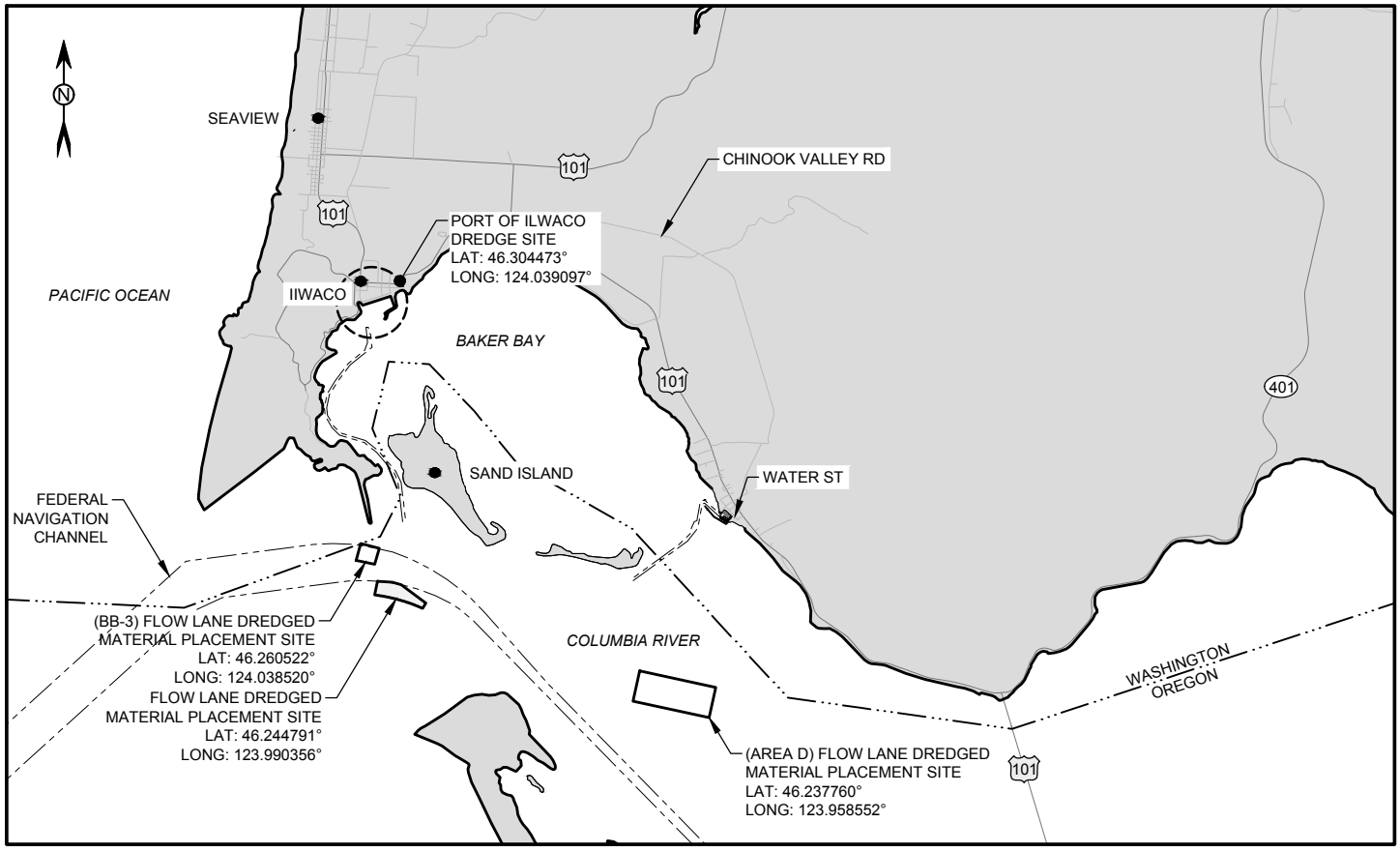
S33 T10N R11W



WASHINGTON KEY MAP

SHEET INDEX

SHEET NO.	TITLE
1	Cover Sheet
2	Parcel Map
3	Site Plan - Proposed Dredging
4	Sections - Dredge 1
5	Sections - Dredge 2
6	Site Plan - Upland Placement Site
7	Sections - Upland Placement Site
8	Site Plan - Flow Lane Placement Site 1
9	Site Plan - Flow Lane Placement Site 2
10	Site Plan - Flow Lane Placement Site 3
11	Sections - Flow Lane Placement Site



PROJECT SITE LOCATION

0 6,000 12,000

SCALE IN FEET

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Cover Sheet

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 1 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Parcel Map

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

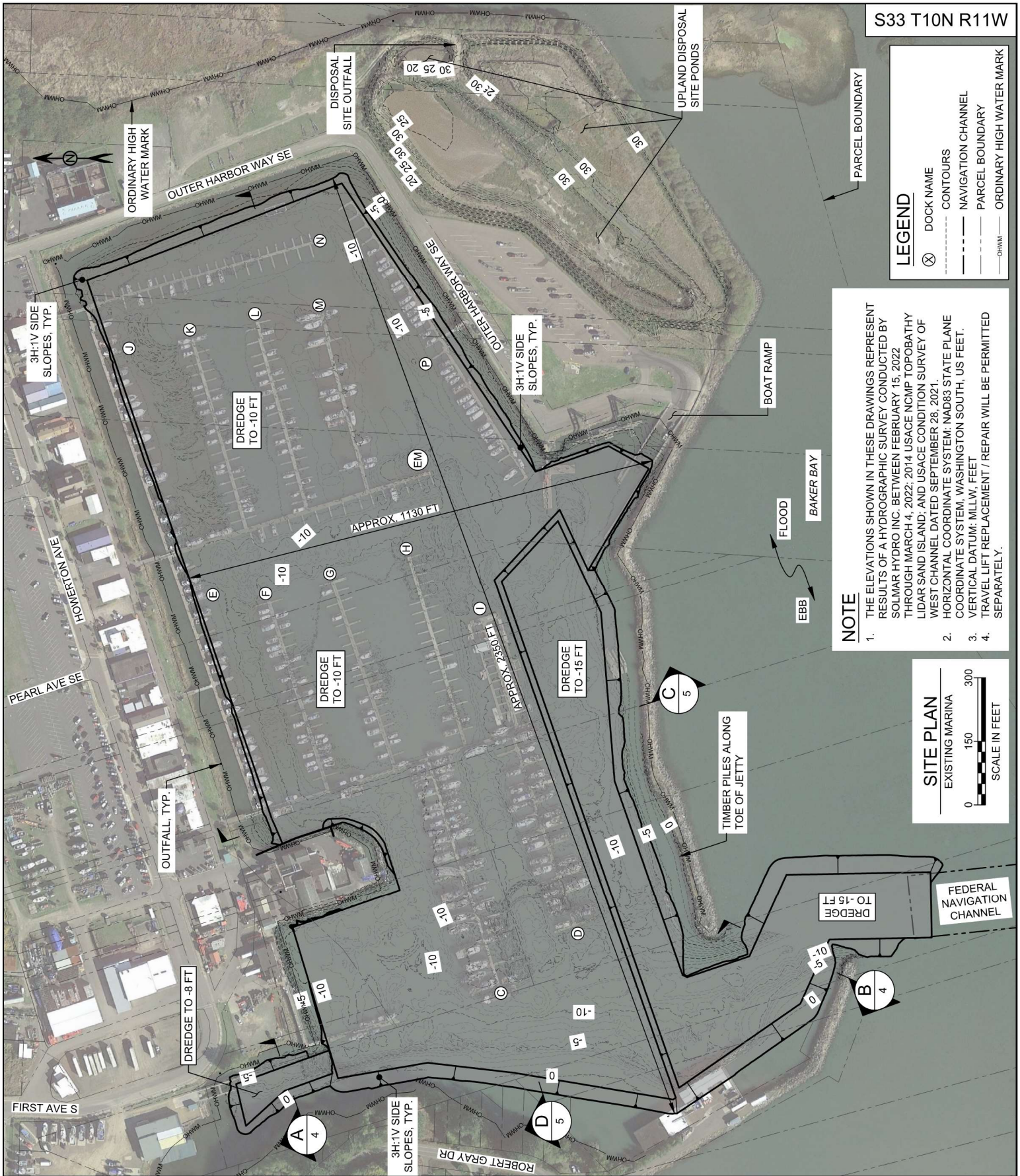
IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 2 OF 11

DATE: 1/10/25



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Site Plan - Proposed Dredging

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

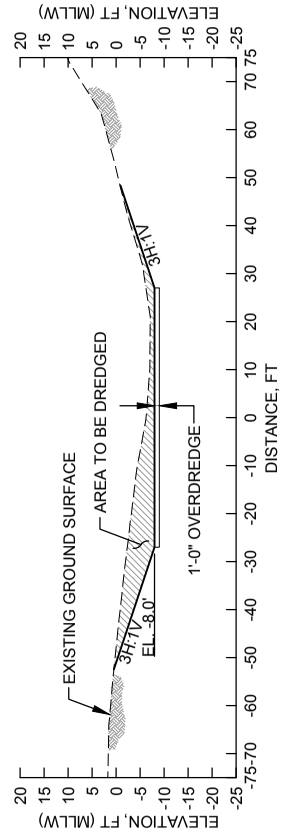
AT: ILWACO

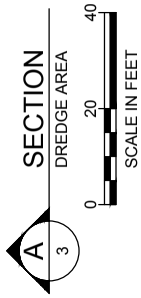
COUNTY: PACIFIC

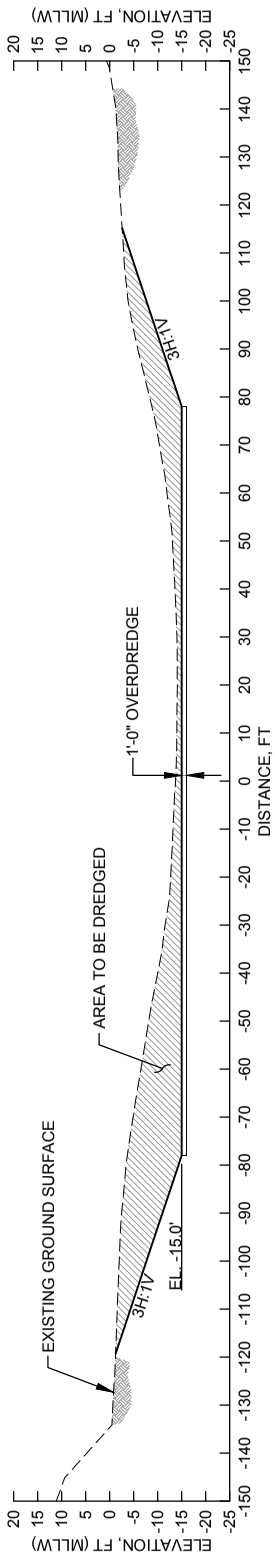
SHEET 3 OF 11

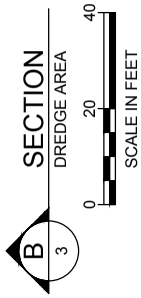
DATE: 1/10/25

S33 T10N R11W









PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Dredge 1

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

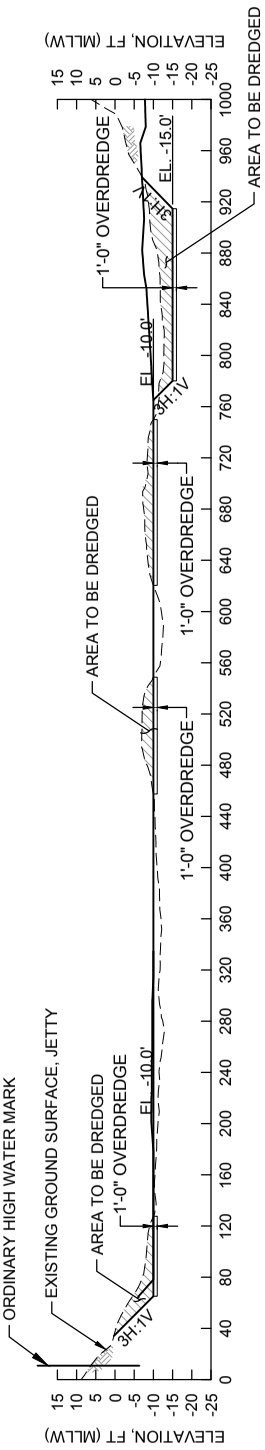
IN: BAKER BAY

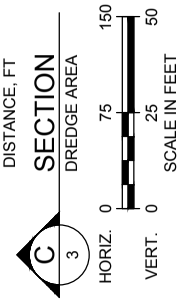
AT: ILWACO

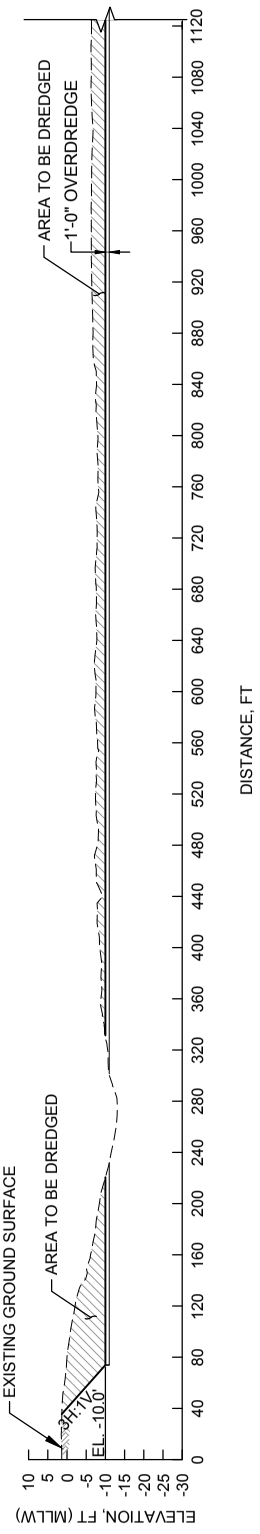
COUNTY: PACIFIC

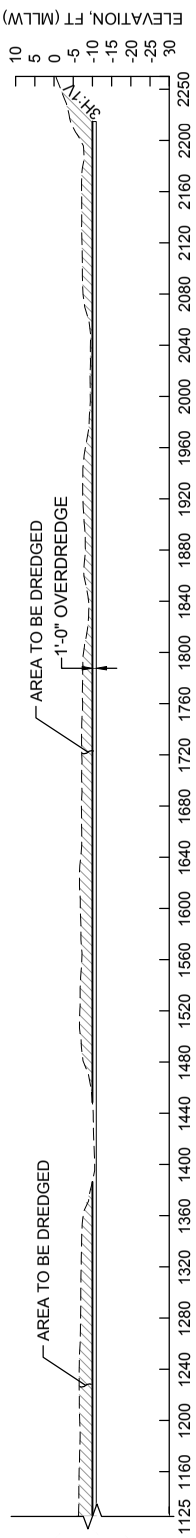
SHEET 4 OF 11

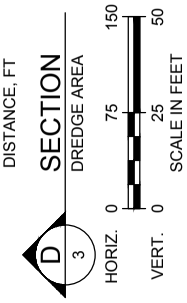
DATE: 1/10/25











PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Dredge 2

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 5 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Upland Placement Site

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 6 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Sections - Upland Placement Site

APPLICATION BY:
Port of Ilwaco

A
6
SECTION
UPLAND PLACEMENT AREA

HORIZ. 0 75 150
VERT. 0 25 50
SCALE IN FEET

B
6
SECTION
UPLAND PLACEMENT AREA

HORIZ. 0 75 150
VERT. 0 25 50
SCALE IN FEET

LEGEND

- BENEFICIAL USE PLACEMENT AREA
- EXISTING GROUND SURFACE
- EXCAVATION CUT

NOTE

1. EXISTING VEGETATION LOCATED WITHIN THE UPLAND PLACEMENT SITE EXCAVATION AREA TO BE CLEARED AND GRUBBED AND DISPOSED OF AT AN APPROVED LOCATION PRIOR TO MATERIAL REMOVAL FOR FLOW LANE PLACEMENT.

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

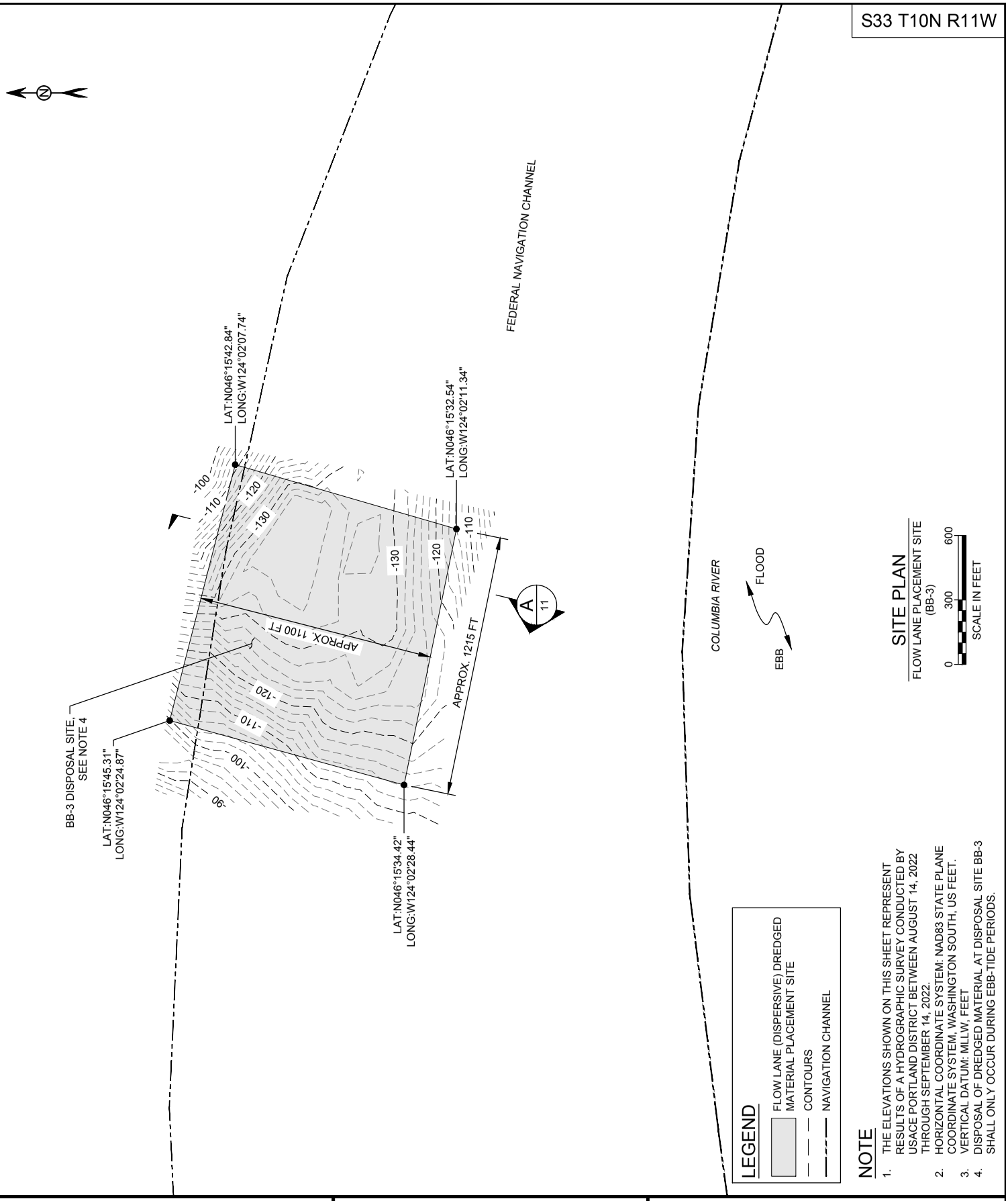
IN: BAKER BAY
AT: ILWACO
COUNTY: PACIFIC

SHEET 7 OF 11

DATE: 1/10/25

S33 T10N R11W

S33 T10N R11W



LEGEND

- FLOW LANE (DISPERSIVE) DREDGED MATERIAL PLACEMENT SITE
- CONTOURS
- NAVIGATION CHANNEL

NOTE

1. THE ELEVATIONS SHOWN ON THIS SHEET REPRESENT RESULTS OF A HYDROGRAPHIC SURVEY CONDUCTED BY USACE PORTLAND DISTRICT BETWEEN AUGUST 14, 2022 THROUGH SEPTEMBER 14, 2022.
2. HORIZONTAL COORDINATE SYSTEM: NAD83 STATE PLANE COORDINATE SYSTEM, WASHINGTON SOUTH, US FEET.
3. VERTICAL DATUM: MLLW, FEET
4. DISPOSAL OF DREDGED MATERIAL AT DISPOSAL SITE BB-3 SHALL ONLY OCCUR DURING EBB-TIDE PERIODS.

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Flow Lane Placement Site 1 (BB-3)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

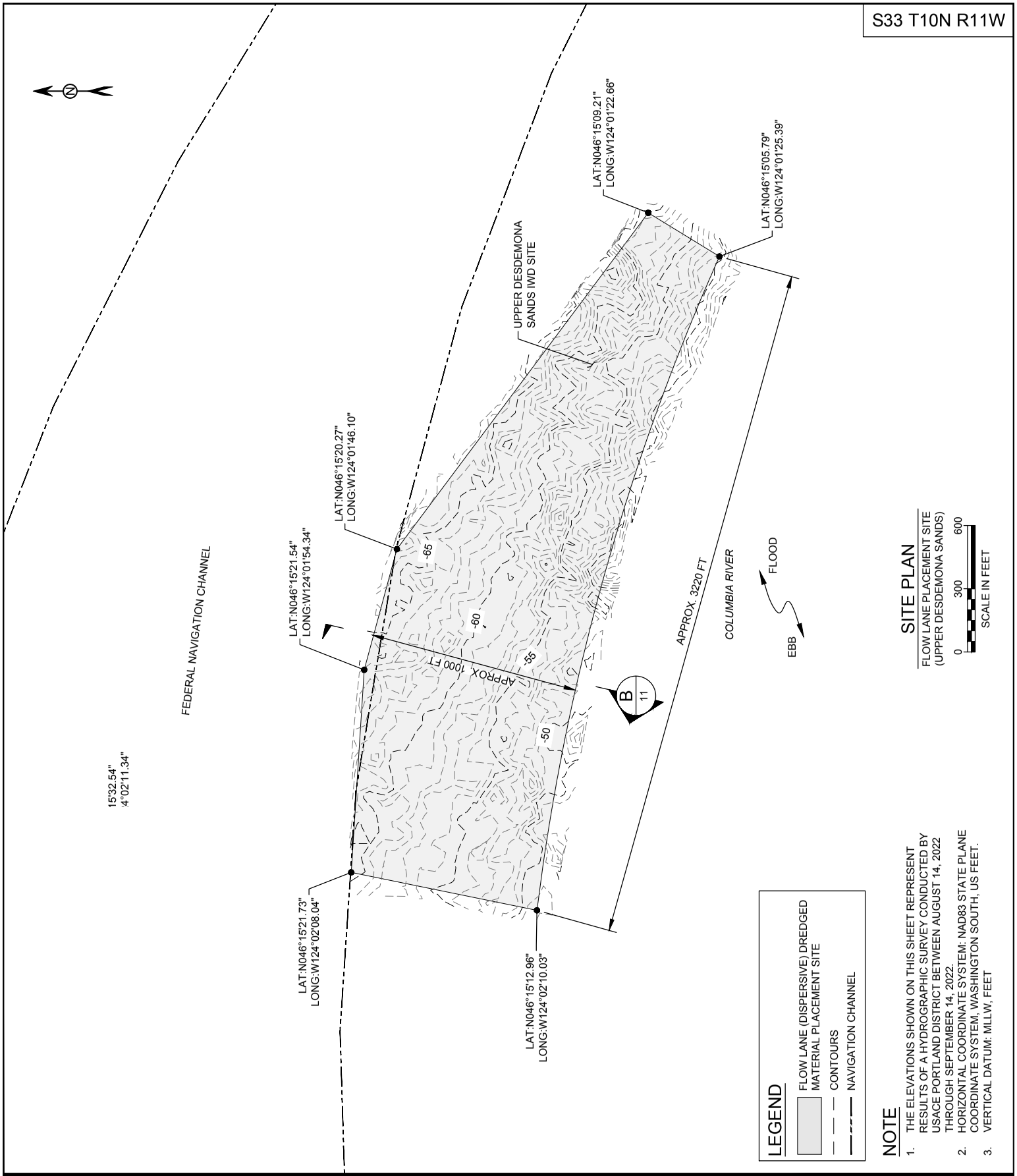
AT: ILWACO

COUNTY: PACIFIC

SHEET 8 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Flow Lane Placement Site 2
(Upper Desdemona Sands)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

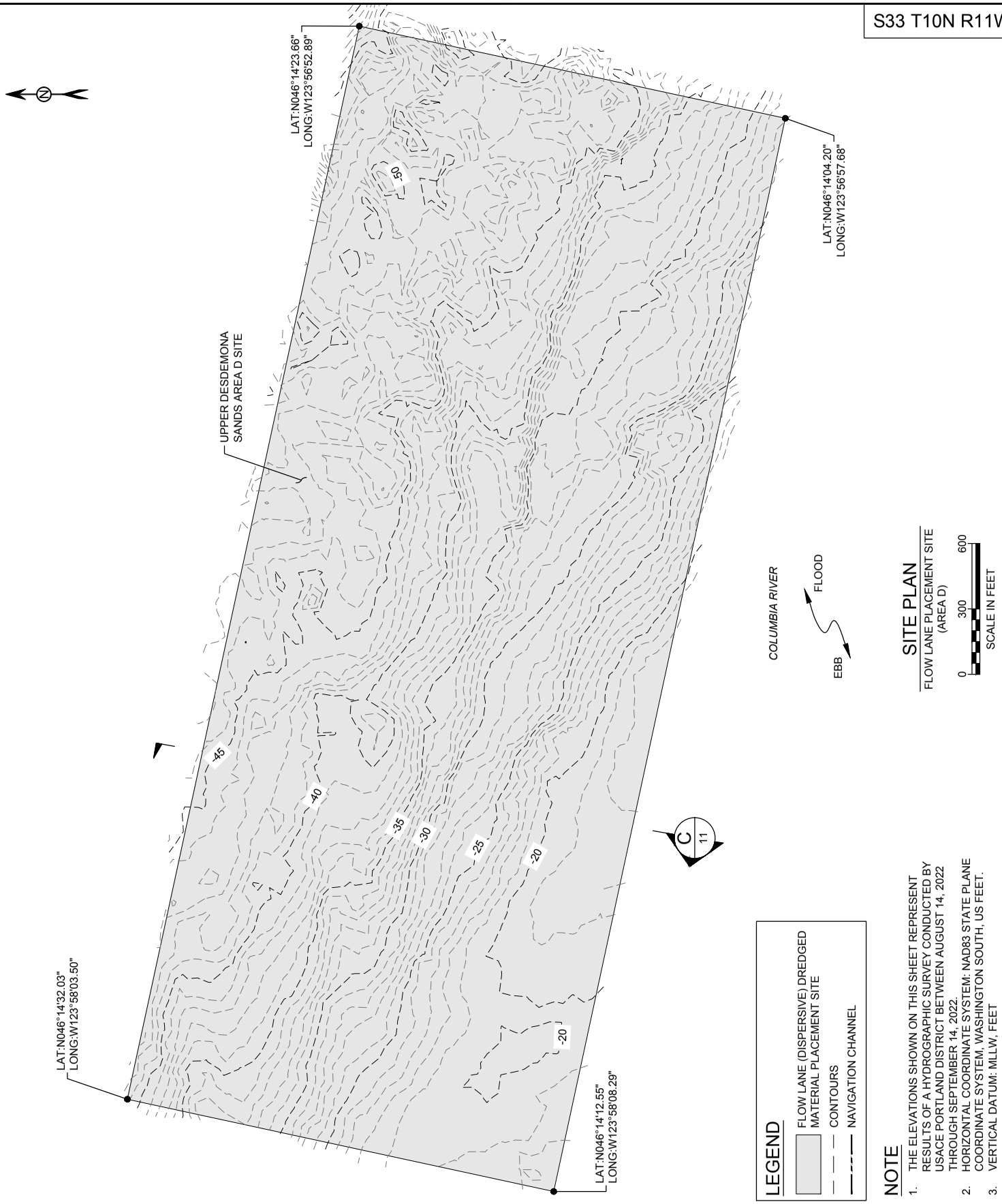
AT: ILWACO

COUNTY: PACIFIC

SHEET 9 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Site Plan - Flow Lane Placement Site 3 (Area D)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

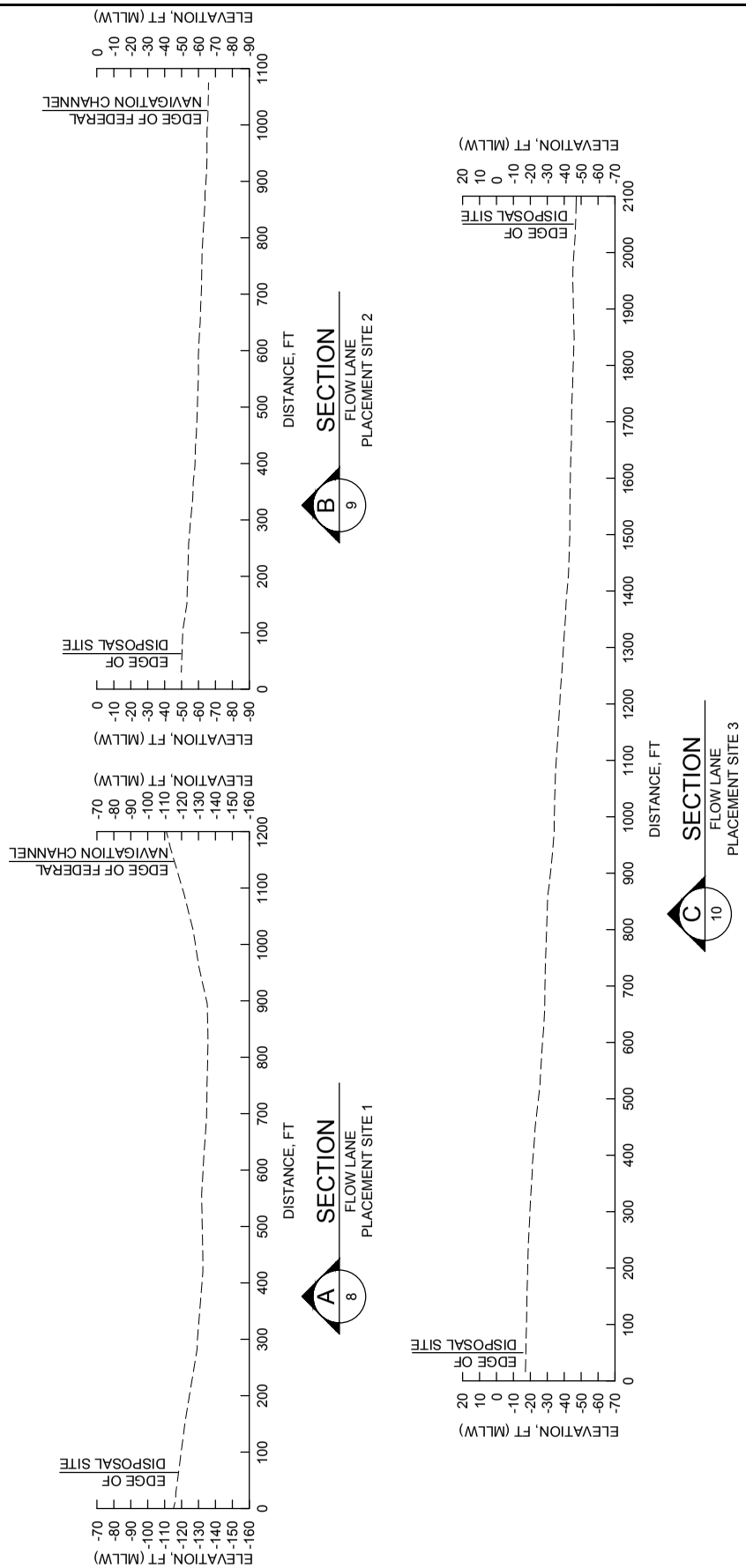
AT: ILWACO

COUNTY: PACIFIC

SHEET 10 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Flow Lane Placement Site

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 11 OF 11

DATE: 1/10/25

Appendix B. Example Data Sheet

Table 1. Summary of Effluent Water Quality Monitoring for Port of Ilwaco Marina Maintenance Dredging

Date	Turbidity (NTU)			D.O. (mg/l)			Temperature (Deg. C)		
	Background	75 ft radially	150 feet radially	Background	75 ft radially	150 feet radially	Background	75 ft radially	150 feet radially

Notes:

The Washington Department of Ecology (Ecology) Turbidity Standard is no more than 5 NTU more than the measured background concentration

The Ecology DO standard for the Columbia River is greater than 8.0 miligrams per liter (mg/l)

The Ecology temperature criteria is based on a 7-day daily max temperature of 18 degrees Celsius.

Cultural Resources Report

CULTURAL RESOURCES REPORT COVER SHEET

DAHP Project Number: _____ (Please contact the lead agency for the project number. If associated to SEPA, please contact SEPA@dahp.wa.gov to obtain the project number before creating a new project.)

Author: Breanne Taylor and Adam Alsobrook

Title of Report: Cultural Resources Assessment for the Port of Ilwaco East Bulkhead Replacement and Dredging Projects, Pacific County, Washington

Date of Report: October 3, 2022

County(ies): Pacific Section: 33,34 Township: 10N Range: 11W

Quad: *Cape Disappointment, WA* 7.5-minute Acres: 18

PDF of report submitted (REQUIRED) ☒ Yes

Historic Property Inventory Forms to be Approved Online? ☒ Yes ☐ No

Archaeological Site(s)/Isolate(s) Found or Amended? ☐ Yes ☒ No

TCP(s) found? ☐ Yes ☒ No

Replace a draft? ☐ Yes ☒ No

Satisfy a DAHP Archaeological Excavation Permit requirement? ☐ Yes # ☒ No

Were Human Remains Found? ☐ Yes DAHP Case # ☒ No

DAHP Archaeological Site #:

_____
_____
_____
_____
_____
_____
_____
_____

- Submission of PDFs is required.
- Please be sure that any PDF submitted to DAHP has its cover sheet, figures, graphics, appendices, attachments, correspondence, etc., compiled into one single PDF file.
- Please check that the PDF displays correctly when opened.

WILLAMETTE
CULTURAL RESOURCES ASSOCIATES, LTD.

Cultural Resources Assessment for the Port of Ilwaco East Bulkhead Replacement and Dredging Projects, Pacific County, Washington

Cultural Resources Assessment for the Port of Ilwaco East Bulkhead Replacement and Dredging Projects, Pacific County, Washington

Prepared by
Breanne Taylor, M.A., RPA
Adam Alsobrook, B.S.

October 3, 2022

WillametteCRA Report No. 21-130a
Portland, Oregon

Prepared for
Moffatt and Nichol
Seattle, Washington

WILLAMETTE
CULTURAL RESOURCES ASSOCIATES, LTD.

Report Details

Project Name:	Port of Ilwaco East Bulkhead Replacement and Dredging Projects
Agency:	USDOT Maritime Administration (Port of Ilwaco Infrastructure Project, only)
Client:	Moffatt and Nichol for Port of Ilwaco
Regulatory Framework:	Section 106, USACE Section 104
County(ies):	Pacific
Legal Description:	Township 10N, Range 11W, Sections 33 and 34
USGS Quad(s):	*Cape Disappointment, WA* 7.5-minute
Project Acreage:	147
Survey Acreage:	18
Curation Location:	N/A
Field Note Location:	WillametteCRA, Portland Office
Fieldwork Type:	Field Reconnaissance
Fieldwork Dates:	April 27 and June 10, 2022
Field Personnel:	Breanne Taylor and Adam Alsobrook
Findings:	None
Recommendations:	Inadvertent Discovery Plan be in place for construction.

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Introduction

Moffatt and Nichol contracted with Willamette Cultural Resources Associates, Ltd. (WillametteCRA) to conduct a cultural resources assessment of the proposed Port of Ilwaco (POI) bulkhead replacement and dredging projects in Pacific County, Washington (Figures 1 through 3). The proposed projects are in Township 10 North, Range 11 West, Sections 33 and 34, just northeast of Cape Disappointment along Baker Bay. The East Bulkhead replacement and Ilwaco Marina dredging are separate and independent projects. The bulkhead replacement and associated maintenance and repairs along the shoreline will be conducted with United States Department of Transportation Maritime Administration (MARAD) grant funding. The Ilwaco Marina dredging project will be permitted separately. MARAD is acting as the lead federal agency responsible for National Historic Preservation Act (NHPA) Section 106 compliance for the MARAD funded bulkhead project. The projects are also subject to the requirements of a US Army Corps (USACE) Section 404 permit. USACE is acting as the lead federal agency for the dredging project.

East Bulkhead Replacement Project

The proposed East Bulkhead project consists of the replacement of the East Bulkhead, re-grading the Safe Coast Seafoods truck lane, shoreline protection, and slope stabilization (see Figure 3, 4, and 5). The East Bulkhead was originally built with timber-pile and earthen fill. The failing bulkhead will be replaced with a sheet-pile, either steel sheet or composite material and anchor system designed to withstand sea-level rise. An associated fender and mooring network will be constructed at the bulkhead to facilitate the temporary mooring of fishing boats and other vessels. The shoreline between the East Bulkhead and West Pier will be raised approximately 2–3 feet (ft.) in the process, increasing the elevation of part of the Ilwaco Marina shoreline.

Ilwaco Marina Maintenance Dredging and Beneficial Use Project

The proposed Ilwaco Marina dredging and beneficial use project will consist of dredging and dredge placement at proposed in-water beneficial use sites in Baker Bay (see Figure 2). The project will address dredging and disposal issues at the POI Marina. Large amounts of dredge material has accumulated at the previously designated upland placement areas and those areas are nearing capacity. The project will attempt to restore the design depth of the marina.

No formal project area or area of potential effect (APE) has been established for the projects at this time. The current study area encompasses an area delineated by WillametteCRA for our background research and reconnaissance level field investigation. The study area consists of the Ilwaco Marina and the East Bulkhead where Safe Coast Seafoods is currently located. Additionally, the study area includes the existing upland dredge placement area at the southeast edge of the POI property. The dredge placement area is an approximately 8 meter (m) high berm of deposited dredge material (see Figures 2 and 3).

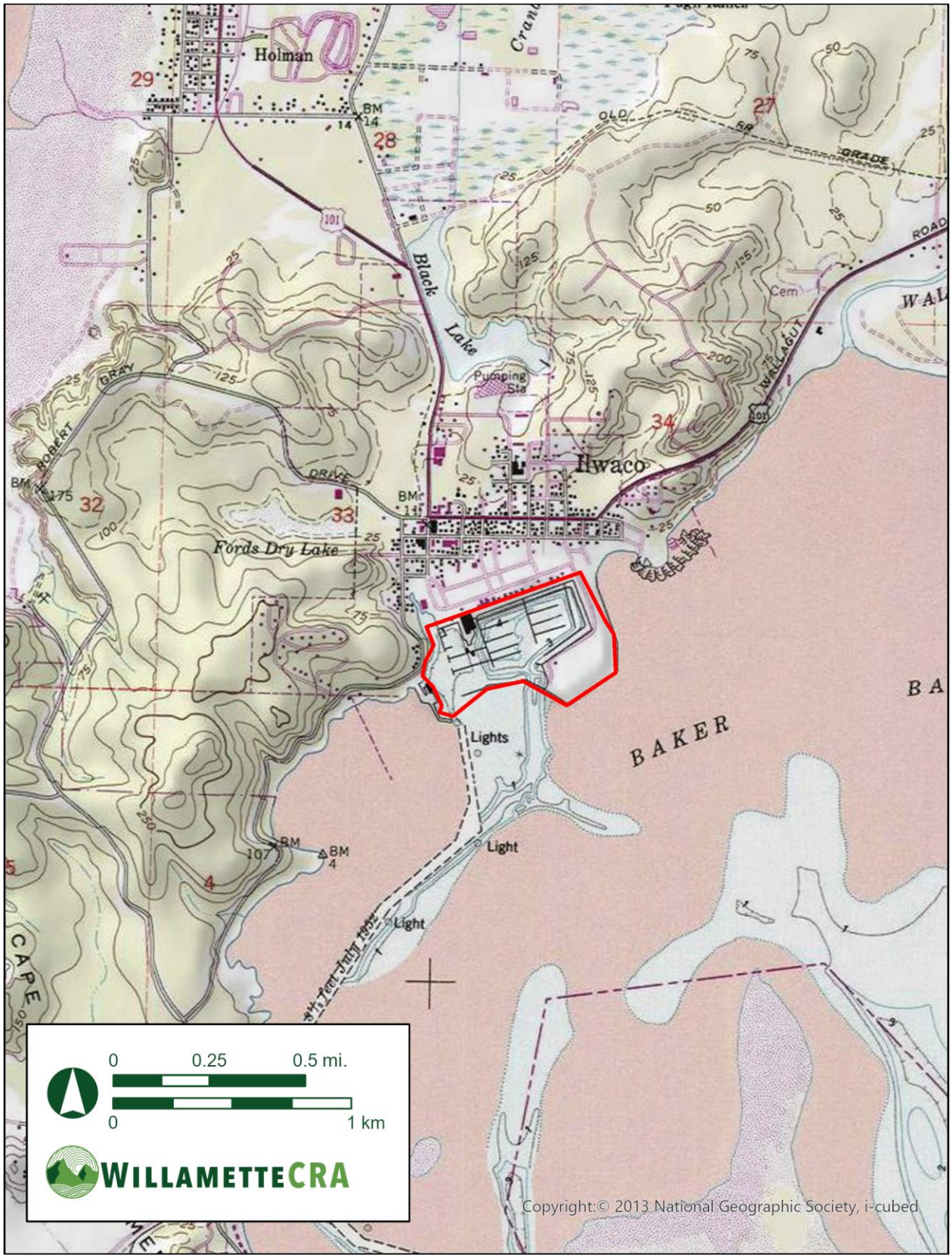

Figure 1. Project location map.

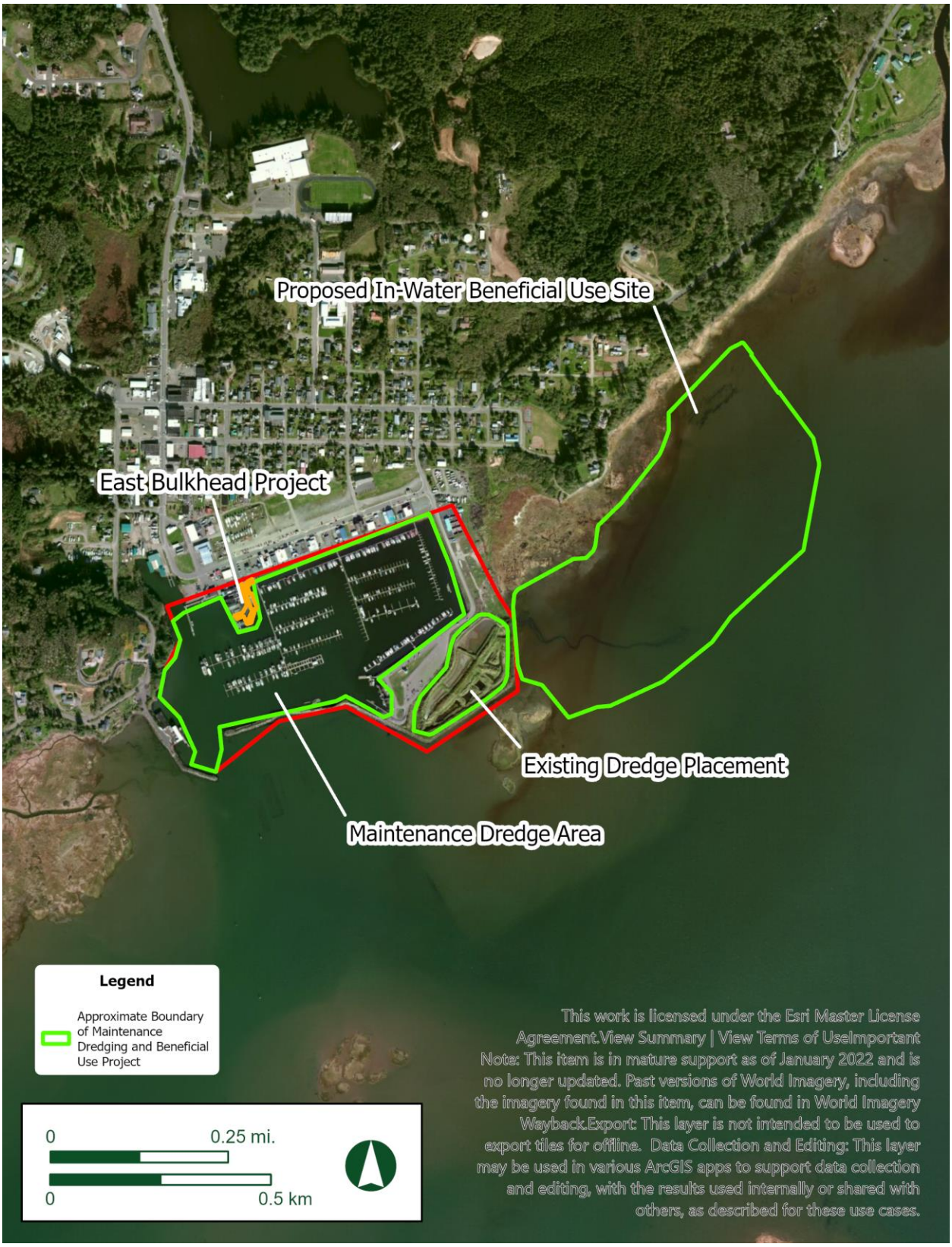

Figure 2. Modern aerial depicting the study area (in red) and proposed East Bulkhead replacement and maintenance dredging and beneficial use projects.

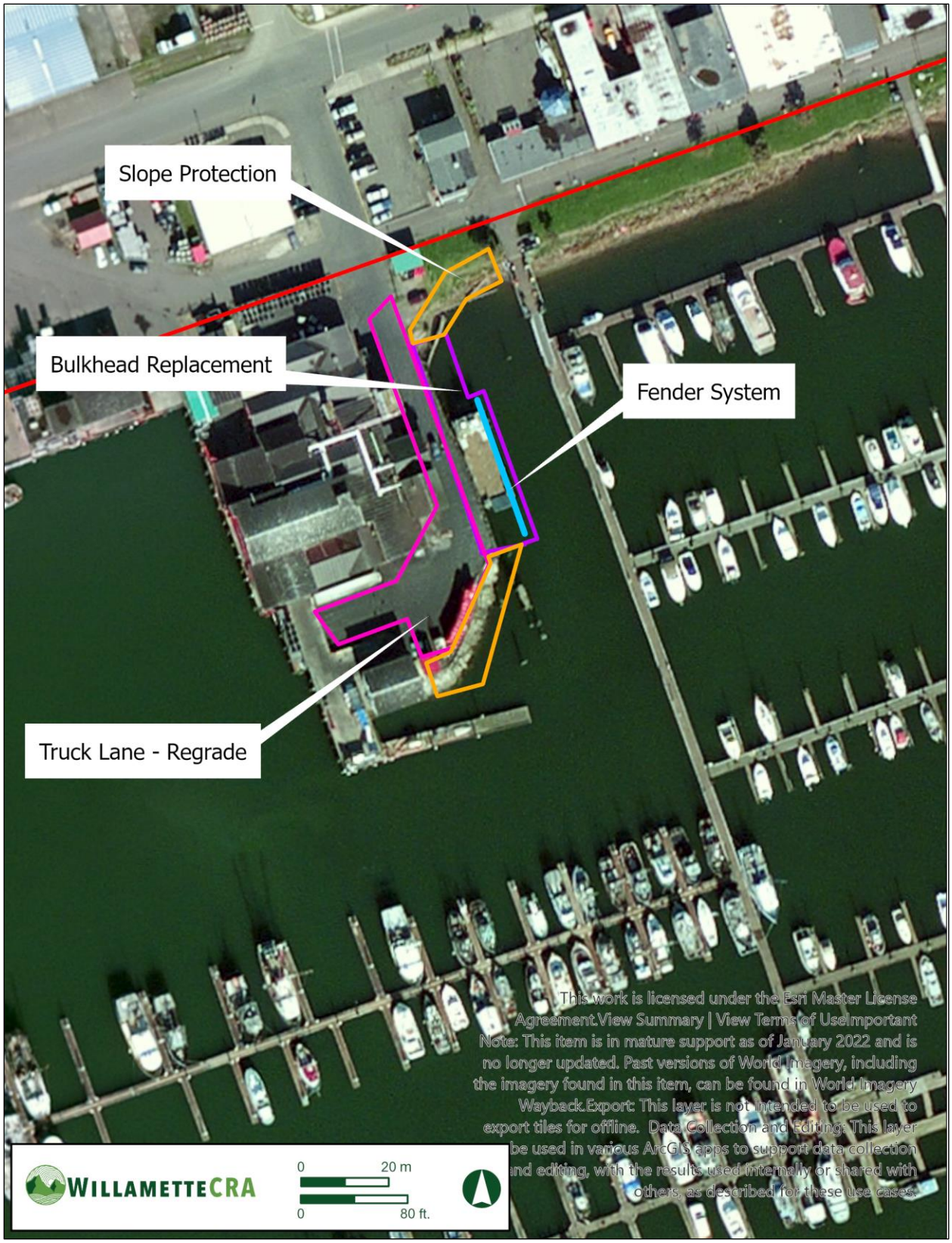

Figure 3. Overview showing proposed East Bulkhead and marine structure replacement elements.

Figure 4. Overview of the East Bulkhead and Safe Coast Seafoods building with visible buckling of the bulkhead and asphalt. View is southwest.

WillametteCRA reviewed documents on file with the Washington Department of Archaeology and Historic Preservation (DAHP) and the Oregon State Historic Preservation Office (SHPO) to determine if archaeological resources have been recorded in the project vicinity, and to identify any previous archaeological studies in the area. WillametteCRA staff also examined copies of historical maps and records to assess the potential for historic-period archaeological resources in the project vicinity. We also reviewed a collection of historic photographs and newspaper articles related to the Port at the Columbia Pacific Heritage Museum in Ilwaco. WillametteCRA archaeologist Breanne Taylor conducted a reconnaissance-level assessment of the current study area and archival research on April 27, 2022. Architectural historian Adam Alsobrook conducted an aboveground resource survey, formally documenting the East Bulkhead on June 10, 2022. An Historic Property Inventory (HPI) form was completed for the East Bulkhead (Appendix). We recommend no additional investigations for the projects.

This report details the results of the cultural resources assessment conducted by WillametteCRA. We adhered to the methods and standards required by federal oversight pursuant to Section 106 of the NHPA.

Figure 5. Overview of the shoreline/slope between the East Bulkhead and the West Pier. View facing west.

Environmental and Cultural Setting

Environmental Setting

At a high level, the study area is located in the Coast Range physiographic province. The hilly topography of surrounding landforms are the result of uplifted Miocene-age basalts and sedimentary deposits that date to the Plio-Pleistocene (Franklin and Dyrness 1988). The uplifting and subsequent erosion created the steep slopes and narrow ridges that are characteristic of the Coast Range.

The study area is in the *Picea sitchensis* (Sitka spruce) vegetation zone. This is a narrow zone below 150 m in elevation along the Oregon and Washington coasts. Areas closer to the mouths of rivers are mainly marshlands, while upriver communities are composed of dense, tall shrub communities with scattered Sitka spruce. Other trees in this zone include red alder, black cottonwood, and willow. Sitka spruce is the characteristic tree species of tideland areas and has been referred to as “tideland spruce” since its discovery (Franklin and Dyrness 1988:296). Sprawling Sitka spruce and dense shrubs border tidal flats and channels all along the Oregon and Washington coasts (Franklin and Dyrness 1988:294–296).

Soils in the study area consist of Palix silt loam, cool, 8 to 30 percent slopes across the western and eastern margins of the study area where native soils are present. Palix silt loam is found on coastal headlands, and the typical profile consists of medial silt loam to a depth of 18 inches (in.), overlying 28 in. of medial silty clay loam, over 4 in. of weathered bedrock. These soils typically form in colluvium derived from siltstone subject to wind and wave action. Palix soils are moderately shallow, very well drained silt loam over paralithic bedrock. They are present in tidal areas along the Columbia River and its major tributaries. Infilled and built-up areas in the study area consist of Udorthents, or sandy and loamy river dredging on tidal flats. A typical profile is 60 in. of moderately well drained sandy loam (National Resource Conservation Service [NRCS] 2022).

The study area lies on the north side of the Columbia River, just inside Cape Disappointment and west of the Wallacut River. It is along the north shore of Baker Bay. Given the active hydrogeology of this location and the placement of dredge materials, the general area is relatively low and supports predominantly grass-shrub vegetation including invasives like scotch broom in the few areas that are not built up as an active marina. Much of the area in the southeastern portion of the study area consists of an existing dredge placement berm (Figures 6 and 7).

Early Historic Depictions of the General Study Area

Although several explorers visited the mouth of the Columbia River during the late 1700s, including Captain Robert Gray who passed the Columbia Bar and traveled 20 miles (mi.) upriver in 1792, the first sustained non-Native presence occurred when Lewis and Clark’s Corps of

Figure 6. Overview of existing dredge placement berm from the Ilwaco Boat Launch parking area. Baker Bay to the right. View facing east.

Figure 7. Overview on top of dredge placement at southeastern end of study area. View facing east.

Discovery moved through the lower stretch of the Columbia, staying ten days at their “Station Camp” at the Chinookan village qíq’ayaqilxam in the present-day location of McGowan. Their journals provide detailed descriptions of the area’s topography, wildlife, and Native Peoples in the early 1800s.

Between November 15 and 25, 1805, the Corps of Discovery traveled through Baker Bay between McGowan and Cape Disappointment in Pacific County. On the 17th of November, Captain William Clark noted the return of Meriwether Lewis to Station Camp. Lewis and a party of Chinookan Peoples had gone ahead to scout Cape Disappointment and the Pacific Coast. Clark remarked in his journals that, “Several Chinnook Indians followed Capt L – and a Canoe came up with roots mats &c to Sell. those Chinooks made us a present of a rute boiled much resembling the common liquorice in taste and Size.” (Moulton 1990:61).

On November 19, 1805, Captain Clark wrote,

> “after takeing a Sumptious brackfast of venison which was rosted on Stiks exposed to the fire, I proceeded on through ruged Country of high hills and Steep hollers on a course from the Cape (Disappointment) N 20° W. 5 miles on a Direct line to the Commencement of a Sandy Coast (Long Beach Peninsula) which extended N. 10° W. from the top of the hill above the Sand Shore to a Point of high land distant near 20 miles. this point I have taken the Liberty of Calling after my particular friend Lewis— at the commencement of this Sand beech the high lands leave the Sea coast in a Direction to Chinnook river (and does not touch the Sea Coast again (until) below point Lewis leaveing a low pondey countrey, maney places open with small ponds in which there is great numbr. of fowl. I am informed that the Chinnook Nation inhabit this low countrey and live in large wood houses on a river which passes through this bottom Parrilal to the Sea coast and falls into the Bay” [Moulton 1990:69–70]

Another land description of the study area comes from the notes of surveyors with the General Land Office (GLO) in 1858. Surveyors described the current study area as, “Level along the bank between Sections 35 and 36 and a portion of 34 to the left bank of the Walicot (sic) River all mostly prairie with some scattering Alder, Willows, etc. Soil 2nd rate. Balance in Sections 33 and 34 banks some broken. Soil good 2nd rate, timbered with Hemlock and Spruce, undergrowth Sallal (sic)” (Reed 1858:29).

Twentieth Century Landform Modification

Prior to the development of the Port’s mooring basin during the 1940s and 1950s, the landform shifted substantially due to strong currents at the mouth of the Columbia, erosion, and dredging. Most notably, the shoreline would have been significantly north of the current study area and present-day waterfront. Several streets and street segments were built during the 1970s. The area underneath First Ave S, Jessie’s Drive, Howerton Way SE, Pearl Ave SE, Howerton Ave, and Waterfront Way would have been filled and built up. The current area is not consistent with

the original shoreline. By the turn of the twentieth century, two piers were built into Baker Bay from the Ilwaco shoreline. These would have been within the current study area. One served as the trestle for the Ilwaco Railway and Navigation Company line. The POI was officially opened in 1930. The construction of the mooring basin and associated developments followed in 1946. These activities reshaped the current study area through dredging and infilling.

Archaeological Context

The last 6,000 years of Northwest Coast prehistory saw dramatic changes in Native lifeways, including increased populations and density, and the appearance of different settlement patterns hinged on winter sedentism and increased logistical mobility. These changes were largely enabled by development of complex food storage technology, resource diversification and intensification, and increased social complexity (Ames 1994; Ames and Maschner 1999).

There is little to no evidence of human presence at the mouth of the Columbia from the Archaic Period (circa [ca.] 11,000–5500 B.P.) or before (Clovis or other first inhabitants of the continent). This is likely due to rising sea levels that have submerged the earliest sites combined with sedimentation in near-river settings. Assemblages from sites of this age in the region contain stemmed or large leaf-shaped points often dubbed Cascade points and like those found along Young's River at Astoria. Sites farther upstream at The Dalles contain evidence of intensive salmon harvesting as early as 9000 B.P., indicating that people of that time were well accustomed to the riverine environment offered at this location (Ames and Maschner 1999).

The Early Pacific Period (ca. 5500–3500 B.P.) was characterized by a cooler and moister climate, and sea level was still low along Washington and Oregon (Ames and Maschner 1999). Early Pacific sites are relatively rare along the lower Columbia River but are found more frequently to the north. Assemblages often contain broad-necked, large stemmed, and side-notched points. Bone and antler tools increase dramatically in frequency, ground stone appears, and microblades disappear. Resource use was diverse, suggesting a broad-spectrum diet, and few special purpose camps are evident. Storage was likely practiced in a limited fashion throughout the Early Pacific, but it did not become widespread until around 3,500 years ago (Ames and Maschner 1999). No evidence for plank houses dating to the Early Pacific has been found.

By the beginning of the Middle Pacific period (ca. 3500–1500 B.P.) modern climatic conditions were in place and sea level approached current elevations. The basic economic and technological traits observed at historic contact are often found (Wessen 1983). Square or rectangular plank houses and villages appear elsewhere on the coast after about 3,500 B.P., although the earliest houses in the Portland Basin-Lower Columbia are about 2,000 years old (Ames 1994).

Most investigated sites in the region generally and the Lower Columbia specifically, date to after about 1,500 years ago, the Late Pacific period (ca. 1500–100 B.P.). Site frequency increased

dramatically, particularly on the lowlands (Ames 1994; Wessen 1983). Assemblages are diverse and contain small, triangular-shaped, narrow-stemmed projectile points. Several Late Pacific period sites in the Portland Basin have been investigated in some manner, with the best-known examples dating to the past 800 years, including Meier and Cathlapotle sites.

Native Peoples

Based on historical accounts and ethnographic data, present-day Ilwaco and the land along the lower Columbia River is within the traditional homeland of the Chinookan peoples, specifically the Lower Chinook (Silverstein 1990:533), today represented by the Chinook Nation of Baycenter, Washington, the Confederated Tribes of Grand Ronde, the Siletz Tribe of Indians, and the Cowlitz Indian Tribe (Boyd and Ames 2013). At the time of European American contact, various Chinookan-speaking groups occupied the Columbia River valley from The Dalles to the Pacific Ocean. Ethnographers today differentiate the Chinook primarily on linguistic variation. Speakers of the Lower Chinookan language included the Clatsop and Chinook proper, who lived around the mouth of the Columbia River; the Clatsop resided on the southern shore, and the Chinook proper were to the north. Upper Chinookan speakers occupied the neighboring upriver areas (Silverstein 1990:533–535). The link to their homeland is manifested in traditional stories, explaining the existence of the landscape (Ellis 2013:42).

Ethnographic or academic descriptions of the Chinook people began in the early 1900s (Curtis ca. 1910a, 1910b; Farrand ca. 1905; French and French 1998; Hajda 1984; Harrington 1909; Hodge 1971; Jacobs 1929–30; Ray 1938). We also reviewed the unpublished ethnographic field notes of John Peabody Harrington, an anthropologist and linguist who conducted fieldwork from 1942 to 1943 with Salish and Chinook-speaking people throughout southwest Washington. Ethnographic accounts from this period provide a useful reference for understanding certain aspects of traditional lifeways but should be interpreted as biased and potentially inaccurate due to the period, racial relations, and the power dynamics inherent in ethnographic research.

Lower Chinook Traditional Economy

Ties of kinship through “blood” and marriage usually defined where individuals lived and rights of access to resource locations. As individuals often married outside their home villages, most families had networks of relationships that crossed both linguistic and cultural boundaries. While salmon was the primary staple, other fish were also harvested, using a variety of methods, including weirs, nets, and seines, as well as spear and gaff-and-hook. People also hunted game and waterfowl among the numerous marshes, lakes, and streams in surrounding low-lying areas and collected roots such as wapato, fruits, and berries (Silverstein 1990:536). The traditional significance of the cultural plants and animals are well rooted within the customs, beliefs, and practices of the Tribes and evident through traditional patterns of land use, which see little distinction between natural and cultural resources, and marked by “an elaborate preparation” that “characterized the first Chinook salmon ceremony” (Silverstein 1990:536).

Place Names in Study Area

Places with American Indian language names demonstrate Tribal presence, as testaments to Tribal history and culture and show the connection between the Tribal community and their homelands. The retention of place names in Native languages can be associated with family oral histories (Duffy and Feeney 2000:31) and Tribal traditional stories (Hunn et al. 2015). Place names can describe resources in the area, relationships with the land, and the experiences of the people with the land. Place names have special meaning to the people that live in the vicinity of these traditional use sites (Hanes and Hansis 1995:3). A place name contains a wealth of historical and ecological information and illustrates the dependence on the land and the resources contained on the land by the Indigenous people (Hunn 1990). Named places can be historic properties of religious and cultural significance to the Tribal communities. Following is a sample of American Indian language place names readily available through literature review and archival research. This is intended as a sample and by no means to be exhaustive.

There are at least three named village sites on the shores of Baker Bay shown on Figure 8 and Table 1 below (Ellis 2013; Zenk et al. 2016:8). Number 12, wíitčutk ‘road coming down’ (Chinookan) or núʔsqʷəlx̣ʷɬ, núʔsqʷəlʼəx̣ʷšəwʼɬ ‘where the trail comes out’ (Salishan) would have been the closest to our current study area. The Chinook (cʼinúk, činúkʷ) village, wíitčutk would have been part of a network of riverfront villages inhabited during the spring and summer months, and largely vacant in the winter months, when families would relocate to inland winter villages. The villages that lined Baker Bay would have been geographically separated but connected as part of a large social community in the region that included fishing locales, plant harvesting areas, and burial grounds. They were linked to the Pacific Ocean and use sites at Cape Disappointment by a well-traveled Chinookan trail (Deur 2016:12, 22). In 1850, Edward Curtis indicated that the village wíitčutk held 15 houses (Ellis 2013:7–8).

Table 1. Place Names in the Study Area Vicinity.

Map Number	Name	Meaning	Reference
12	wíitčutk	‘road coming down’ (Chinookan)	Ellis 2013:8
	núʔsqʷəlx̣ʷɬ, núʔsqʷəlʼəx̣ʷšəwʼɬ	‘where the trail comes out’ (Salishan)	Ellis 2013:8
13	cʼinúk	(Local Salishan)	Pedestrian Survey and Shovel Probes
	činúkʷ, čtčinúkʷ	(Local Salishan)	Ellis 2013:8
14	qíqʼayaqilxam	‘middle town’ (Chinookan)	Ellis 2013:9
	kʷacámcʼ	‘in the middle’ (Salishan)	Ellis 2013:9

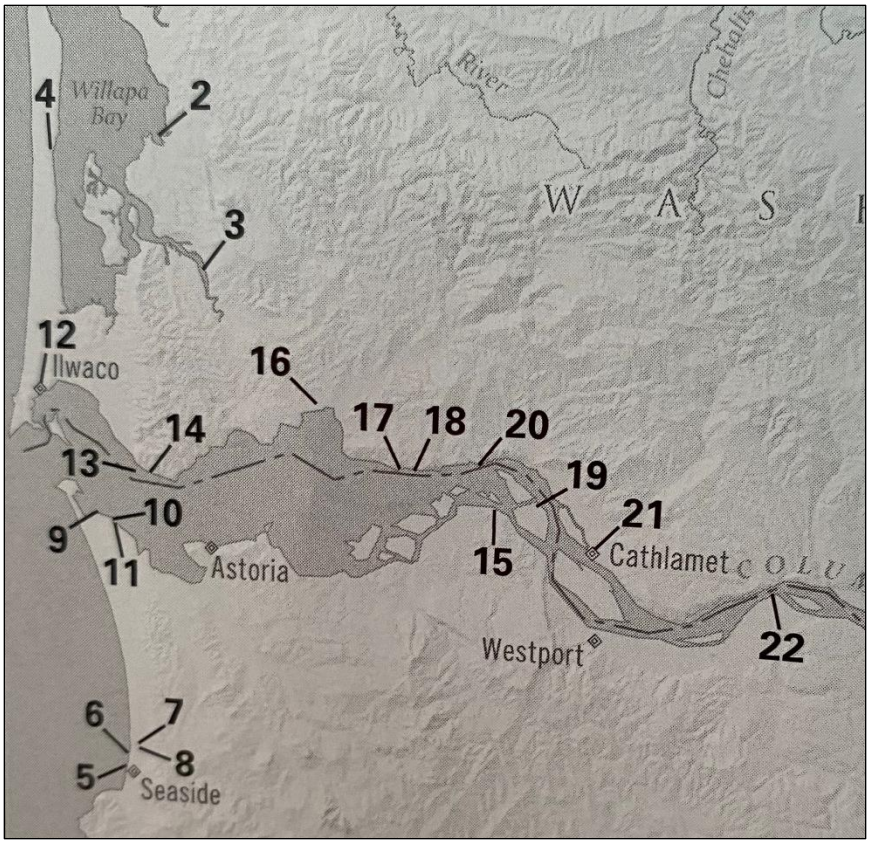

Figure 8. Village place names in the study area vicinity (Zenk et al. 2016:Figure 1).

Historic Era to the Present

By the 1840s the character of the Native settlements throughout the lower Columbia River drainage had been radically altered by epidemics of introduced European diseases. A smallpox epidemic is known to have struck the lower Columbia region in the 1770s and is estimated to have killed about a third of the Native population. Native peoples experienced periodic outbreaks of smallpox and possibly other introduced diseases such as measles through the 1860s. At the time of contact between Native peoples of the lower Columbia and Lewis and Clark's Corps of Discovery, populations had already dwindled considerably. Native peoples who lived at or near the mouth of the Columbia River would have been especially vulnerable as the first groups encountered by the ships of explorers and navigators in the 1700s (Deur 2016:22). For the people of the region, the most devastating epidemic was an outbreak of malaria in the 1830s. This epidemic devastated the Native communities of the lower Columbia region, destroying entire villages in a matter of days or weeks and eventually spreading east of the Cascade Range and south to northern California (Boyd 1990:146–147, 1999:233–238).

The Native population of the Willamette Valley and the lower Columbia River was reduced by 75 to 90% or higher. Boyd (1999:Table 3) has estimated that Cathlamet, Multnomah, Clackamas,

and Cascades populations declined from about 12,000 in around 1800 to 300 by the 1850s (a population loss of almost 98%). These statistics coldly demonstrate what was undoubtedly a terrifying and devastating experience for the people struck by the disease. The oral tradition of the effects of the epidemic continued until at least the 1930s among some of the groups affected.

Further devastation followed with the establishment of reservations and unratified treaty negotiations during the 1850s. The insistence by the federal government to 'clear title' for permanent white settlement and resource extraction led to a series of 1851 treaties at Tansey Point with the Tribes of the lower Columbia. During these meetings, the Lower Chinook were allowed to stay on their lands north of the Columbia as "de facto reservations," however the treaties were never ratified, and the Tribal status of the Chinook was not recognized. This resulted in the increased displacement of Native peoples by white settlers who claimed traditional lands under federal land legislation during the 1850s and 1860s.

In 1866, the Shoalwater Bay reservation was created, though by then some Chinook had relocated to the Grand Ronde and Siletz reservations in Oregon, and to the Chehalis and Cowlitz reservations in Washington (Fisher and Jette 2013:292). The many Chinook people who stayed in their homeland rather than going to one of the reservations, were briefly recognized by the federal government from 2001 to 2002 (Fisher and Jette 2013:288–306) and now represent five separate groups of Chinook people; the Lower Chinook, Clatsop, Wahkiakum, Kathlamet and Willapa (Chinook Indian Nation 2022). Federal Acknowledgement was granted to the Chinook Indian Nation in 2001 but revered by President George W. Bush a mere 18 months later. The reversal was due in part to the objection of Federal status by neighboring Tribes over territorial rights (Chinook Indian Nation 2022; Smith 2021). It is important to note that the Shoalwater Bay are a Federally recognized Tribe, while the Chinook Nation is not, though many of the members of both share common ancestors and are therefore related.

The Chinook people who enrolled with other federally recognized Tribes in Oregon also suffered termination. By 1947, the United States government concluded that there was no longer a need for federal support, indicating that the people on the reservations had been fully "assimilated." In 1954, the Grand Ronde Reservation was terminated by the United States Government and the Siletz in 1955. Those who wanted to stay on reservation lands allotted to them under the 1887 Dawes Act were forced to purchase it from the government. In 1974, the Tribes of the Grand Ronde Reservation were reorganized as The Confederated Tribes of the Grand Ronde. In 1977 Congress restored the Siletz Tribe, and in 1983, the Grand Ronde Tribes (The Confederated Tribes of the Grand Ronde 2022; Wilkinson 2010). For the people whose traditional homeland includes the study area, the connection to the land has never ceased or been lost, despite removal to reservation.

Tribal use of the area stretches back to time immemorial and extends across a much larger area than the current projects, all of which is traditionally significant to its original inhabitants, as it

was to their ancestors, and to their descendants. The Tribal worldview is one of interconnected entities, and traditional use does not take place in discrete, unconnected areas. Tribal members often perceive the entire landscape as one interconnected entity, and can seamlessly incorporate oral history with natural features, resource use, and spirituality. The individual places to which they traveled to hunt, fish, gather, or engage in other cultural activities were and still are interdependent (Stoffle et al. 1997:231). While the traditions of going to some of these areas may have been disrupted, Indian people may have an oral history of the events that occurred in these areas. Tribal use of the land, as many aspects of the traditional economy of hunting, fishing, and gathering, may not have left easily identifiable physical manifestation on the land (i.e., archaeological sites). Neither do named places, geographic points significant in oral histories and creation stories, or places where cultural activities may have taken place. These can only be identified through knowledge of Tribal culture.

Historic Background and Map Review

The first documented non-Native in the study area vicinity was the Spanish Explorer Bruno de Hezeta, who identified the mouth of the Columbia River from the Pacific Ocean in 1775 but was unable to cross the bar into the lower stretches of the river. Hezeta named the area Cabo San Roque. In 1788, John Meares renamed the area Cape Disappointment when he failed to find the Columbia River, not recognizing the outlet as a major waterway. Meares identified the mouth of the Columbia and Baker Bay, noting,

> "…a large bay, as we had imagined, opened to our view, that bore a very promising appearance and into which we steered with encouraging expectation…As we steered in, the water shoaled to nine, eight, and seven fathoms, when the breakers were seen from the deck, right a-head; and, from the mast-head, they were observed to extend across the bay. We therefore hauled out…The name of Cape Disappointment was given to the promontory, and the bay obtained the title of Deception Bay…We can now with safety assert, that there is no such river as that of Saint Roc [San Roque] exists, as laid down in the Spanish charts" [Lamb 1984:497]

In April of 1792, The Voyage of Discovery, led by Captain George Vancouver, passed this stretch of the Pacific coastline. Vancouver noted Meares' Cape Disappointment and Disappointment Bay, while also failing to identify the greater Columbia River. Captain Vancouver did not consider the "bay" worth additional exploration. Likely dissuaded by the constraints of time and the dangerous conditions of the Columbia River bar, he continued to map the coastline to the north (Lamb 1984:497–498).

In May of 1792 (the following month), Captain Robert Gray explored the lower Columbia River, naming it after his ship the *Columbia Rediviva*. Gray was the first to cross the treacherous river bar, and he traveled approximately 20 mi. upriver (Howay 1969). In the fall of 1792, Vancouver

and the Voyage of Discovery returned to the area. Lieutenant William Broughton was the first person to measure the depth of waters at the mouth of the Columbia River (Vancouver and Broughton 1798:71).

In November of 1805 the peoples of qíqʾayaqilxam were met by members of the Corps of Discovery when Lewis and Clark established their lower Columbia River base camp at Middle Village. This “Station Camp” became the jumping off point for overland excursions to the Pacific. The Corps spent a total of 10 days here. Extensive archaeological work has been conducted at the site (45PC106) and the area is part of the Lewis and Clark National Historical Park (Wilson et al. 2009). Between November 15 and 25 of 1805, Lewis and Clark camped at this location near Chinook Point, “Miles to a point of a low bottom on the Stard. Side (where we Encamped 10 days in a narrow bottom Slashey in full view of the Ocian) passed a Small Creek at 1 mile an old Chin nook Village of 36 houses at 1 ½ miles a butifull Sand beech and narrow bottom below the Creek on Stard.” (Moulton 1990:59).

During their stay in November, the village qíqʾayaqilxam was largely empty, and the Expedition assumed that the inhabitants were either away hunting or relocated to winter houses at present-day Willapa Bay (McDonald 1989:24). Lower Columbia village populations did vary seasonally, and populations relocated to inland sites for the winter (Zenk et al. 2016:18). Between Lewis and Clark’s exploration of the lower Columbia and the decline of the fur trade in the 1830s, Baker Bay was visited repeatedly by British and American fur ships. In 1806, the Russian ship, *Juno*, made it to the mouth of the Columbia River to establish a settlement on the river, but was unable to breach the river bar (McDonald 1989:25). The fur trade in this part of the Columbia River was supported by the establishment of Fort Astoria on the south side of the river in 1811. The fort was built by John Jacob Astor’s Pacific Fur Company and became the first American establishment on the west coast. In 1813, the fort was purchased by the North West Company (NWC), a Canadian outfit that renamed the post Fort George. In 1821, the Hudson’s Bay Company (HBC) subsumed NWC, eventually operating the fort as a satellite of Fort Vancouver, upriver (McDonald 1989:30–32).

One of the earliest non-Natives to permanently settle in the Ilwaco area was a Black Peruvian man named James DeSaule (commonly referred to as Sanler or Saule). In 1841, DeSaule was working as a cook onboard the Wilkes Expedition’s vessel, the U.S.S. *Peacock* when it capsized off Cape Disappointment. All the *Peacock’s* crew survived the wreck, and the Wilkes Expedition returned two years later to continue charting the lower Columbia. DeSaule stayed behind, first working in a kitchen in Astoria and eventually building a house at Cape Disappointment and founding a freight service based in Ilwaco (Deur 2016:81–82; Hardina 2020; McDonald 1989:34–36). When British Lieutenants were sent to map the Cape for the development of a potential battery, they found DeSaule already established there. The efforts of the Wilkes Expedition to map and chart the mouth of the Columbia and the lower reaches of the river were

hailed as a national, scientific success and served as a catalyst for American dominance, treaty negotiations and westward expansion, in a region previously presided over by the British HBC.

By the 1840s, large numbers of settlers were flooding into the Willamette Valley via the Oregon Trail. Fueled by Manifest Destiny and federal land legislation that supported the Doctrine of Discovery, a massive land grab began in earnest under acts like the Donation Land Act of 1850 and the Homestead Act of 1862. This extended to the Pacific Coast by the late 1840s. The Donation Land Act allowed for married couples who settled in the west by 1850 to claim up to 640 acres to settle and improve. This included the current study area which was claimed by James and Rachel Holman and James and Jane Johnson, who both acquired portions of Section 33. The Johnsons would have also owned the portion of the study area within Section 34 (Bureau of Land Management [BLM] 2022). The Johnsons' house is depicted on the 1859 GLO map of Township 10 North, Range 11 West, approximately 82 m north of the study area (Figure 9). This would have been the closest development to the study area at the time (GLO 1859). James Johnson was a Scottish boat captain employed by the HBC. He lived at the Ilwaco Townsite by 1848. He worked as a bar pilot at the mouth of the Columbia and was married to a Chinookan woman at Fort George. Her name is listed on their Donation Land Claim simply as "Jane," but her given name was Comtia Koholwish (BLM 2022; McChesney et al. 2002:50, photograph; McDonald 1989:40–42).

Following the death of James Johnson, the property and house was sold to Isaac Whealdon, who became postmaster, with the house serving as the first Post Office of Ilwaco, which was then known as "Unity" (McDonald 1989:83-84). In 1870, a formal stage route was built between Unity and Oysterville and a dock was built at the Ilwaco port in 1874 (McDonald 1989:83–84).

U.S. Coast and Geodetic Survey (USC&GS) maps from the 1850s depict an undeveloped Ilwaco and the shoals of Baker Bay with alternating hard and soft sands. Leading in Bluff is shown to the east and Cape Disappointment to the west is mapped with the alternate name Cape Hancock (USC&GS 1851, 1854). In 1862, a garrison was established at Cape Disappointment to protect the entrance to the Columbia from Confederate troops and foreign entities. The following year, Fort Stevens was established on the southern side of the river mouth. In 1864, the fort was renamed Fort Cape Disappointment and again in 1875 to Fort Canby.

By 1870, four houses and one unoccupied building or warehouse are depicted on a USC&GS map, approximately 210 m north of the current study area, off the historic shoreline of Ilwaco. informal road networks connected these structures to the hills above (Figure 10; USC&GS 1870, 1874). Additionally, several houses and associated agricultural fields are shown to the east, in the flats around the Wallacut River (see Figure 9). By this time, the lighthouse at Cape Disappointment was mapped (USC&GS 1870).

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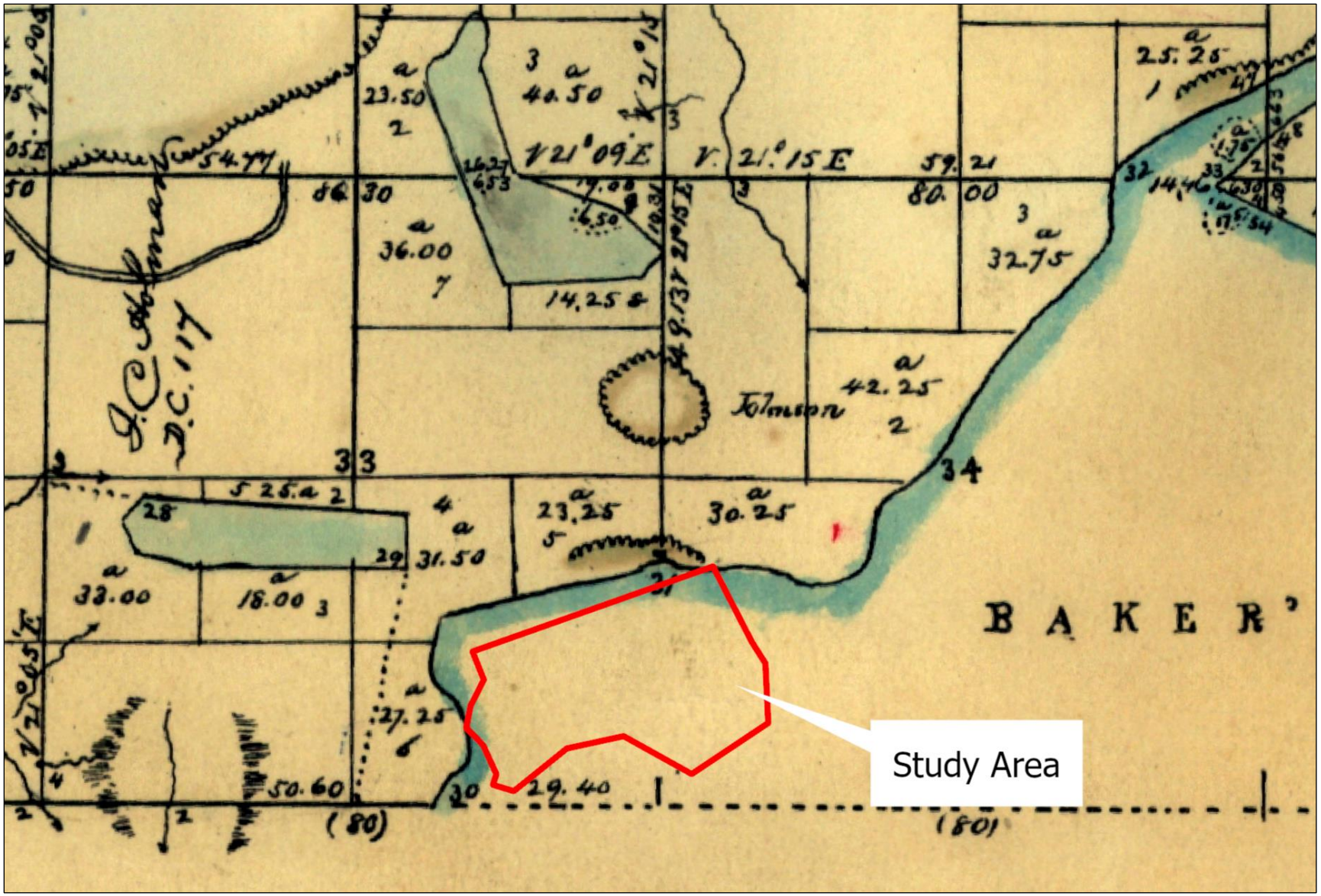

Figure 9. Study area depicted on 1859 GLO map of T10N, R11W. The Johnsons' house is shown on the shore.

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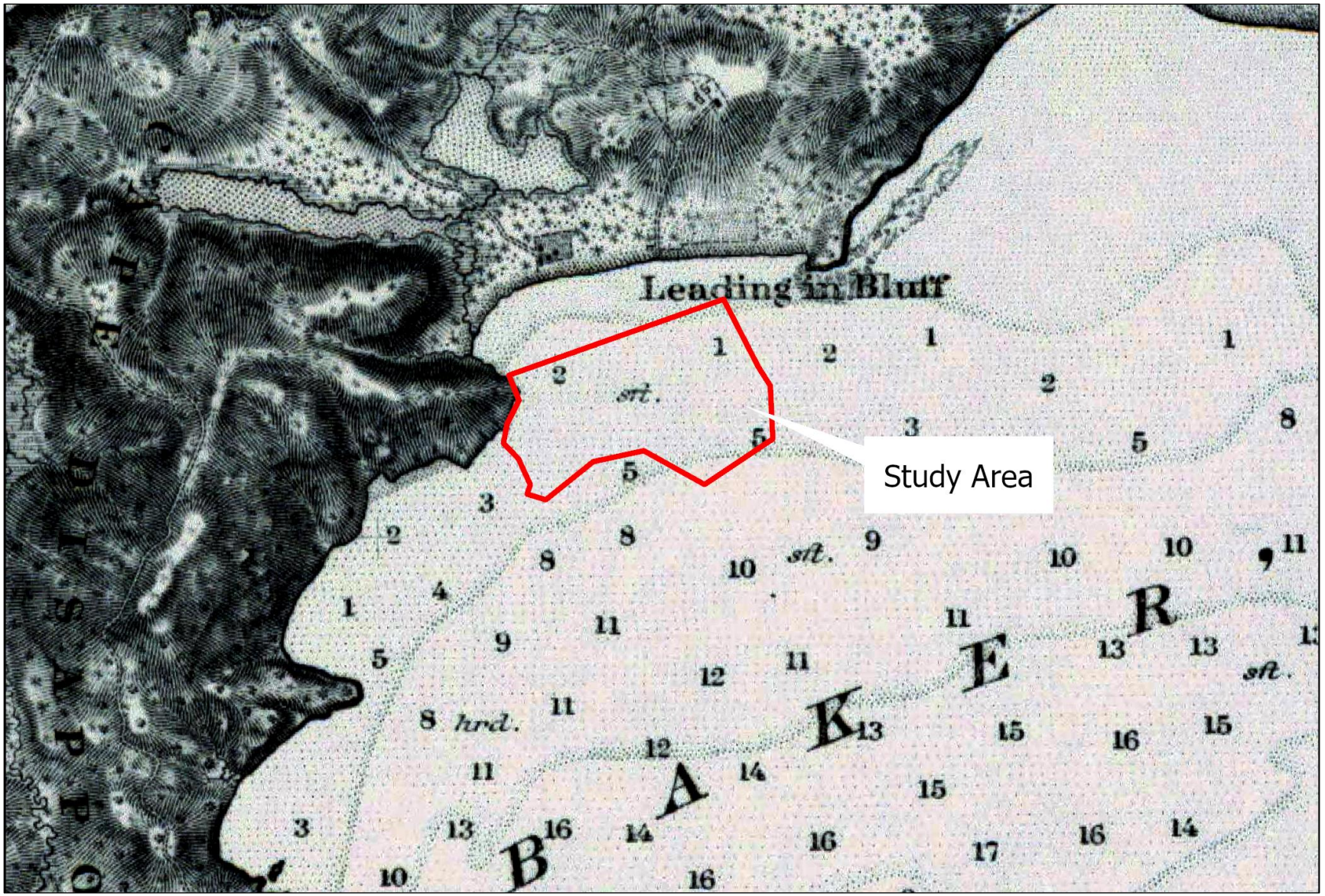

Figure 10. Study area depicted on USC&GS map from 1870.

By the turn of the twentieth century, Ilwaco served as a thriving stopping off point for people traveling to the Long Beach Peninsula and a home for fishermen working in Baker Bay. It offered a hub for travelers taking ferries and stagecoaches from Astoria to the Puget Sound. The town plat was filed in 1876 and Ilwaco was officially incorporated in 1890 (Becker 2012). The 1880s witnessed the prominence of gillnet fishing in Baker Bay. Gillnetters were soon rivaled by fisherman and companies with the means to establish permanent traps. By the turn of the twentieth century, there were hundreds of these traps lining the Bay. An 1881 U.S. Engineers map shows numerous fish traps, from Aberdeen Cannery near Ilwaco to McGowan's Cannery at Chinook Point on the Washington side of the Columbia (USACE 1881). By 1892, the number of seines mapped had nearly tripled (U.S. Commission of Fish and Fisheries 1892). Fish traps made it possible to produce massive yields, causing overfishing in Baker Bay. They were banned by Washington State in 1934 (Becker 2012).

In 1888, the Ilwaco Railway and Navigation Company (IR&NC) railroad was constructed to replace the stage route from Ilwaco to Oysterville. The line ran to Nahcotta, where the water was deeper than Oysterville, from the wharf at Ilwaco (Figure 11). One of the largest exports from the region during this period were oysters; thousands of pounds were shipped to cities like San Francisco. Clams and cranberries were also moved out of the Long Beach Peninsula and Ilwaco by way of the active ports at Astoria (Becker 2012; McDonald 1989:98–100). The IR&NC line, or so-called "Clamshell Railroad" was abandoned in 1930 and Highway 103 was built over it (Becker 2012; McDonald 1989:98–104).

Early Development of the Port of Ilwaco and the Mooring Basin

The original topography of the Long Beach Peninsula to the west and Sand Island to the east protected the waters along the west shore of Baker Bay and provided a sheltered anchorage for mariners to wait out bad weather. The waters in the vicinity were also originally much deeper than today, and early European American settlers Elijah White and James Holman were among the first European American settlers to envision a deep-water seaport on the Long Beach Peninsula (US Coast and Geodetic Survey [USC&GS] 1851; Williams 1924:49).

Lewis Alfred Loomis, an early European American settler of the Long Beach peninsula, was instrumental in developing the earliest vessel docking facilities at Ilwaco. Lewis and his brother Edwin raised sheep on their land claim, which was in the vicinity of present-day Lake Loomis State Park. To address his need for a wharf to handle his outgoing wool, Lewis Alfred Loomis incorporated the Ilwaco Wharf Company in July 1874 (The Oregonian 1913; Williams 1924:55). In 1881, the 135 m long wharf was lengthened to 180 m to reach deeper water farther from shore. The wharf was also widened by 3 m (The Morning Astorian 1881a, 1881b).

By 1901, USC&GS maps show the formal plat of Ilwaco (USC&GS 1901). At this time, the original shoreline was still more than 100 m north of the boundary of the current study area, and two piers had been built out into Baker Bay within the study area bounds. The pier along the

Figure 11. Overview of the Ilwaco Railway and Navigation Company terminus at the Ilwaco Wharf. Photo courtesy of Oregon Historical Society.

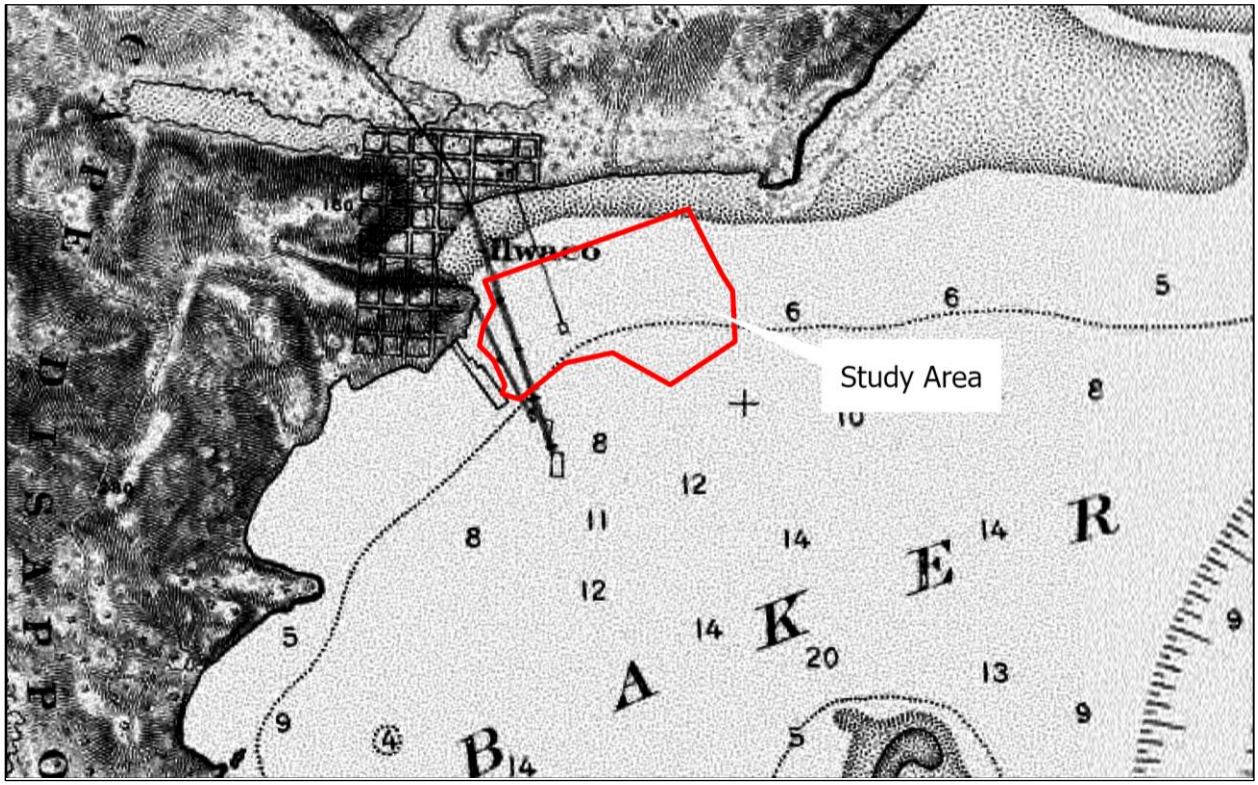

Figure 12. Study area depicted on 1901 USC&GS map, showing railroad trestle and pier.

west boundary of the current study area was the Ilwaco Wharf Company's pier of 1874–1881, which connected the IR&NC line from the Long Beach Peninsula to a landing approximately 760 m into the Bay (Figure 12). The 1901 map shows another parallel pier approximately 90 m east of the IR&NC pier. This east pier extended approximately 210 m into Baker Bay. The 1901 map also depicts the Ilwaco Landing at Robert Gray Drive, just west of the current study area. The IR&NC pier and the present-day Ilwaco Landing served as the terminus for trains and steamboats in the region up until 1908 (McDonald 1989:21).

In the late nineteenth and early twentieth centuries, silt buildup in Baker Bay emerged as a threat to the viability of Ilwaco as a port for deep draft vessels (Ott 2010). In 1889, mariners and river pilots noted that Sand Island had shifted to the north by roughly 2 mi. since about 1869. The movement of Sand Island caused Baker Bay to fill with silt, and the pilots grew concerned that Ilwaco would soon be inaccessible by ship (North Pacific History Company 1889:103). The first major dredging project in Baker Bay occurred in 1913 when a channel was established between Ilwaco and the western tip of Sand Island (The Oregon Daily Journal 1913).

By 1929, the section of the IR&NC pier between the Ilwaco Mill & Lumber Company and the former IR&NC freight dock and car barn on a platform over Baker Bay had been removed (Sanborn 1909, 1929). By that same year, the pier east of the IR&NC pier had become home to the Pioneer Packing Company Clam & Fish Cannery (Sanborn 1909, 1929). The pier was about 6 m wide and originated at a point approximately 75 m east of the present-day intersection of Eagle Street SW and First Avenue S and extended approximately 180 m out to the platform that supported the cannery buildings. This platform measured approximately 30 m by 75 m, with the long axis of the platform roughly aligned in a south-southeast / north-northwest direction. The east pier extended approximately 150 m to180 m beyond the Pioneer Packing Company platform and then turned 90 degrees westward and connected with the platform supporting the J.P. McGowan & Sons Fish Cannery. Overall, the east pier extended approximately 425 m into Baker Bay (Sanborn 1929).

In 1911, Washington State passed the Port District Act which made ports public. This laid the groundwork for the formation of the POI and funding for its dredging and improvement projects, including the construction of a publicly accessible dock. In 1928 voters approved the development plans for the POI and two years later the Port was opened (The Oregonian 1930; Ott 2010). The newly created port soon received federal assistance in making navigation improvements, and in 1932 the USACE approved a plan to construct a new 60 m wide, 3 m deep channel north of Sand Island (The Oregonian 1932, 1938; USC&GS 1948). However, this channel was not officially completed until 1938 (The Oregonian 1938; USC&GS 1948).

Development of the Port of Ilwaco Mooring Basin

Plans for new port facilities at Ilwaco were first announced in November 1946 (The Oregonian 1946). The project plans included a mooring basin and breakwater to accommodate more

fishing fleets and improve storm protection. The Port could house up to 50 fishing boats in 1946, and the proposed project included mooring space for 300 additional boats (The Oregonian 1946; Port of Ilwaco 1946). The mooring basin and channel were to be dredged to a depth of 15 ft. (4.5 m). Dredging maintenance would be completed annually with the materials deposited in an area southeast of the breakwater (Port of Ilwaco 1946).

Construction on the mooring basin did not begin until 1957 (The Oregonian 1957a, 1957b; USGS 1956). The original shoreline was still present in 1950 and marked on a *Metsker Atlas of Pacific County* as, “First Rate Tidelands” (Metsker Maps 1950). At this time, the shoreline was located north of the study area, just south of Lake Street SE and Main Street SE (Figures 13 and 14). Dredge materials were placed at the waterfront edge, thus beginning the infill of lots along present-day Howerton Avenue and Waterfront Way (Ott 2010). The 1946 mooring basin plans called for the construction of a timber pile and stone bulkhead along the north boundary of the mooring basin, which coincides with the north extent of the current study area. However, it appears that this bulkhead was not constructed as planned (USGS 1971).

The new 500-boat mooring basin was dedicated in 1959 (The Oregonian 1959). The 1959 nautical chart for Baker Bay shows the breakwater and approximate areas covered by dredge materials to the north of the mooring basin (USGS 1956). The present-day shoreline along the north extent of the current study area is situated approximately 150 m to 180 m out from the original shoreline. This area was continually infilled and built upon with several roads, including Howerton Avenue and Waterfront Way during the 1970s, and this transition is shown on topographical maps from the mid-century (Figures 15 and 16; USGS 1949, 1951, 1955, 1957, 1963, 1974, 1977, 1980).

The new mooring basin proved extremely popular and in May 1961 plans were announced to expand the moorage to accommodate 300 more boats (The Oregonian 1961). These plans were scaled back slightly, and in October 1962, the POI applied for a permit to dredge the mud banks within the moorage breakwater and build berths for an additional 180 boats (The Oregonian 1962).

In March 1965, the USACE announced plans to construct a new breakwater across the Holman waterway west and south of the mooring basin. Plans included cutting off the existing pier (formerly the home of the Pioneer Packing Company cannery) to accommodate the new breakwater, which would also create moorage space for additional boats (The Oregonian 1965). Aerial photographs indicate that this work was underway by 1971 (USGS 1969, 1971).

Figure 13. Aerial photograph of the proposed Ilwaco Mooring Basin, showing original shoreline. Wavy lines delineate infill and current extent. Photo courtesy of Columbia Pacific Heritage Museum. View is northwest.

Figure 14. Overview of the study area in 1946, prior to mooring basin construction. View facing west. Courtesy of Columbia Pacific Heritage Museum.

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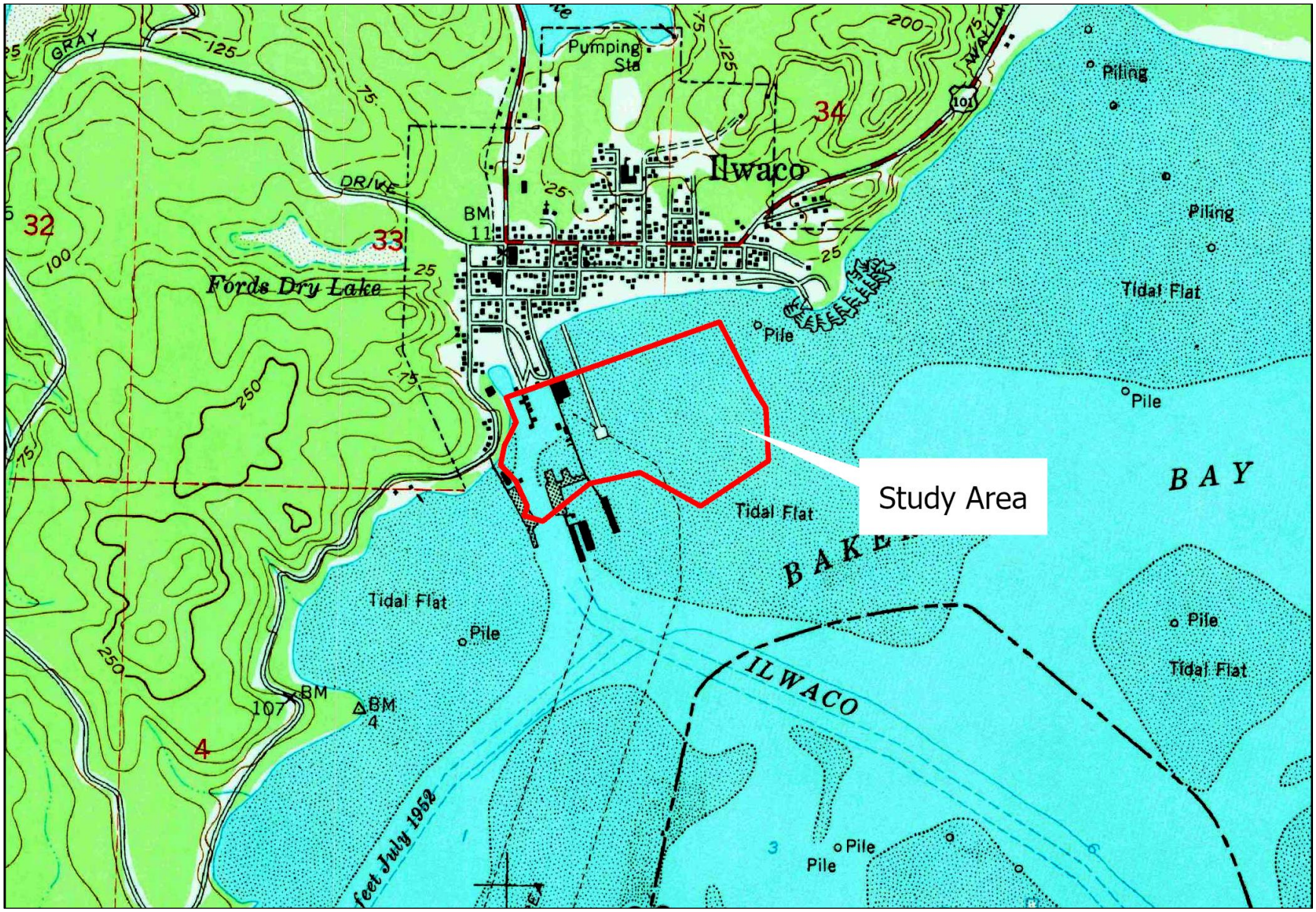

Figure 15. Study area depicted on USGS topographic, *Cape Disappointment*, edition 1974.

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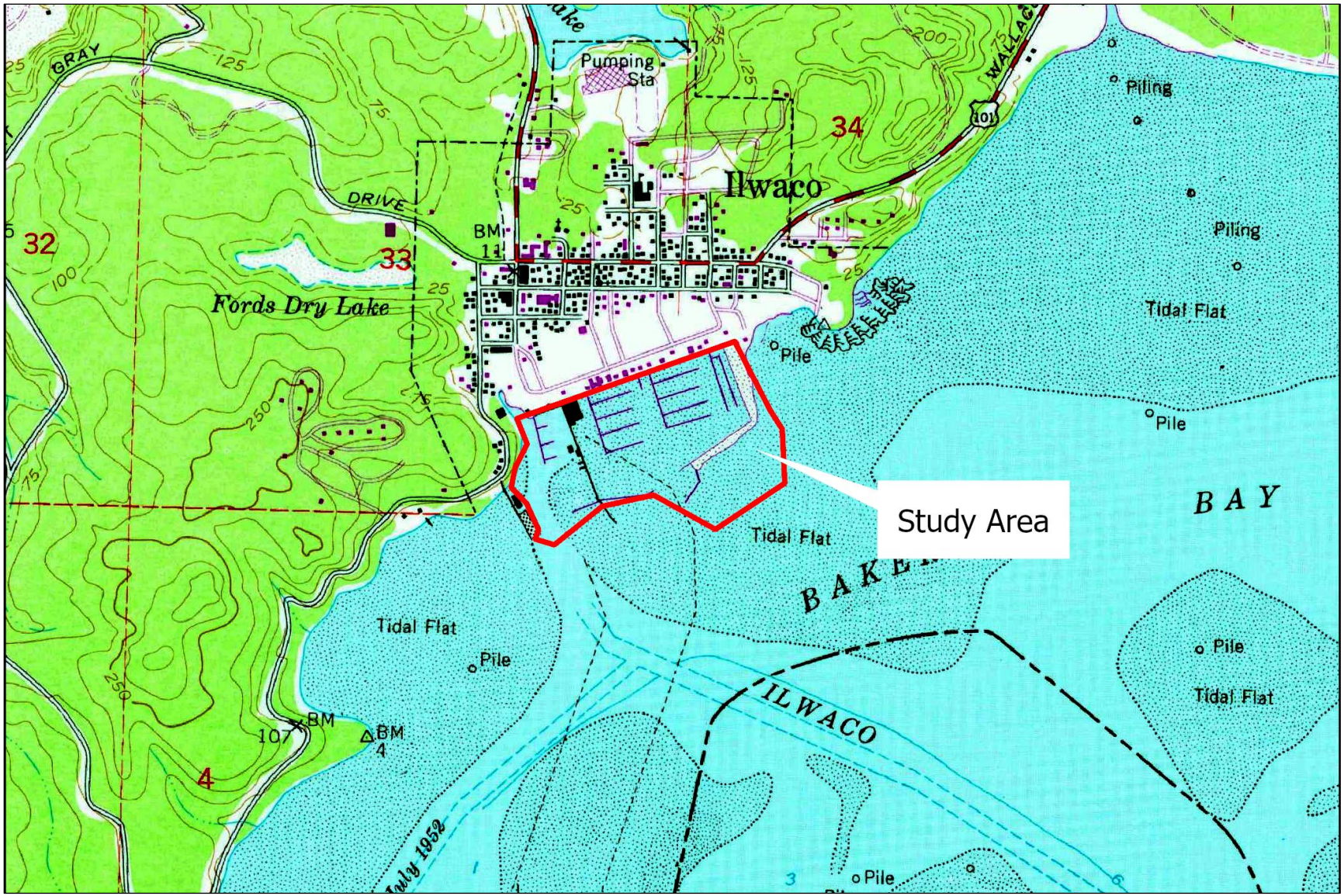

Figure 16. Study area depicted on USGS topographic, *Cape Disappointment*, edition 1977.

Construction of the Port of Ilwaco East Bulkhead

By 1968, the filling in of the former tidelands made the former Pioneer Packing Company cannery platform into a peninsula at the northwest corner of the mooring basin (USC&GS 1968; USGS 1969). The former Pioneer Packing Company cannery became Jessie's Ilwaco Fish Company in 1961, and the property is now home to Safe Coast Seafoods. The original footprint of the platform supporting the Pioneer Packing Company building was approximately 30 m by 75 m in size, with the long axis of the platform roughly aligned in a south-southeast/north-northwest direction. A 1956 aerial photograph shows the original narrower platform, which was expanded to the east by 1968 to create a vehicular driveway (USC&GS 1968; USGS 1956, 1969). By 1974, the overall configuration of the current Safe Coast Seafoods facility was largely complete and like the conditions found today (USGS 1974).

The East Bulkhead runs 50 m along the east edge of the vehicular driveway located east of the Safe Coast Seafood buildings. The middle of the structure bulges outward by approximately 2 to 3 ft. The East Bulkhead is built of 118 creosote treated timber piles. These piles vary from approximately 12 in. to 16 in. in diameter. Of the 118 piles, the upper portions of 18 piles are broken off or missing, and the tops of an additional 26 piles are severely deteriorated. In addition to the deteriorated piles, about one-third of the piles appear to be relatively recent replacements, based on the lack of wood deterioration, creosote seepage, and lack of biological growth on the surfaces of the piles. Horizontal creosote treated timber lagging is mounted on the inboard side of the bulkhead to retain the stone and earth fill material. Creosote treated timber walers are mounted on the outboard face of the bulkhead and are secured to the structure with wire strand cables. Three galvanized steel piles are mounted outboard of the walers to fend off docked vessels.

Following the decline of salmon runs and the outlaw of fish traps in the 1930s, deep sea fishing became the predominant marine industry in the region and enhancements to the Port were needed to accommodate the growth, which included new fishing fleets moving from the harbor to the Pacific and the deep waters of the Columbia. Through this period, Ilwaco continued to be the primary port in Pacific County for cranberry growers, fishermen, and loggers in the region. Industries at the Port included seafood processers, canneries, and mineral companies. The 1930s and 1940s witnessed the rise in sports fishing, and the Port held competitions and events (Ott 2010).

In 1974, the federal case *U.S. v. Washington* resulted in legal fishing rights for Native fishermen from signatory Tribes. Tribal fishermen would now be allowed to harvest half of available fish during the season. This resulted in a decrease of commercial fishing fleets at the Port and increased hostilities between Native and non-Native fishermen in the lower Columbia (Ott 2010).

From the 1980s onward, the POI has undergone a series of revitalization projects to increase tourism, including the development of new facilities for recreational boating and fishing, hotels, restaurants, and shops. Due to the continued decline in salmon runs, fishing companies run out of the Port have shifted to harvesting additional species like Dungeness crab, Albacore tuna, and Pacific shrimp (Ott 2010).

Previous Archaeological Investigations

WillametteCRA reviewed records on file with the Oregon SHPO online database, Oregon Archaeological Records Remote Access (OARRA) and DAHP's online database WISSARD, to determine if previous archaeological investigations and/or archaeological resources occur within a one-mi. radius of the study area. Tables 2 and 3 summarize our findings.

The POI has not been previously surveyed, and no archaeological resources have been documented in the study area. However, 11 previous archaeological investigations have occurred within a 1 mi. search radius of the study area. Prior work is focused north of the study area within the City of Ilwaco and mainly identified historic-period resources. The nearest investigations were conducted within 80 m of the study area and included a pedestrian survey and monitoring work (Freed 2013; Hulse and Smits 2022). The survey work was conducted for the city of Ilwaco's Elizabeth Street improvement projects in 2013 and included pedestrian survey. No shovel probes were excavated at this time due to the development of the area and no archaeological resources were encountered (Freed 2013). The monitoring project occurred in 2022, parallel to the study area on Howerton Way SE Street for a proposed stormwater management project. Archaeologists observed the excavation of 5 exploratory borings to a depth of 1.5 m. All samples were determined to be fill and were negative for cultural material (Hulse and Smits 2022). The remaining surveys were predominately conducted by the City of Ilwaco for various sewer, water, and park maintenance projects.

There are 6 recorded archaeological resources within 1 mi. of the study area. The nearest resource to the study area is a precontact site (45PC1), approximately 240 m northwest of the study area. The remaining 5 resources are all historic-period and include aboveground structures that were recorded during pedestrian surveys (see Table 3).

Site 45PC1 is the location of a reported Chinook village and cemetery extending out to the tide flats. It is recorded in DAHP's database, WISAARD, as a point, not a formal site boundary (Figure 17). The site was recorded in 1948 and at the time was in poor condition (Hudziak and Smith 1948). No follow up work has been done in the area. The original site form notes that, "Graves were on a spit of land sticking out into the tide flats upon which the village rested." Two informants were consulted for the archaeological investigation in the 1940s, a local drugstore owner, Reese Williams, and EJ Patana, the owner of the property.

Table 2. Previous Archaeological Studies Within 1 Mi. of the Study Area.

NADP #	Distance	Citation	Fieldwork Method	Resources Documented?
1696326	75 m	Hulse and Smits 2022	Monitoring	No
1684344	80 m	Freed 2013	Pedestrian Survey	No
1682127	0.2 mi.	Freed 2012	Pedestrian Survey, Shovel Probe, and Geotechnical Test Pits	No
1689189	0.2 mi.	Gall 2016	Pedestrian Survey and Shovel Tests	No
1354036	0.3 mi.	Whitlam 2010	Pedestrian Survey and Shovel Probes	No
1684537	0.4 mi.	Tisdale 2013	Monitoring	Yes
1682774	0.4 mi.	Freed 2012	Pedestrian Survey	No
1681947	0.5 mi.	Freed 2011	Pedestrian Survey	No
1342076	0.7 mi.	Smith and Fagan 2003	Pedestrian Survey and Shovel Probes	Yes
1683814	0.9 mi.	Willis et al. 2013	Pedestrian Survey and Shovel Probes	Yes
1352781	1.0 mi.	Wilson 2009	Pedestrian Survey and Shovel Probes	No

Table 3. Archaeological Resources Within 1 Mi. of the Study Area.

Resource #	Distance	Resource Type	Description	Eligibility
45PC1	240 m	Precontact Site	Permanent Village and Cemetery	Unevaluated
45PC223	0.3 mi.	Historic Site	Railroad	Unevaluated
45PC113	0.7 mi.	Historic Site	Road	Unevaluated
45PC114	0.8 mi.	Historic Site	Structures	Unevaluated
45PC147	0.9 mi.	Historic Site	Cemetery	Unevaluated
45PC2	1.0 mi.	Precontact Site	Temporary Fishing Site	Unevaluated

Figure 17. Aerial map showing the proximity of site 45PC1 to the proposed projects.

Hudziak and Smith described the site as largely underneath the town of Ilwaco, with the rear portion extending up into an area of old growth timber (presumed to be west of present-day 2nd Avenue SW). They described the sediments as “black earth” up to 45 centimeters (cm) thick overlying bedrock at the “top of the hill” and gray clay at lower elevations (i.e., the tidal flats). The only material collected was a broken canoe anchor, which was reportedly in the possession of the landowner. The site had been looted during the previous 50 years, according to the informants. The landowner claimed that the burial of “Chief Ilwaco” was located near to the existing house on the property. This is likely in reference to “Elwahko Jim,” for whom the town was named, but could be his father-in-law, Chief Concomly. Other townspeople disputed the claim at the time and indicated the Chief was buried at Willapa Bay, while concurring that the Patana property was the known site of a precontact burial ground.

In an article for the Clatsop County Historical Society, researcher Catherine Carlson wrote, “When Chief Concomly passed away, the members of the Chinook Tribe put him in his canoe, and put it on stilts with his belongings to take with him to the other side. Six years after the death of the chief, Dr. Meredith Gairdner of the Hudson’s Bay Company went to the burial site and took the skull. It was sent to a museum in England. The skull was returned to the Chinook Nation in 1972 and was placed in a sacred and secret place where no one could find it (Carlson 2004:28).

Aside from the use of site 45PC1 as a Chinookan village site and potential burial location, the area centered at Main and 2nd streets was the site of a cemetery for the old Ilwaco Episcopalian Church, which was active during the 1890s. It is noted in the site form that other denominations may have used the church over the years (Hudziak and Smith 1948).

Archaeological Expectations

The proximity of site 45PC1 to the current study area makes the potential for cultural resources and precontact burials moderate to high in the vicinity of the current study area, even though the currently proposed work will occur in a heavily developed marina environment and in dredge materials and fill. Additionally, the study area is separated physically from site 45PC1 by several streets that were added to the Port property in the 1970s (USGS 1974, 1977). No information has been identified regarding the uncovering of additional resources or burials associated with this village site in the years after Hudziak and Smith’s work in 1948, during ground-disturbing or construction work at the Ilwaco waterfront. However, ground disturbance in the study area should be conducted with extreme caution due to the proximity of site 45PC1 and the potential for precontact artifacts, objects of cultural patrimony, and/or human remains.

Additionally, it is worth noting that Baker Bay and the Ilwaco Channel have multiple reported shipwrecks and historic artifacts have been identified in dredge material south of the study area

(Reinicke and Mengers 2021; Taylor et al. 2019). There is moderate potential that cultural material, likely historic period artifacts, may be intermixed in dredge deposits along the shoreline in the study area.

Archaeological Field Methods

WillametteCRA completed a field reconnaissance of the study area. A walk-over was conducted across the margins of the marina, with attention paid to areas of exposed earth, including the graded area east of Outer Harbor Way SE and the existing dredge placement area southeast of the Ilwaco Boat Launch and Fuel Dock (see Figures 5 and 6). The WillametteCRA archaeologist took overview photographs and notes on the landform. No archaeological resources were identified.

Field Reconnaissance

WillametteCRA archaeologist Breanne Taylor, M.A., conducted a field reconnaissance of the study area on April 27, 2022. Given that most of the study area is heavily developed as a marina and/or paved, it was not possible to conduct a systematic survey. Therefore, archaeological efforts consisted simply of reconnaissance level investigation aimed at examining exposed ground surfaces and current conditions, as well as an overview of the existing East Bulkhead proposed for replacement and the shoreline between the bulkhead and the west pier (see Figures 3 and 4). Ms. Taylor examined the top and profile of the large dredge piles that are present in the southeast portion of the study area (see Figure 2, 4, and 5). No archaeological resources were identified during this phase of reconnaissance. It was determined during this field visit that the East Bulkhead warranted a formal state-level inventory and would be documented on an HPI form.

Aboveground Inventory

On June 10, 2022, WillametteCRA architectural historian Adam Alsobrook conducted a site visit to the POI to formally document and assess the East Bulkhead. Mr. Alsobrook took measurements, photographs, and notes on the bulkhead feature, and assessed its condition and NRHP eligibility. The findings of his inventory work are presented in an HPI form attached to this report as an Appendix.

The POI East Bulkhead was constructed between 1959 and 1968 and, although it meets the age threshold for listing on the NRHP, the bulkhead is in a severe state of deterioration and lacks integrity of design, materials, and workmanship. Due to this loss of integrity, the feature does not convey any potential historical significance under Criterion A, the association with historic events or patterns of history. No historically significant people were found to have been associated with the bulkhead, and therefore it is not eligible for listing under Criterion B of the NRHP. The bulkhead is an indistinct example of a maritime utility structure and is not the work of a master engineer or designer. It does not possess high artistic value and is therefore not eligible under Criterion C. It is unlikely to yield information important to history or prehistory and is therefore recommended ineligible under Criterion D of the NRHP.

The Safe Coast Seafoods building complex was not documented and assessed as part of the WillametteCRA aboveground inventory of June 10, 2022. The Safe Coast Seafoods building complex is located west of the POI East Bulkhead. An asphalt paved vehicular driveway separates the building complex from the bulkhead. This building complex formerly housed the Pioneer Packing Company cannery, which became Jessie’s Ilwaco Fish Company in 1961. The Safe Coast Seafoods building complex meets the minimum age criteria for listing on the NRHP and may have historical significance under NRHP Criterion A due to its association with Ilwaco’s fishing and canning industry. However, publicly available historic photographs of the building complex indicate that it has been extensively altered since the early 1970s. These alterations

include the replacement of the horizontal wood siding with a mixture of painted metal siding and painted T1-11 plywood, the removal of numerous window and door openings, and the addition of mechanical cooling equipment and piping at the roof level. Due to these numerous alterations, the WillametteCRA architectural historian recommends that the Safe Coast Seafoods building complex is not eligible for listing on the NRHP due to the extensive loss of integrity.

A linear group of commercial buildings and structures are arranged along the waterfront north of the marina and are bounded by Howerton Avenue to the north and Waterfront Way to the south. These commercial buildings and structures are located to the northeast of the POI East Bulkhead but were not documented or assessed as part of the WillametteCRA aboveground inventory of June 10, 2022. The WillametteCRA architectural historian reviewed the available project plans for the POI East Bulkhead replacement. These plans indicated that the group of commercial buildings and structures are located outside of the project area for the replacement of the POI East Bulkhead and will not be directly impacted by the proposed replacement of the bulkhead. Additionally, the proposed project is generally at ground level and horizontal in nature. The grade of the vehicular driveway will be raised by approximately 3 ft., and the replacement bulkhead and slope protection will be constructed using materials commonly used in marine environments such as the POI marina. Due to the extremely low likelihood of the project introducing visual elements detrimental to the nearby group of buildings and structures, the WillametteCRA architectural historian decided that a survey of buildings and structures outside the immediate project area was not warranted at this time.

Conclusions and Recommendations

WillametteCRA has completed a cultural resources investigation of the POI for the replacement of the East Bulkhead replacement and the Ilwaco Marina dredging and dredge material placement projects. Our investigation included a review of records on file with Oregon SHPO and Washington DAHP; historic map and archival research; and field investigations (reconnaissance level). The POI has not been subject to previous archaeological investigations and there are no known archaeological resources within the current study area. Prior to the development of Howerton Avenue and Waterfront Way in the 1970s, the area was continually reshaped by the shifting sand shoals of the Columbia River. The Ilwaco waterfront experienced substantial modification during the latter part of the twentieth century through dredging and infill. No archaeological resources were identified during the current investigation.

The nearest previously identified archaeological resource is a reported precontact village and burial site, 45PC1, which was recorded in 1948 and is consistent with the ethnohistoric accounts of *wíittčutk*, a seasonal Chinookan village. Translated to, “road coming down” or ‘where the trail comes out’ (Salishan), ethnographer Edward Curtis noted that the village held 15 houses in 1850 (Curtis 1911; Silverstein 1990:534; Zenk et al. 2016:7–8). In 1948, archaeologists documented the site location based on informant accounts and a broken canoe anchor was the only cultural material collected at that time. No follow-up work has been completed (Hudziak and Smith 1948). The center point of the site was recorded only 240 m northwest of the current study area, centered around the intersection of 2nd Avenue SW and Main Street SE.

Due to the presence of nearby 45PC1, a reported Chinookan village and cemetery site proximal to the current projects, WillametteCRA recommends the preparation of an Inadvertent Discovery Plan (IDP) prior to ground-disturbing work for both the East Bulkhead and Ilwaco Marina dredging projects. The IDP will inform contractors on cultural resources and guide them on protocols to follow should archaeological remains be encountered. These recommendations apply to the current study area. Should the proposed work or study area change, these recommendations may not apply, and additional fieldwork may be necessary.

During the cultural resources assessment of the study area, WillametteCRA’s architectural historian documented the East Bulkhead and completed an HPI form for the Washington DAHP (Appendix). The bulkhead was constructed circa 1959 to 1968. The creosote-treated timber pile, lagging, and waler construction is typical of other marine bulkheads in the region. The bulkhead is severely deteriorated overall, and a large portion of the structure has failed and shifted out of plumb. It is the opinion of WillametteCRA that the East Bulkhead does not meet the criteria for NRHP eligibility as the structure does not maintain sufficient integrity to convey its historical significance. Although there are structures more than 50 years old in the viewshed of the proposed East Bulkhead replacement project, it is the professional opinion of WillametteCRA that the project as currently defined will not create significant visual impacts.

Additionally, the Safe Coast Seafoods building complex does not appear to meet the criteria for NRHP eligibility as it does not appear to maintain sufficient integrity to convey its historical significance. Finally, the group of commercial buildings and structures to the northeast of the POI East Bulkhead were not evaluated for NRHP eligibility due to the reasons identified in the previous section on the aboveground inventory.

Should unanticipated archaeological or historical resources be encountered during future activities at this location, all ground-disturbing activity in the vicinity of the find should be halted and the MARAD notified immediately. If Native American ancestral remains, funerary objects, sacred objects, and objects of cultural patrimony are discovered during the proposed work, they will be treated with respect, secured, and protected until such time as the appropriate action had been determined. All activity that may cause further disturbance to those remains must cease and the area of the find must be secured and protected from further disturbance and exposure to rain, wind, etc. The remains should not be touched, moved, or further disturbed.

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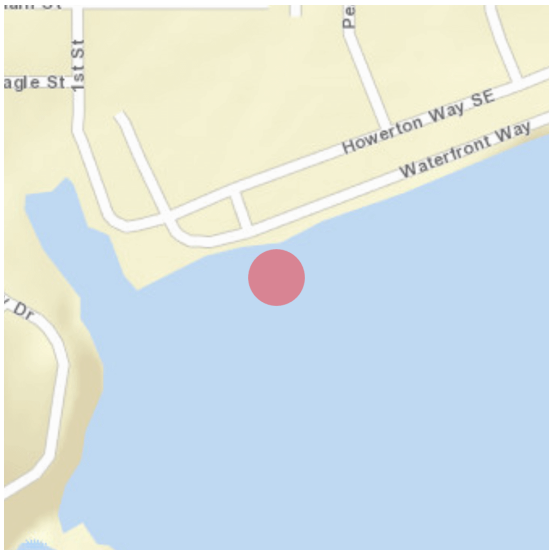
Appendix:
HPI Form

Historic Property Report

Resource Name: Port of Ilwaco Wharf East Bulkhead Property ID: 728160

Location



Address: 113 Howerton Way SE, Ilwaco, Washington, 98624

Tax No/Parcel No: 73031013000

Geographic Areas: Pacific County, T10R11W33, CAPE DISAPPOINTMENT Quadrangle

Information

Number of stories: N/A

Construction Dates:

Construction Type	Year	Circa
Built Date	1959	☑
Built Date	1968	☑

Historic Use:

Category	Subcategory

Historic Context:

Category
Maritime

Architect/Engineer:

Category	Name or Company

Thematics:

Local Registers and Districts

Name	Date Listed	Notes

Project History

Project Number, Organization, Project Name	Resource Inventory	SHPO Determination	SHPO Determined By, Determined Date
2022-06-04226, , Port of Ilwaco	6/10/2022	Survey/Inventory	

Photos

2022.06.10_Port of Ilwaco_41.jpg

2022.06.10_Port of Ilwaco_74.jpg

2022.06.10_Port of Ilwaco_42.jpg

2022.06.10_Port of Ilwaco_28.jpg

2022.06.10_Port of Ilwaco_25.jpg

2022.06.10_Port of Ilwaco_08.jpg

Historic Property Report

Resource Name: Port of Ilwaco Wharf East Bulkhead Property ID: 728160

Inventory Details - 6/10/2022

Common name:

Date recorded: 6/10/2022

Field Recorder: Adam Alsobrook

Field Site number:

SHPO Determination

Detail Information

Surveyor Opinion

Significance narrative:

Minimum Age Threshold: The Port of Ilwaco Wharf East Bulkhead (East Bulkhead) was constructed circa 1959 to 1968 and therefore meets the minimum age threshold for listing in the National Register of Historic Places (NRHP).

Integrity: The creosote-treated timber pile, lagging, and waler construction of the East Bulkhead is typical of other marine bulkheads in the region. The bulkhead is severely deteriorated overall, and a large portion of the structure has failed and shifted out of plumb. The East Bulkhead maintains integrity of location, setting, feeling, and association, but it has severely diminished integrity of design, materials, and workmanship.

Criterion A: The East Bulkhead is potentially eligible under NRHP Criterion A for its potential associations with the history of the development of the Port of Ilwaco between 1930 and 1972. However, based on the substantial amount of integrity loss, the East Bulkhead does not possess sufficient integrity to convey any potential historical significance under Criterion A.

Criterion B: Research did not reveal any historically significant individuals associated with the East Bulkhead. Therefore, it is recommended that the East Bulkhead is not eligible for listing in the NRHP under Criterion B.

Criterion C: The East Bulkhead is an indistinct example of a maritime utility structure that is not the work of a master engineer, is not a significant or distinguished entity representative of its type, and which does not possess high artistic values. Therefore, it is recommended that the East Bulkhead is not eligible for listing in the NRHP under Criterion C.

Criterion D: The East Bulkhead is unlikely to yield information important in history or prehistory. Therefore, it is recommended that the East Bulkhead is not eligible for listing in the NRHP under Criterion D.

Summary: It is recommended that the East Bulkhead is not eligible for listing in the NRHP.

Physical description:

Early Development of the Port of Ilwaco and the Mooring Basin

Lewis Alfred Loomis, an early European American settler of the Long Beach peninsula, was instrumental in developing the earliest vessel docking facilities at Ilwaco. Lewis and

his brother Edwin raised sheep on their land claim, which was located in the vicinity of present-day Lake Loomis State Park. To address his need for a wharf to handle his outgoing wool, Lewis Alfred Loomis incorporated the Ilwaco Wharf Company in July 1874 (The Oregonian 1913; Williams 1924:55). In 1881, the 450-foot-long wharf was lengthened to 600 feet to reach deeper water farther from shore. The wharf was also widened by ten feet (The Morning Astorian 1881a, 1881b).

By 1901, U.S. Coast and Geodetic Survey maps show the formal plat of Ilwaco (USC&GS 1901). At this time, the original shoreline was still more than a hundred meters north of the boundary of the current study area, and two piers had been built out into Baker Bay within the project bounds. The pier along the west boundary of the current study area was the Ilwaco Wharf Company's pier of 1874-1881, which connected the IR&NC line from the Long Beach Peninsula to a landing approximately 2500 feet into the Bay. The 1901 map also shows another parallel pier approximately 300 feet east of the IR&NC pier. This east pier extended approximately 700 feet into Baker Bay. The 1901 map also depicts the Ilwaco Landing at Robert Gray Drive, just west of the current project bounds. The IR&NC pier and the present-day Ilwaco Landing served as the terminus for trains and steamboats in the region up until 1908 (McDonald 1989:21).

In the late 19th and early 20th centuries, silt buildup in Baker Bay emerged as a threat to the viability of Ilwaco as a port for deep draft vessels (Ott 2010). In 1889, mariners and river pilots noted that Sand Island had shifted to the north by about two miles since about 1869. The movement of Sand Island caused Baker Bay to fill with silt, and the pilots grew concerned that Ilwaco would soon be inaccessible by ship (North Pacific History Company 1889:103). The first major dredging project in Baker Bay occurred in 1913, when a channel was established between Ilwaco and the western tip of Sand Island (The Oregon Daily Journal 1913).

By 1929, the section of the IR&NC pier between the Ilwaco Mill & Lumber Company and the former IR&NC freight dock and car barn on a platform over Baker Bay had been removed (Sanborn 1909, 1929). By that same year, the pier east of the IR&NC pier had become home to the Pioneer Packing Company Clam & Fish Cannery (Sanborn 1909, 1929). The pier was about 20 feet wide and originated at a point approximately 250 feet east of the present-day intersection of Eagle Street SW and First Avenue S and extended approximately 600 feet out to the platform that supported the cannery buildings. This platform measured approximately 100 feet by 250 feet, with the long axis of the platform roughly aligned in a south-southeast/north-northwest direction. The east pier extended approximately 500 to 600 feet beyond the Pioneer Packing Company platform and then turned ninety degrees westward and connected with the platform supporting the J.P. McGowan & Sons Fish Cannery. Overall, the east pier extended approximately 1400 feet into Baker Bay (Sanborn 1929).

In 1911, Washington State passed the Port District Act which made ports public. This laid the groundwork for the formation of the Port of Ilwaco and funding for its dredging and improvement projects, including the construction of a publicly accessible dock. In 1928 voters approved the development plans for the Port of Ilwaco and two years later the Port was opened (The Oregonian 1930; Ott 2010). The newly created port soon received federal assistance in making navigation improvements, and in 1932, the United States Army Corps of Engineers approved a plan to construct a new 200-foot-wide, 10-foot-deep channel north of Sand Island (The Oregonian 1932, 1938; USC&GS 1948). However, this channel was not officially completed until 1938 (The Oregonian 1938; USC&GS 1948).

Development of the Port of Ilwaco Mooring Basin

Plans for new port facilities at Ilwaco were first announced in November 1946 (The Oregonian 1946). The project plans included a mooring basin and breakwater to accommodate more fishing fleets and improve storm protection. The Port could house up to 50 fishing boats in 1946, and the proposed project included mooring space for 300 additional boats (The Oregonian 1946; Port of Ilwaco 1946). The mooring basin and channel were to be dredged to a depth of 15 ft. Dredging maintenance would be completed annually with the spoils deposited in an area southeast of the breakwater (Port of Ilwaco 1946).

Construction on the mooring basin did not begin until 1957 (The Oregonian 1957a, 1957b; USGS 1956). The original shoreline was still present in 1950 and marked on a Metsker Atlas of Pacific County as, “First Rate Tidelands” (Metsker Maps 1950). At this time, the shoreline was located north of the project area, just south of Lake Street SE and Main Street SE. Dredge spoils were placed at the waterfront edge, thus beginning the infill of lots along present-day Howerton Avenue and Waterfront Way (Ott 2010). The 1946 mooring basin plans called for the construction of a timber pile and stone bulkhead along the north boundary of the mooring basin, which coincides with the north extent of the current project area. However, it appears that this bulkhead was not constructed as planned (USGS 1971).

The new 500-boat mooring basin was dedicated in 1959 (The Oregonian 1959). The 1959 nautical chart for Baker Bay shows the breakwater and approximate areas covered by dredge spoils to the north of the mooring basin (USGS 1956). The present-day shoreline along the north extent of the current project area is situated approximately 500 to 600 feet out from the original shoreline. This area was continually infilled and built upon with several roads, including Howerton Avenue and Waterfront Way during the 1970s, and this transition is shown on topographical maps from the mid-century (USGS 1949, 1951, 1955, 1957, 1963, 1974, 1977, 1980).

The new mooring basin proved extremely popular and in May 1961 plans were announced to expand the moorage to accommodate 300 more boats (The Oregonian 1961). These plans were scaled back slightly, and in October 1962, the Port of Ilwaco applied for a permit to dredge the mud banks within the moorage breakwater and build berths for an additional 180 boats (The Oregonian 1962).

In March 1965, the United States Army Corps of Engineers announced plans to construct a new breakwater across the Holman waterway west and south of the mooring basin. Plans included cutting off the existing pier (formerly the home of the Pioneer Packing Company cannery) to accommodate the new breakwater, which would also create moorage space for additional boats (The Oregonian 1965). Aerial photographs indicate that this work was underway by 1971 (USGS 1969, 1971).

Construction of the Port of Ilwaco Wharf East Bulkhead

By 1968, the filling in of the former tidelands made the former Pioneer Packing Company cannery platform into a peninsula at the northwest corner of the mooring basin (USC&GS 1968; USGS 1969). The former Pioneer Packing Company cannery became Jessie’s Ilwaco Fish Company in 1961, and the property is now home to Safe Coast Seafoods. The original footprint of the platform supporting the Pioneer Packing Company building was

approximately 100 feet by 250 feet in size, with the long axis of the platform roughly aligned in a south-southeast/north-northwest direction. A 1956 aerial photograph shows the original narrower platform, which was expanded to the east by 1968 to create a vehicular driveway (USC&GS 1968; USGS 1956, 1969). By 1974, the overall configuration of the current Safe Coast Seafoods facility was largely complete and similar to the conditions found today (USGS 1974).

The east bulkhead runs 168 feet along the east edge of the vehicular driveway located east of the Safe Coast Seafood buildings. The middle of the structure bulges outward by approximately two to three feet. The east bulkhead is built of 118 creosote treated timber piles. These piles vary from approximately 12 inches to 16 inches in diameter. Of the 118 piles, the upper portions of 18 piles are broken off or missing, and the tops of an additional 26 piles are severely deteriorated. In addition to the deteriorated piles, about one-third of the piles appear to be relatively recent replacements, based on the lack of wood deterioration, creosote seepage, and lack of biological growth on the surfaces of the piles. Horizontal creosote treated timber lagging is mounted on the inboard side of the bulkhead to retain the stone and earth fill material. Creosote treated timber walers are mounted on the outboard face of the bulkhead and are secured to the structure with wire strand cables. Three galvanized steel piles are mounted outboard of the walers to fend off docked vessels.

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Biological Evaluation

moffatt & nichol

BIOLOGICAL EVALUATION
Produced for the Port of Ilwaco

January 2025

PORT OF ILWACO

Port of Ilwaco Maintenance Dredging

Document Verification

Client	Port of Ilwaco
Project name	Port of Ilwaco Marina Structure Replacement
Document title	Port of Ilwaco Maintenance Dredging
Status	Final Report
Date	9 January 2025
Project number	213282

Revision	Description	Issued by	Date	Checked
00	DRAFT – Biological Evaluation – Port of Ilwaco Maintenance Dredging	T. Meyers	01/09/2025	V. England
01	Final - Biological Evaluation – Port of Ilwaco Maintenance Dredging	T. Meyers	02/20/2025	T. Hayes

Produced by:
Moffatt & Nichol
915 Broadway Street, #100
Vancouver, WA 98660
(206) 622-0222
WWW.MOFFATTNICHOL.COM

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Glossary

AMMs	Avoidance and Minimization Measures
BE	Biological Evaluation
BMP	Best Management Practice
BO	Biological Opinion
cy	Cubic yard
dB	Decibel
dBA	A-Weighted Decibels
dBrms	Decibel Root Mean Square
DNR	Washington Department of Natural Resources
DPS	Distinct Population Segment
Ecology	Washington State Department of Ecology
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
ft	feet
hr	hour
HTL	High Tide Line
IPaC	Information For Planning and Consultation
l	liter
LCR	Lower Columbia River
LCFRB	Lower Columbia Fish Recovery Board
MCR	Middle Columbia River
MHHW	Mean Higher High Water
MLLW	Mean Lower Low Water
mph	Miles per hour
MSA	Magnuson Stevens Fishery Conservation and Management Act
NLAA	Not Likely to Adversely Affect
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PCE	primary constituent element
PFMC	The Pacific Fishery Management Council
Project	Port of Ilwaco East Bulkhead Resilience Project
RM	River Mile
sf	Square feet
SEL	Sound exposure level
SR-F	Snake River fall-run
SRKW	Southern Resident Killer Whale
SR-SS	Snake River spring/summer-run
UCR	Upper Columbia River
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
UWR	Upper Willamette River
WDFW	Washington Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation

1. Purpose of the Biological Evaluation

The Port of Ilwaco (Port) is located on the north shoreline of the Columbia River in Baker Bay. Annual maintenance dredging is necessary to keep the marina actively operating. Historically the Port has dredged targeted areas of the marina depending on the need, upland placement site capacity, budget, and availability of dredging equipment to complete the work within the designated in-water work window. This has resulted in removing only 1 to 3 feet of accumulated sediment annually from the highest priority areas. Maintenance dredging of the entire marina to the fully permitted depths has not been an option for the Port in the last ten years primarily due to limited placement site capacity and budgetary constraints.

The purpose of the project is to remove accumulated sediment and restore depths in the marina to accommodate the vessel drafts of the Port's customers including local, state and federal agencies (including local police department, US Coast Guard [USCG], US Army Corps of Engineers [USACE], and WA Department of Fish and Wildlife [WDFW]); and to restore capacity of the Port's existing upland placement site for placement during future dredge events. The project locations are shown on Sheet 1, all sheets are included as Appendix A.

The purpose of this Biological Evaluation (BE) is to address potential effects of the Port of Ilwaco Maintenance Dredging Project (herein referred to as 'Project') and address the proposed action in compliance with Section 7 of the Endangered Species Act (ESA). Section 7 requires consultation with the Services (U.S Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) Fisheries or National Marine Fisheries Service (NMFS) to evaluate whether proposed Project activities could potentially jeopardize the continued existence of any threatened, endangered, or proposed species, or result in the destruction or adverse modification of critical habitat (CH).

The Project has the potential to impact the following ESA-listed species and/or their critical habitat: Chinook salmon (*Oncorhynchus tshawytcha),* chum salmon (*Oncorhynchus keta*), Coho salmon (*Oncorhynchus kisutch)*, sockeye salmon (*Oncorhynchus nerka)*, steelhead *(Onocorhynchus myskiss)*, bull trout (*Salvelinus confluentus)*, green sturgeon (*Acipenser medirostris)*, eulachon (*Thaleichthys pacificus)*, leatherback sea turtle (*Dermochelys coriacea*), southern resident killer whales (*Orcincus orca)*, humpback whale (*Megaptera novaeangliae)*, western snowy plover (*Charadrius nivosus nivosus*), marbled murrelet (*Brachyramphus marmoratus)*, and streaked horned lark (*Eremophila alpestris strigata)*.

Appendix B of this BE also includes an assessment of essential fish habitat (EFH) protected under the Magnuson–Stevens Fishery Conservation and Management Act (MSA).

1.1. Project Location

Dredging is proposed to occur at the Port of Ilwaco on the southwest coast of Washington State near the mouth of the Columbia River (Figure 1). The site is tidally influenced because it is located approximately 6 miles from the confluence of the Pacific Ocean and the Columbia River. Dredged materials would be placed either in-water at three existing Oregon flow lane placement sites (Figure 1) or within the Port's existing upland placement site once capacity has been restored.

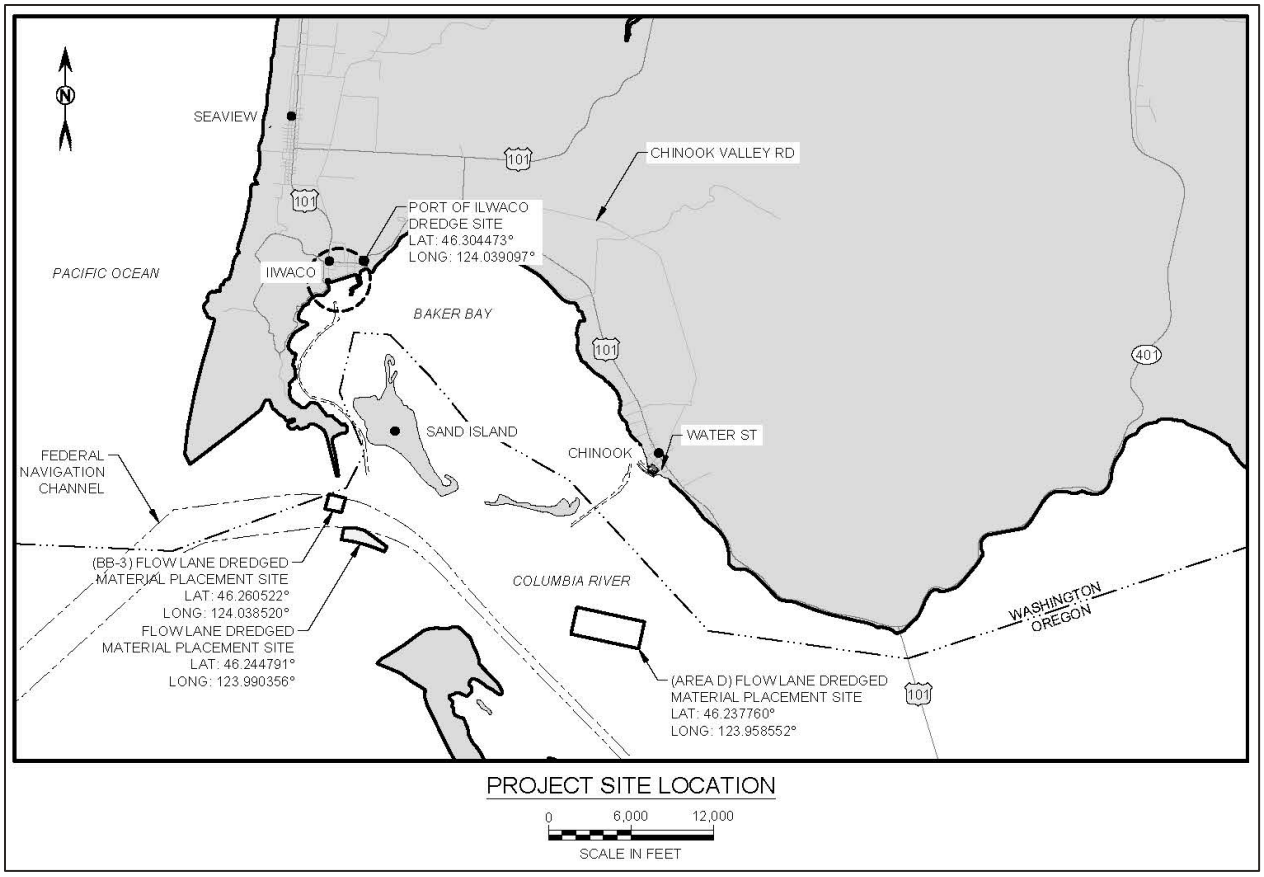

FIGURE 1: DREDGE AND PLACEMENT SITE LOCATIONS

1.2. Project Setting

The Port area generally consists of a Marina used for year-round moorage of recreational and commercial fishing vessels, upland commercial buildings, commercial fishing wharf, and a boatyard (Figure 2). The Port is a key hub for commercial fishing, seafood and aquaculture processing, and recreation activities that greatly benefit the regional economy. The Port's marina is also used by several state and federal agencies to access the Columbia River including the USACE, the USCG, and WDFW. The USCG currently uses the Port's travel lift and boat yard for vessel maintanence, as well as a point of deployment. The USCG is also proposing to use the Port's marina for mooring vessels during planned future maintenance and repair of docks at their Cape Disappointment Station. The marina represents a potential point of deployment for rapid access to the Columbia River for the local police department, USCG, and other state and federal emergency responders which significantly reduces response times for incidents that may occur in the River.

The Marina is partially enclosed by a rubble breakwater (Figure 2) and the majority of the shoreline is armored with riprap or retaining walls. Vegetation and terrestrial habitat conditions are limited within the project vicinity. The Marina is a commercial area and is largely devoid of terrestrial vegetation. Existing vegetation along the shoreline of the Marina consists of short-statured ruderal species behind existing bulkhead walls and in viable spaces along the riprap shoreline. Upland vegetation observed along the shoreline during a 2022 site survey included clover species (*Trifolium species*), Japanese knotweed (*Polygonum cuspidatum*), various grasses, dandelion (*tatxasum officinale*), and creeping buttercup (*Ranunculus repens*) (Geoengineers 2022, see Appendix C). Vegetation here was dominated by

Lyngbye's sedge (*Carex lyngbyei*), three-square (*Schoenplectus pungens*) and silverweed (*Potenitilla anserina*).

Vegetation and terrestrial habitat conditions are limited at the project site. The shoreline along the majority of the marina is armored with riprap or bulkhead structures, and terrestrial vegetation is limited to sparse, low-growing vegetation growing amongst the riprap. There is limited habitat for terrestrial wildlife species, and limited functioning riparian habitat at the site because the site is within the waters of a working marina.

Eelgrass was observed in the Ilwaco Marina during the 2022 eelgrass survey completed for the project (Figure 3; GeoEngineers 2022, see Appendix C)[1]. The majority of observed eelgrass is observed near docks G and H. The identified beds are small and patchy in nature (GeoEngineers 2022). The eelgrass was only observed in those areas where annual maintenance dredging has not been completed in several years and sedimentation has resulted in high points where eelgrass can establish transitory beds that are actively disturbed by marina vessel traffic throughout the year. These beds likely occur here due to an extended period of deposition from the Columbia River based on the lack of regular Marina-wide dredging, which has created suitable growing conditions (depth) (GeoEngineers 2022). Ilwaco Marina's maintenance dredging has been limited to annual targeted dredging by budget constraints. Additionally, eelgrass beds are not known to naturally occur at the mouth of the Columbia River due to high turbidity levels which create unsuitable growing conditions. It is assumed that the breakwaters have reduced turbidity levels within the Marina, which has allowed eelgrass beds to grow here. Given the location of these beds within a busy, active Marina, the ecological benefits associated with these beds are anticipated to be limited and transitory. Mitigation for impacts to eelgrass beds within the Marina is not anticipated to be required based on their patchy and transitory nature, location within a heavily modified environment within the active marina, and presence enabled by the conditions due to the periodic and targeted nature of maintenance dredging to authorized depths in the Marina limited by the Port's budgetary cycles.

[1] GeoEngineers. 2022. Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey.

FIGURE 2: PORT OF ILWACO MARINA TO BE DREDGED

FIGURE 3: EELGRASS IDENTIFIED AT ILWACO MARINA, 2022 EELGRASS SURVEY (SOURCE: GEOENGINEERS 2022)

1.3. Project Description

The Port of Ilwaco Marina is cherished by the local community and allows access to the Columbia River for recreational opportunities such as fishing, cruising, and commercial fishing/crabbing. Periodic

maintenance dredging is necessary to keep the Port of Ilwaco Marina actively operating. The marina is an important local economic resource as it supports the commercial fishing and crabbing industry. These employment opportunities are only viable as long as the marina is dredged and accessible to these commercial vessels.

The Port's marina is also used by several state and federal agencies to access the Columbia River including the USACE, the USCG, and WDFW. The USCG currently uses the Port's travel lift and boat yard for vessel maintancne, as well as a point of deployment. The USCG is also proposing to use the Port's marina for mooring vessels during planned future maintenance and repair of docks at their Cape Disappointment Station. The marina represents a potential point of deployment for rapid access to the Columbia River for the local police department, USCG, and other state and federal emergency responders which significantly reduces response times for incidents that may occur in the river.

The purpose of the project is to remove accumulated sediment and restore depths in the marina to accommodate the vessel drafts of the Port's customers; and to restore capacity of the Port's existing upland placement site. The upland placement site is nearing capacity and needs to be rehabilitated through removal of the material that is currently stored onsite. The Port is proposing to restore capacity of the upland placement site for placement of future dredged material by removing the dredged material that is currently stored there and placing it at the proposed in-water flow lane placement sites. Removing the material currently stored at the upland placement site would rehabilitate the upland placement site to allow for placement of dredged material from future dredge events. The use of the upland placement site allows the Port to proceed with targeted annual maintenance dredging within their limited budget cycles.

The Port is requesting a new 10-year maintenance dredging permit that will allow for placement of dredged material either upland and/or at existing in-water flow lane placement sites.

The project will require placement of dredge material below the ordinary high-water mark (OHWM) of the Columbia River and will require Sections 10 and 404 permits from the USACE. This represents a federal nexus and requires that the USACE consult with the services to assess the potential for effects to species or critical habitats listed under Section 7 of the ESA and to Essential Fish Habitat (under the provisions of the Magnuson-Stevens Act).

The proposed project includes:

1. Conducting maintenance dredging to the previously authorized dredge footprint to the previously authorized depths of -8 feet mean lower low water (MLLW), -10 feet MLLW, and -16 feet MLLW;
2. Dredging 280,288 cubic yards (CY) (one-time capital dredge event) and an annual maximum of 50,000 CY of sediment from within the marina using either hydraulic or mechanical dredging equipment (clamshell or bucket on extended reach excavator)[2];
3. Authorizing flow lane placement at three existing Columbia River in-water placement sites in Clatsop County, Oregon via bottom dump barge. (See Sheets 8 through 11).
4. Authorizing removal of the previously dredged material that is currently stored at the upland placement site (approximately 70,000 CY) for placement into the above listed Columbia River flow lane placement sites;
5. Authorizing placement of dredged material at currently authorized upland placement site;

[2] The one-time capital dredge event is funding dependent and may occur during any single year that the permit is valid. The proposed annual maximum maintenance dredging volume (not including the one-time capital dredge event volume) would be a maximum of 50,000 CY

6. Authorizing a total dredge volume of up to 735,000 CY[3] for a new 10-year USACE permit;
7. Authorizing placement of approximately 4,410 CY of clean sand within the marina[4]; and
8. Authorizing nighttime activities because dredging operations could include night shifts.

It is anticipated that 1 November to 28 February will be the in-water work window for the new dredging permits consistent with state and federal guidance and requirements for fish protections.

The proposed dredging activities are described in additional detail in Section 1.3.1 and placement activities are described in Section 1.3.2.

1.3.1. Dredging

The Port is requesting new permits to allow continued maintenance dredging including a one-time capital dredge event to provide safe navigation and to meet the needs of its Marina customers. Dredging at the Marina will occur within the previously approved dredge prism and to the previously authorized depths of -8 feet MLLW, -10 feet MLLW, and -16 feet MLLW. The capital dredge event volume, maximum annual dredge volume and the average annual dredge volume are shown in Table 1 below. Work will be done during the fish protection work window as authorized by federal and state agencies. Dredging may occur during nighttime hours.

TABLE 1: SUMMARY OF ANNUAL MAXIMUM AND AVERAGE DREDGE VOLUMES

Site	One-time capital dredge event (cubic yards)	Maximum amount of material (cubic yards) to be dredged each year[5]	Average annual amount of material (cubic yards) to be dredged each year
Ilwaco Marina Dredge prism	280,288	50,000	20,000

Maintenance dredging at the Ilwaco Marina will be completed using hydraulic (cutter suction dredge) or mechanical dredging methods (clamshell and/or bucket dredge). A hydraulic dredge uses a cutterhead on the end of an arm that is buried typically 3 to 6 feet deep in the river bottom of the dredge prism and swings in a 250- to 300-foot arc in front of the dredge barge during dredging. Dredged material is sucked up through the cutterhead either piped to the upland placement area or to a barge for transport and placement in the in-water flow lane sites.

A mechanical dredge removes material by scooping it up with a bucket. Mechanical dredges include clamshell or backhoe dredges. Mechanical dredging is performed using a bucket operated from a crane

[3] The Port's SDM includes approval of a maximum dredge volume of up to 735,000 CY. This volume is based the one-time capital dredge event (280,288 CY) and material currently stored at the upland placement site (70,000 CY), plus historic annual dredge volumes over the life of a 10-year permit. The annual maintenance dredging will not exceed 50,000 CY in a given year. The Port is currently authorized to dredge the marina under existing permits, as such the total volume of material that may be dredged over the life of the requested 10-year permits may be less that the calculated volume but would not exceed 735,000 CY.

[4] The 13 December 2024 Portland Sediment Evaluation Team (PSET) Suitability Determination Memorandum indicates that a 1-foot layer of clean sand will be required if post-dredge surface sediment sampling indicates that the post-dredge surface around sampling station SP-ll is not suitable for unconfined aquatic exposure (See Attached Appendix D Suitability Determination Memorandum). The volume of material was based on area of unsuitable material (approximately 119,097 sq. ft.) and 1 foot of clean sand.

[5] This volume is what is currently permitted.

or derrick that is mounted on a barge or operated from shore. Sediment from the bucket is usually placed in an upland area or on a scow or bottom dump (split) barge or directly onto the upland placement site when it has capacity. Placement of the material at the in-water flow lane placement site will occur through the opening of the bottom doors or splitting the barge. The process of splitting is tightly controlled to minimize turbidity and to minimize the spread of material outside of the placement area.

Best Management Practices (BMPs) will be implemented during all dredging activities to minimize adverse impacts and reduce the potential for inadvertent adverse impacts. BMPs that will be implemented are included in Section 1.4.

1.3.2. Placement

The Port's upland placement site is nearing capacity, and the Port needs additional capacity for placement during future dredging events. All of the material stored at the upland placement site has been found suitable for open water placement (PSET 13 December 2024; see Appendix D). Therefore, the Port proposes to place dredged material that is suitable for in-water disposal (either from the marina or from the upland placement site) at three existing flow-lane sites in Clatsop County, Oregon (see project Sheets 8 through 11 in Appendix A).

The Port will place dredged material from future dredge events at either the existing flow-lane sites in Clatsop County, Oregon or their currently permitted upland placement site – once additional capacity has been restored. The Port will use different placement sites each year based on a combination of factors such as funding, the equipment used by the selected contractor, and the rate of dispersion at the proposed in-water site. All of the placement sites are needed to meet the Port's overall dredging needs over the 10-year life of the permit.

Only dredged material that is deemed suitable for unconfined aquatic placement by the Portland Sediment Evaluation Team (PSET) will be placed at the in-water flow lane placement sites. Flow lane placement will occur via transport by bottom dump (split) barge. Placement of the material at the in-water flow lane placement site will occur through the opening of the bottom doors or splitting the barge. The process of splitting is tightly controlled to minimize turbidity and to keep the material from spreading outside of the placement area. Upland placement will occur via hydraulic dredging. Dredged material is sucked up through the cutterhead and piped directly to the upland placement area.

BMPs will be implemented during all dredge material placement activities to minimize adverse impacts and reduce the potential for inadvertent adverse impacts. BMPs that will be implemented are included in Section 1.4.

The amount of material and acreage of impact for the proposed dredged material placement is provided in Table 2.

TABLE 2: SUMMARY OF AMOUNT OF DREDGED MATERIAL AND PLACEMENT SITE ACREAGE OF IMPACT

Placement Site	Marina: One-time (capital) dredge event (CY)[6]	One time placement of previously dredged material from upland site (CY)	Maintenance Dredge: Average Annual Volume (CY)	Placement Site: Average Annual Acreage of impact
Oregon Flow Lane Site 1: "BB-3"	280,288	70,000	20,000	8.7 acres
Oregon Flow Lane Site 2:				
Oregon Flow Lane Site 3: "Area D"				
Upland Site	--	--	20,000	3 acres

1.4. Avoidance, Minimization, and Best Management Practices (BMPs)

The project has been designed to avoid and minimize impacts to the aquatic environment and ESA-listed species and designated critical habitat to the maximum extent feasible. Initially the Port evaluated placing dredged material at a proposed beneficial use site located in water southeast of the Port of Chinook's marina. However, the proposed beneficial use placement site was eliminated due to eelgrass present at the proposed site and associated mitigation requirements that the Port could not accommodate.

The following avoidance and minimization measures and BMPs will also be used to minimize impacts and avoid the potential for inadvertent impacts during dredging and placement activities.

1.4.1. General AMMs

- A dredging and placement work plan with description of equipment, placement techniques, work sequence, processes, surveying, and monitoring of placement of dredged material will be a required preconstruction submittal to be reviewed by the engineer, Washington State Department of Ecology (Ecology), USACE, Port, and other agencies prior to starting construction.
- Work plans will be submitted to and are subject to review and approval by Ecology, USACE and other permitting agencies and will be discussed and reviewed during the required pre-dredging conference for each event.
- Cleanup of misplaced material, taking into account the tolerance listed above, outside of the project boundaries (both vertical and horizontal) will be the responsibility of the contractor.

[6] Approximately 13,460 CY within the marina dredge prism has been found unsuitable for unconfined aquatic placement. Only dredged material deemed suitable for unconfined aquatic placement will be placed at the proposed flow lane placement sites.

1.4.2. Endangered Species Act AMMs

- The work will be conducted the fish protection work window[7] as authorized by federal and state agencies.
- The work will be conducted to ensure no impingement of juvenile salmonids by dredging equipment, clamshell or hydraulic dredge. Regular observation of sediment aboard the barge or at the placement areas will be conducted. If impingement is occurring, clamshell operations would be adjusted (slowed) to increase opportunity for juveniles to avoid the bucket and/or suction head and the hydraulic dredge will be lowered deeper into the sand to minimize water entrainment.

1.4.3. Hazmat/SPCC BMPs

- Dredge vessel personnel will be trained in hazardous material handling and spill response, and will be equipped with appropriate response tools, including adsorbent oil booms. If a spill occurs, spill cleanup and containment efforts will begin immediately and will take precedence over normal work.
- There will be no discharge of oil, fuels, or chemicals to surface waters, or onto land where there is a potential for re-entry into surface waters.
- Fuel hoses, oil drums, oil or fuel transfer valves, fittings, etc., will be checked regularly for leaks, and materials will be maintained and stored properly to prevent spills.
- The dredging contractor will be responsible for the preparation of a Spill, Prevention, Control, and Countermeasure (SPCC) Plan to be used for the duration of the project. The plan shall be submitted to the project engineer prior to the commencement of any construction activities. A copy of the plan with any updates will be maintained at the work site by the contractor.
- The SPCC Plan shall identify construction planning elements and recognize potential spill sources at the site. The SPCC Plan shall outline responsive actions in the event of a spill or release and shall describe notification and reporting procedures. The SPCC Plan shall outline contractor management elements, such as personnel responsibilities, project site security, site inspections, and training.
- The SPCC Plan will outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. These items include, but are not limited to, gasoline, oils, and chemicals. Hazardous materials are defined in RCW 70.105.010 under “hazardous substance.”.

1.4.4. Dredging and Turbidity

Construction activities will be performed in compliance with Surface Water Quality Standards for the State of Washington (WAC 173-201A) or other conditions as specified in the WQC.

Appropriate BMPs will be employed to minimize sediment loss and turbidity generation during dredging. BMPs may include, but are not limited to the following:

[7] It is anticipated that 1 November to 28 February will be the in-water work window for the new dredging permits consistent with state and federal guidance and requirements for fish protections.

- Smooth closure of the bucket when at the bottom (mechanical dredging only)
- No stockpiling of dredged material on the riverbed
- Maintain suction head of hydraulic dredge at the riverbed to the extent practicable (hydraulic only)
- Other conditions as specified in the WQC.

Enhanced BMPs may be implemented to control turbidity and may include, but are not limited to, the following:

- Slowing the velocity (i.e., cycle time) of the ascending loaded clamshell bucket through the water column
- Pausing the dredge bucket near the bottom while descending and near the water line while ascending
- Placing filter material over the barge scuppers to clear return water

If sediment is placed on a barge for delivery to the placement areas, no spill of sediment from the barge will be allowed. The barge will be managed such that the dredged sediment load does not exceed the capacity of the barge. The load will be placed in the barge to maintain an even keel and avoid listing. Hay bales and/or filter fabric may be placed over the barge scuppers to help filter suspended sediment from the barge effluent, if needed.

1.4.5. Placement Site BMPs

The following BMPs and conservation measures will be implemented to minimize environmental impacts during dredged material transport and placement.

Upland Placement:

- Discharge pipes at the upland placement site will be extended or moved as necessary to maintain an efficient ponding configuration within the placement site. Coarser dredged material will be stockpiled around the perimeter, where practical, to avoid reducing pond size unnecessarily.
- The dredging rate will not reach a level that results in noncompliance with the effluent limitations and/or water quality criteria at the discharge point. The level of settleable solids in the discharge will be in accordance with the WQC.
- A buffer plate or other means will be used to reduce flow discharge of the hydraulic dredge at the placement area if necessary.
- Drainage from the dredged material will be discharged to Baker Bay in accordance with the water quality criteria specified in the WQC.

Flow Lane Placment

- The placement activities will be visually monitored and the sites will be surveyed pre- and post-placement to ensure placed sediment is contained inside the specified boundaries.
- A contractor work plan with description of equipment, placement techniques, work sequence, processes, surveying, and monitoring of placement of dredged material will be a required preconstruction submittal to be reviewed by the project engineer, the USACE and other agencies prior to starting construction.

- Contractor work plans will be submitted to and are subject to review and approval by the USACE and other permitting agencies and will be discussed and reviewed during the required pre-dredging conference for each event
- A horizontal placement tolerance of 3 feet will be applied to the placement of all dredged material within the placement area design template. Placement will be evaluated relative to this tolerance by the Port and the project engineer prior to acceptance of the work
- Cleanup of misplaced material, taking into account the tolerance listed above, outside of the project boundaries (both vertical and horizontal) will be the responsibility of the contractor
- Visual water quality monitoring and, if necessary, follow-up measurements will be conducted around the barge at the removal area to confirm that material is not being released.
- Sediment will be discharged at the riverbed to the extent practicable to minimize turbidity in the water column.
- Sediment placement will occur using methods that minimize sediment loss and turbidity to the maximum extent possible.
- Only dredged material suitable and approved for in-water disposal based on a Suitability Determination issued by the PSET will be placed in water.

1.4.6. Unsuitable Material

Two areas within the marina have been identified as unsuitable for unconfined aquatic placement (PSET December 2024; see Appendix C) including:

- An approximately 119,100 sq. ft. area in the northeast corner of the marina representing approximately 9,560 CY; and
- The upper 1-foot of material adjacent to the former Ilwaco Landing Seafood Processing crab dock which burned down in January 2024. This area is approximately 105,340 sq. ft. and represents approximately 3,900 CY.

BMPs for dredging and placement of material associated with these areas include:

- 25-foot buffers around unsuitable material will be implemented when dredging adjacent suitable material to prevent comingling of unsuitable material from material that may be placed in-water.
- Unsuitable material will be disposed of at a permitted upland landfill facility.
- If unsuitable material is temporarily stored at the Port's upland placement site prior to being transported for disposal at an upland facility, unsuitable material will be isolated from suitable material and will be confined and covered in such a way as to prevent stormwater coming into contact with the unsuitable material and associated runoff. The unsuitable material stockpile will also be secured to prevent public access and minimize wildlife contact.

2. Action Area

This section describes the defined geographic area that could be affected by the direct and indirect effects of the proposed action (the "Action Area"). For the proposed Project, the Action Area includes the Project footprint, extent of potential water quality impacts, and all areas in which project-related noise could exceed background noise levels. The total Action Area is shown on Figure 4 and described in detail in Section 2.1 through 2.3.

2.1. Proposed Project Footprint

The project footprint consists of the physical location of the proposed dredge area and placement sites. The dredge area is located at the Marina (Figure 1). The in-water placement sites (flow lane sites) are approximately 8.7 acres and the upland placement site is approximately 3 acres (Figure 1). The location and configuration of the dredge area and placement sites are shown in Figure 1. Additional details are provided in Appendix A.

2.2. Water Quality

In-water construction activities have the potential to elevate turbidity levels due to sediment resuspension. The majority of the sediment disturbances will occur during hydraulic dredging activities. The extent of turbidity plumes depends on grain size and hydrographic patterns. Turbidity plumes in low energy environments are flushed out slower than fast moving environments such as riverine environments. Fine grained sediment plumes typically extend further than larger sandy grain sediment plumes. For the purpose of determining the Action Area, it has been conservatively assumed that turbidity plumes could extend up to 4,000 feet (0.76 miles) from the proposed placement activities (Wilber and Clarke 2001, Figure 4). However, according to recent studies by the USACE at the mouth of the Columbia River, surface plumes produced during hopper dredging and open water placement did not extend further than 600 feet (ft) (USACE 2023). Furthermore, in estuarine waters in Washington State, water quality regulations (WAC 173-201A-400) require that construction related turbidity does not exceed background turbidity levels by more than 5 nephelometric turbidity units (NTU) (if less than 50 NTU background) or more than 10 percent (%) (if greater than 50 NTU background) at 300 ft.

2.3. Underwater and Terrestrial Noise

The proposed dredging has the potential to result in temporary elevated underwater and terrestrial noise levels. Background in-water and in-air noise levels are discussed in Section 2.3.1. Noise levels associated with the proposed Project activities are described in Section 2.3.2. Noise calculations were completed using the in-air spherical spreading loss model assuming a 6 BA attenuation rate for each doubling distance (FTA 2018), and the in-water practical spreading model (NMFS 2012a).

2.3.1. Background Noise Levels

2.3.1.1. In-water

Site specific underwater noise levels are not available but are anticipated to be elevated due to anthropogenic activities associated with the Port activities and the use of the Marina. Underwater noise levels in deep slow-moving rivers are typically about 120 decibel (dB) root mean square (rms) (Washington Department of Transportation [WSDOT] 2020). Given the occurrence of the Project in the Columbia River, a deep slow-moving river, 120 dBrms has been used to represent the anticipated in-water background noise level for the Project area. However, it should be noted that background noise may be higher than 120 dBrms depending on the levels of activity occurring at the Marina.

2.3.1.2. In-air

Site specific in-air noise levels are not available but are anticipated to be elevated due to anthropogenic activities including port and Marina traffic within the area. Waterfront Way is a one-lane street immediately adjacent to the Project site and would be anticipated to contribute background traffic noise. In addition, Howerton Avenue, a two-lane road, is approximately 150 ft from the Project site. The speed limit for Howerton Avenue is 25 miles per hour (mph). The WSDOT Biological Assessment Manual (2020) reports typical traffic noise levels for various speed limits (ranging from 35 mph to 75 mph) and traffic counts, ranging from 125 per hour (hr) to 6,000/hr). Traffic noise levels for traffic counts of approximately 125 vehicles per hour traveling at speeds of 35 miles per hour (mph), is 57 A-weighted decibels (dBA) at 50 ft from the source (WSDOT 2020). The Project is located within an area zoned as light industrial and adjacent to areas zoned as low density commercial (City of Ilwaco 2017). Commercial and industrial activities within the vicinity would be anticipated to contribute to background noise levels. Measured in-air background noise levels at the Port of Bellingham, a larger Port facility, ranged from 69 dBA to 73 dBA during peak traffic hours (Landau 2007). In the absence of site specific in-air noise data, 60 dBA is assumed to be representative of the in-air background noise level given the commercial and industrial activities in the area and proximity to roads.

2.3.2. Project-related Noise Levels

2.3.2.1. In-water Noise Levels dredging

The source levels of underwater sound from dredging vary among the different dredge methods and are influenced by several factors, including substrate and water depth. Noise generated by dredging sand and small gravels (typical of sediments found in the Columbia River) is typically far less than that generated during dredging of larger gravels and other coarse materials.

Maintenance dredging at the Marina is anticipated to be completed using a hydraulic cutterhead dredge but may be completed using mechanical dredging (clamshell or bucket on extended reach excavator) if access issues are encountered. A desktop noise analysis was completed for each of the potential dredge methods (mechanical and hydraulic). The analysis is based on a review of studies that most closely match the type and size of equipment proposed for use and the existing environmental conditions at the project site (e.g., soft sediments in a riverine environment). Results are discussed below.

Mechanical Dredge

A mechanical dredge may be used if access issues are encountered. Noise produced during mechanical dredging includes noise generated by winches, bucket impact with the substrate, bucket closing, and the emptying of material into a barge (Engineer Research and Development Center [ERDC] 2001). In coarse substrates, bottom contact typically produces the most intense noise, but noise emitted during bottom contact in soft substrates is less intense. Winch noise produced by the lowering or raising of the bucket is typically the loudest noise produced during mechanical dredging in soft sediments (ERDC 2001).

Studies conducted in Alaska's Cook Inlet in 2001 indicate that the raising and lowering of the winch during mechanical dredging produces noise levels of up to 116.6 dBrms at 150 meters from the source (ERDC 2001). In-water noise generated by mechanical dredging is anticipated to attenuate background noise levels within approximately 90 meters (about 0.06 mile) of the source.

Hydraulic Dredge

Major processes contributing to noise production during hydraulic dredging includes the noise produced during dredge material collection and intake of sediment-water slurry; sounds produced by pumps driving suction of material through pipes, movement of sediment through pipes, and sounds associated with

vessels and machinery operating the dredge equipment (Reine and Dickerson 2014). Sounds produced by hydraulic dredging are continuous except during transitional activities (e.g., system flushing, repositioning, etc.).

Studies conducted in the Stockton Deepwater Shipping Channel in California in 2014 indicated that hydraulic cutterhead dredging in soft sediments generated underwater sound pressure levels of 153 dBrms at 1 meter from the source (Reine and Dickerson 2014). In-water noise generated by dredging using a hydraulic cutterhead is anticipated to attenuate to background noise levels within 160 meters (about 0.1 mile) of the source.

2.3.2.2. In-air Noise

Dredging

The loudest pieces of machinery expected to be in use during dredge and placement activities will be pumps and generators. Pumps could result in in-air noise levels of up to 74 dBA at 15.25 meters from the source (WSDOT 2020). Generators could result in in-air noise levels of up to 73 dBA at 15.25 meters from the source (WSDOT 2020). Pumps and generators could run simultaneously and result in cumulative noise levels of up to 77 dBA at 15.25 meters from the source (USDOT 1995). 77 dBA at 15.25 meters was used to calculate the extent of in-air noise during dredging activities. In-air noise generated by dredging and placement activities is anticipated to attenuate to background noise levels at approximately 110 meters (about 0.07 mile) of the source.

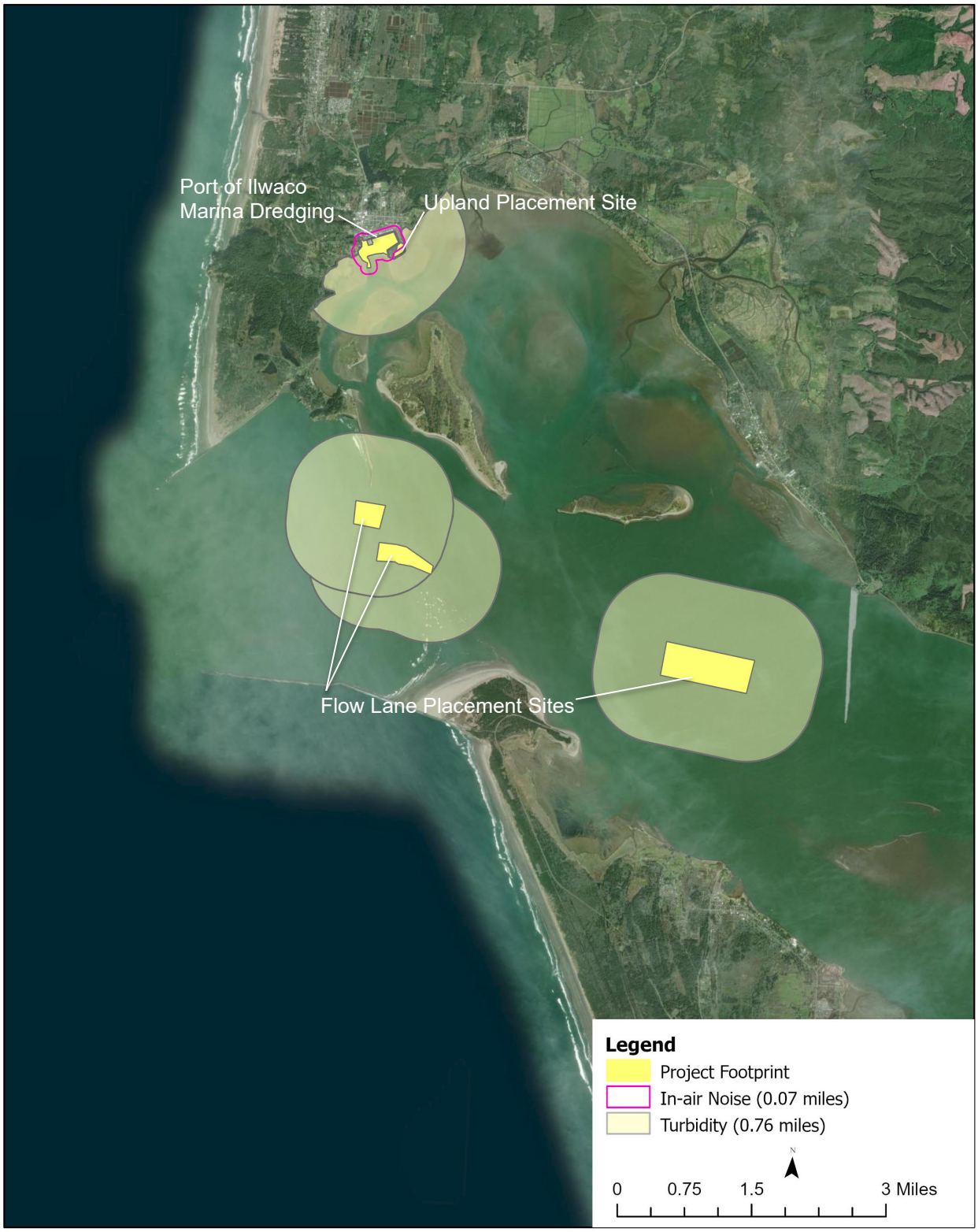

FIGURE 4: ACTION AREA AS DEFINED BY THE EXTENT OF IN-WATER AND IN-AIR IMPACTS

3. Status of Species and Critical Habitat

This Section discusses the ESA-listed species and critical habitat known to occur, or with the potential to occur, within the Action Area. Chinook salmon (*Oncorhynchus tshawytcha)* chum salmon (*Oncorhynchus keta*), Coho salmon (*Oncorhynchus kisutch)*, sockeye salmon (*Oncorhynchus nerka)*, steelhead *(Onocorhynchus myskiss)*, bull trout (*Salvelinus confluentus)*, green sturgeon (*Acipenser medirostris)*, eulachon (*Thaleichthys pacificus)*, leatherback sea turtle (*Dermochelys coriacea*), southern resident killer whales (*Orcincus orca)*, humpback whale (*Megaptera novaeangliae)*, western snowy plover (*Charadrius nivosus nivosus*), marbled murrelet (*Brachyramphus marmoratus)*, and streaked horned lark (*Eremophila alpestris strigata)* could occur in the Project Area (Table 3). It was determined that the Project may affect, but is **not likely to adversely affect** (NLAA) the ESA-listed species listed in Table 3. Yellow billed cuckoo (C*occyzus americanus),* monarch butterfly (*Danaus plexippus)*, short-tailed albatross (*Phoebastria albatrus*), and northwestern pond turtle (Actinemys marmorata) were evaluated for their potential to occur in the Project Area. However, it was determined that these species will either not occur in the Project Area based on the location of the Project and available habitat or would not be impacted by the Project given the nature of the proposed activities (Table 4). The Project would have no effect on the species listed in Table 4.

Information for this BE regarding listed species was obtained from the USFWS Information for Planning and Consultation (IPaC) website (USFWS 2024 and the NMFS West Coast Region protected species website and Protected Resources App database (NMFS 2024a and NMFS 2024b) on 3 January 2025. Additional information came from the WDFW's database, SalmonScape (WDFW 2024a).

TABLE 3: ESA-LISTED SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT ACTION AREA

Species	ESU/DPS	Scientific Name	Agency	Federal Status	Critical Habitat
Chinook Salmon	Lower Columbia River evolutionarily significant unit (ESU)	*Oncorhynchus tshawytcha*	NMFS	Threatened	Occurs in Action Area
	Snake River fall-run ESU			Threatened	
	Snake River spring/summer-run ESU			Threatened	
	Upper Columbia River spring-run ESU			Endangered	
	Upper Willamette River ESU			Threatened	
Chum Salmon	Columbia River ESU	*O. keta*	NMFS	Threatened	Occurs in Action Area
Coho Salmon	Lower Columbia River ESU	*O. kisutch*	NMFS	Threatened	Occurs in Action Area
Sockeye Salmon	Snake River ESU	*O. nerka*	NMFS	Endangered	Occurs in Action Area
Steelhead	Lower Columbia River Distinct Population Segment (DPS)	*Onocorhynchus myskiss*	NMFS	Threatened	Occurs in Action Area
	Middle Columbia River DPS			Threatened	
	Snake River Basin DPS			Threatened	
	Upper Columbia River DPS			Threatened	
	Upper Willamette River DPS			Threatened	
Green sturgeon	Southern DPS	*Acipenser medirostris*	NMFS	Threatened	Occurs in Action Area

Species	ESU/DPS	Scientific Name	Agency	Federal Status	Critical Habitat
Eulachon	Southern DPS	*Thaleichthys pacificus*	NMFS	Threatened	Occurs in Action Area
Sea turtles	Leatherback	*Dermochelys coriacea*	NMFS	Endangered	None in Action Area
Killer Whale	Southern Resident	*Orcincus orca*	NMFS	Endangered	None in Action Area
Humpback Whale	Central America DPS	*Megaptera novaeangliae*	NMFS	Endangered	None in Action Area
	Mexico DPS			Threatened	None in Action Area
Bull Trout	N/A	*Salvelinus confluentus*	USFWS	Threatened	Occurs in Action Area
Western Snowy Plover	N/A	*Charadrius nivosus*	USFWS	Threatened	None in Action Area
Marbled Murrelet	N/A	*Brachyramphus marmoratus*	USFWS	Threatened	None in Action Area
Streaked Horned Lark	N/A	*Eremophila alpestris strigata*	USFWS	Threatened	None in Action Area

Source: USFWS Information for Planning and Consultation (IPaC) database (USFWS 2024) and the NOAA Fisheries Protected Resources App (NOAA 2024).

TABLE 4: ESA-LISTED SPECIES DETERMINED TO NOT OCCUR IN PROJECT AREA OR BE IMPACTED BY PROJECT

Species	Scientific Name	Agency	Status	Additional Information
Yellow-billed Cuckoo	*Coccyzus americanus*	USFWS	Threatened	*Yellow-billed cuckoo believed to be extirpated from all its historical range in Washington (85 Federal Register [FR] 11465). Associated with cottonwood and willow riparian habitat, a habitat that does not occur in the Action Area.*
Monarch Butterfly	*Danaus plexippus*	USFWS	Candidate	*Proposed activities would not destroy vegetation that could provide habitat. Impacts would not occur.*
Short-tailed Albatross	*Phoebastria (=Diomedea) albatrus*	USFWS	Endangered	*The species is known to breed on just two remote islands off the coast of Japan and spends most of its life foraging at sea. Foraging habitat for this species stretches across much of the temperate and subarctic North Pacific and they have been observed in the Gulf of Alaska, the Aleutian Islands, and the Bering Sea. There is evidence that young adult individuals forage as far south as the Oregon coast but feeding range in the U.S. is generally concentrated in waters off Alaska (USFWS 2012).* *There are no known documented occurrences of short-tailed albatrosses in the Action Area and they rarely occur along the outer coast.*
Northwestern Pond Turtle	*Actinemys marmorata*	USFWS	Proposed Threatened	Proposed activities would not impact terrestrial or freshwater aquatic habitat where northwestern pond turtles could occur. Impacts would not occur.

Source: USFWS (IPaC) database (USFWS 2024)

4. Listed Species and Critical Habitat

4.1. Chinook Salmon (*Oncorhynchus tshawytscha*)

The Action Area is potential habitat for five ESU of Chinook salmon (Oncorhynchus tshawytscha): the Lower Columbia River (LCR), Upper Willamette River (UWR), Upper Columbia River (UCR), Snake River spring/summer-run (SR-SyS), and Snake River fall-run (SR-F).

The LCR ESU of Chinook salmon includes all natural spawning populations in river reaches accessible to Chinook salmon in Columbia River tributaries between the Grays and White Salmon Rivers in Washington and the Willamette and Hood Rivers in Oregon (70 FR 37160). The other ESUs with the potential to occur within the Action Area use the Columbia River as a migratory corridor to spawning and rearing habitats higher in the watershed.

The most recent 5-year status reviews for these ESUs indicate that there has been some modest increase in abundance for some ESU populations, but most are not currently meeting recovery goals (NMFS 2016a). Native stocks are scarce or nonexistent (Myers et al. 1998; Lower Columbia Fish Recovery Board [LCFRB] 2010a). Habitat degradation due to stream blockages, forest practices, urbanization, and agriculture are listed as primary causes of decline.

4.1.1. Distribution and Habitat Requirements

Chinook salmon have the most complex life history with a large variety of patterns compared to other Pacific salmon. The length of freshwater and saltwater residency varies greatly (Myers et al. 2006). Channel size and morphology, substrate size and quality, water quality, and cover type and abundance may influence distribution and abundance of Chinook salmon (LCFRB 2010a). Columbia River stocks return to spawn in the fall and spring after three to five years in the ocean. Spawning occurs in the mainstems of larger tributaries in coarse gravel and cobble (Myers et al. 1998).

4.1.2. Presence in Action Area

Habitat use within the Action Area is variable, depending on the stock. Adult fish migrate through the Action Area almost year-round. Depending on the ESU, adults enter the LCR between February and November and spawn in tributaries from August through September (Myers et al. 2006, LCFRB 2010b). The portion of the LCR that is within the Action Area does not provide any suitable spawning or rearing habitat for Chinook salmon, as suitable spawning substrate is virtually non-existent. If they are present, migrating adults are expected to be moving quickly through the Action Area.

Juvenile movement through the Action Area is also variable depending on the stock. Juveniles often move into the LCR and estuary to over-winter (LCFRB 2010c). Spring Chinook tend to rear in tributary streams for a year, and yearlings out-migrate rapidly during the spring freshet (LCFRB 2010b). Fall Chinook tend to out-migrate as sub-yearlings in the late summer and fall of their first year (LCFRB 2010b). These fish are more likely to spend days to weeks residing in tidal freshwater habitats with peak abundances occurring March through May (Hering et al. 2010; McNatt et al. 2016). Smaller sub-yearling salmonids will likely congregate along the nearshore areas in shallow water and extend into the channel margins (Bottom et al. 2011), but some research indicates there is higher use of the channel margins than previously thought (Carlson et al. 2001) and relative juvenile position in the water column suggests higher potential sub-yearling use in areas of 20- to 30-ft-deep.

4.1.3. Critical Habitat

The proposed action occurs within designated critical habitat for all five ESU Chinook salmon. Table 5 provides a brief summary of the critical habitat designations.

TABLE 5: CHINOOK SALMON CRITICAL HABITAT DESIGNATIONS AND DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Chinook Salmon		
Lower Columbia River ESU	2 September 2005	Columbia River to confluence with Hood River and tributaries.
Upper Willamette River ESU	2 September 2005	Columbia River to confluence with Willamette River. Willamette River, including Willamette Channel, and tributaries.
Upper Columbia River Spring–Run ESU	2 September 2005	Columbia River to Island Dam and tributaries.
Snake River Spring/ Summer-Run ESU	25 October 1999	Columbia River to confluence with Snake River. Snake River and tributaries.
Snake River Fall-Run ESU	28 December 1993	Columbia River to confluence with Snake River. Snake River and tributaries.

Critical habitat is a specific geographic area that contains features essential to the conservation of the species. The primary constituent elements (PCEs) determined essential for to the conservation of salmon and steelhead and the presence or absence of these PCEs are discussed below. These PCEs are consistent for all ESU/DPS salmon and steelhead addressed in this BE and this Section will be referenced in discussion for those ESU/DPS below.

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

The Action Area is situated at the mouth of the Columbia River where saline ocean water mixes with and is diluted by freshwater from the river system and does not provide suitable freshwater spawning habitat for salmon and steelhead.

- *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.*

The Action Area does not provide suitable freshwater habitat necessary to support juvenile growth and mobility, or juvenile development because is situated within an estuarine environment where saline ocean water mixes with freshwater from the river system.

- *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.*

The Action Area does not provide suitable freshwater migration habitat because it is situated within an estuarine environment where saline ocean water mixes with freshwater from the river system. It is possible that adult and juvenile salmon and steelhead migrate through the Action Area between their off-shore marine habitats and freshwater natal streams, however the nature of the estuarine environment within the Action Area is not a freshwater system.

- *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.*

The Action Area provides only marginal estuarine rearing habitat for juvenile salmonids. The Marina is enclosed by rock jetties with only limited natural cover or aquatic vegetation. Most of the shoreline consists of developed and/or armored areas with only short statured vegetation when present. West of the Marina there is approximately 1,000 ft of more natural vegetated shoreline that provides cover, overhanging vegetation, and woody debris. The Marina does not provide any side channel or off-channel habitat. The portion of the LCR that is within the Action Area does provide suitable habitat for juvenile growth, mobility, or forage, but offers very limited, suboptimal habitat for juvenile rearing, growth and maturation, and/or juvenile or adult forage.

- *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.*

The Action Area does not provide marine habitat. The project is located in an estuarine environment. The enclosed Marina does not provide natural cover, submerged or overhanging large wood, aquatic vegetation, rocks, boulders, or side channels. Most of the shoreline consists of developed and/or armored areas with only short statured vegetation when present. West of the Marina there is some naturally vegetated shoreline that provides cover, overhanging vegetation, and woody debris. The in-water Action Area likely provides suitable water quality and quantity conditions to support foraging behavior (aquatic invertebrates and fish) for adult and juvenile salmonids. The portion of the LCR that is within the Action Area does provide suitable habitat for juvenile growth, maturation, and forage, but available habitat is limited and suboptimal compared to better quality habitat immediately outside of the Action Area within Baker Bay.

- *Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.*

The Action Area does not provide offshore marine habitat for salmon and steelhead. As mentioned previously, the Action Area consists of the estuarian and nearshore habitat of Baker Bay at the mouth of the LCR where ocean water mixes with freshwater from the river system.

4.2. Chum Salmon (*Oncorhynchus keta*)

The proposed Project area is located within the Columbia River ESU of chum salmon (*Oncorhynchus keta*). The Columbia River ESU of chum salmon includes all naturally spawning populations in all river reaches accessible to chum salmon in the Columbia River downstream from Bonneville Dam (70 FR 37160).

The majority of the populations in this ESU are at high to very high risk, with very low abundances (NWFSC 2015). Columbia River ESU chum salmon are essentially extirpated upstream of Bonneville Dam. Only three populations (Grays River, Hardy Creek, and Hamilton Creek) are at low to moderate risk.

The ESU as a whole remains at moderate to high risk. Habitat loss and degradation due to dam placement, forest practices, and urbanization are the most significant causes of decline in this ESU (Johnson et al. 1991; LCFRB 2010a).

4.2.1. Distribution and Habitat Requirements

Historically, chum salmon were very abundant in the Columbia River. They have the broadest spawning distribution of Pacific salmon species. Chum salmon have a very short freshwater residency time, and require cool, clean water, and substrate for spawning. Migration to saltwater occurs immediately after emerging from the gravel. After three to five years in saltwater, Columbia River chum salmon return to spawn in the fall. Spawning typically takes place in the lower mainstems of rivers, including the Columbia River, frequently in locations within the tidal zone where there is an abundance of clean gravel.

4.2.2. Presence in Action Area

Adults likely use the Action Area only as a migration corridor. Adult fish enter freshwater and likely migrate through the Action Area from mid-October through November and spawn from early November to late December. Spawning occurs in low-gradient, low-elevation reaches of the LCR and major tributaries (LCFRB 2010b). Spawning habitat requirements include clean gravel and spawning sites are typically associated with areas of upwelling water (LCFRB 2010a). No suitable spawning habitat exists within the Action Area.

Juvenile out-migration to the Columbia River estuary for rearing occurs soon after emergence from spawning gravels, from mid-February to mid-June. Chum salmon usually spend more time in estuaries than do other anadromous salmonids (Dorcey et al. 1978 and Healey et al. 1982, as cited in NMFS 2013)—(up to weeks or months) (NMFS 2011). Shallow, protected habitats such as salt marshes, tidal creeks, and intertidal flats serve as rearing areas for juvenile chum salmon during estuarine residency (LCFRB 2010a). Juvenile chum salmon rear in the Columbia River estuary from February through June before beginning long-distance ocean migrations (LCFRB 2010a).

No backwater channels habitat suitable for rearing chum salmon occur within the Action Area and nearshore habitat that does occur within the Action Area is not optimal for rearing. Chum salmon may rear within the Action Area.

4.2.3. Critical Habitat

The proposed action occurs within designated critical habitat for all Columbia River ESU chum salmon Table 6 provides a brief summary of the critical habitat designations.

TABLE 6: CHUM SALMON CRITICAL HABITAT DESIGNATIONS AND DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Chum Salmon		
Columbia River ESU	2 September 2005	Columbia River to confluence with Hood River and tributaries.

Critical habitat is a specific geographic area that contain features essential to the conservation of the species. The PCEs determined essential to the conservation of salmon and steelhead that could be present within the Action Area are consistent for all ESU/DPS salmon and steelhead addressed in this BE. See Section 4.1.3 above for discussion of PCE presence within the Action Area.

4.3. Coho Salmon (*Oncorhynchus kisutch*)

The Action Area is located within the LCR ESU of Coho salmon (*Oncorhynchus kisutch*). This ESU includes all natural spawning populations in Columbia River tributaries below the Klickitat River in Washington and the Deschutes River in Oregon (including the Willamette River up to Willamette Falls) (70 FR 37160).

Of the 24 populations that make up this ESU, 21 populations are at very high risk, one population is at high risk, and two populations are at moderate risk. While recovery efforts have likely improved the status of a number of Coho salmon populations, abundance is still at low levels and the majority of the populations remain at moderate or high risk. Limiting factors for this ESU include degraded habitat and restricted access (e.g., altered flow regime in the Columbia River, sediment and nutrient changes in the estuary, fish passage barriers, reduced access to off-channel rearing habitat, and presence of contaminants), and over harvesting (LCFRB 2010b).

4.3.1. Distribution and Habitat Requirements

Historically, Coho salmon spawned in almost every accessible stream system in the LCR and typically occupy intermediate positions in tributaries relative to chum and fall-run Chinook (downstream) and steelhead and spring-run Chinook (upstream) (LCFRB 2010a). Coho salmon usually spawn in small to medium, low-to-moderate elevation streams and favor small, rain-driven, lower elevation streams characterized by late summer and early fall low flows, and increased river flows with cooler water temperatures in winter (LCFRB 2010a). Redds are constructed in gravel and small cobble substrate in pool tailouts, riffles, and glides and sufficient flow depth is required for spawning activity (NMFS 2013). Eggs incubate over late fall and winter for about 45 to 140 days, depending on water temperature, Fry typically emerge from early spring to early summer. Hatching success depends on clean gravel that is not choked with sediment or subject to extensive scouring by floods (LCFRB 2010a).

Juveniles rear in freshwater for more than a year. Fry move to shallow low-velocity environments (stream edges and side channels) after emergence. Juveniles favor pools and will congregate in backwaters and side channels (LCFRB 2010a). Most juvenile Coho salmon migrate seaward as smolts in April to June, (typically during their second year). Coho generally do not linger for extended periods in the LCR estuary, but it is a critical habitat used for feeding during the physiological adjustment to salt water. Juvenile Coho salmon are present in the LCR estuary from March to August (LCFRB 2010a). Adult Coho salmon return from the ocean to spawn during fall freshets in September and October.

The distribution and abundance of Coho salmon are most likely influenced by water temperature, stream size and flow, channel morphology, vegetation type and abundance, and channel substrate.

4.3.2. Presence in Action Area

There are two types of run timing associated with Coho, Type S, which are early run, and Type N, which are late run (Myers et al. 2006). Type S fish generally return to the Columbia River from August to October and spawn in October and November. Type N fish return to the Columbia River from October to November/ December and spawn in November through January. Some Type N Coho can spawn as late as mid-February (Myers et al. 2006).

Spawning in the tributaries of the LCR occurs roughly November through January (Weitkamp 1994). No suitable spawning habitat is present within the Action Area.

Juveniles rear in smaller tributaries and are not anticipated to rear in significant numbers within the Action Area. Juvenile out-migration occurs in the spring and summer of the second year, with the peak occurring in May (LCFRB 2010b). Depending on the degree of maturation, some juveniles may forage in the Action Area during out-migration.

4.3.3. Critical Habitat

The proposed action occurs within designated critical habitat for LCR ESU Coho salmon. Table 7 provides a brief summary of the critical habitat designations.

TABLE 7: COHO SALMON CRITICAL HABITAT DESIGNATIONS AND DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Coho Salmon		
Lower Columbia River ESU	24 February 2016	Columbia River to confluence with Hood River and tributaries.

Critical habitat is a specific geographic area that contain features essential to the conservation of the species. The PCEs determined essential for to the conservation of salmon and steelhead that could be present within the Action Area are consistent for all ESU/DPS salmon and steelhead addressed in this BE. See Section 4.1.3 above for discussion of PCE presence within the Action Area.

4.4. Sockeye Salmon (*Oncorhynchus nerka*)

The Action Area is located within the Snake River ESU of sockeye salmon (*Oncorhynchus nerka*). The Snake River ESU of sockeye salmon includes all river reaches and estuary areas presently or historically accessible to sockeye salmon in the Columbia River. This is defined as all river reaches east of a straight line connecting the west end of the Clatsop Jetty (Oregon side) and the west end of the Peacock Jetty (Washington side), and extending upstream to the confluence of the Snake River, upstream on the Snake River to the confluence of the Salmon River, and upstream on the Salmon River to the confluence of the Alturas Lake Creek and Stanley, Redfish, Yellow Belly, Pettit, and Alturas Lakes (including their inlet and outlet tributaries) (70 FR 37160).

The Snake River ESU of sockeye salmon is extremely close to extinction. There has been substantial progress on developing hatchery program(s) to amply stock and facilitate reintroductions and captive brood programs have been successful in providing substantial numbers of hatchery produced fish for use in supplementation efforts, but this single population ESU is at very high risk due to small population size (NMFS 2016b). Limiting factors for this ESU include effects related to the hydropower system on the Columbia River, reduced water quality and elevated temperatures, water quality, and predation. The only extant sockeye salmon in the Snake River ESU spawn in lakes in the Stanley basin of Idaho.

4.4.1. Distribution and Habitat Requirements

Historically, adult sockeye salmon in the Snake River ESU enter the LCR in June and July and migrate upstream through the Snake and Salmon Rivers, arriving at their natal lakes in August and September. Spawning peaks in October and occurs in lakeshore gravels. Fry emerge in late April and May and move immediately to the open waters of the lakes where they feed on plankton for one to three years before migrating to the ocean (NMFS 2015). Juvenile sockeye generally leave Redfish Lake from late April through May and migrate to the Pacific Ocean. Snake River ESU sockeye salmon spend two to three years in the Pacific Ocean before returning to their natal lakes to spawn (NMFS 2015).

4.4.2. Presence in Action Area

Adult and juvenile sockeye salmon are expected to migrate through the Project vicinity. In the Columbia River basin, sockeye salmon spawn and rear in lakes in the upper Snake River watershed. Adults likely migrate through the Action Area in June and July. Juvenile out-migration begins in early spring after ice

breakup on the lakes (LCFRB 2010c), and out-migrating juveniles are likely present within the Action Area between April and June.

4.4.3. Critical Habitat

The proposed action occurs within designated critical habitat for Snake River ESU sockeye salmon. Table 8 provides a brief summary of the critical habitat designations.

TABLE 8: SOCKEYE SALMON CRITICAL HABITAT DESIGNATIONS AND DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Sockeye Salmon		
Snake River ESU	28 December 1993	Columbia River to confluence with Snake River. Snake River and tributaries.

Critical habitat is a specific geographic area that contain features essential to the conservation of the species. The PCEs determined essential for to the conservation of salmon and steelhead that could be present within the Action Area are consistent for all ESU/DPS salmon and steelhead addressed in this BE. See Section 4.1.3 above for discussion of PCE presence within the Action Area.

4.5. Steelhead (*Oncorhynchus mykiss*)

The Action Area represents potential habitat for five ESUs of steelhead (*Oncorhynchus mykiss*): the LCR, UWR, Middle Columbia River (MCR), UCR, and Snake River Basin ESU. The LCR within the Action Area represents a migration corridor for these five ESUs.

Factors contributing to the decline of the steelhead ESU in the Columbia River include predation and competition, blocked access to historical habitat, habitat degradation, hatchery practices, and urbanization. Despite the ability of steelhead to use a diversity of habitats, very few healthy stocks remain within the Columbia River basin (LCFRB 2010c).

4.5.1. Distribution and Habitat Requirements

Steelhead is the most widely distributed anadromous salmonid. The life history pattern of steelhead can be very complex, involving repeated spawnings, and continuous reversals of freshwater to ocean phases (LCFRB 2010c). The distribution and abundance of steelhead are thought to be influenced by water temperature, stream size, flow, channel morphology, vegetation type and abundance, and channel substrate size and quality (LCFRB 2010c). Steelhead use a wide range of habitat types from low-order tributaries to river mainstems depending upon the specific requirements of a particular life stage (61 FR 41541). Steelhead ESU that migrate within the LCR return in the spring and fall to spawn. Spawning occurs in small to large gravel of tributaries and smaller rivers (LCFRB 2010b). Fry emergence typically occurs from March into July, with peak emergence time generally in April and May (NMFS 2015). Fry usually move to the shallow margins of streams following emergence and begin inhabiting deeper, higher velocity environments as they grow. Juvenile steelhead rear in freshwater streams for 1 to 4 years before migrating to the ocean. Outmigration generally occurs from March to June. Catch data suggest that juvenile steelhead migrate directly offshore during their first summer.

4.5.2. Presence in Action Area

Adult and juvenile steelhead most likely use the Action Area as a migration corridor. Adults likely migrate through the Action Area year-round, depending on the run type. Summer steelhead migrate upstream

within the Columbia River between roughly May and October, with spawning occurring in tributaries between late February and early April. Winter-run adults enter the LCR between December and May, spawning in tributaries in late April and early May.

Peak adult spawning for both summer and winter runs occurs in the spring. Spawning occurs in the tributaries throughout the Columbia River basin (LCFRB 2010b). In streams that support both summer and winter steelhead runs, summer steelhead tend to spawn higher in the watershed. No suitable steelhead spawning habitat occurs within the Action Area.

The peak juvenile out-migration through the LCR occurs in the spring. Over-wintering and out-migrating juvenile steelhead may occupy the nearshore habitat within the Project area. Juvenile steelhead may be present in high numbers during migration periods.

4.5.3. Critical Habitat

The proposed action occurs within designated critical habitat for all five ESU of listed steelhead. Table 9 provides a brief summary of the critical habitat designations.

TABLE 9: STEELHEAD CRITICAL HABITAT DESIGNATIONS AND DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Steelhead		
Lower Columbia River DPS	2 September 2005	Columbia River to confluence with Hood River and tributaries.
Upper Willamette River DPS	2 September 2005	Columbia River to confluence with Willamette River. Willamette River, including Willamette Channel, and tributaries.
Middle Columbia River DPS	2 September 2005	Columbia River to confluence with Yakima River and tributaries.
Upper Columbia River DPS	2 September 2005	Columbia River to Chief Joseph Dam and tributaries.
Snake River Basin DPS	2 September 2005	Columbia River to confluence with Snake River. Snake River and tributaries.

Critical habitat is a specific geographic area that contain features essential to the conservation of the species. The PCEs determined essential for to the conservation of salmon and steelhead that could be present within the Action Area are consistent for all ESU/DPS salmon and steelhead addressed in this BE. See Section 4.1.3 above for discussion of PCE presence within the Action Area.

4.6. Bull Trout (*Salvelinus confluentus*)

The Project area is located within the Columbia River DPS of bull trout (*Salvelinus confluentus*). Excluding one Nevada population, the Columbia River DPS includes all natural spawning populations in the Columbia River basin within the U.S. and its tributaries (FR 63 31647). Bull trout in the Columbia River DPS are listed as threatened under the ESA. Bull trout are piscivorous and are the only native char.

Key factors in the decline of bull trout populations include harvest by anglers, impacts to watershed biological integrity, and the isolation and fragmentation of populations. Changes in sediment delivery (particularly to spawning areas), degradation and scouring, shading (high water temperature), water quality, and low hydrologic cycles adversely affect bull trout. Therefore, impacted watersheds are

negatively associated with current populations. Bull trout also appear to be affected negatively by non-native trout species through competition and hybridization.

4.6.1. Distribution and Habitat Requirements

Bull trout were once widely distributed throughout the Pacific Northwest but have been reduced to approximately 44 percent of their historical range (LCFRB 2010c). Bull trout are thought to have more specific habitat requirements in comparison to other salmonids and are most often associated with undisturbed habitat with diverse cover and structure. Spawning and rearing are thought to be primarily restricted to relatively pristine cold streams, often within headwater reaches (Rieman and McIntyre 1993). Adults can reside in lakes, reservoirs, and coastal areas or they can migrate to saltwater (63 FR 31647). Juveniles are typically associated with shallow backwater or side-channel areas, while older individuals are often found in deeper pools sheltered by large organic debris, vegetation, or undercut banks (63 FR 31467). Water temperature is also a critical factor for bull trout and areas where water temperature exceeds 59°F (15°C) are thought to limit distribution (Rieman and McIntyre 1993).

4.6.2. Presence in Action Area

In southwest Washington, bull trout have been reported in the North Fork Lewis, White Salmon, and Klickitat River systems (USFWS 1998). Historically, bull trout were found in the Cowlitz and Kalama basins but are not believed to be present there today. Bull trout populations occur in two drainages downstream of Bonneville Dam: the Willamette River and the Lewis River (USFWS 1998). Because bull trout in the LCR basin are not usually anadromous, they are primarily regulated by local habitat conditions, and not directly affected by conditions in the mainstem Columbia River and estuary (LCFRB 2010c).

The only core areas presently supporting anadromous populations of bull trout are located within the Puget Sound and Olympic Peninsula regions. Although bull trout in the LCR region share a genetic past with the Puget Sound and Olympic Peninsula regions, it is unclear to what extent the LCR core areas supported the anadromous life history in the past or could in the future (Ardren et al. 2011 in USFWS 2015a).

Bull trout prefer the upper reaches of cold, clear running streams with clean gravel and cobble substrate for spawning. Adult bull trout in the Columbia River basin spawn in headwater tributaries and forage in mainstem freshwater reaches of larger rivers. It is unlikely that bull trout would occur in the Action Area because it is located within the marine/mixing zone of the Columbia River estuary.

4.6.3. Critical Habitat

The critical habitat designation and description for Columbia River DPS bull trout are summarized in Table 10.

TABLE 10: BULL TROUT CRITICAL HABITAT DESIGNATION AND DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Bull Trout		
Columbia River DPS	17 November 2010	Mainstem Columbia River and major tributaries from mouth to Chief Joseph Dam.

The PCEs determined essential to the conservation of Columbia River DPS bull trout are as follows:

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

The Action Area does not provide these habitat characteristics and will not impact these PCEs of bull trout critical habitat.

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

The Action Area may serve as a migratory corridor for bull trout. However, habitat conditions within the Action Area severely limit its suitability. No natural cover, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, or large rocks and boulders exist within the active Marina. There is more natural shoreline on the west side of the Action Area that may provide limited marginal resources for bull trout mobility and survival, as previously discussed.

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

The Action Area does provide habitat for native and non-native juvenile fishes and aquatic macroinvertebrates that serve as prey for bull trout.

- *Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.*

The Action Area includes a developed Marina that is dredged to maintain vessel access and shorelines that are engineered. As previously discussed, the west side of the Marina does provide some more natural shoreline characteristics. The Action Area does not provide these habitat characteristics and the proposed project will not impact these PCEs of bull trout critical habitat.

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

The LCR downstream of Bonneville Dam does not typically achieve water temperatures that would be suitable for bull trout (USACE 2011a). Summer water temperatures frequently exceed thresholds considered necessary for salmonid growth and survival (Tanner et al. 2012). The Action Area may provide suitable conditions for bull trout survival throughout the year but in general this PCE is not present within the Action Area and the Project will not impact this PCE of bull trout critical habitat.

- *In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.*

The Action Area does not provide these habitat characteristics and the Project will not impact these PCEs of bull trout critical habitat.

- *A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.*

Freshwater flows of the Columbia River are controlled for hydroelectric operations of the Bonneville Dam. Hydrologic control of the Columbia River at Bonneville Dam has altered the natural hydrograph of the river system, however, operations at the dam implement "target flows" to ensure adequate instream flows to support salmon and steelhead life stages including smolt outmigration. At the mouth of the Columbia River (including the Action Area) hydrologic forces are primarily dominated by tidal forces. This PCE is functioning within the river system, thought as previously stated, the Action Area is primarily dominated by tidal forces. The Project would not impact this PCE of bull trout critical habitat.

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

Water quality within the Action Area is moderately impaired, but likely suitable for survival of migrating adults and out-migrating juveniles. Portions of the LCR within the Action Area are listed on the Ecology's 303(d) list for bacteria (fecal coliform) (Ecology 2022). Water quantity, while artificially maintained by upstream control structures, is assumed to be sufficient for survival of migrating adults and out-migrating juveniles. Minor, localized, and temporary effects from increased suspended sediment due to construction activities are likely, however, BMPs will be implemented to reduce turbidity and/or any incidental impacts to water quality as the result of leaks or spills.

- *Sufficiently low levels of occurrence of nonnnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.*

Northern pike, small mouth bass, and brown trout have been documented in the Columbia River, however these freshwater species are not likely to occur in the saline mixing zone that defines the Action Area. Catch reports indicate that these areas are primarily inhabited by saltwater species such as Pacific halibut and black seabass, and anadromous salmon species. The Project will not alter the presence or absence of non-native predatory, interbreeding, or competing species.

4.7. North American Green Sturgeon (*Acipenser medirostris*)

The Southern DPS of North American green sturgeon (*Acipenser medirostris*) are listed as threatened under the ESA. The LCR estuary below river mile (RM) 46 has been designated as critical habitat (74 FR 52299).

The most recent 5-year Status Review for this species was conducted in 2021 (NMFS 2021). The review indicates that there has not been significant change in the status of Southern DPS green sturgeon. Threats include commercial and sport fisheries, modification of spawning habitats (e.g., as a result of logging, agriculture, mining, road construction, and urban development in coastal watersheds), entrainment in water Project diversions, and pollution. All known spawning rivers have flow regimes affected by water Projects (NMFS 2018).

4.7.1. Distribution and Habitat Requirements

The green sturgeon is distributed throughout Alaska, Washington, California, and Oregon (McCabe and Tracy 1994). The Southern DPS of North American green sturgeon includes individuals from coastal and Central Valley populations south of the Eel River in California. At the time of listing there was only one known spawning population in the Sacramento River (71 FR 17757). Spawning has since been documented in the Feather and Yuba rivers, which are tributaries to the Sacramento River (Seesholtz et

al. 2015; Beccio 2018, 2019). The Columbia River does not support spawning populations of green sturgeon (71 FR 17757). Adults and subadults from this DPS migrate up the coast and use coastal estuaries, including the LCR, for resting and feeding during the summer. In the mid-1930s, before Bonneville Dam was constructed, green sturgeon were found in the Columbia River up to the Cascades Rapids; today, they occur upriver to Bonneville Dam but are predominantly found in the lower reach of the river. The estuaries of Willapa Bay, the Columbia River, and Grays Harbor are late summer concentration areas (NMFS 2018).

4.7.2. Presence in Action Area

Adult and subadult green sturgeon are typically present in the LCR from June through August, with August the peak month (McCabe and Tracy 1994). It is possible that during the months of June through August green sturgeon could be present in the Action Area.

4.7.3. Critical Habitat

The proposed action occurs within designated critical habitat for the Southern DPS of North American green sturgeon. Table 11 shows the date of the designation and gives a general description of the area designated (NMFS 2009a).

TABLE 11: NORTH AMERICAN GREEN STURGEON CRITICAL HABITAT DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
North American Green Sturgeon		
Southern DPS	9 October 2009	Columbia River mouth to RM 74.

The specific PCEs determined essential to the conservation of Southern DPS of North American green sturgeon in estuarine and coastal marine areas include:

- *Abundant prey items within estuarine habitats and substrates for juvenile, subadult, and adult life stages.*

The Action Area represents habitat providing suitable prey items for adult green sturgeon. Juvenile green sturgeon are not likely to be present within the Action Area. Migrating adults and subadults typically feed on benthic species such as shrimp, clams, and benthic fishes (NMFS 2018). The Action Area likely provides an adequate source of prey items for migrating adult and subadult green sturgeon.

- *Within bays and estuaries adjacent to the Sacramento River (i.e., the Sacramento-San Joaquin Delta and the Suisun, San Pablo, and San Francisco bays), sufficient flow into the bay and estuary to allow adults to successfully orient to the incoming flow and migrate upstream to spawning grounds.*

The Action Area is not located within the specified estuarine areas identified for the PCE. Green sturgeon are not known to spawn in the Columbia River or its tributaries and the Action Area does not represent habitat between marine/estuarine habitat and spawning grounds. This PCE of green sturgeon habitat is not present within the Action Area and the Project will not impact this PCE.

- *Water quality, including temperature, salinity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages.*

Water quality conditions are adequate to support migrating adult and subadult green sturgeon that may be present within the Action Area.

- *A migratory pathway necessary for the safe and timely passage of Southern DPS fish within estuarine habitats and between estuarine and riverine or marine habitats.*

Green sturgeon are not known to spawn in the Columbia River or its tributaries and the Action Area does not represent habitat between marine/estuarine habitat and spawning grounds. As the Columbia River does not represent suitable spawning habitat, the Action Area is most likely used as foraging habitat for migrating adult green sturgeon. The deep-water habitat is largely unobstructed, and likely is adequate to allow the safe and timely passage of migrating green sturgeon. High levels of shipping traffic on the Columbia River likely influence the usability of the shipping channel as a migratory corridor.

- *Diversity of depths necessary for shelter, foraging, and migration of juvenile, subadult, and adult life stages.*

The Action Area has limited complexity regarding diversity of depths because the Marina is dredged to maintain vessel access. The Action Area likely represents marginally suitable nearshore estuarine habitat for shelter, foraging, and migration of adult life stages of green sturgeon. The Action Acrea also represents suitable deep-water habitat.

- *Sediment quality (i.e., chemical characteristics) necessary for normal behavior, growth, and viability of all life stages.*

Sediments within the Action Area are expected to meet this criterion. At minimum, the Action Area does likely provide sediment quality conditions that are suitable for the normal behavior, growth, and viability of migrating adult green sturgeon, which is the only life stage that is expected to occur within the Action Area.

- *A migratory pathway necessary for the safe and timely passage of Southern DPS fish within marine and between estuarine and marine habitats.*

The Columbia River does not represent suitable spawning habitat, but the Action Area is most likely used as foraging habitat for migrating adult green sturgeon. The deep-water habitat is largely unobstructed, and likely is adequate to allow the safe and timely passage of migrating green sturgeon.

- *Coastal marine waters with adequate dissolved oxygen levels and acceptably low levels of contaminants (e.g., pesticides, PAHs, heavy metals that may disrupt the normal behavior, growth, and viability of subadult and adult green sturgeon).*

Water quality conditions are adequate to support migrating adult and subadult green sturgeon that may be present within the Action Area. Portions of the Columbia River within the Action Area are listed on the Ecology's 303(d) list for bacteria (fecal coliform) (Ecology 2022). Water quantity, while artificially maintained by upstream control structures, is assumed to be sufficient for survival

- *Abundant prey items for subadults and adults, which may include benthic invertebrates and fish*.

The Action Area represents habitat providing suitable prey items for adult green sturgeon. Migrating adults and subadults typically feed on benthic species such as shrimp, clams, and benthic fishes (NMFS 2018). The Action Area likely provides an adequate source of prey items for migrating adult and subadult green sturgeon.

4.8. Pacific Eulachon (*Thaleichthys pacificus*)

Pacific eulachon (*Thaleichthys pacificus*) are small anadromous fish that occur offshore in marine waters and return to tidal areas of rivers to spawn in late winter and early spring (WDFW and Oregon Department of Fish and Wildlife [ODFW] 2001). Pacific eulachon (commonly called smelt) in the LCR are considered part of the southern DPS and is a threatened species under the ESA (NMFS 2010).

Eulachon abundance in monitored rivers has generally improved (particularly in the 2013-2015 return years), but recent poor ocean conditions and the likelihood that these conditions will persist into the near future suggest that population declines may be widespread in the upcoming return years (Gustafson et. al. 2016). Key threats to eulachon are overfishing in subsistence and commercial fisheries, continued/increased by catch in commercial groundfish and shrimp fisheries, industry pollution of freshwater and marine habitats, human impact on spawning habitat through logging, dredging, and diversions, and climate change (Hay and McCarter 2000).

4.8.1. Distribution and Habitat Requirements

Pacific eulachon are endemic to the eastern Pacific Ocean and range from northern California to southwest Alaska and into the southeastern Bering Sea. Eulachon typically spend three to five years in saltwater before returning to freshwater to spawn from late winter through early summer. Spawning runs in the Columbia River typically occur in January, February, and March. Spawning grounds are typically in the lower reaches of larger rivers fed by snowmelt and spawning typically occurs at night. Spawning occurs at temperatures from 39°F to 50°F (4°C to 10°C) in the Columbia River over sand, coarse gravel, or detrital substrates. Eulachon eggs hatch in 20 to 40 days, and then are carried downstream and dispersed by estuarine and ocean currents. Therefore, it is unlikely that eulachon life stages would occur in the Action Area during proposed construction. In addition, the Project area lacks nearshore habitat in which eulachon would spawn.

4.8.2. Presence in Action Area

Most Pacific eulachon production for the southern DPS occurs in the Columbia River basin according to NMFS (2010). Spawning runs return to the mainstem of the Columbia River from RM 25 (near the estuary) to immediately downstream of Bonneville Dam (RM 146). The Washougal River, which empties into the Columbia River at RM 122, is known to support smelt (NMFS 2010). The Sandy River, also located at RM 122 in Oregon, also supports a smelt run (NMFS 2010). In the Columbia River and its tributaries, spawning usually begins in January or February (Beacham et al. 2005). It is unlikely that Pacific eulachon spawning occurs within the Action Area because of the saline water conditions. Dredged flow lane placement will occur in deep-water depths, extending to areas where saline ocean water mixes with freshwater. Larvae are carried downstream and are dispersed by estuarine and ocean currents shortly after hatching. Larval forms outmigrate through the estuary and juvenile forms rear in marine waters extending out along the continental shelf (NMFS 2008a). While information on juvenile distribution is limited, it is likely that juveniles rear in near-shore marine areas at moderate or shallow depth (Barraclough 1964) feeding on pelagic species and krill. Pacific eulachon tend to use waters of greater depths as they grow in the marine environment and have been found as deep as 2,051 ft (Allen and Smith 1988).

It is likely that adult eulachon will be migrating through the Action Area during the in-water work period. It is not likely that spawning could occur in the Action Area and it is not likely that any spawning adults or incubating eggs would be present within the Action Area. Larval stage eulachon could be present within the Action Area.

4.8.3. Critical Habitat

The proposed action occurs within the designated critical habitat for southern DPS of Pacific eulachon. Table 12 shows the date of the designation and gives a general description of the area designated.

TABLE 12: PACIFIC EULACHON CRITICAL HABITAT DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Pacific Eulachon		
Southern DPS	5 January 2011	Lower Columbia River and tributaries

The PCEs determined essential to the conservation of Southern DPS Pacific eulachon that could be present within the Action Area are:

- *Freshwater spawning and incubation sites with water flow, quality and temperature conditions and substrate supporting spawning and incubation, and with migratory access for adults and juveniles.*

The Action Area does not represent suitable freshwater spawning and/or incubation habitat for eulachon. This PCE is not present within the Action Area and the Project will not impact this PCE of Pacific eulachon.

- *Freshwater and estuarine migration corridors associated with spawning and incubation sites that are free of obstruction and with water flow, quality and temperature conditions supporting larval and adult mobility, and with abundant prey items supporting larval feeding after the yolk sac is depleted.*

The Action Area does not represent a suitable freshwater migration corridor but does represent estuarine migration habitat for Pacific eulachon. The Action Area likely provides suitable water and conditions and prey availability to support larval and adult mobility and larval survival.

- *Nearshore and offshore marine foraging habitat with water quality and available prey, supporting juveniles and adult survival.*

The Action Area does not provide marine habitat. The Action Area consists of the estuarian and habitat of Baker Bay at the mouth of the LCR where ocean water mixes with freshwater from the river system.

4.9. Leatherback Sea Turtle (*Dermochelys coriacea*)

The leatherback turtle (*Dermochelys coriacea*) is listed as Endangered throughout its range. In the Pacific, leatherback populations are in severe decline and recovery actions must be given the highest priority. Primary threats to the species are incidental take in coastal and high seas fisheries, and the killing of nesting females and collecting of eggs at the nesting beaches (WDFW 2022b). The U. S. does not have any nesting of leatherbacks in its jurisdiction in the Pacific but has important foraging areas on the continental U.S. west coast and near the Hawaiian Islands.

4.9.1. The Distribution and Habitat Requirements

Leatherback sea turtles are most widely distributed in tropical and sub-tropical waters in the Pacific. Leatherback sea turtles spend nearly their entire lifespan at sea. Five consistent conditions characterize nesting beaches: coarse-grained sand; steep, sloping littoral zone; an obstacle-free approach; proximity to deep water; and oceanic currents affecting the coast (Hendrickson and Balasingam 1966). Foraging habitat for leatherback sea turtles has been known to extend in subpolar oceans (Sato 2017). Western Pacific leatherbacks often forage in the coastal and shelf waters adjacent to the Columbia River Plume and satellite telemetry data indicates that the state's outer coast (especially the area near the Columbia River plume) is an important foraging area for the species (Benson et al. 2011)

4.9.2. The Presence in Action Area

Other species of sea turtles have occasionally been documented in marine waters at the mouth of the LCR or found washed ashore on coastal beaches in Oregon and Washington. These are typically juvenile individuals that have been driven off course by storms or are sick and found stranded. Off the West Coast of North America, western Pacific leatherback sea turtles are distributed most commonly off central California (Benson et al. 2007). Within Washington waters, western Pacific leatherbacks occur along the entire outer coast outward to pelagic waters but are most commonly found in continental shelf and slope habitat (200–2000 m) (Benson et. al. 2011). While it is possible that this species could occur in the vicinity of the project area it is unlikely.

4.9.3. Critical Habitat

The proposed Action Area does not occur within designated critical habitat for the leatherback sea turtles. Table 13 shows the date of the designation and gives a general description of the area designated.

TABLE 13: LEATHERBACK SEA TURTLE CRITICAL HABITAT DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Leatherback Sea Turtle		
NA	27 February 2012	Oregon/Washington. The area bounded by Cape Blanco, Oregon (42°50′4″ N./124°33′44″ W.) north along the shoreline following the line of extreme low water to Cape Flattery, Washington (48°23′10″ N./124°43′32″ W.) then north to the U.S./Canada boundary at 48°29′38″ N./124°43′32″ W. then west and south along the line of the U.S. Exclusive Economic Zone to 47° 57′38″ N./126° 22′54″ W. then south along a line approximating the 2,000 meter isobath that passes through points at 47° 39′55″ N./126°13′28″ W., 45°20′16″ N./125°21′ W. to 42°49′59″ N./125°8′10″ W. then east to the point of origin at Cape Blanco.

4.10. Killer Whale (*Orcincus orca*)

The Southern Resident killer whale (SRKW, *Orcincus orca*) DPS was ESA-listed as endangered in 2005. The SRKW population is made up of the J, K, and L pods.

4.10.1. Distribution and Habitat Requirements

Southern resident killer whales are found in the Salish Sea during fall, spring, and summer. Less is known about their winter habitat; however, they are known to travel along the Oregon and Washington coast. Southern Resident killer whales consume fish, particularly salmon. Their preferred prey is Chinook salmon, particularly in the summer (NMFS 2014)

4.10.2. The Presence in Action Area

Southern Resident killer whales have been repeatedly observed feeding off the Columbia River plume in the vicinity of the LCR jetties in March and April during peak spring Chinook salmon runs (USACE 2011b). Salmon returning to the Columbia River mouth may have been an important part of SRKW diet previously; however with declines in prey availability (salmon) in Columbia River stocks it is possible that

the current movement patterns of the SRKW are somewhat different from those of several centuries ago (NMFS 2008b).

Southern Resident Killer whale presence in the Columbia River mouth is rare and it is unlikely that this species would be present in the Action Area.

4.10.3. Critical Habitat

The proposed Action Area does not occur within designated critical habitat for SRKWs. Table 11 shows the date of the designation and gives a general description of the area designated.

TABLE 14: SOUTHERN RESIDENT KILLER WHALE CRITICAL HABITAT DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Killer Whale		
Southern Resident DPS	9 October 2009	Coastal Washington/Northern Oregon Inshore Area. U.S. marine waters west of a line connecting Cape Flattery, Washington (48°23′10″ N/124°43′32″ W), Tatoosh Island, Washington (48°23″ N/124°44′12″ W), and Bonilla Point, British Columbia (48°35′30″ N/124°43′00″ W), from the U.S. international border with Canada south to Cape Meares, Oregon (45°29′12″ N), between the 6.1-m and 50-m isobath contours. This includes waters off Clallam, Jefferson, Grays Harbor, and Pacific counties in Washington and Clatsop and Tillamook counties in Oregon.

4.11. Humpback Whale (*Megatera novaeangliae*)

Humpback whales (*Megaptera novaeangliae*) were listed under the ESA as endangered in 1970. In 2016 NMFS revised the listing status and divided the globally endangered species into 14 distinct population segments, removed the species-level listing, and revised the listing status of the individual DPSs (81 FR 62259).

4.11.1. Distribution and Habitat Requirements

Humpback whales in the California/Oregon/Washington “stock” include multiple DPSs. These populations are recognized based on their low-latitude breeding areas. The California/Oregon/ Washington stock primarily includes whales from the endangered Central America DPS and the threatened Mexico DPS, in addition to a small number of whales from the Hawaii DPS (which is not currently listed under the ESA). The Marine Mammal Protect Act considers the California/Oregon/ Washington stock endangered and depleted for management purposes.

The Mexico DPS breeds along the Pacific coast of Mexico during winter months and then migrates to feeding areas that range from California to the Aleutian Islands. The Central American DPS breeds along the Pacific coast of Central America and has feeding grounds of the west coast of the U.S. extending to British Columbia (86 FR 21082). Feeding areas in the North Pacific are broadly distributed, but are usually over the continental shelf or near the shelf edge at shallow (approximately 10m) to moderate water depths (approximately 50-200m). Feeding areas are also typically associated with oceanographic, bathymetric, and/or biological features that concentrate or aggregate prey species.

The Central America DPS breed in waters off Central America (Panama north to Guatemala, and possibly into southern Mexico (Bettridge *et al.* 2015, Calambokidis *et al.* 2017 as cited in 86 FR 21082) and feed off the West Coast of the U.S. and British Columbia. Foraging occurs most commonly off the coast of California with decreased numbers north to Washington and British Columbia.

The Mexico DPS breed in the area of mainland Mexico, transit off the coast of Baja California, and feed off coasts of California and Oregon, northern Washington and British Columbia, and Western Gulf of Alaska and Berring Sea 86 FR 21082.

For the remainder of this BE, the discussion of the "humpback whale" refers to either DPS.

4.11.2. The Presence in Action Area

Humpback whales are known to forage in the Columbia River plume system which supports foraging by many predators. This area is known to support an abundance of krill and seasonal/annual assemblages of forage fish. Habitat use by humpback whales is primarily continental shelf and shelf edge environments (Mate et. al. 2018). Humpback whales have occasionally been documented within the mouth of the Columbia River. It is thought that very near-shore habitat use may be driven by prey availability especially when targeting nearshore concentrations of fish like anchovies, has sometimes brought whales closer to shore and into new areas.

Humpback whale presence in the Columbia River mouth is rare and it is unlikely that this species would be present in the Action Area.

4.11.3. Critical Habitat

The proposed action does not occur within designated critical habitat for the either the Mexico or Central America DPS of Humpback whales. Table 15 shows the date of the designation of critical habitat. Critical habitat along the west coast is variable based on known use in coastal waters. Table 15 gives a general description of the area designated nearest to the Action Area.

TABLE 15: HUMPBACK WHALE CRITICAL HABITAT DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Humpback Whale		
Mexico/Central America DPS	21 May 2021	Extends southward from 46°50′ N to 45°10′ N and extends out to a seaward boundary corresponding to the 1,200-m isobath. The 50-m isobath forms the shoreward boundary. This area includes waters off of Pacific County, WA and Clatsop County, OR. This unit covers about 3,636 nmi2 of marine habitat..

4.12. Streaked Horned Lark (*Eremophila alpestris strigata*)

The streaked horned lark (*Eremophila alpestris strigata*) is endemic to the Pacific Northwest (British Columbia, Oregon, and Washington). It was listed as a threatened species under the ESA on 3 October 2013 (78 FR 61505).

The USFWS Periodic Status Review for Streaked Horned Lark (Stinson 2016) states:

> "*the factors currently influencing the streaked horned lark and anticipated to continue influencing larks in the future include ongoing loss and conversion of suitable habitats, land management activities at occupied sites and the related effects, and recreation. Survey data from some regularly monitored sites indicates that the subspecies appears to have increased in abundance from 198 breeding pairs in 2013 to 383 breeding pairs in 2019… Despite increases in abundance, a range-wide population estimate has not been reanalyzed since 2011. Therefore, we are unable to state conclusively that the range-wide population has increased based on survey data of local populations since larks were listed in 2013. In the foreseeable future, however, there is potential for a decline in resiliency of local populations across the range.*"

The loss of preferred habitat will continue from plant succession and encroachment of woody vegetation, invasion of beach grasses, changes in land use, and changes in beneficial agricultural practices. The regular large-scale, human-caused disturbance (burning, mowing, cropping, chemical treatments, or placement of dredged materials) that now provides and maintains replacement habitat for the streaked horned lark will continue, as will the related effects of these activities that can negatively affect individual larks (nest destruction, mortality, disturbance, and aircraft strikes). Recreation will also continue. The cumulative negative effect from these factors will likely be amplified in some local populations due to the synergistic effects related to small population size and climate change over the next 30 years.

4.12.1. Distribution and Habitat Requirements

Nesting habitat for the streaked horned lark along the Willamette and Columbia Rivers was historically found on sandy beaches and spits (Stinson 2016). Streaked horned larks currently nest in a broad range of habitats, including native prairies, coastal dunes, fallow and active agricultural fields, wetland mudflats, sparsely vegetated edges of grass fields, recently planted Christmas tree farms with extensive bare ground, moderately to heavily grazed pastures, gravel roads or gravel shoulders of lightly traveled roads, airports, and dredge deposition sites, particularly islands in the LCR (USFWS 2012). Wintering streaked horned larks use habitats that are very similar to breeding habitats. Habitats on the Columbia River used by larks are typically adjacent to and in view of open water, which provides the open landscape context this species needs.

Streaked horned larks need expansive areas of flat, open ground to establish breeding territories. Horned larks forage on the ground in low vegetation or on bare ground (USFWS 2012). Adults feed mainly on grass and weed seeds but feed insects to their young. Introduced weedy grasses and forb seeds comprise the winter diet. Horned larks form pairs in spring and create nests in shallow depressions on the ground. The larks show strong natal fidelity to nesting sites and may return each year to the place they were born (USFWS 2012). The nesting season begins in mid-April and ends in the early part of August. Some streaked horned larks may re-nest in late June or early July. Wintering streaked horned larks use habitats that are very similar to breeding habitats.

4.12.2. Presence in Action Area

The Action Area does not represent optimal habitat for streaked horned lark. There are some shoreline areas within the Action Area that include wetland mudflats and dredge deposit sites and visual access to open water, however vegetation conditions are generally not optimal for streaked horned lark nesting habitat. Additionally, more suitable habitat for streaked horned lark breeding and nesting occurs outside of the Action Area but within the general vicinity of the mouth of the Columbia River. Any potential streaked horned lark present within the Action Area would likely be foraging and would not spend extended periods of time in the vicinity.

Streaked horned larks could potentially be present in the Action Area during all months of the year, though they are most likely to be present during the mid-April to early August nesting season.

4.12.3. Critical Habitat

The proposed action does not occur within the immediate vicinity of designated critical habitat for the southern DPS of streaked horned lark. Table 16 shows the date of the designation and gives a general description of the area designated (USFWS 2013).

TABLE 16: STREAKED HORNED LARK CRITICAL HABITAT DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Streaked Horned Lark		
NA	3 October 2013	Critical habitat designation includes 2 units and 16 subunits located in both Oregon and Washington. The designation includes several sites in and adjacent to the LCR.

4.13. Western Snowy Plover (*Charadrius nivosus nivosus*)

The western snowy plover (*Charadrius alexandrinus nivosus*) was listed as a threatened species by the USFWS in 1993. The western snowy plover is a small shorebird found in coastal habitats. Several factors have been identified for population declines including human disturbance, predation, poor reproductive success, encroachment of non-native vegetative species into breeding areas, and urban development, among others (USFWS 2007).

4.13.1. The Distribution and Habitat Requirements

This species breeds in environments that include coastal beaches, sand spits, sparsely vegetated dunes, salt pans at lagoons and estuaries, and beaches at the mouths of creeks and rivers. Less frequent documented nesting habitats include dredged material disposal sites, bluff-backed beaches, dry salt ponds, and river bars (USFWS 2007). The historic range of this species included numerous nesting sites across the coasts of California, Oregon, and Washington, but current nesting inventories show a significant decline in the population.

The breeding season for this species (March through September) also coincides with high levels of human beach use, which is thought to result in nest abandonment and a reduction in nest density and success.

4.13.2. The Presence in Action Area

The Action Area does not represent optimal habitat for western snowy plover nesting or breeding habitat. The Pacific Coast western snowy plover breeds primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries (77 FR 36727). In winter this species is found on many of the beaches used for nesting as well as on beaches where they do not nest (e.g., manmade salt ponds, on estuarine sand and mud flats). Despite the variation in the types of habitat these habitats all share the same general characteristics of typically being flat, open areas with sandy or saline substrates, with usually sparse or absent vegetation or driftwood (Stenzel *et al.* 1981, p. 18; Service 2007 as cited in 77 FR 36727).

Any western snowy plover present in the Action Area would likely be foraging and are not expected to remain for a significant duration of time.

4.13.3. Critical Habitat

The proposed action does not occur within designated critical habitat for the Pacific Coast DPS of western snowy plover. The nearest designated critical habitat occurs more than 17 miles north of the Action Area along the outer coast and mouth of Willapa Bay. Table 17 shows the date of the designation and gives a general description of the area designated.

TABLE 17: WESTERN SNOWY PLOVER CRITICAL HABITAT DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Western Snowy Plover		
Pacific Coast DPS	19 July 2012	Four units in Washington, totaling 6,077 acres (2,460 hectares)

4.14. Marbled Murrelet (*Brachyramphus marmoratus*)

The marbled murrelet *(Brachyramphus marmoratus marmoratus)* was listed as threatened under the ESA in 1992 in Washington, Oregon, and California as the result of nesting habitat loss from commercial timber harvest and mortality cause by net fisheries and oil spills. (57 FR 45328).

4.14.1. The Distribution and Habitat Requirements

This species is a small seabird that nests in mature and old growth coniferous forests and forages in marine environments (WDFW 2016). During the nesting season (approximately 1 April to 15 September), marbled murrelets forage in the marine environment and return to the nest at least once daily, carrying prey to their young. Both marine and terrestrial factors influence the survivorship of the species. A reduction in availability of successful nesting sites in proximity to foraging habitat (resulting from timber harvest) in combination with declines in forage fish species have impacted nest success and nestling survival (WDFW 2016).

Marbled murrelets nest in inland coastal forests dominated by western hemlock (*Tsuga heterophylla*), Sitka spruce (*Picea sitchensis*), Douglas fir (*Pseudotsuga menziesii*), and western red cedar (*Thuja plicata*). Nesting habitat requirements include a forest structure that is of sufficient height and depth to provide cover. Structure requirements are thought to provide enhanced microclimate conditions and reduce predation (WDFW 2016). Foraging habitat has been documented as generally occurring within 2 to 8 km from shore. Marbled murrelets primarily feed on forage fish species (herring, anchovy, eulachon, sand lance, etc.) The largest concentrations of this species are found along the northern and outer coast of Puget Sound, where large areas of mature forest in close proximity to foraging habitat is still intact.

4.14.2. The Presence in Action Area

According to USFWS, the distribution of marbled murrelet habitat in Washington is currently disjunct with a major gap in distribution of habitat and occupied sites occurring along the southwest Washington coast from Grays Harbor south the Columbia River (USFWS 2019). The closest designated critical habitat to the Action Area is located approximately 8 miles to the east of the Project site, and the Action Area represents potential foraging habitat for this species, however murrelet occurrence at the mouth of the Columbia River is limited (ODFW 2017). Marbled murrelet have the potential to occur within the Action Area, however species presence at the mouth of the Columbia River is extremely limited and any

individuals present within the Action Area are likely to be foraging and are not expected to be present for a sustained duration of time.

4.14.3. Critical Habitat

The proposed action does not occur within designated critical habitat for marbled murrelet. Table 18 shows the date of the designation and gives a general description of the area designated. The Action Area does not contain designated critical habitat for this species and the Project will not impact designated critical habitat or the PCEs necessary for the conservation of this species.

TABLE 18: MARBLED MURRELET CRITICAL HABITAT DESCRIPTIONS

Species and ESU/DPS	Date of Designation	Description of Critical Habitat
Marbled Murrelet		
N/A	4 November 2011	Approximately 3,698,100 acres (1,497,000 hectares) of critical habitat in the States of Washington, Oregon, and California.

5. Effects of the Action

This section outlines the potential effects of the proposed action as they pertain to the species identified as having potential to occur in the Action Area.

5.1. Direct Impacts

Direct impacts are generally defined as impacts that physically contact the species and have the potential to cause physical damage. Direct impacts are caused by the activity and occur at the same time and place. The Project has the potential to create the following direct adverse impacts.

5.1.1. Noise

In-water and in-air noise disturbances could occur. The greatest potential for in-water noise impacts is during dredging. Potential in-water noise impacts will be species specific and are further discussed in Sections 5.3 through 5.4 of this BE.

5.1.2. Water Quality

Dredging and dredged material placement activities have the potential to re-suspend sediments, which can affect water quality conditions by increasing turbidity. Dredging can also resuspend contaminated sediments if any are present in the area of temporary disturbance.

Potential water quality impacts are species specific and are further defined below in Sections 5.3 through 5.4.

5.1.3. Vessel Collision

Species that surface to breathe are susceptible to propeller strikes and vessel collisions. Vessels will be used during construction to support Project activities. Vessels proposed for use during construction could include barges and smaller support vessels. These types of vessels are typical throughout the Action Area and do not pose a substantial deviation from normal boating activity. The risk of vessel collisions are species specific and are discussed in additional detail in Section 5.3 below.

5.1.4. Entrainment

Entrainment refers to the uptake of species during dredging activities. Impacts due to potential entrainment risks are discussed in further detailed in Sections 5.3 through 5.4.

5.2. Indirect Effects

Indirect impacts are generally defined as ecosystem changes that could affect food web dynamics. Indirect impacts are caused by the activity and are later in time or farther removed in distance but are still reasonably foreseeable. The Project has the potential to cause the following indirect adverse impacts.

5.2.1. Habitat Disturbance

Benthic habitat disturbances could occur during the proposed dredging and placement activities. Potential benthic habitat disturbance impacts are species specific and are discussed in further detail in Sections 5.3 through 5.4.

5.2.2. Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Potential impacts to prey species for the identified species are further discussed below in Sections 5.3 and 5.4.

5.3. NMFS Listed Species

5.3.1. Salmonids (Chinook, Coho, Sockeye, Steelhead)

Direct and indirect adverse impacts could occur to salmonids but are considered unlikely given the extent of the proposed activities and proposed minimization measures. As discussed in Sections 4.1 through 4.5 adult salmonids may occur in the Columbia River and Action Area during migrations, however there is no suitable spawning habitat within the Action Area. Juvenile salmonids may rear within the Action Area.

Direct impacts could occur due to noise, water quality, and entrainment. Indirect impacts could occur due to impacts to prey species and habitat impacts. Potential impacts to salmonids from the proposed activities are discussed below in Sections 5.3.1.1 through 5.3.1.6.

5.3.1.1. Noise

The main hearing organ in fish is the lateral line system, which is sensitive to particle motion. Pressure waves can cause changes in the swim bladder that may cause damage or reduced hearing sensitivity. Criteria for assessing dredging noise impacts to fish have not been established. However, in 2008, the Fisheries Hydroacoustic Working Group (FHWG), which included NMFS, USFWS, the Departments of Transportation for California, Oregon, and Washington, and nation experts on sound propagation developed the interim injury criteria level threshold and a behavioral guideline for assessing potential pile driving noise impacts to fish (FHWG 2008, Table 19). The injury thresholds were developed to apply to impulsive pile driving noise sources, not continuous noise sources such as dredging.

TABLE 19: FHWG ESTABLISHED NOISE GUIDELINES AND THRESHOLDS FOR FISH

	Interim Injury Criteria (impulsive)			Behavioral Guideline (impulsive & Continuous)
	dB Peak	SEL cum		dBrms
		Fish > 2 g	Fish < 2g	
Threshold/Guidelines	206	187	183	150

Source: FHWG 2008

The greatest potential for project-related noise is the use of a cutterhead dredge. Sounds produced by cutterhead dredges are continuous except during transitional activities (e.g., system flushing, repositioning, etc.).

As discussed in additional detail in Section 2.3.2, the use of a cutterhead dredge could produce continuous noise levels of up to 153 dB at the source (Reine and Dickerson 2014). Fish typically avoid areas of elevated continuous noise sources (NMFS 2012b) and it is therefore unlikely that fish would remain in close proximity to the proposed Project activities and be exposed to noise levels that could result in substantial adverse impacts. Compliance with the in-water work window for the area will further reduce the risk of noise impacts to salmonids.

5.3.1.2. Water Quality

There are several mechanisms by which suspended sediments affect fish species, including increased potential for gill tissue damage, physiological stress, direct mortality, and behavioral changes. Typical small-scale sediment plumes, such as those caused by dredging and material disposal, are not anticipated to reach levels in which gill tissue damage, physiological stress, or direct mortality would occur (NMFS 2002).

The project may create focused areas of minor, temporary water quality impacts due to suspended sediments during in-water project activities. Dredging and disposal operations have the greatest potential to result in increased turbidity. Areas of increased turbidity are expected to be localized and of short duration because of the substrate characteristics (sands). This suggests that the potential for salmonids to encounter areas of high suspended sediment is low. Studies show that salmonids are able to detect and distinguish turbidity and other water quality gradients (Bisson and Bilby 1982) and would, therefore, be anticipated to easily avoid the waters affected by suspended sediment and find refuge/passage conditions.

Adult salmonids are expected to be of sufficient size to avoid areas with elevated suspended sediment to the extent that they are present. This would limit the potential for, and duration of, exposure. A small number of fish may be exposed to turbidity levels above baseline when within the immediate vicinity of dredging operations.

The action has been planned to occur when juvenile salmon and steelhead are likely to be present only in low numbers (during the in-water work window for the area). If juveniles are present, they will be exposed to reduced foraging conditions for minutes to hours, with those most affected being smaller sub-yearling migrants that utilize shallow waters for migration. Depending on the concentrations of suspended solids and the food supply, it is anticipated that juvenile salmonids will either seek refuge in adjacent areas with less turbidity or remain in the area taking advantage of additional cover provided by the turbid water.

Dredging activities have the potential to resuspend contaminated sediment (if any is present), which can affect salmonids by making contaminants biologically available for uptake. Only material that has been tested and determined to be suitable for in-water placement will be placed in-water at the proposed flow

lane sites. The contractor will be required to provide and implement avoidance and minimization measures (AMMs) (Section 1.4) so that the project complies with state water quality standards, and so that any temporarily elevated turbidity levels or any temporary resuspension of contaminated sediments do not result in substantial effects to ESA-listed species. Potential water quality impacts are anticipated to be minor and temporary.

5.3.1.3. Entrainment

Entrainment impacts can occur during active dredging operations and dredge sediment disposal. Entrainment during these two events is discussed below.

Dredging

Maintenance dredging at the Ilwaco Marina will be completed using hydraulic (cutter suction dredge) or mechanical dredging methods (clamshell and/or bucket dredge). The portion of the LCR in which dredging activities would be conducted provides limited habitat for ESA-listed salmonids; therefore, entrainment risks are low. Mechanical (clamshell) dredges entrain organisms that are captured within the clamshell bucket, but this rarely includes mobile organisms like fish (NMFS 2020). Cutterheads create a small area of suction around the dredge, which can entrain organisms. However, because cutterheads are typically buried in the sediment, there is limited risk of entraining water column species (NMFS 2020) such as salmonids. It is anticipated that highly mobile water column species such as salmonids would avoid entrainment by cutterhead or mechanical dredge. Sufficient habitat adjacent to the Marina occurs that could be used by salmonids avoiding the active dredging area. To further reduce the risk of entrainment, the project would occur during the in-water work window when salmonids are less likely to occur. Given the limited extent, temporary nature, and location of the dredging operations, as well as the proposed low entrainment risk equipment and compliance with the in-water work window, entrainment of salmonids is anticipated to be unlikely.

Sediment Disposal

Organisms can become caught in sediment disposal plumes that can cause physical harm. Salmonids are mobile species that are anticipated to evade the sediment placement plume as it descends through the water column. To further reduce potential impacts during dredged material placement, disposal would occur during the in-water work window when salmonids are less likely to occur in the Action Area. Given the limited extent of the placement area, temporary nature of the project, and compliance with the in-water work window, sediment disposal impacts to salmonids are considered unlikely.

5.3.1.4. Habitat Disturbance

The Project will result in benthic habitat impacts. Dredging at the marina will occur within the previously approved dredge prism and the in-water placement of dredge material would occur at existing flow lane placement sites. Therefore, potential habitat disturbance compared to baseline conditions are anticipated to be minor. Dredging may impact small areas of existing eelgrass beds, however these eelgrass beds are not anticipated to provide suitable habitat for salmonids given the developed nature of this Marina and high level of marina and Port activity here. The eelgrass beds within the Marina are anticipated to occur here due to a lack of regular Marina-wide dredging creating suitable growing conditions (depth).

The in-water placement of dredge material could result in impacts to habitat. To minimize potential habitat impacts, open-water/flow lane placement will occur in deep and dynamic portions of a water body where it will become a natural element of the sediment transport system, and will be assimilated into the system with no measurable impacts to either the sediment transport system or the environment. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates (Thrush and Dayton 2002).

Benthic habitat impacts to salmonids are anticipated to be minor.

5.3.1.5. Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Salmonid prey that could occur in the Action Area includes crustaceans, invertebrates, and small fish. The active Marina/port area in which the dredging would occur is not anticipated to provide optimal foraging habitat for salmonids.

As discussed in Section 5.3.1.4, the Project will result in impacts to benthic sediments. Benthic and epibenthic fauna may also be entrained; however, long-term impacts associated are expected to be minimal based on the fact that recolonization of these benthic communities typically occurs rapidly after disturbance (McCauley et al. 1977, Albright and Borithilette 1982, Romberg et al. 1995, Wilson and Romberg 1999). As discussed in Section 5.3.1.1, the proposed Project related noise is not anticipated to result in impacts to fish.

Eelgrass beds within the dredge footprint may be permanently impacted. However, these eelgrass beds are not anticipated to provide optimal habitat for salmonids given the developed nature of this Marina and high level of marina and Port activity here. To reduce the potential for impacts to foraging, the Project would comply with the in-water work window for the area when salmonid foraging presence is anticipated to be low. Substantial impacts to salmonids due to a reduced food supply are not anticipated given the nature and location of the proposed Project and proposed AMMs.

5.3.1.6. Determination

Due to the potential impacts identified above, the Project is ***Likely to Adversely Affect (LAA)*** Chinook, Coho, sockeye, and steelhead salmon, but is ***not likely to jeopardize*** the species. Critical Habitat for Chinook, Coho, sockeye, and steelhead salmon occurs in the Action Area. The Project is ***LAA*** Chinook, Coho, sockeye, and steelhead salmon CH within the Action Area for the reasons given above.

5.3.2. Eulachon

Direct and indirect adverse impacts could occur to eulachon but are considered unlikely given the extent of the proposed activities and proposed minimization measures. As discussed in Section 4.8 adult eulachon could occur migrating through the Action Area. Larval state eulachon could also occur in the Action Area. Spawning is unlikely given the saline water conditions in the Action Area.

Direct impacts could occur due to noise, water quality, and entrainment. Indirect impacts could occur due to impacts to benthic habitat and prey species. Potential impacts to Eulachon from the proposed activities are discussed below in Sections 5.3.2.1 through 5.3.2.6.

5.3.2.1. Noise

The main hearing organ in fish is the lateral line system, which is sensitive to particle motion. Pressure waves produced by impulsive sounds can cause changes in the swim bladder that may cause damage or reduced hearing sensitivity. Eulachon do not have swim bladders and therefore may be less impacted by underwater noise. The greatest potential for project-related noise is the use of a cutterhead dredge. As discussed in additional detail in Section 5.3.1.1, fish typically avoid areas of elevated continuous noise sources (NMFS 2012b). It is therefore unlikely that fish would remain near the proposed Project activities and be exposed to noise levels that could result in substantial adverse impacts. Compliance with the in-water work window for the area will further reduce the risk of noise impacts to eulachon.

5.3.2.2. Water Quality

The project may create focused areas of minor, temporary water quality impacts due to suspended sediments during in-water project activities. Dredging and disposal operations have the greatest potential to result in increased turbidity. Potential water quality impacts are discussed in detail in Section 5.3.1.2 and summarized here. Dredging activities have the potential to resuspend contaminated sediment (if any is present), which can affect species by making contaminants biologically available for uptake. The contractor will be required to provide and implement AMMs (Section 1.4) so that the project complies with state water quality standards, and so that any temporarily elevated turbidity levels or any temporary resuspension of contaminated sediments do not result in substantial impacts to ESA-listed species. With the proposed AMMs direct water quality adverse impacts are anticipated to be minor and temporary.

5.3.2.3. Entrainment

Entrainment impacts can occur during active dredging operations and dredge sediment disposal. As discussed in additional detail in Section 5.3.1.3, entrainment during the proposed dredging and sediment disposal activities is unlikely. To further reduce the risk of entrainment, the project would occur during the in-water work window when eulachon are less likely to occur in the area.

5.3.2.4. Habitat Disturbance

Dredging and dredged material placement will disturb benthic habitat. Benthic habitat impacts are discussed in detail in Section 5.3.1.4 and summarized here. Dredging at the marina will occur within the previously approved dredge prism and the in-water placement of dredge material would occur at existing flow lane placement sites. Therefore, potential habitat disturbance compared to baseline conditions are anticipated to be minor. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates (Thrush and Dayton 2002). Dredging may impact small areas of eelgrass within the Marina. However, these eelgrass beds are not anticipated to provide suitable habitat given the developed nature of this Marina and high level of marina and Port activity here. Benthic habitat Impacts to eulachon are anticipated to be minor.

5.3.2.5. Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Eulachon prey that could occur in the Action Area includes small crustaceans and krill. The Project may result in minor benthic habitat impacts that could result in impacts to benthic food supply. The active Marina/port area in which the Project is located is not anticipated to provide optimal foraging habitat for eulachon. Therefore, foraging impacts are anticipated to be minor.

5.3.2.6. Determination

Due to the potential impacts identified above, the Project is ***LAA*** eulachon, but is not likely to jeopardize the species. Critical Habitat for eulachon occurs in the Action Area. The Project is ***LAA*** eulachon CH within the Action Area for the reasons given above.

5.3.3. Green Sturgeon

Direct and indirect adverse impacts could occur to eulachon but are considered unlikely given the extent of the proposed activities and proposed minimization measures. As discussed in Section 4.7, adult and subadult green sturgeon could occur in the Action Area from June to August.

Direct impacts could occur due to noise, water quality, and entrainment. Indirect impacts could occur due to impacts to benthic habitat and prey species. Potential impacts to Eulachon from the proposed activities are discussed below in Sections 5.3.3.1 through 5.3.3.6.

5.3.3.1. Noise

The main hearing organ in fish is the lateral line system, which is sensitive to particle motion. Pressure waves produced by impulsive sounds can cause changes in the swim bladder that may cause damage or reduced hearing sensitivity. The greatest potential for project-related noise is the use of a cutterhead dredge. As discussed in additional detail in Section 5.3.1.1, fish typically avoid areas of elevated continuous noise sources (NMFS 2012b). It is therefore unlikely that fish would remain near the proposed Project activities and be exposed to noise levels that could result in substantial adverse impacts.

5.3.3.2. Water Quality

The project may create focused areas of minor, temporary water quality impacts due to suspended sediments during in-water project activities. Dredging and disposal operations have the greatest potential to result in increased turbidity. Potential water quality impacts are discussed in detail in Section 5.3.1.2 and summarized here. Dredging activities have the potential to resuspend contaminated sediment (if any is present), which can affect species by making contaminants biologically available for uptake. The contractor will be required to provide and implement AMMs (Section 1.4) so that the project complies with state water quality standards, and so that any temporarily elevated turbidity levels or any temporary resuspension of contaminated sediments do not result in substantial impacts to ESA-listed species. With the proposed AMMs direct water quality adverse impacts are anticipated to be minor and temporary.

5.3.3.3. Entrainment

Entrainment impacts can occur during active dredging operations and dredge sediment disposal. As discussed in additional detail in Section 5.3.1.3, entrainment during the proposed dredging and sediment disposal activities is considered unlikely.

5.3.3.4. Habitat Disturbance

Dredging and dredged material placement will disturb benthic habitat. Benthic habitat impacts are discussed in detail in Section 5.3.1.4 and summarized here. Dredging at the marina will occur within the previously approved dredge prism and the in-water placement of dredge material would occur at existing flow lane placement sites. Therefore, potential habitat disturbance compared to baseline conditions are anticipated to be minor. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates (Thrush and Dayton 2002). Dredging may impact small areas of eelgrass within the Marina. However, these eelgrass beds are not anticipated to provide suitable habitat given the developed nature of this Marina and high level of marina and Port activity here. Benthic habitat Impacts to green sturgeon are anticipated to be minor.

5.3.3.5. Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Green sturgeon prey that could occur in the Action Area includes crustaceans, invertebrates. The Project may result in minor benthic habitat impacts that could result in impacts to benthic food supply. The active Marina/port area in which the Project is located is not anticipated to provide optimal foraging habitat for green sturgeon. Therefore, foraging impacts are anticipated to be minor.

5.3.3.6. Determination

Due to the potential impacts identified above, the Project is ***LAA*** green sturgeon, but is not likely to jeopardize the species. Critical Habitat for eulachon occurs in the Action Area. The Project is ***LAA*** eulachon CH within the Action Area for the reasons given above.

5.3.4. Sea Turtles (Leatherback)

Direct and indirect adverse impacts to leatherback sea turtles could occur, but are considered unlikely given the location and extent of the proposed activities and proposed minimization measures. As discussed in Section 4.9 although leatherback sea turtles could occur in the Columbia River and in the Action Area on rare occasions, their presence within the enclosed Marina is not anticipated.

Impacts are anticipated to be highly unlikely given that sea turtles would not be anticipated to occur within proximity to where the construction activities are proposed. The potential for direct impacts due to noise, water quality, entrainment, habitat impacts, foraging impacts and vessel collision during transportation of materials to the site is evaluated below in Section 5.3.4.1 through 5.3.4.7.

5.3.4.1. Noise

Sea turtles are not known to use sound for communication (NOAA 2016) and it is thought that they likely have poor auditory sensitivity (U.S. Navy 2017). Electrophysiological and behavioral studies have indicated that sea turtles detect low frequency acoustics, and it is anticipated that they may use sound for navigation, finding prey, and avoiding predators (NOAA 2016). The proposed in-water construction activities including dredging are not anticipated to result in noise levels that could cause impacts to sea turtles. Furthermore, dredging would be limited to the enclosed Marina/port area, where sea turtles are unlikely to occur.

5.3.4.2. Water quality

The project may create focused areas of minor, temporary water quality impacts due to suspended sediments during in-water project activities. Dredging and disposal operations have the greatest potential to result in increased turbidity. Potential water quality impacts are discussed in detail in Section 5.3.1.2 and summarized here. Dredging activities have the potential to resuspend contaminated sediment (if any is present), which can affect species by making contaminants biologically available for uptake. The contractor will be required to provide and implement AMMs (Section 1.4) so that the project complies with state water quality standards, and so that any temporarily elevated turbidity levels or any temporary resuspension of contaminated sediments do not result in substantial impacts to ESA-listed species. With the proposed AMMs direct water quality adverse impacts are anticipated to be minor and temporary.

5.3.4.3. Entrainment

Maintenance dredging at the Ilwaco Marina will be completed using hydraulic (cutter suction dredge) or mechanical dredging methods (clamshell and/or bucket dredge). Mechanical (clamshell) dredges rarely entrain mobile organisms like sea turtles. Cutterheads are typically buried in the sediment there is limited risk of entraining water column species (NMFS 2020). Furthermore, it is very unlikely that sea turtles would occur within the area proposed for dredging due to its location in an enclosed Marina in the Columbia River. Therefore, entrainment is not anticipated.

5.3.4.4. Habitat disturbance

Risk of sea turtle habitat disturbance is negligible given that sea turtle presence in the Columbia River and enclosed marina is very unlikely. This area does not provide optimal habitat for sea turtles, and therefore habitat impacts are not anticipated.

5.3.4.5. Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Optimal sea turtle foraging habitat does not occur in the Project area. It is considered very

unlikely that sea turtles would occur foraging in the Project area and therefore impacts due to reduced food supply are not anticipated.

5.3.4.6. Vessel Collision

Because sea turtles surface to breathe, they are susceptible to propeller strikes and vessel collisions. Vessels will be used during construction to support Project activities and would travel to and from the site. Although sea turtles are not anticipated to occur within the enclosed marina, there is some potential for them to occur along the routes that vessels may travel when accessing the Marina and flow lane placement sites. Vessels proposed for use during construction could include barges and smaller support vessels. These types of vessels are typical throughout the Action Area and do not pose a substantial deviation from normal boating activity. The increased risk of vessel collision due to construction related boating activity is considered negligible given the rare occurrence of leatherback sea turtles in the Columbia River and typical nature of the types of vessels proposed. There is no proposed long-term increase in boat use in Action Area as a result of Project. Therefore, long-term operational vessel collision risks are not anticipated.

5.3.4.7. Determination

Due to a lack of identified direct and indirect impacts the Project is **NLAA** leatherback sea turtles. Critical Habitat for leatherback sea turtles does not occur in the Action Area. The Project would have **No Effect** on leatherback sea turtle CH.

5.3.5. Marine Mammals (Killer Whale, Humpback Whale)

Direct and indirect adverse impacts to SRKW and humpback whales could occur, but are considered unlikely given the location and extent of the proposed activities and proposed minimization measures. As discussed in Section 4.10 and 4.11, SRKWs and humpback whales Humpback whale occur on rare occasions at the Columbia River mouth and it is considered unlikely that these species would be present in the Action Area.

Direct impacts could occur due to noise and/or decreased water quality. Indirect impacts could occur due to impacts to prey species. Potential impacts to SRKW and humpbacks from the proposed activities are discussed below in Sections 5.3.5.1 through 5.3.5.5.

5.3.5.1. Noise

Noise has the potential to directly impact marine mammals by causing physical injury or altering behavior when noise threshold levels are exceeded. NMFS has identified Level A (potential injury) and Level B (potential disturbance) thresholds for marine mammals based on their hearing class (Table 20). Humpback whales are low frequency cetaceans and SRKWs are mid-frequency cetaceans.

The greatest potential for project-related noise is the use of a cutterhead dredge. Sounds produced by cutterhead dredges are continuous except during transitional activities (e.g., system flushing, repositioning, etc.). The use of a cutterhead dredge could produce continuous noise levels of up to 153 dB at the source (Reine and Dickerson 2014). The use of a cutterhead dredge would not be anticipated to result in exceedances over the Level A thresholds and would not be anticipated to result in substantial exceedances over the established Level B threshold (Table 20). Therefore, noise impacts to marine mammals are not anticipated.

TABLE 20: NMFS MARINE MAMMAL NOISE THRESHOLDS

Hearing Group	Non-impulsive	
	Level A Threshold	Level B Threshold
	dB SELcum	dBrms
Low Frequency Cetaceans	199	120
Mid Frequency Cetaceans	198	120

5.3.5.2. Water Quality

Decreased water quality has the potential to directly impact SRKWs and humpback whales. The project may create focused areas of minor, temporary water quality impacts due to suspended sediments during in-water project activities. Dredging and disposal operations have the greatest potential to result in increased turbidity. It is unlikely that whales would occur within close enough proximity to the dredging and disposal operations that they are impacted by elevated turbidity levels. Potential water quality impacts are discussed in detail in Section 6.3.1.2 and summarized here. Dredging activities have the potential to resuspend contaminated sediment (if any is present), which can affect species by making contaminants biologically available for uptake. The contractor will be required to provide and implement AMMs (Section 1.4) so that the project complies with state water quality standards, and so that any temporarily elevated turbidity levels or any temporary resuspension of contaminated sediments do not result in substantial impacts to ESA-listed species. With the proposed AMMs direct water quality adverse impacts are anticipated to be minor and temporary.

5.3.5.3. Vessel Collision

Whales are susceptible to propeller strikes and vessel collisions because they surface to breathe. Vessels will be used during construction to support Project activities and would travel to and from the site. Although whales are not anticipated to occur within the enclosed Marina where dredging is proposed, there is the potential for them to occur along the routes that vessels may travel when accessing the dredging and placement sites. Vessels proposed for use during construction could include barges and smaller support vessels. These types of vessels are typical throughout the Action Area and do not pose a substantial deviation from normal boating activity. The increased risk of vessel collision due to construction related boating activity is considered negligible given the rare occurrence of SRKW and humpback whales in the Columbia River and typical nature of the types of vessels proposed. There is no proposed long-term increase in boat use in Action Area as a result of Project. Therefore, long-term operational vessel collision risks are not anticipated.

5.3.5.4. Prey Species

Impacts to prey species such as fish, for reasons outlined in Section 5.3.1 are unlikely. Additionally, the Marina where the proposed dredging would occur is not anticipated to be used as foraging habitat for SRKW or humpback whales. Therefore, the Project is not anticipated to indirectly impact SRKW and humpback whales by impacting prey species.

5.3.5.5. Determination

Due to a lack of identified direct and indirect impacts the Project is ***NLAA*** SRKW and humpback whales. Critical Habitat for SRKW and humpback whales does not occur in the Action Area. The Project would have ***No Effect*** on SRKW or humpback whale CH.

5.4. USFWS Listed Species

5.4.1. Fish Species (Bull Trout)

Direct and indirect adverse impacts could occur to bull trout but are considered unlikely given the extent of the proposed activities and proposed minimization measures. As discussed in Section 4.6, it is unlikely that bull trout would occur in that Action Area because it is located within the marine/mixing zone of the Columbia River estuary and this species it typically associated with freshwater habitats.

Direct impacts could occur due to noise, water quality, and entrainment. Indirect impacts could occur due to impacts to benthic habitat and prey species. Potential impacts to bull trout from the proposed activities are discussed below in Sections 5.4.1.1 through 5.4.1.5.

5.4.1.1. Noise

The main hearing organ in fish is the lateral line system, which is sensitive to particle motion. Pressure waves created by impulsive sounds can cause changes in the swim bladder that may cause damage or reduced hearing sensitivity. The greatest potential for project-related noise is the use of a cutterhead dredge. Bull trout are unlikely to occur in the marine/mixing zone of the Columbia River estuary where Project activities are proposed and therefore noise impacts are unlikely. As discussed in additional detail in Section 5.3.1.1, fish typically avoid areas of elevated continuous noise sources (NMFS 2012b). It is therefore unlikely that fish would remain near the proposed Project activities and be exposed to noise levels that could result in substantial adverse impacts.

5.4.1.2. Water Quality

The project may create focused areas of minor, temporary water quality impacts due to suspended sediments during in-water project activities. Dredging and disposal operations have the greatest potential to result in increased turbidity. Bull trout are unlikely to occur in the marine/mixing zone of the Columbia River estuary where Project activities are proposed and therefore water quality impacts are unlikely. Potential water quality impacts are discussed in detail in Section 5.3.1.2 and summarized here. Dredging activities have the potential to resuspend contaminated sediment (if any is present), which can affect species by making contaminants biologically available for uptake. The contractor will be required to provide and implement AMMs (Section 1.4) so that the project complies with state water quality standards, and so that any temporarily elevated turbidity levels or any temporary resuspension of contaminated sediments do not result in substantial impacts to ESA-listed species. With the proposed AMMs direct water quality adverse impacts are anticipated to be minor and temporary.

5.4.1.3. Habitat Disturbance

Dredging and dredged material placement will disturb benthic habitat. Bull trout are unlikely to occur in the marine/mixing zone of the Columbia River estuary where Project activities are proposed and therefore benthic habitat impacts are unlikely. Benthic habitat impacts are discussed in detail in Section 5.3.1.4 and summarized here. Dredging at the marina will occur within the previously approved dredge prism and the in-water placement of dredge material would occur at existing flow lane placement sites. Therefore, potential habitat disturbance compared to baseline conditions are anticipated to be minor. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates (Thrush and Dayton 2002). Dredging may impact small areas of eelgrass within the Marina. However, these eelgrass beds are not anticipated to provide suitable habitat given the developed nature of this Marina and high level of marina and Port activity here. Benthic habitat Impacts to bull trout are anticipated to be minor.

5.4.1.4. Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Bull trout prey that could occur in the Action Area includes crustaceans, invertebrates, and small fish. Bull trout are unlikely to occur in the marine/mixing zone of the Columbia River estuary where Project activities are proposed and therefore impacts to bull trout due to reduced food supply are unlikely. The Project may result in minor benthic habitat impacts that could result in impacts to benthic food supply. The active Marina/port area in which the Project is located is not anticipated to provide optimal foraging habitat for green sturgeon. Therefore, foraging impacts are anticipated to be minor.

5.4.1.5. Determination

Due to the unlikely occurrence of bull trout in the marine/mixing zone of the Columbia River estuary where the activities are proposed and lack of identified direct and indirect impacts the Project is ***NLAA*** bull trout. Critical Habitat for bull trout occurs in the Action Area. The Project is NLAA bull trout CH within the Action Area for the reasons given above.

5.4.2. Bird Species (Western Snowy Plover, Marbled Murrelet)

Direct and indirect adverse impacts to western snowy plovers, marbled murrelets, and streaked horned larks could occur but are considered unlikely given the extent of the proposed activities and proposed minimization measures. As discussed in Section 4.12, 4.13, and 4.14 any potential streaked horned lark, western snowy plover, or marbled murrelet within the Action Area would be anticipated to be foraging individual. Nesting habitat does not occur within the Action Area. Therefore, impacts to nesting individuals are not anticipated.

Direct impacts could occur due to noise, water quality, and benthic habitat disturbances. Indirect impacts could occur due to impacts to prey species. Potential impacts to western snowy plover, streaked horned lark, and marbled murrelet from the proposed activities are discussed below in Sections 5.4.2.1 through 5.4.2.5.

5.4.2.1. Noise

Noise has the potential to directly impact marbled murrelets, western snowy plover, and streaked horned lark. The greatest potential for project-related noise is the use of a cutterhead dredge. Dredging could result in in-air noise levels of up to 77 dBA at 15.25 meters from the source (USDOT 1995). The use of a cutterhead dredge could produce noise levels of up to 153 dB at the source (Reine and Dickerson 2014).

Noise thresholds have not been developed for western snowy plover or streaked horned lark, but have been developed for marbled murrelets for certain activities. Noise thresholds developed for marbled murrelets are summarized below.

The USFWS completed a biological opinion (BO) for potential in-air noise impacts to marbled murrelets from the use of heavy machinery. The BO establishes threshold distances from certain activities to determine potential noise impacts during construction activities. According to the BO, the use of machinery at a distance of greater than 0.25 miles from a known occupied nest tree or suitable nesting tree in an un-surveyed area would have no effect on marbled murrelets.

The USFWS has developed in-water auditory thresholds for marbled murrelets, however these auditory thresholds apply to repetitive impulsive noise sources such as impact pile driving (USWFS 2014, Table 21). There are currently no thresholds for continuous noise sources such as dredging.

TABLE 21: MARBLED MURRELET IN-WATER IMPULSIVE NOISE THRESHOLDS

	Injury		Behavioral
	Auditory	Non auditory	
Threshold Value	202 dB SEL	208 dB SEL	150 dBrms

Source: USFWS 2014

Streaked horned lark, western snowy plover, and marbled murrelet nesting habitat is not anticipated to occur in the Action Area. Therefore, noise impacts to nesting individuals are not anticipated. Given the limited extent of potential in-air and in-water noise, noise impacts to foraging individuals are not anticipated.

5.4.2.2. Water Quality

Marbled murrelets forage in subtidal areas and therefore decreased water quality has the potential to directly impact foraging marbled murrelets. Western snowy plover and streaked horned larks are not known to use subtidal areas and therefore water quality impacts are unlikely.

The Project may create focused areas of minor, temporary water quality impacts due to suspended sediments during in-water project activities. Dredging and disposal operations have the greatest potential to result in increased turbidity. Potential water quality impacts are discussed in detail in Section 5.3.1.2 and summarized here. Dredging activities have the potential to resuspend contaminated sediment (if any is present), which can affect species by making contaminants biologically available for uptake. The contractor will be required to provide and implement AMMs (Section 1.4) so that the project complies with state water quality standards, and so that any temporarily elevated turbidity levels or any temporary resuspension of contaminated sediments do not result in substantial impacts to ESA-listed species. With the proposed AMMs direct water quality adverse impacts are anticipated to be minor and temporary.

5.4.2.3. Habitat Disturbance

Marbled murrelets, western snowy plover, and streaked horned lark could use soft bottom habitat within the Project area for foraging. Upland placement would not be anticipated to substantially alter the existing habitat and therefore impacts due to habitat disturbance are anticipated to be minor.

5.4.2.4. Prey Species

Impacts to prey species have the potential to cause indirect impacts to their predators through reduced food supply. Marbled murrelet prey that could occur in the Action Area includes invertebrates and forage fish. Western snowy plover prey that could occur in the Action Area includes invertebrates. Streaked horned lark prey that could occur in the Action Area includes insects and small areas of vegetation.

The Project may result in minor benthic habitat impacts that could result in impacts to benthic food supply. Benthic prey species would be anticipated to quickly recolonize temporarily disturbed benthic habitats. Fish prey species could be impacted by noise emitted during in-water construction activities, however as discussed in Section 5.3.1.1, the proposed Project related noise is not anticipated to result in impacts to fish.

Substantial impacts to marbled murrelets, western snowy plover, and streaked horned lark due to a reduced food supply are not anticipated given the nature and location of the proposed Project and proposed AMMs.

5.4.2.5. Determination

Due to a lack of identified direct and indirect impacts the Project is ***NLAA*** marbled murrelets, western snowy plover, and streaked horned lark. Critical Habitat for marbled murrelets, western snowy plover, and streaked horned lark does not occur in the Action Area. The Project would have ***No Effect*** on marbled murrelet and western snowy plover CH.

6. Conclusion

Direct and indirect adverse impacts could occur to protected species but are unlikely to occur given the extent of the proposed maintenance dredging, associated placement activities, and proposed AMMs. The Project could result in direct impacts from construction related noise, water quality, vessel collision, and/or entrainment. The Project could also result in indirect impacts due to impacts to habitat and/or prey species. Given the extent of the maintenance dredging and associated placement activities proposed any potential direct or indirect impacts are anticipated to be minor and temporary. Additionally, the AMMs proposed in Section 1.4 of this BE will further reduce the potential for adverse impacts to protected species and critical habitat. Potential ESA effects determinations are summarized in Table 22.

TABLE 22: EFFECT DETERMINATION

Species	Scientific Name	Federal Status	Effect Determination	Critical Habitat Determination
NMFS ESA-listed Species				
Chinook Lower Columbia River ESU	*Oncorhynchus tshawytcha*	Threatened	NLAA	NLAA
Chinook Snake River fall-run ESU		Threatened	NLAA	NLAA
Chinook Snake River spring/summer-run ESU		Threatened	NLAA	NLAA
Chinook Upper Columbia River spring-run ESU		Endangered	NLAA	NLAA
Chinook Upper Willamette River ESU		Threatened	NLAA	NLAA
Chum Columbia River ESU	*O. keta*	Threatened	NLAA	NLAA
Coho Lower Columbia River ESU	*O. kisutch*	Threatened	NLAA	NLAA
Sockeye Snake River ESU	*O. nerka*	Endangered	NLAA	NLAA
Steelhead Lower Columbia River DPS	*O. myskiss*	Threatened	NLAA	NLAA
Steelhead Middle Columbia River DPS		Threatened	NLAA	NLAA
Steelhead Snake River Basin DPS		Threatened	NLAA	NLAA
Steelhead Upper Columbia River DPS		Threatened	NLAA	NLAA
Steelhead Upper Willamette River DPS		Threatened	NLAA	NLAA
Green Sturgeon Southern DPS	*Acipenser medirostris*	Threatened	NLAA	NLAA
Eulachon Southern DPS	*Thaleichthys pacificus*	Threatened	NLAA	NLAA
Leatherback Sea Turtle	*Dermochelys coriacea*	Endangered	NLAA	No Effect
Southern Resident Killer Whale	*Orcincus orca*	Endangered	NLAA	No Effect
Humpback Whale Central America DPS	*Megaptera novaeangliae*	Endangered	NLAA	No Effect
Humpback Whale Mexico DPS		Threatened	NLAA	No Effect

Species	Scientific Name	Federal Status	Effect Determination	Critical Habitat Determination
USFWS ESA-listed Species				
Bull Trout	*Salvelinus confluentus*	Threatened	NLAA	NLAA
Western Snowy Plover	*Charadrius alexandrinus nivosus*	Threatened	NLAA	No Effect
Marbled Murrelet	*Brachyramphus marmoratus*	Threatened	NLAA	No Effect
Streaked Horned Lark	*Eremophila alpestris strigata*	Threatened	NLAA	No Effect

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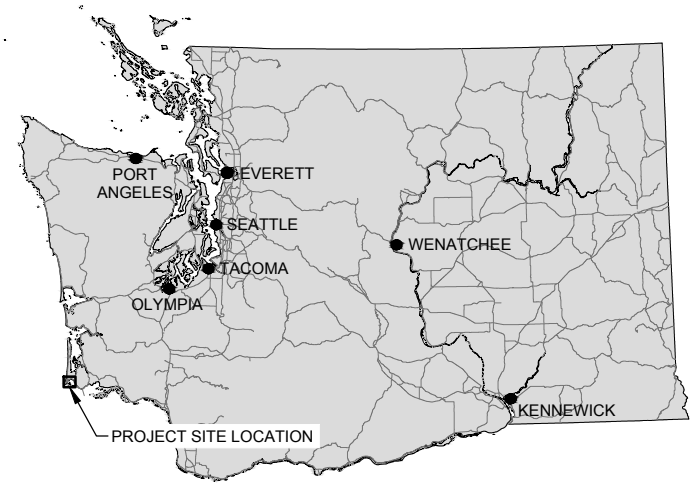
Appendix A. Project Sheets

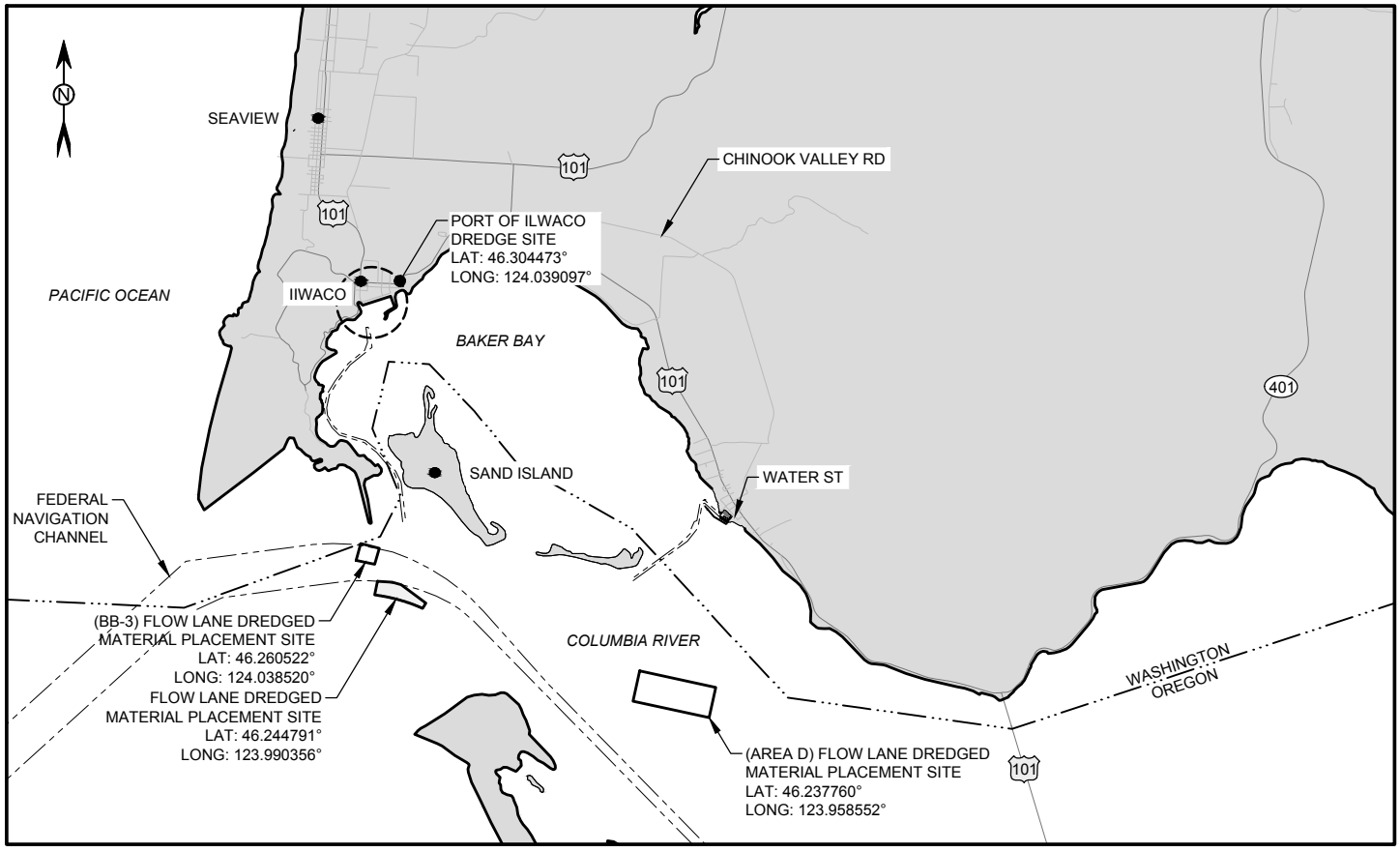
S33 T10N R11W



WASHINGTON KEY MAP

SHEET INDEX

SHEET NO.	TITLE
1	Cover Sheet
2	Parcel Map
3	Site Plan - Proposed Dredging
4	Sections - Dredge 1
5	Sections - Dredge 2
6	Site Plan - Upland Placement Site
7	Sections - Upland Placement Site
8	Site Plan - Flow Lane Placement Site 1
9	Site Plan - Flow Lane Placement Site 2
10	Site Plan - Flow Lane Placement Site 3
11	Sections - Flow Lane Placement Site



PROJECT SITE LOCATION

0 6,000 12,000

SCALE IN FEET

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Cover Sheet

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 1 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Parcel Map

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

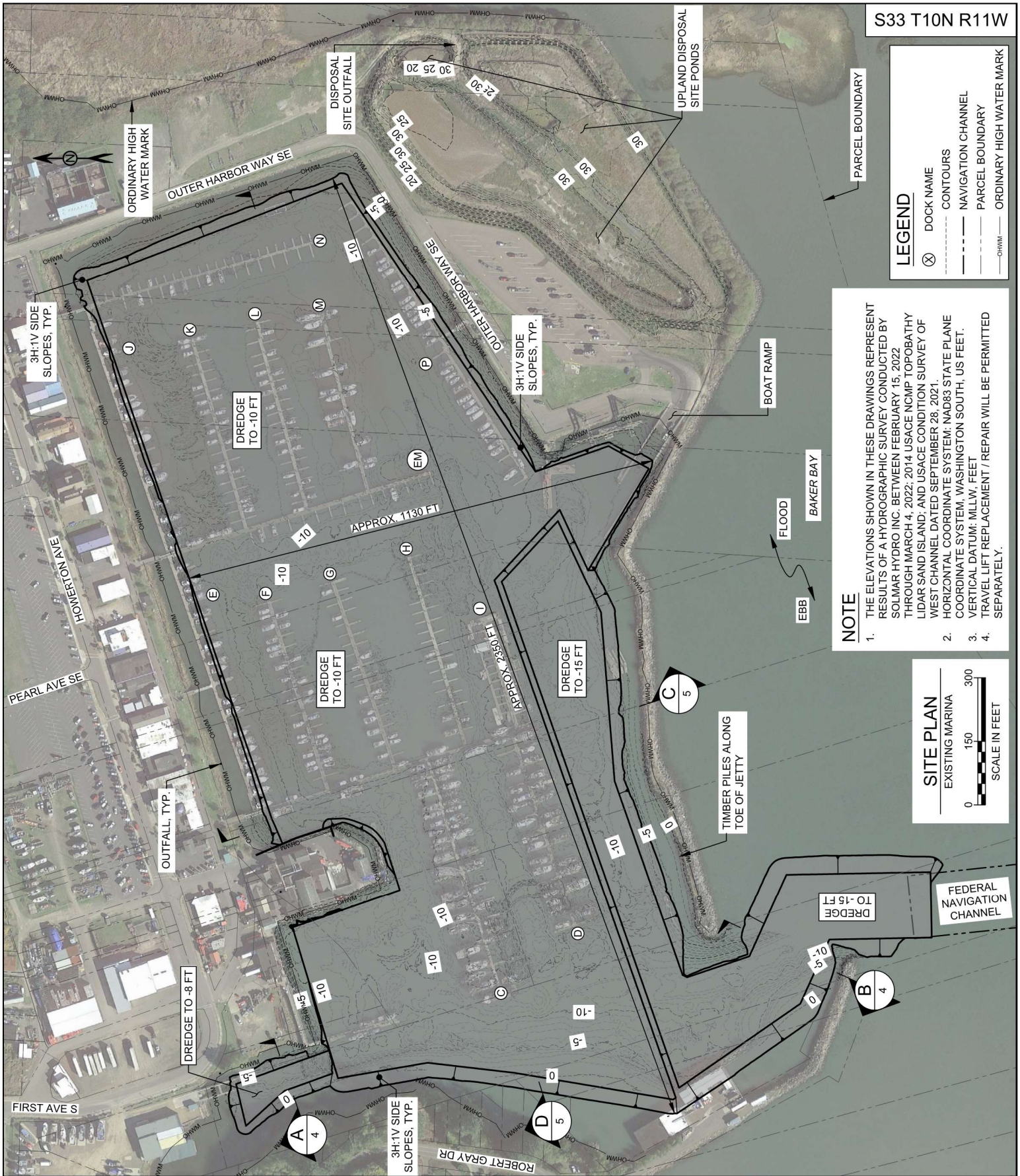
IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 2 OF 11

DATE: 1/10/25



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Site Plan - Proposed Dredging

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

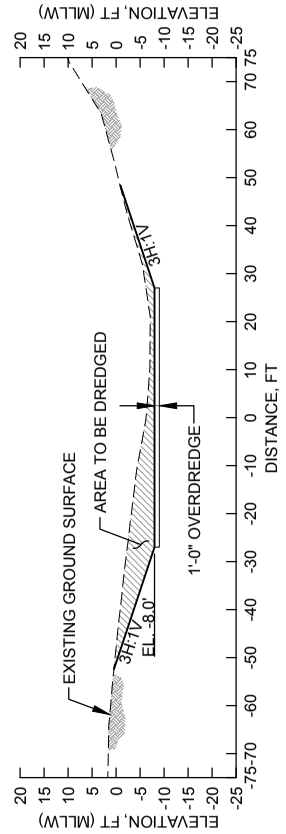
AT: ILWACO

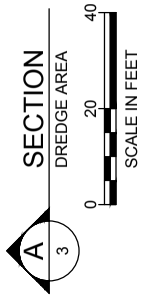
COUNTY: PACIFIC

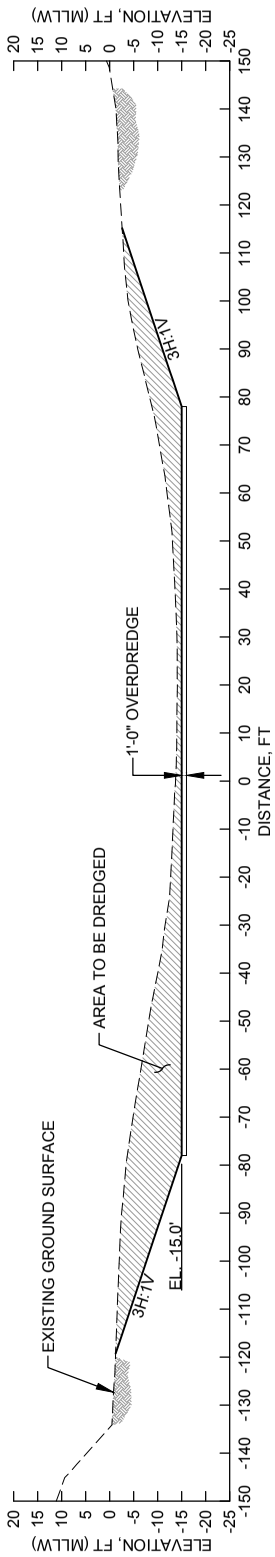
SHEET 3 OF 11

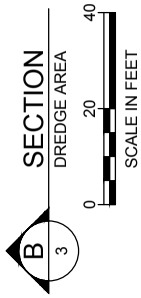
DATE: 1/10/25

S33 T10N R11W









PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Dredge 1

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

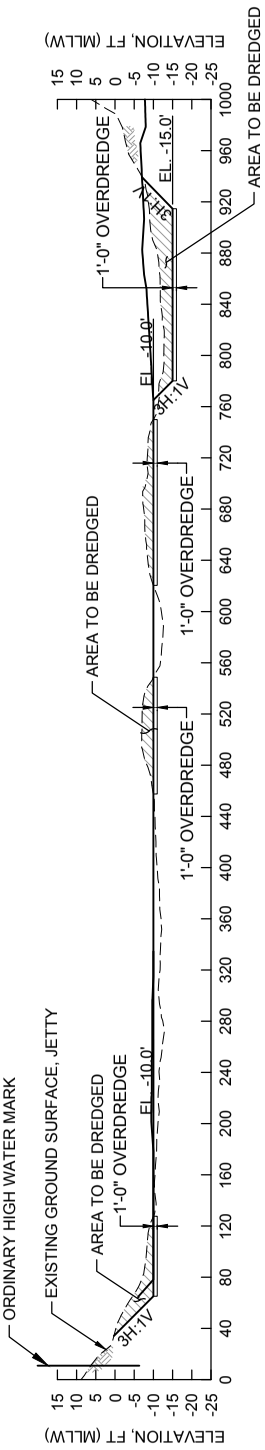
IN: BAKER BAY

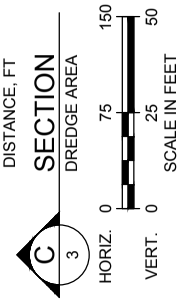
AT: ILWACO

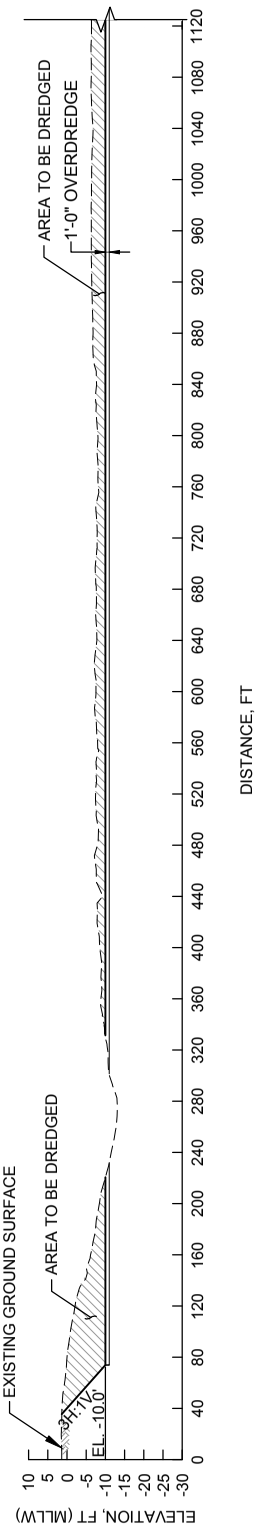
COUNTY: PACIFIC

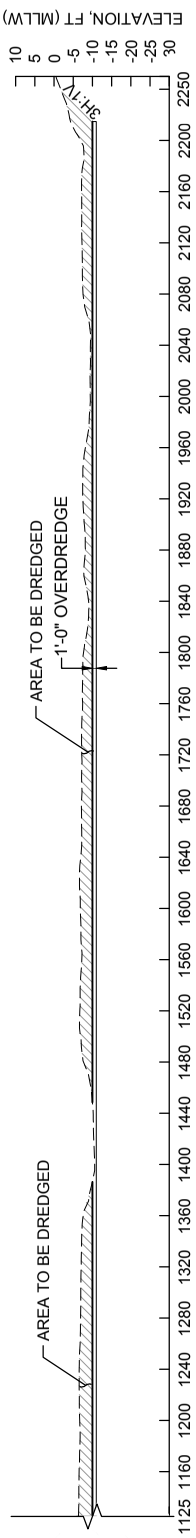
SHEET 4 OF 11

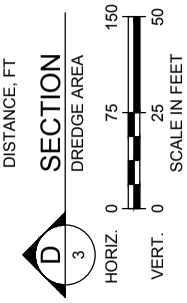
DATE: 1/10/25











PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Dredge 2

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 5 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Upland Placement Site

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 6 OF 11

DATE: 1/10/25

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Sections - Upland Placement Site

APPLICATION BY:
Port of Ilwaco

A
6
SECTION
UPLAND PLACEMENT AREA

HORIZ. 0 75 150
VERT. 0 25 50
SCALE IN FEET

B
6
SECTION
UPLAND PLACEMENT AREA

HORIZ. 0 75 150
VERT. 0 25 50
SCALE IN FEET

LEGEND

- BENEFICIAL USE PLACEMENT AREA
- EXISTING GROUND SURFACE
- EXCAVATION CUT

NOTE

1. EXISTING VEGETATION LOCATED WITHIN THE UPLAND PLACEMENT SITE EXCAVATION AREA TO BE CLEARED AND GRUBBED AND DISPOSED OF AT AN APPROVED LOCATION PRIOR TO MATERIAL REMOVAL FOR FLOW LANE PLACEMENT.

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

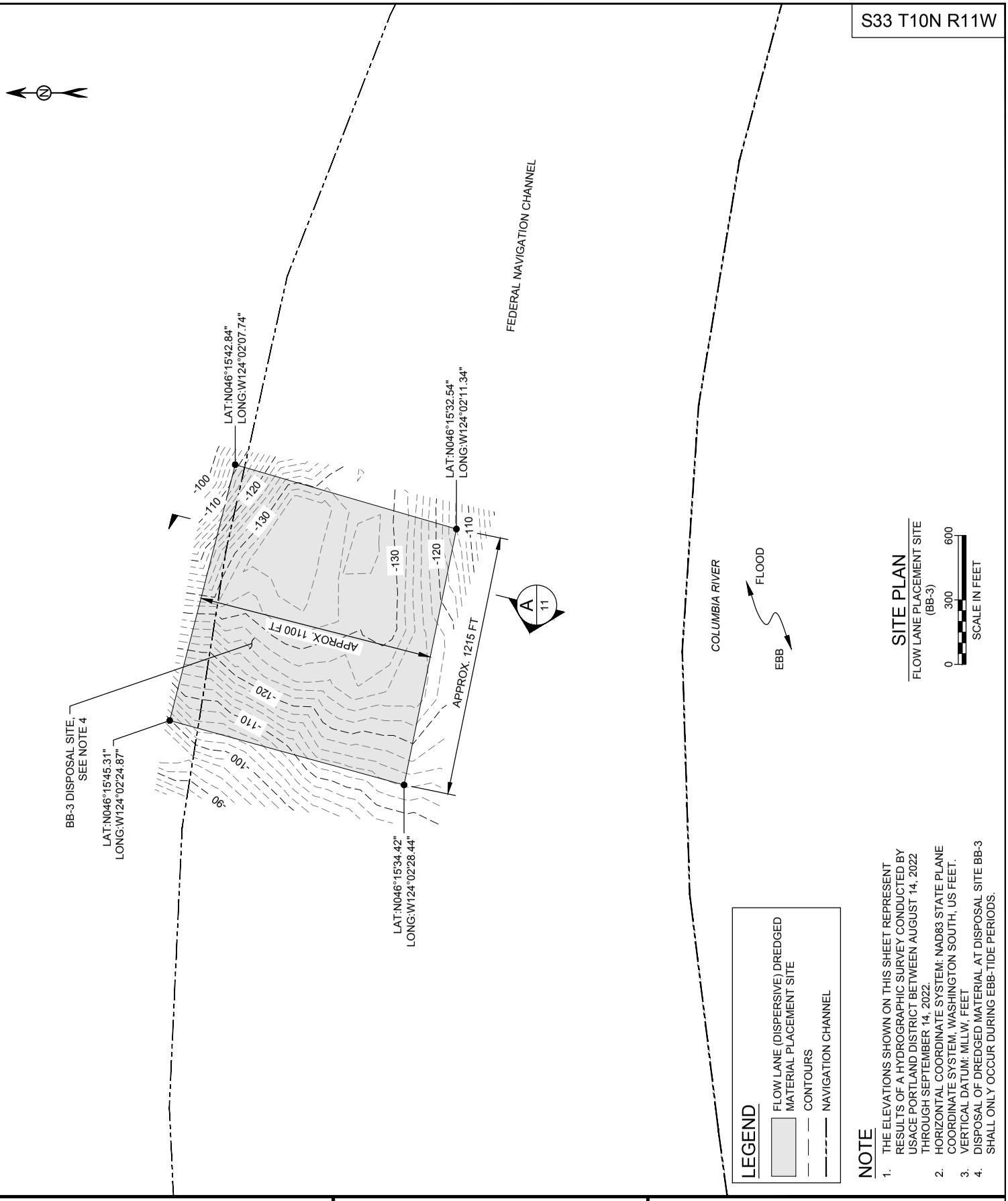
IN: BAKER BAY
AT: ILWACO
COUNTY: PACIFIC

SHEET 7 OF 11

DATE: 1/10/25

S33 T10N R11W

S33 T10N R11W



LEGEND

- FLOW LANE (DISPERSIVE) DREDGED MATERIAL PLACEMENT SITE
- CONTOURS
- NAVIGATION CHANNEL

NOTE

1. THE ELEVATIONS SHOWN ON THIS SHEET REPRESENT RESULTS OF A HYDROGRAPHIC SURVEY CONDUCTED BY USACE PORTLAND DISTRICT BETWEEN AUGUST 14, 2022 THROUGH SEPTEMBER 14, 2022.
2. HORIZONTAL COORDINATE SYSTEM: NAD83 STATE PLANE COORDINATE SYSTEM, WASHINGTON SOUTH, US FEET.
3. VERTICAL DATUM: MLLW, FEET
4. DISPOSAL OF DREDGED MATERIAL AT DISPOSAL SITE BB-3 SHALL ONLY OCCUR DURING EBB-TIDE PERIODS.

PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Flow Lane Placement Site 1 (BB-3)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

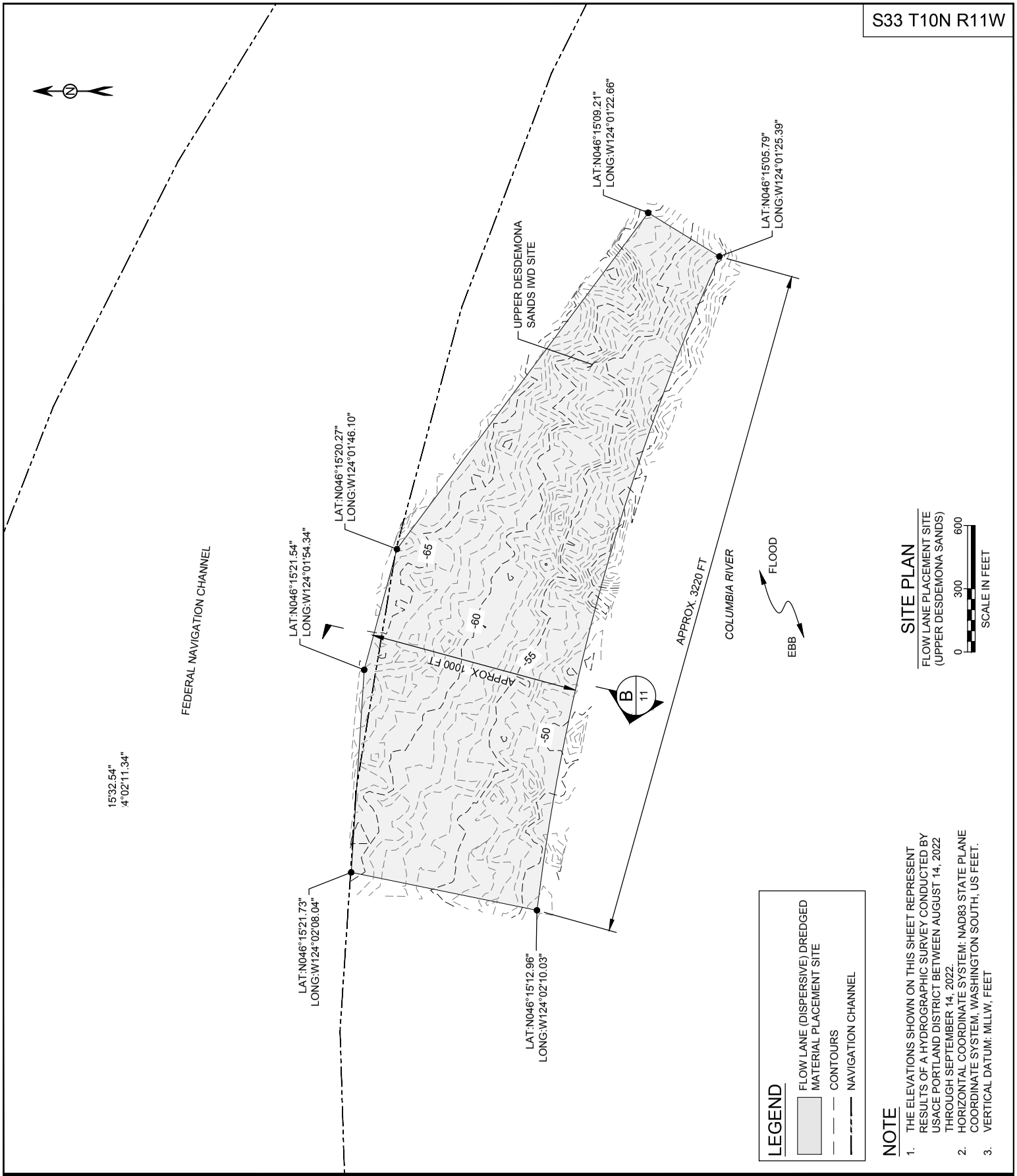
AT: ILWACO

COUNTY: PACIFIC

SHEET 8 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Site Plan - Flow Lane Placement Site 2
(Upper Desdemona Sands)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

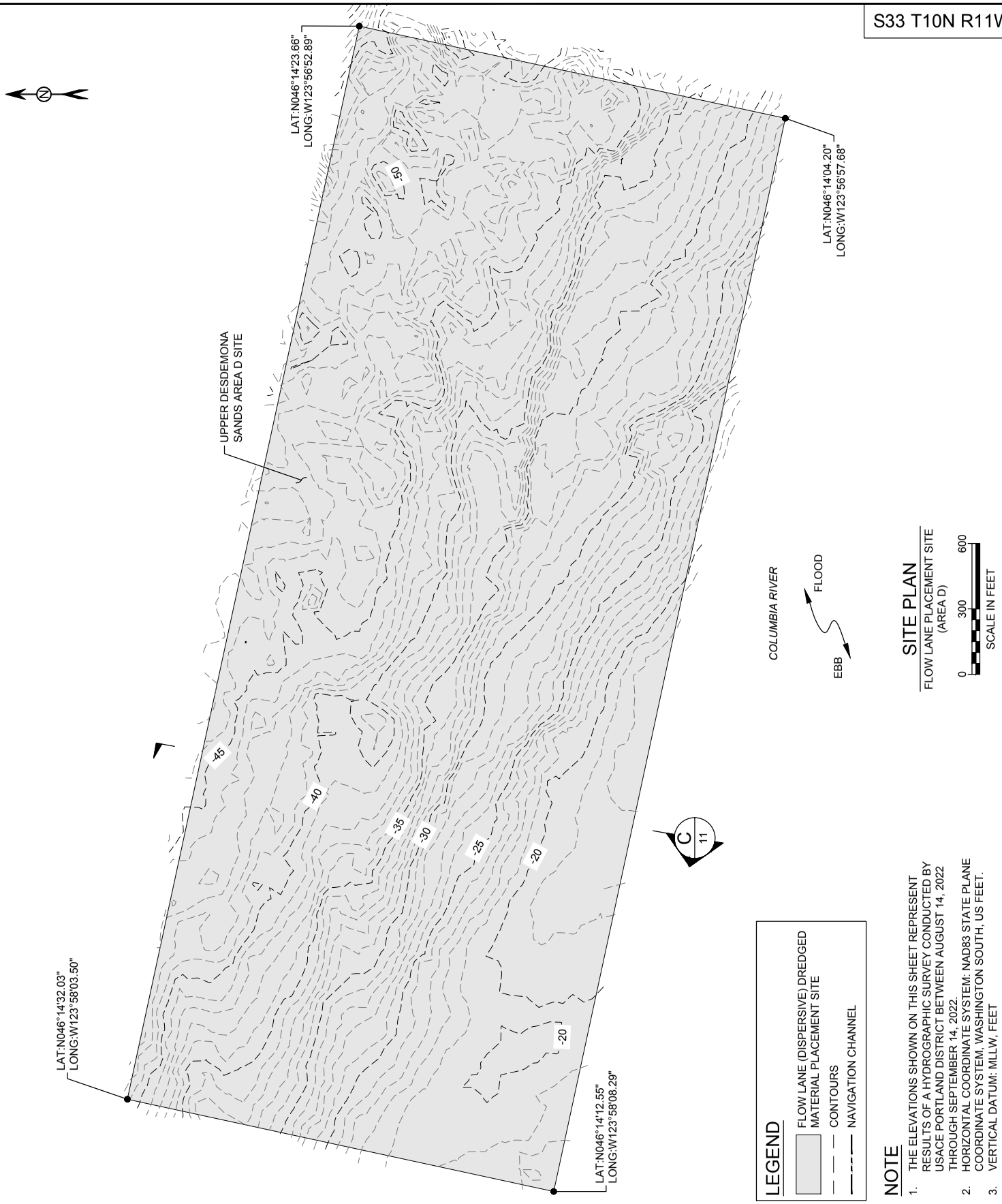
AT: ILWACO

COUNTY: PACIFIC

SHEET 9 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:
1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco Marina Dredging

Site Plan - Flow Lane Placement Site 3 (Area D)

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

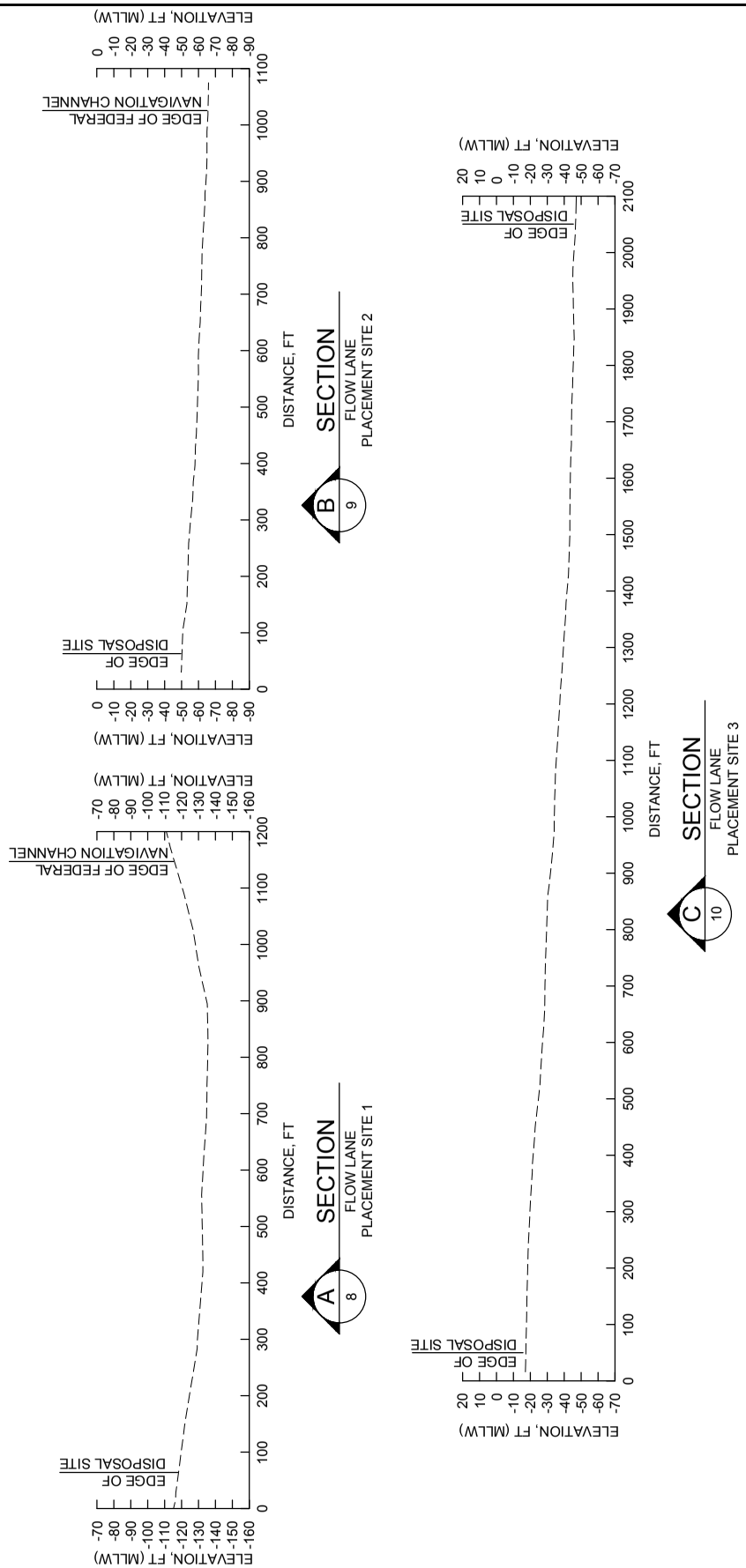
AT: ILWACO

COUNTY: PACIFIC

SHEET 10 OF 11

DATE: 1/10/25

S33 T10N R11W



PURPOSE: PORT OF ILWACO MARINA BASIN MAINTENANCE DREDGING.

DATUM: MLLW

ADJACENT PROPERTY OWNERS:

1. CITY OF ILWACO
2. STATE OF WASHINGTON
3. STARLIGHT ONE LLC.

USACE NO. NWP-2004-78-5

Port of Ilwaco
Marina Dredging

Sections - Flow Lane Placement Site

APPLICATION BY:
Port of Ilwaco

PROPOSED: MARINA BASIN MAINTENANCE DREDGING AND UPLAND AND/OR FLOW LANE PLACEMENT OF DREDGED MATERIAL

IN: BAKER BAY

AT: ILWACO

COUNTY: PACIFIC

SHEET 11 OF 11

DATE: 1/10/25

Appendix B. Essential Fish Habitat Assessment

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) includes a mandate that NOAA Fisheries must identify essential fish habitat (EFH) for federally managed marine fish, and federal agencies must consult on all activities, or proposed activities, authorized, funded, or undertaken by the agency that may adversely affect EFH. The Pacific Fishery Management Council (PFMC) has designated EFH for the Pacific salmon fishery, federally managed ground fishes, and coastal pelagic fisheries (PFMC 1999). This assessment has been prepared to provide documentation that this project has been analyzed for its potential to affect EFH.

A. Description of the Proposed Action *(may refer to BE/BA project description)*

Please refer to Sections 1 of the BE.

B. Addresses EFH for Appropriate Fisheries Management Plans (FMP)

Three Fisheries Management Plans (FMPs) have been identified for the Action Area covering groundfish, coastal pelagic species and Pacific salmon. General impacts are anticipated to be similar to those described in the BE (minor, localized and short-term).

C. Effects of the Proposed Action

i. Effects on EFH (groundfish, coastal pelagic, and salmon EFH should be discussed separately)

Pacific Groundfish: The Pacific Groundfish FMP protects a variety of bottom dwelling fish and is composed of 90 different fish species, including flatfish, round fish, sharks and skates, and other species such as ratfish, finescale codling, and Pacific rattail grenadier. Groundfish species could occur within the Action Area. Benthic habitat disturbance could occur. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates (Thrush and Dayton 2002). The in-water placement of dredge material could result in permanent impacts to habitats, including small areas of existing eelgrass beds. To minimize potential habitat impacts, open-water/flow lane placement will occur in deep and dynamic portions of a water body where it will become a natural element of the sediment transport system, and will be assimilated into the system with no measurable impacts to either the sediment transport system or the environment. Any potential impacts to Pacific groundfish EFH are anticipated to be minor and localized and will not be anticipated to substantially impact Pacific groundfish.

Coastal Pelagic Species: The Coastal Pelagic FMP protects a variety of fish associated with open water coastal habitats. The Coastal Pelagic FMP is composed of six species including northern anchovy, market squid, pacific sardine, Pacific (chub) mackerel, jack mackerel and krill. Dredging and placement activities could cause minor impacts to coastal pelagic EFH.

Salmon EFH: The Pacific Salmon FMP protects a variety of salmonid species. The main species managed by the council include Chinook and Coho salmon. Salmon could occur within the Action Area. Dredging and placement activities could cause minor impacts to salmon EFH. Any potential impacts to salmonid EFH are anticipated to be minor, temporary, and localized.

ii. Effects on Managed Species (unless effects to an individual species are unique, it is not necessary to discuss adverse effects on a species-by species basis)

The project has the potential to create the following short-term direct adverse impacts:

<u>Noise</u>

In-water and in-air noise disturbances to managed species could occur. The greatest potential for in-water noise impacts will be during dredging. Potential in-water noise impacts to fish species are discussed in Section 5.3.1.1 of this BE. In general, potential noise impacts are anticipated to be minor and temporary.

<u>Water Quality</u>

General localized water quality/turbidity impacts could occur to managed species. Potential water quality impacts from the proposed project are discussed in detail in Section 6.3.1.2. In general, water quality and turbidity impacts from sediment resuspension are anticipated to be minor, localized, and temporary. The contractor will be required to provide and implement AMMs (Section 1.4) so that the project complies with state water quality standards, and so that any temporarily elevated turbidity levels or any temporary resuspension of contaminated sediments do not result in substantial water quality impacts. The AMMs discussed in Section 1.4 of this BE will minimize the potential for this impact to be significant on aquatic species or habitat.

Benthic Habitat Disturbance

Benthic habitat disturbance could occur. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates (Thrush and Dayton 2002). The proposed dredging and placement activities will result in benthic habitat disturbances including impacts to small areas of patchy eelgrass beds within the Marina.

iii. Effects on Associated Species, Including Prey Species

Due to the proposed construction activities and methods, temporary nature of the project, and the implementation of the proposed AMMs (Section 1.4 of this BA) to reduce the risk of impacts to aquatic resources, the project is not anticipated to have substantial adverse impacts on prey species over the short or long term.

iv. Cumulative Effects

Cumulative effects are those effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the Action Area. Maintenance dredging may occur within the Action Area as a separate, independent project. This maintenance dredging could result in localized temporary effects to water quality, but would not be anticipated to result in substantial cumulative impacts. All dredged material will be characterized and placed either upland or at a permitted open water placement site if the material is suitable for open water placement.

D. Proposed Conservation Measures

See Section 1.4 of this BE.

E. Conclusions by EFH *(taking into account proposed conservation measures)*

Due to the temporary nature of the project and the implementation of AMMs (Section 1.4 of this BE) to reduce the risk of impacts to marine resources, the project ***may affect*** EFH for groundfish, coastal pelagic species, or salmonids.

Appendix C. Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey

Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey

Port of Ilwaco
Ilwaco, Washington

for
Moffatt & Nichol

December 13, 2022

GeoEngineers

Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey

Port of Ilwaco
Ilwaco, Washington

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Moffatt & Nichol

December 13, 2022

GeoEngineers, Inc.
17425 NE Union Hill Road, Suite 250
Redmond, Washington 98052
425-861-6000

Aquatic Critical Areas Assessment and Macrovegetation/Eelgrass Survey

Port of Ilwaco
Ilwaco, Washington

File No. 21551-003-01

December 13, 2022

Prepared for:

Moffat & Nichol
600 University Street, Suite 610
Seattle, WA 98101

Attention: Victoria England, LG

Prepared by:

GeoEngineers, Inc.
17425 NE Union Hill Road, Suite 250
Redmond, Washington 98052
425-861-6000

Jennifer L. Dadisman, PWS
Senior Biologist

Jason P. Stutes, PhD
Senior Marine Ecologist

Emily R. Hurn
Environmental Scientist

Fiona M. McNair, MRM, PWS
Associate Biologist and Wetland Scientist

JLD:JPS:ERH:FMM:tlm

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APPENDICES

Appendix A. Published Data Review
Appendix B. Site Photographs
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Appendix D. Ecology Wetland Rating Form

1.0 INTRODUCTION AND PROJECT UNDERSTANDING

GeoEngineers, Inc. (GeoEngineers) was contracted by Moffatt & Nichol on behalf of the Port of Ilwaco (Port) to perform wetland and stream delineation services and a macrovegetation/eelgrass survey for the Port of Ilwaco Dredging and Dredge Material Placement Project (project). The project and survey areas are located within Baker Bay, within and adjacent to the mouth of the Columbia River in Ilwaco, Washington (Figure 1, Vicinity Map). The Port of Ilwaco is proposing to dredge the marina basin as part of their ongoing maintenance to maintain marina operations, and potentially place dredge materials along the Baker Bay shoreline to the northeast of the marina.

This report has been prepared to summarize habitat surveys completed to document baseline habitat conditions (wetland, stream and estuarine macrovegetation) that may be affected by proposed project elements in accordance with Ilwaco Municipal Code (IMC) Chapter 15.18 (Critical Areas Ordinance) and according to the City of Ilwaco's Shoreline Master Program (SMP) (IMC Chapter 15.14). Per Washington Administrative Code (WAC) 220-110-250(3)(a,b), eelgrass and macroalgae are saltwater habitats of special concern and per IMC Chapter 15.14 they are critical saltwater habitats and therefore project proponents are required to document proximity of these habitats within the footprint and vicinity of the project. The habitat surveys included an eelgrass/macroalgae and wetland survey within the marina and within and adjacent to the proposed beneficial use site (proposed dredge disposal area). Both of these distinct survey areas are shown on Figure 1. The approximate marina dredge basin area is 62 acres, and the proposed beneficial use site encompasses a 78-acre area.

1.1. Project Location and Site Description

The project site is located at the Port of Ilwaco Marina at 165 Howerton Avenue, adjacent to the Columbia River (Figure 1). The proposed beneficial use site is located northeast of the marina on the Columbia River shoreline. The project area is bordered to the north by businesses, single-family homes and roadways and bordered to the south by the Columbia River. The project is located within Water Resources Inventory Area (WRIA) 24 (Willapa), and Section 34 of Township 10 North and Range 11 West of the Willamette Meridian (W.M.).

The general vicinity of the marina has been heavily influenced by development and recreational uses (marina and boating). Structures and development within the marina include docks, piers and riprap bulkheads.

2.0 DATA REVIEW

Environmental maps of the project area were collected and reviewed as part of a paper inventory. The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) online mapper (USFWS 2022) depicts an estuarine wetland along the shoreline within the project area. The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey identifies the marina and proposed beneficial use site areas as located in water and there is no soil type listed (USDA-NRCS 2022). NWI and soil survey information are included in Appendix A, Published Data Review.

Additional information was obtained from the Washington State Department of Natural Resources (DNR) Forest Practices Application Mapping Tool (FPAMT) and Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) data (DNR 2022; WDFW 2022). FPAMT depicts the marina as the Columbia River (a shoreline waterbody), maps a fish-bearing stream flowing into the northwest corner of the marina and maps another fish-bearing stream flowing into and through the proposed beneficial use site (DNR 2022). WDFW PHS data depicts the following priority species and habitats within ½-mile of the marina (WDFW 2022):

- Marbled murrelet (*Brachyramphus marmoratus*);
- Purple martin (*Progne subis*);
- Shorebird Concentrations;
- Waterfowl Concentrations;
- Wetlands;
- Estuarine and Marine wetlands;
- Freshwater Emergent Wetlands; and
- Freshwater Forested/Shrub Wetlands.

The U.S. Army Corps of Engineers (USACE) performed a comprehensive eelgrass survey of subtidal habitats within Baker Bay and Chinook in 2015 using BioSonics MX Aquatic Habitat Echosounder technologies. This survey documented a small population of eelgrass to the east of Sand Island (located approximately 2.6 miles southeast of the Ilwaco Marina) and larger beds to the west near Chinook (USACE 2015). The 2015 USACE survey did not include the marina or proposed beneficial use site but their findings document habitat in the vicinity of the project areas.

3.0 MACROVEGETATION/EELGRASS DELINEATION

The eelgrass/macrovegetation survey covered two survey areas: the footprint of the proposed dredge prism at the marina and the footprint of the proposed beneficial use site are located to the northeast. Surveys within these areas are necessary to document the potential effects of the proposed activities on eelgrass and macroalgal resources to help inform the design team and regional regulators. The following sections summarize the methods of the survey and the findings. Site photographs from the macrovegetation/eelgrass survey are provided in Appendix B, Site Photographs.

3.1. Eelgrass and Macrovegetation Survey Methods

The macrovegetation survey of this section of shoreline was conducted under the WDFW Eelgrass/Macroalgae Habitat Interim Survey Guidelines dated June 16, 2008 (WDFW 2008) and USACE4K Components of a Complete Eelgrass Delineation Report (USACE 2018). As per the protocols, the macrovegetation survey was initiated as a preliminary level survey (Tier 1 per USACE) using the geo-referenced hydroacoustic MX Aquatic Habitat Echosounder by BioSonics® aboard a vessel contracted with Gravity Marine. This system is comprised of a downward looking single beam transducer head that is georeferenced using a Trimble R2 Integrated GNSS Receiver System. A Sontek Castaway conductivity, temperature and depth (CTD) was used to profile density (i.e., salinity) of the water column to determine

the speed of sound for the survey site. In addition to the echosounder, an Outland technology 4K towed video system was used to ground truth/field verify echosounder data and to document fish and invertebrate resources associated with various habitat types encountered. An eelgrass biologist was onboard during the survey to document the extent of subtidal eelgrass (namely *Zostera marina*) and macroalgae in the proposed project area along with other observations about habitat quality and species diversity. Geospatial data was postprocessed for eelgrass and macroalgae coverage using ESRI software to compile a geospatial (geographic information system [GIS]) database.

Within both the marina and proposed beneficial use site, BioSonics® equipment was used to survey transects across the entire dredge and proposed beneficial use footprints. BioSonics® transects completed in these areas are shown on Figure 2, Survey Area Effort, Wetland and Aquatic Vegetation Survey – Ilwaco Marina and Figure 3, Survey Effort, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site, respectively. To confirm presence/absence of macrovegetation, field verification was performed using underwater video camera equipment within the proposed dredge prism and beneficial use area (Figures 2 and 3).

In addition to the vessel-based survey methods described above, a foot-based survey was completed to assess the habitat conditions within the upper elevations of the proposed beneficial use site as these areas were not accessible with the vessel due to shallow water/low tide conditions. In order to have complete survey coverage of the proposed beneficial use site, any areas not directly surveyed by the boat-based survey, or the foot-based survey were verified visually (either from the upland or from the water side) to be devoid of macrovegetation during low tide. Figure 3 illustrates the extent of the nearshore foot-based survey, and the vessel transects completed with the BioSonics® equipment.

3.2. Eelgrass and Macrovegetation Survey Results

The project site was surveyed on June 15, 2022. Conditions were calm with light and variable wind with overcast skies. Tides ranged from -2.06 feet mean lower low water (MLLW) to +6.8 feet MLLW during the survey. Water column visibility during field verification performed with underwater video was low during the survey with approximately 2 to 5 feet of visibility. A summary of survey findings is provided below.

3.2.1. Marina

The preliminary survey results identified one main bed of eelgrass within the marina with smaller adjacent patches. The mapped eelgrass is distributed in shallow subtidal areas between approximate elevations -7 to -10 feet (North American Vertical Datum of 1988 [NAVD 88] vertical datum). The survey identified the eelgrass distribution primarily within the center of the marina, adjacent to the "G Dock" with smaller patches scattered to the south and east (Figure 4, Eelgrass Coverage, Wetland and Aquatic Vegetation Survey – Ilwaco Marina). This survey documented approximately 0.02 acres (983 square feet) of native eelgrass habitat within the marina (Figure 3).

Photographs of the macrovegetation portion of the site visit are provided in Appendix B, Figures B-5 and B-6.

3.2.2. Proposed Beneficial Use Area/Dredge Disposal Area

The preliminary survey results identified one patch of non-native eelgrass (*Zostera japonica*) and patchy rockweed (*Fucus distichus*) within the survey area associated with the proposed beneficial use site. No

native eelgrass (*Zostera marina*) was identified in the proposed beneficial use site. The distribution of these patches of submerged vegetation are shown on Figure 5, Macrovegetation Coverage, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site and occurred between the approximate elevations +1 and +3 feet NAVD88. Our survey documented approximately 4.6 acres (200,080 square feet) of patchy non-native (*Z. japonica*) eelgrass and 2.9 acres (126,750 square feet) of patchy rockweed habitat within the proposed beneficial use site (Figure 5). Rockweed encountered was always associated with shallow low elevation rocky outcrops (e.g., Appendix B, Figure B-3; Photograph 6). No kelp species were noted in either survey area. Photographs of the macrovegetation portion of the site visit are provided in Appendix B, Figures B-3 and B-4.

3.2.3. Invertebrate and Vertebrate Fauna

As underwater video was limited to field verification of BioSonics® flagged macrovegetation and visibility was generally reduced within the Columbia River estuary, large mobile invertebrates and vertebrates were not documented. However, lack of video documentation does not suggest these species are not present at the site. Eelgrass and macroalgal habitat provide cover and foraging habitat for crab and fish species and likely numerous species occupy the documented habitat.

3.2.4. Anthropogenic Elements

Throughout the marina portion of the survey area, derelict boats, petroleum sheen on the water surface and other garbage on the water surface was noted. In contrast, the proposed beneficial use site was predominantly absent of anthropogenic materials such as concrete, and derelict fishing gear; however, some tires and wood debris were observed. The majority of the documented habitat in the vicinity of the proposed beneficial use site was unimpacted by human development or activities.

3.3. Summary

Native eelgrass was documented within the proposed dredge footprint at the Port of Ilwaco marina. The presence of eelgrass habitat within the marina likely occurs due to sediment deposition from the Columbia River raising elevations within the marina dredge basin so they are suitable for eelgrass as it has been an extended period of time since the last marina-wide dredging event. The Port has completed maintenance dredging in small, targeted areas where deposition and prop wash have created high spots over the last several years. A marina-wide maintenance dredging episode has not been completed for many years. The survey also documented non-native eelgrass and macroalgae habitat (rockweed) within the proposed beneficial use/dredge disposal area. The native eelgrass and rockweed habitats are considered protected as Essential Fish Habitat (EFH) for both marine and anadromous fish under the Magnuson Stevens Fishery Conservation and Management Act (PFMC 1998 and PFMC 1999). These saltwater habitats are also protected under WACs 220-110-250(3)(a,b) and per IMC Chapter 15.14 (Shoreline Master Program).

4.0 WETLANDS AND STREAMS FIELD INVESTIGATION

GeoEngineers' biologist conducted a field assessment on June 15, 2022, to characterize wetland and stream features within the project area. The survey area for wetlands and streams focused on the approximately 2,000 feet of shoreline located northeast of the marina, landward of and along the northwest edge of the proposed beneficial use site. One estuarine wetland (Wetland A) and no streams were identified during the field investigation. The wetland delineation focused on the waterward side of

the wetland boundary. The landward boundary was delineated due to private property ownership. The ordinary high water mark (OHWM) of the Columbia River was determined during the previous geodetic survey. Representative photographs of the site have been included in Appendix B.

4.1. Methods

The delineation of aquatic critical areas (wetlands and streams) was conducted in accordance with guidelines presented in IMC, Chapter 15.18 Critical Areas and the Shoreline Master Program (IMC Chapter 15.14). The wetland delineation was also conducted with the use of the *USACE Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010). The OHWM of potential streams was evaluated by examining breaks in the topography, drift lines, shifts in vegetation and signs of water marks, according to USACE protocol as referenced from Regulatory Guidance Letter (No. 05-05), Ordinary High-Water Mark Identification, December 7, 2005 (Riley 2005) and according to the Washington State Department of Ecology (Ecology) 2016 guidance (Anderson et al. 2016).

GeoEngineers collected geographic coordinates of the wetland boundaries and sample plots using a hand-held global positioning system (GPS) device. Survey flags were not placed because identified wetland habitat was below the shoreline OHWM, where flags could be washed away. A total of two sample plots were established within the project area as part of the wetland assessment. Sample plot data forms are presented in Appendix C, Sample Plot Data Forms. The delineated wetland was categorized using the 2014 Washington State Wetland Rating System for Western Washington (Hruby 2014). The rating system is intended for use primarily with vegetated, freshwater, wetlands as identified using the federal wetland delineation manual and the appropriate regional supplements. The rating system categorizes estuarine wetlands but does not rate their functions. The wetland rating form is included in Appendix D, Ecology Wetland Rating Form.

The wetland was categorized, and the regulatory wetland buffer was identified according to the Shoreline Master Program (IMC Chapter 15.14) based on the wetland habitat characteristics, Ecology wetland rating, and the intensity of proposed land use. For the purposes of this report, it is assumed that the site will have a high-intensity land use based on the project plans. The City of Ilwaco will make the final determination of buffer widths.

4.2. Results

Within the marina there was some limited upland vegetation growing on fill materials above the riprap bulkhead. Upland vegetation included clover species (*Trifolium species*), Japanese knotweed (*Polygonum cuspidatum*), various grasses, dandelion (*Taraxacum officinale*) and creeping buttercup (*Ranunculus repens*). No wetlands were noted in or around the marina.

Outside of the marina in the vicinity of the proposed beneficial use site, one estuarine wetland was identified below the eastern marina riprap bulkhead extending east adjacent to the proposed beneficial use site; dominant vegetation identified within the estuarine wetland during the site visit included Lyngbye's sedge (*Carex lyngbyei*), three-square (*Schoenplectus pungens*) and silverweed (*Potenitilla anserina*). In addition to the estuarine wetland, the Columbia River estuary was documented. No streams were identified along the shoreline of Baker Bay within and adjacent to the proposed beneficial use site.

The field assessment mapping results are presented in Figure 6, Wetland Survey Findings, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site. Tables 1 and 2 on the following pages summarizes the wetland and Baker Bay features documented on the site and provides additional information regarding baseline conditions, rating details and regulatory requirements.

TABLE 1. WETLAND A SUMMARY

Shoreline Wetland – Information		
Location	Shoreline along proposed beneficial use site; northeast of existing marina	
WRIA	24 – Willapa	
Local Jurisdiction	Ilwaco	
Buffer Width[1]	200 feet	
Washington Ecology Categorization[2]	Category I	
Size	More than 2 acres	
Cowardin Class	Estuarine Emergent	
Description Summary		
Dominant Vegetation	**Herbaceous:** Lyngbye's sedge (*Carex lyngbyei*); three-square (*Schoenplectus pungens*); silverweed (*Potenitilla anserina*) **Shrub:** None **Tree:** None	
Soils	Meets criteria for hydric soil indicator sandy redox (S5) and hydrogen sulfide (A4).	
Hydrology	**Indicators:** Saturated, geomorphic position and facultative (FAC)-Neutral Test **Source:** Direct precipitation, runoff and tidal influences	
Wetland Functions Summary		
Water Quality	Moderate water quality functions because it is dominated by emergent vegetation. The wetland also has adjacent development with adjacent paved roads (i.e. sources of pollution). However, the wetland is directly adjacent to the marine influenced waters of the Columbia River with a direct outlet.	
Hydrologic	Moderate level for hydrologic functions due to vegetation coverage, and ability to slow water flow discharge and protect the shoreline from erosion.	
Habitat	Moderate to high level of habitat functions due to having direct connections to Columbia River, no vegetated connections to other upland or wetland areas, there is only one vegetation class (emergent) and special habitat features such as large woody debris.	
Buffer Condition	The wetland buffer is impacted and consists in part of paved roadways and single-family residences. There is direct observations and evidence of human uses within the buffer and portions of the buffer are dominated by invasives. In addition, boat use in the Columbia River disturbs the waterward side of the buffer.	

Notes:

1. According to IMC 15.18.030.G. Buffer width was identified according to the Ecology rating and a high intensity land use impact. The final buffer width is subject to approval by the jurisdictional authority.
2. Wetland category based on the Washington State Wetlands Rating System for Western Washington, (Hruby revised 2014). The wetland is greater than 1-acre in size, is relatively undisturbed and has tidal channels and depressions.

TABLE 2. BAKER BAY SUMMARY

Baker Bay – Information		
Location	Shoreline along proposed beneficial use site; east of marina	
WRIA	24 – Willapa	
Local Jurisdiction	Ilwaco	
DNR Stream Type[1]	S – Shoreline of the State	
Shoreline Type[2]	High Intensity A (adjacent to the marina) Shoreline Residential A (NE area of the investigation)	
Buffer Width[3]	Adjacent to High Intensity A: No buffer, and 50-foot structure setback. Adjacent to Shoreline Residential A: 100-foot buffer and 15-foot structure setback	
Average Channel Width[4]	5 to 6 miles wide in the lower reach (from the mouth to approximately 25 miles upstream)	
Gradient	Less than 5 percent	
Duration	Perennial and Tidally Influenced	
Description Summary		
Documented Fish Use[5]	Steelhead (*Oncorhynchus mykiss*), Bull Trout (*Salvelinus confluentus*), Coho Salmon (*Oncorhynchus kisutch*), Pink Salmon (*Oncorhynchus gorbuscha*), Chum Salmon (*Oncorhynchus keta*), Chinook Salmon (*Oncorhynchus tshawytscha*), Sockeye (*Oncorhynchus nerka*), Residential Coastal Cutthroat (*Oncorhynchus clarki*), White Sturgeon (*Acipenser transmontanus*), Green Sturgeon (*Acipenser medirostris*)	
Connectivity	Discharges to the Pacific Ocean	
Channel Description	5- to 6-mile-wide estuarine channel, 3.5 miles from the Pacific Ocean. Sand substrate.	
Buffer Condition	Riparian buffer within the project site consists of steeps slopes and native vegetation. Downstream from the project site the buffer contains rural residential development, landscape and native vegetation.	

Notes:

1. DNR FPAMT (DNR 2022).
2. City of Ilwaco Official Shorelines Map (IMC Chapter 15.14)
3. According to IMC Chapter 15.14, Appendix B, Table B3-1. The final buffer width is subject to approval by the jurisdictional authority.
4. Average Channel Width derived from estimates during the field investigation, aerial photographs and Light Detection and Ranging (LiDAR) data.
5. WDFW Priority Habitat and Species mapping application (WDFW 2022).

5.0 SUMMARY

GeoEngineers performed aquatic critical areas (wetlands and streams) assessment and a macrovegetation/eelgrass survey for the Port of Ilwaco Dredging and Dredge Material Placement Project. One estuarine wetland (Wetland A) was identified and delineated along the shoreline of the Columbia River. The wetland meets the characteristics to be a Category I estuarine system. According to Ilwaco Shoreline Master Program, the wetland will require a 200-foot buffer based on being an estuarine wetland with a high intensity of proposed adjacent land use. Native eelgrass (0.02 acres) was documented within the marina dredge prism. The eelgrass likely occurs within the marina due to an extended period of deposition from the Columbia River based on the lack of regular marina-wide dredging creating suitable growing conditions (depth) for the species to occur. Large, patchy areas of non-native eelgrass and brown algae were found in the upper elevations of the proposed beneficial use site.

6.0 LIMITATIONS

GeoEngineers has prepared this report in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for wetland delineation and macro vegetation surveys in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for the exclusive use of Moffatt & Nichol, authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state and federal) prior to design or construction of any development to obtain necessary permits and approvals.

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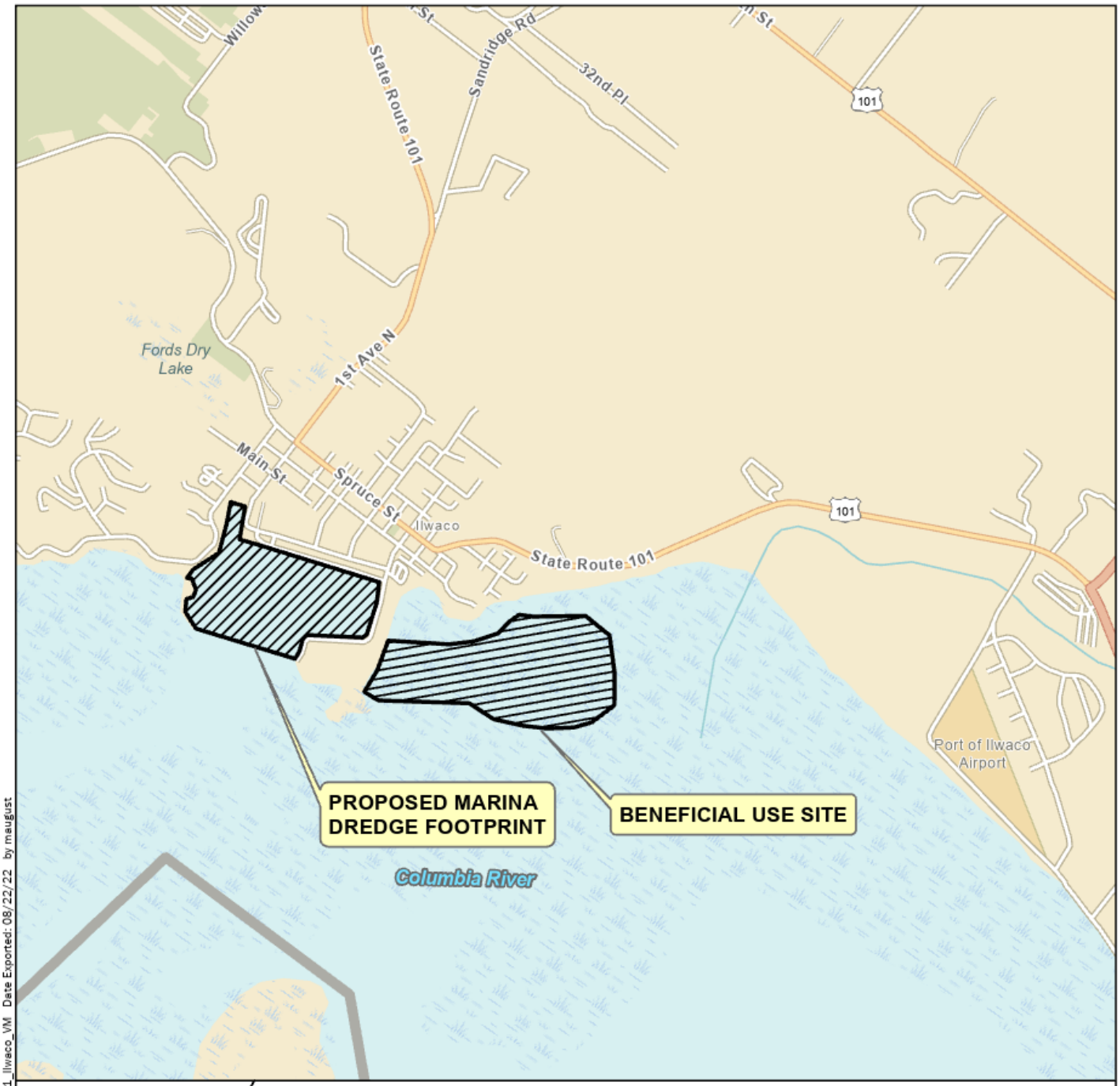
Washington State Department of Natural Resources (DNR). 2022. Forest Practices Application Mapping Tool (FPAMT). Available at: https://fpamt.dnr.wa.gov/default.aspx

FIGURES

GeoEngineers



2,000 0 2,000

Feet

Vicinity Map

Port of Ilwaco Dredging and
Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 1

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\2155100301_Ilwaco_VM Date Exported: 08/22/22 by maugust

P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\21551003_F02_Ilwaco_zoom_video Date Exported: 12/12/22 by maugust

Notes:

1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. Vessel transects completed using BioSonics survey and underwater video equipment.
3. The locations of all features shown are approximate.
4. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Data Source: Bing Aerial Imagery

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Transect Point
- Field Verification Area
- Ordinary High Water Mark (OHWM)

200 0 200

Feet

Survey Effort, Wetland and Aquatic Vegetation Survey – Ilwaco Marina

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 2

Notes:

1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. Vessel transects completed using BioSonics survey and underwater video equipment.
3. Nearshore macrovegetation survey was completed on foot during a low tide.
4. The locations of all features shown are approximate.
5. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Bing Aerial Imagery

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Transect Point
- Field Verification Area
- Nearshore Macrovegetation Survey Area
- Ordinary High Water Mark (OHWM)

300 0 300

Feet

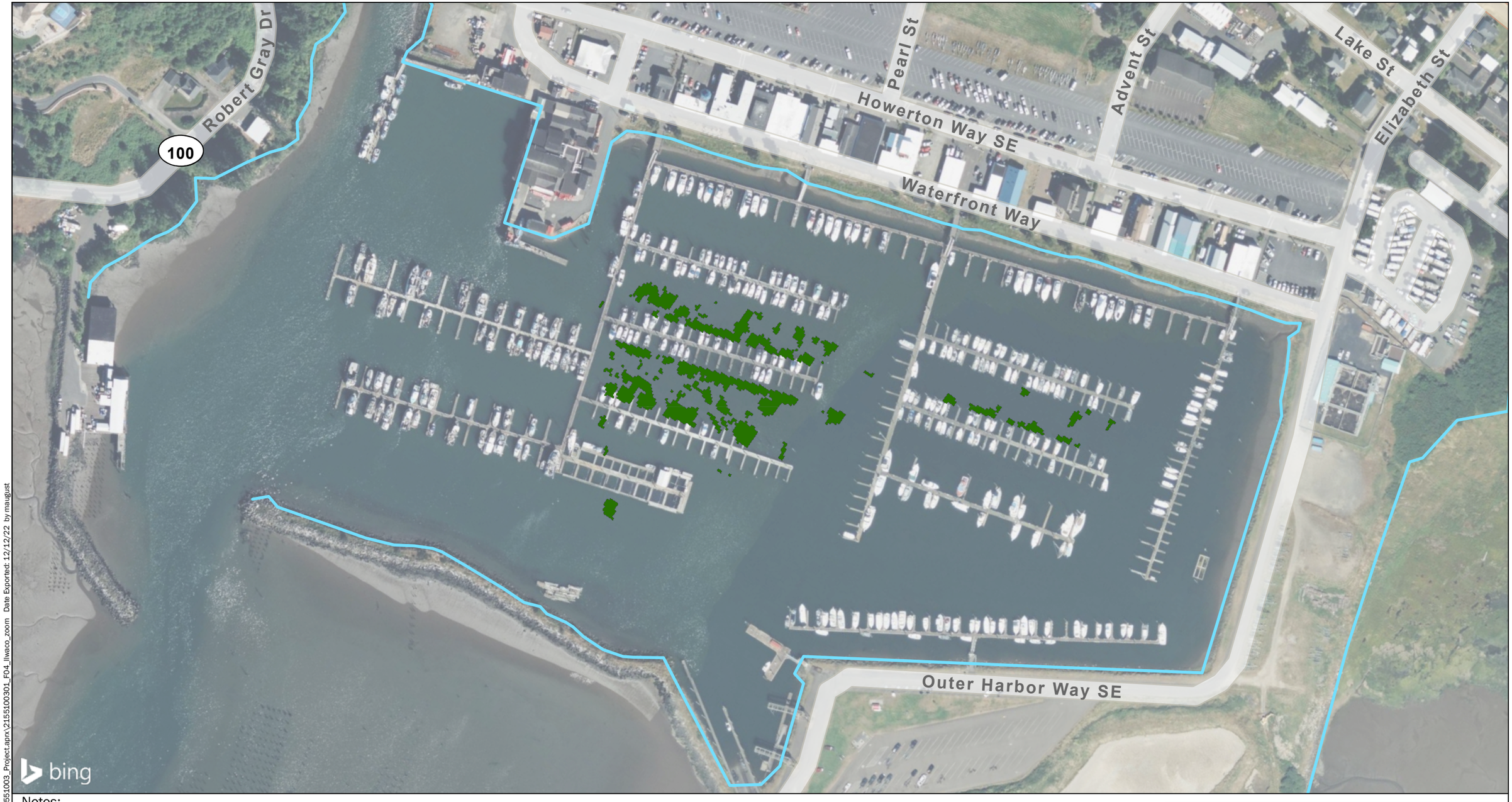
Survey Effort, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 3

P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\21551003_F03_Ilwaco_video Date Exported: 12/12/22 by maugust



P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\21551003_F04_Ilwaco_zoom Date Exported: 12/12/22 by maugust

Notes:

1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. Vessel transects completed using BioSonics survey and underwater video equipment.
3. The locations of all features shown are approximate.
4. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Bing Aerial Imagery.

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Native Eelgrass Presence
- Ordinary High Water Mark (OHWM)

N W E S

200 0 200

Feet

Eelgrass Coverage, Wetland and Aquatic Vegetation Survey – Ilwaco Marina

Port of Ilwaco Dredging and
Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 4

Notes:
1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. The locations of all features shown are approximate.
3. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Bing Aerial Imagery

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Ilwaco Dredge Disposal Area
- Non-Native Eelgrass
- *Fucus distichus*
- Ordinary High Water Mark (OHWM)

300 0 300
Feet

Macrovegetation Coverage, Wetland and Aquatic Vegetation Survey – Ilwaco Proposed Beneficial Use Site

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 5

P:\21\21551003\GIS\21551003_Project\21551003_Project.aprx\21551003_F05_Ilwaco_coverage Date Exported: 12/12/22 by maugust

Notes:

1. OHWM boundary shown is based on aerial imagery due to private parcel access limitations at the time of survey.
2. Wetland survey completed by foot during a low tide.
3. The locations of all features shown are approximate.
4. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Sample Point
- Wetland Boundary
- Ordinary High Water Mark (OHWM)
- Wetland
- Ilwaco Dredge Disposal Area

300 0 300

Feet

Wetland Survey Findings, Wetland and Aquatic Vegetation Survey - Ilwaco Proposed Beneficial Use Site

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure 6

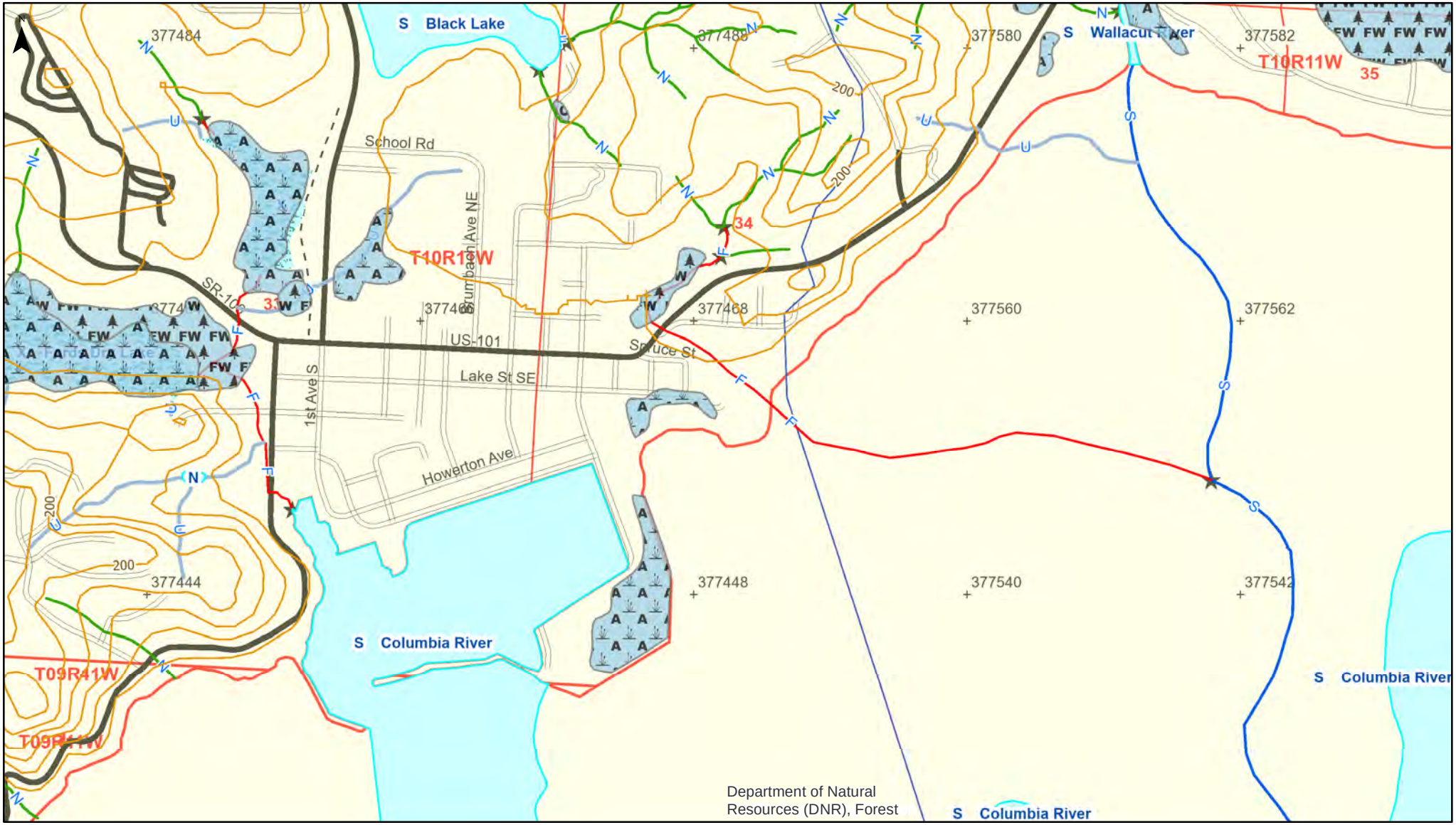
P:\21\21551003\GIS\215510003_Project\215510003_Project.aprx\2155100301_F06_Ilwaco_wetlands Date Exported: 12/12/22 by maugust

APPENDICES

GeoEngineers

APPENDIX A
Published Data Review

Forest Practices Water Type Map



Map Symbols

- New Stream
- Proposed Water Type
- Stream Removal
- Break between water types
- Start and End Point of Surveyed Reach
- Natural Fish Barrier
- Manmade Barrier
- End of Fish or Last Fish

Additional Information

Legal Description

S35 T10.0N R11.0W, S33 T10.0N R11.0W
S03 T09.0N R11.0W, S04 T09.0N R11.0W
S34 T10.0N R11.0W

WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

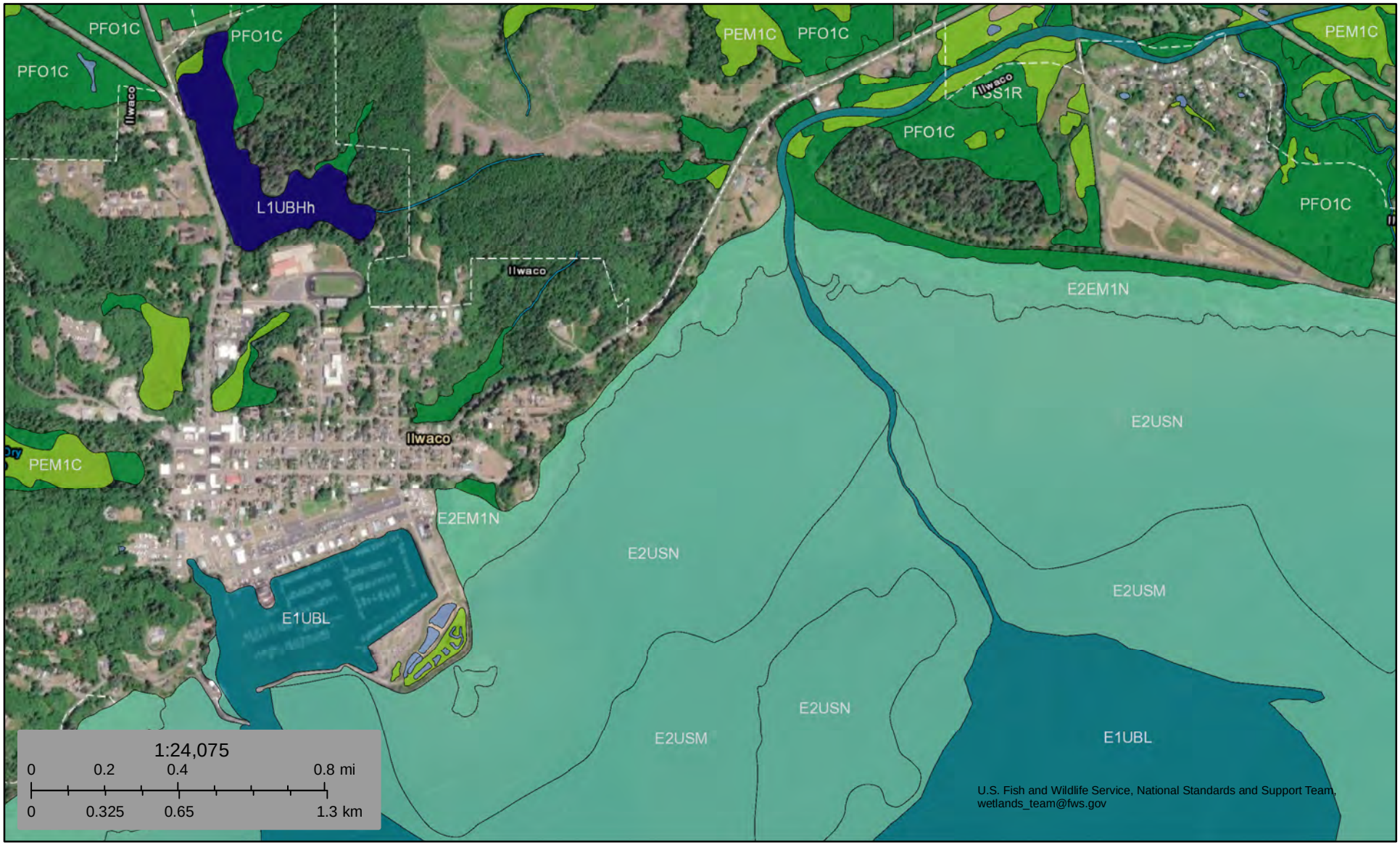
Extreme care was used during the compilation of this map to ensure its accuracy. However, due to changes in data and the need to rely on outside information, the Department of Natural Resources cannot accept responsibility for errors or omissions, and therefore, there are no warranties that accompany this material.

0 0.25 Miles

Date: 8/18/2022 Time: 6:21:47 PM

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands



June 29, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Soil Map—Grays Harbor County Area, Pacific and Wahkiakum Counties, Washington

Map Scale: 1:7,640 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grays Harbor County Area, Pacific and Wahkiakum Counties, Washington
Survey Area Data: Version 20, Aug 23, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

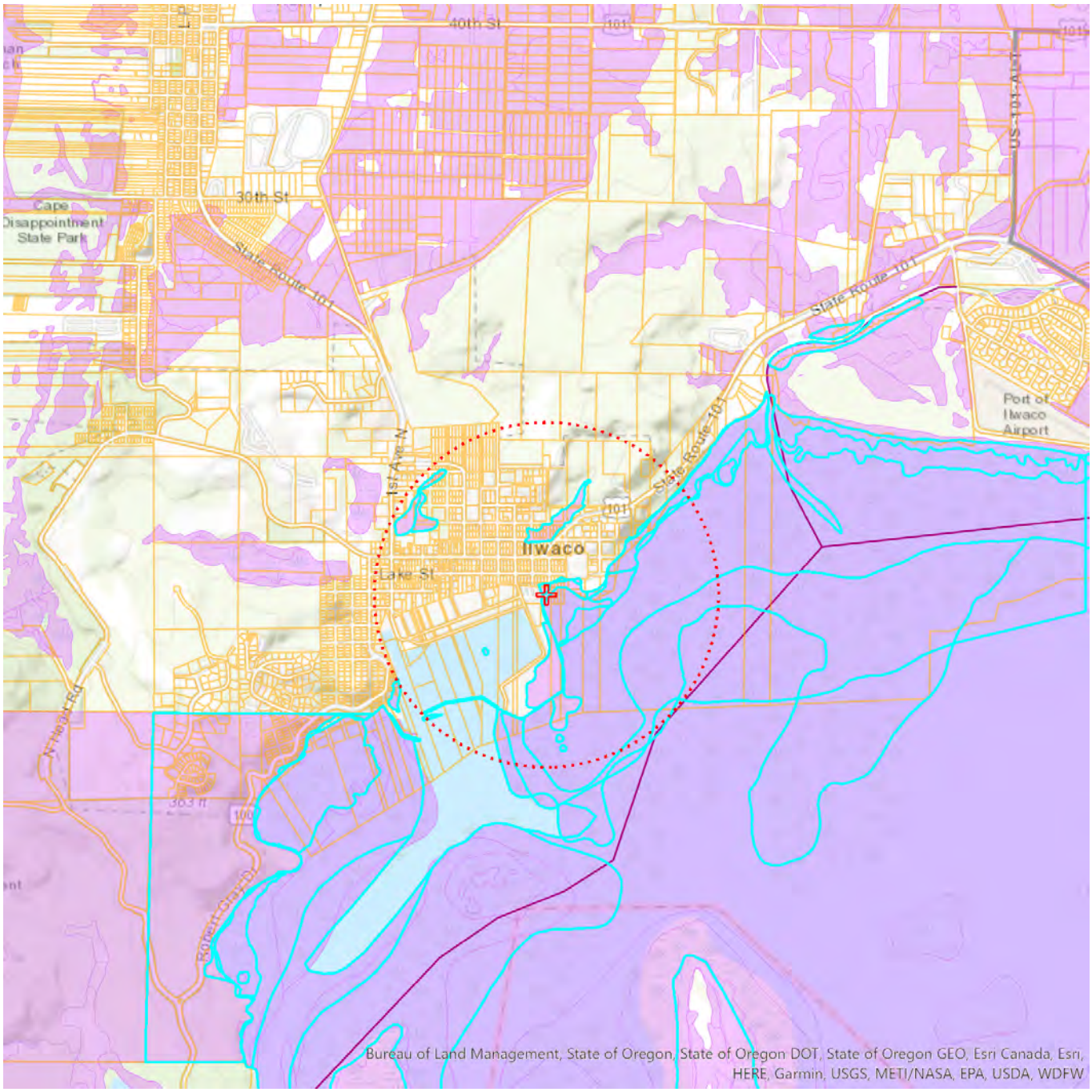
Date(s) aerial images were photographed: Jul 26, 2020—Jul 27, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
115	Palix silt loam, cool, 30 to 65 percent slopes	8.5	7.9%
147	Udorthents, level	15.9	14.7%
158	Willapa silt loam, cool, 1 to 8 percent slopes	9.6	8.9%
169	Water	74.0	68.5%
Totals for Area of Interest		**108.0**	**100.0%**

Priority Habitats and Species on the Web



Buffer radius: 0.5 Miles

Report Date: 06/29/2022

PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Sensitive Location
Marbled murrelet	Threatened	Endangered	No
Shorebird Concentrations	N/A	N/A	No
Waterfowl Concentrations	N/A	N/A	No
Wetlands	N/A	N/A	No
Purple martin	N/A	N/A	No
Estuarine and Marine Wetland	N/A	N/A	No
Freshwater Emergent Wetland	N/A	N/A	No
Freshwater Forested/Shrub Wetland	N/A	N/A	No

PHS Species/Habitats Details:

Marbled murrelet	
Scientific Name	*Brachyramphus marmoratus*
Priority Area	Breeding Survey
Site Name	T9-0N R11-0W S04
Accuracy	NA
Notes	Detection Status: 3
Source Dataset	WS_MMDetSect
Source Name	Not Given
Source Entity	WDFW Wildlife Program
Federal Status	Threatened
State Status	Endangered
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	Y
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00026
Geometry Type	Polygons

Shorebird Concentrations	
Priority Area	Regular Concentration
Site Name	BAKER BAY
Notes	SHOREBIRD CONCENTRATION AREAS
Source Record	904452
Source Dataset	PHSREGION
Source Name	SKRILETZ, JEFF
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00026
Geometry Type	Polygons

Waterfowl Concentrations	
Priority Area	Regular Concentration
Site Name	BAKER BAY
Accuracy	1/4 mile (Quarter Section)
Notes	WATERFOWL WINTERING CONCENTRATION AREA.
Source Record	902356
Source Dataset	PHSREGION
Source Name	SCHIRATO, GREG
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00026
Geometry Type	Polygons

Wetlands	
Priority Area	Aquatic Habitat
Site Name	REGION 6 SALTWATER WETLANDS
Accuracy	1/4 mile (Quarter Section)
Notes	COASTAL SALT MARSHES SALT MEADOWS AND BRACKISH MARSHES
Source Record	904451
Source Dataset	PHSREGION
Source Name	GUFLER DAVE
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Purple martin	
Scientific Name	*Progne subis*
Priority Area	Breeding Area
Site Name	ILWACO MARINA
Accuracy	GPS
Notes	NESTIN IN TOP OF ROTTEN PILINGS AT MARINA.
Source Record	4592
Source Dataset	WS_OccurPolygon
Source Date	WS_OccurPolygon
Source Name	SCHMIDT, T/WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	Y
Display Resolution	AS MAPPED
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00026
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2RSPr
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2USM
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1As
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1C
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1C
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1Ch
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2USN
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2EM1N
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1S
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

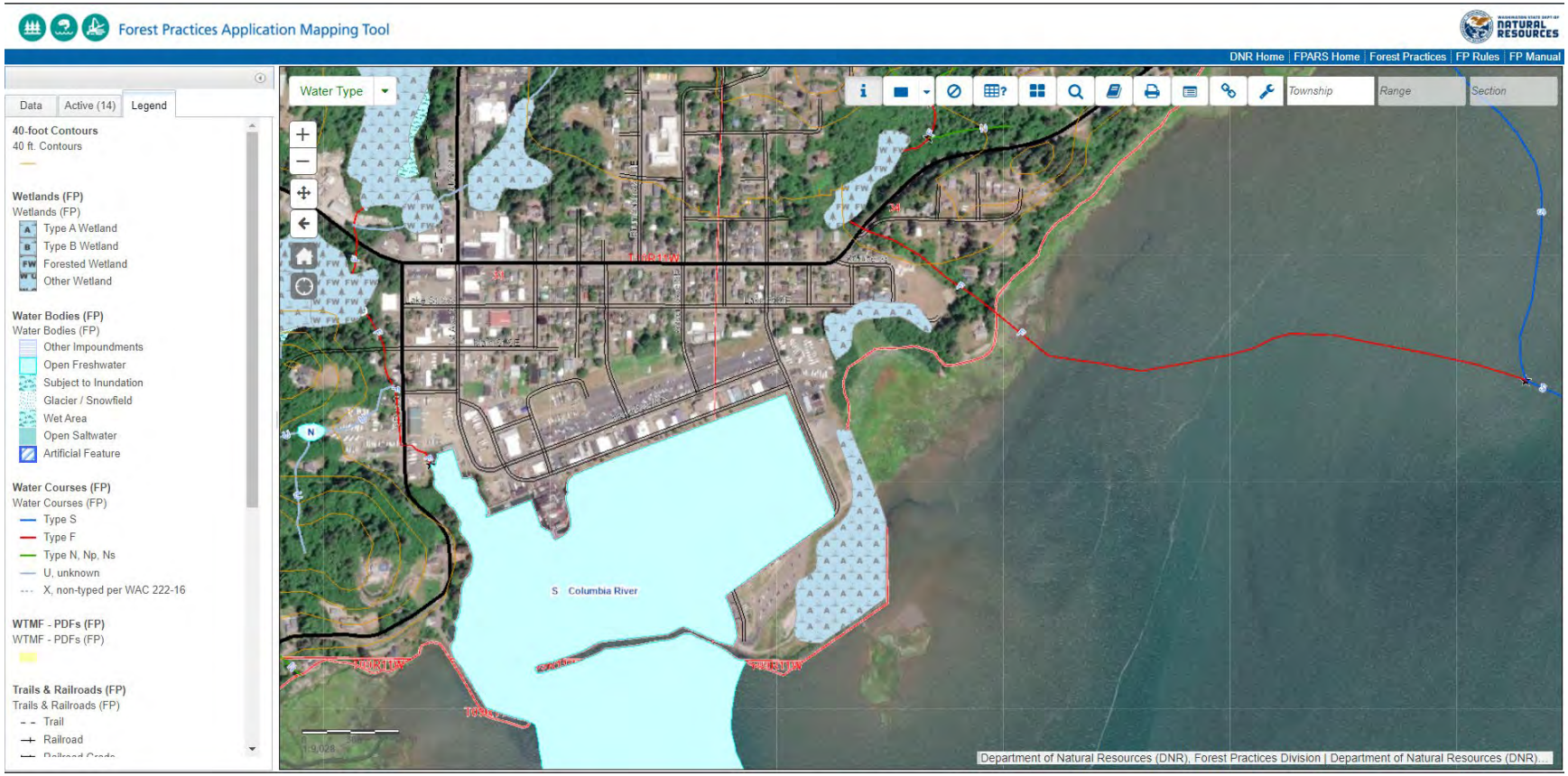
Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSSR
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSSR
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

Estuarine and Marine Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Estuarine and Marine Wetland - NWI Code: E2USN
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

Washington Department of Natural Resources Forest Practicies Application Mapping Tool (FPARS).



APPENDIX B
Site Photographs

Photograph 1. Looking north just east of the marina. A riprap bulkhead protects the access road to the boat launch at the marina. (June 15, 2022)

Photograph 2. Looking north over the estuarine wetland (Wetland A). (June 15, 2022)

Site Photographs – Wetland Survey

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure B-1

21551-003-01 Date Exported: July 5, 2022

Photograph 3. Tidal channels and areas of open water were identified in the wetland. (June 15, 2022)

Photograph 4. Estuarine Wetland A near the eastern portion of the investigation area. (June 15, 2022)

Site Photographs – Wetland Survey

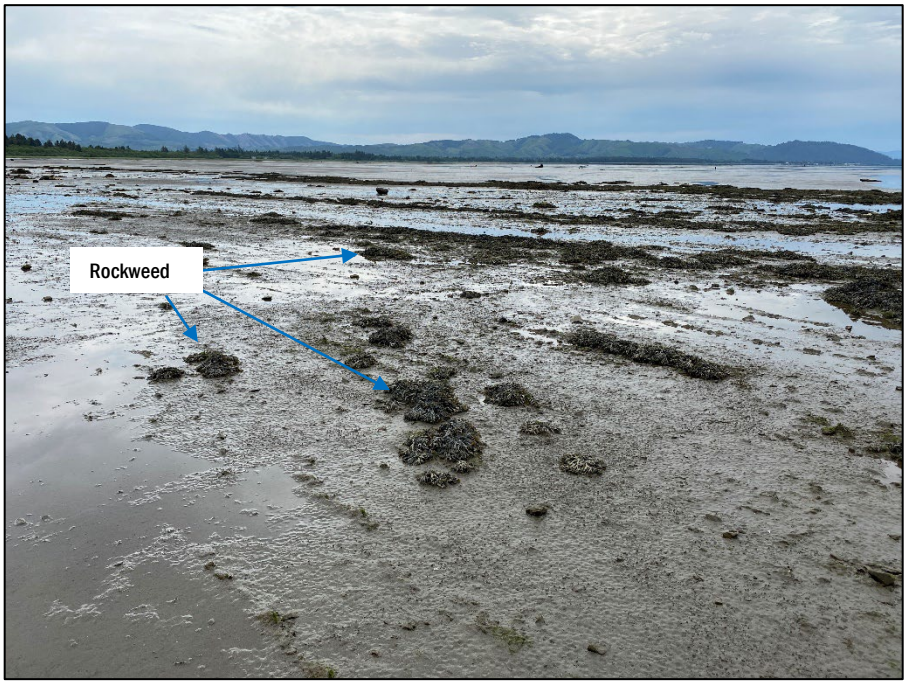
Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure B-2

0422-148-01 Date Exported: June 22, 2020

Photograph 5. Columbia River adjacent to the estuarine wetland and investigation area. (June 15, 2022)



Photograph 6. Rockweed patchy area near the western side of the investigation area within the Columbia River. (June 15, 2022)

Site Photographs – Macrovegetation Survey

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure B-3

0422-148-01 Date Exported: June 22, 2020

Photograph 7. Non-native eelgrass (*Zostera japonica*) on the east side of the investigation area. (June 15, 2022)

Photograph 8. Non-native eelgrass on the east side of the investigation area. (June 15, 2022)

Site Photographs – Macrovegetation Survey

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

GeoEngineers

Figure B-4

0422-148-01 Date Exported: June 22, 2020

Photograph 9. Ilwaco marina surface conditions. Breakwater shown in the background. (June 15, 2022)

Photograph 10. Vessel for completing the macrovegetation surveys shown with towed underwater camera on deck of vessel. (June 15, 2022)

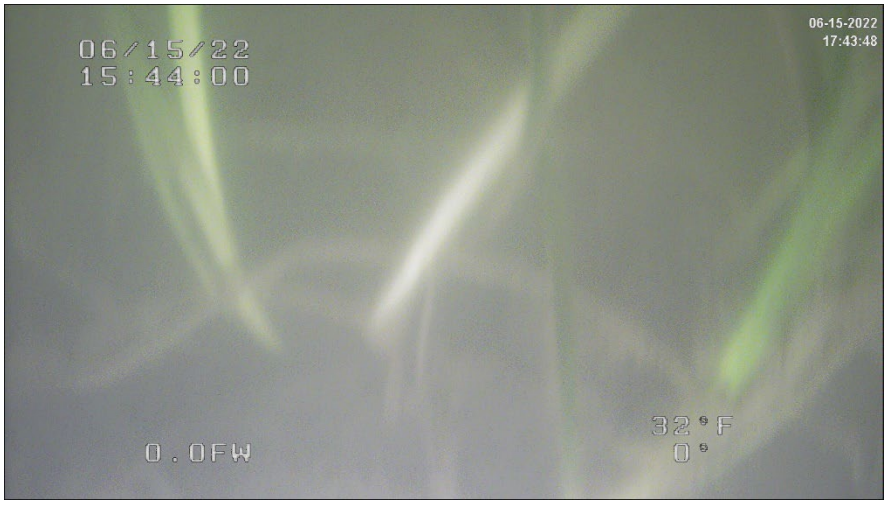
Site Photographs – Macrovegetation Survey

Port of Ilwaco Dredging and Dredge Material Placement Project
Ilwaco, Washington

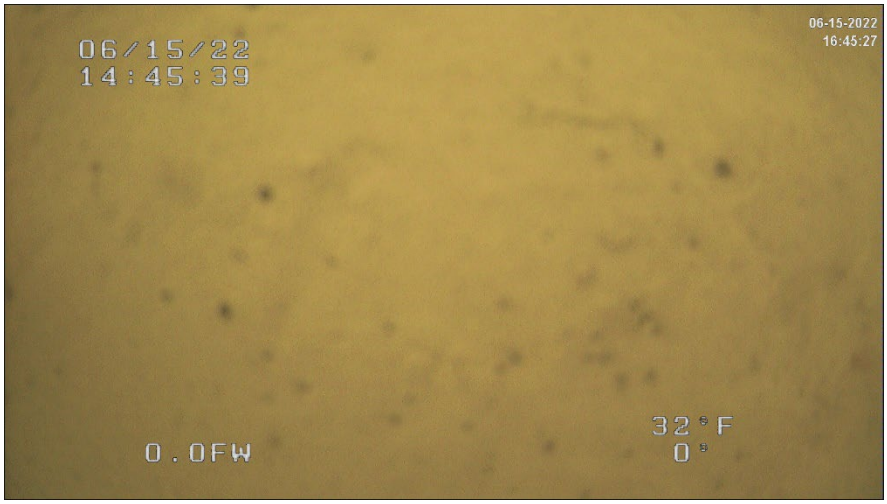
GeoEngineers

Figure B-5

0422-148-01 Date Exported: June 22, 2020



Photograph 11. Native eelgrass (*Zostera marina*) field verified during the survey within the Ilwaco marina. (June 15, 2022)



Photograph 12. Soft, mud bottom substrate conditions within the footprint of the proposed beneficial use area for the dredge material. No eelgrass was observed in this area. Siphon holes from clams visible in photo. (June 15, 2022)

0422-148-01 Date Exported: June 22, 2020

Site Photographs – Macrovegetation Survey	
Port of Ilwaco Dredging and Dredge Material Placement Project Ilwaco, Washington	
GeoEngineers	Figure B-6

APPENDIX C
Sample Plot Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Port of Ilwaco Wharf Bulkhead and Gangeway Access City/County: Ilwaco Sampling Date: 6.15.22

Applicant/Owner: Port of Ilwaco State: WA Sampling Point: SP-1

Investigator(s): J. Dadisman Section, Township, Range: Section 34, Township 10 North, Range 11 West

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Concave Slope (%): <5

Subregion (LRR): A Lat: Long: Datum:

Soil Map Unit Name: Water NWI Classification: EEM

Are climatic / hydrologic conditions on the site typical for this time of year? (●) Yes ( ) No (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? (●) Yes ( ) No

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	(●) Yes	( ) No	**Is the Sampled Area within a Wetland?**	(●) Yes ( ) No
Hydric Soil Present?	(●) Yes	( ) No		
Wetland Hydrology Present?	(●) Yes	( ) No		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft x 30ft)	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status
1.				
2.				
3.				
4.				
	= Total Cover			
Sapling/Shrub Stratum (Plot size: 5ft x 5ft)				
1.				
2.				
3.				
4.				
5.				
	= Total Cover			
Herb Stratum (Plot size: 5ft x 5ft)				
1. *Carex lyngbyei*	50	Y	45.5	OBL
2. *Schoenoplectus pungens*	40	Y	36.4	OBL
3. *Potentilla anserina*	20	N	18.2	OBL
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
	110 = Total Cover			
Woody Vine Stratum (Plot size: 30ft x 30ft)				
1.				
2.				
	= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	110	x 1 =	110
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		110 (B)

Prevalence Index = B/A = 1.000

Hydrophytic Vegetation Indicators:

- [✓] 1 - Rapid Test for Hydrophytic Vegetation
- [✓] 2 - Dominance Test is >50%
- [✓] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] 5 - Wetland Non-Vascular Plants[1]
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? (●) Yes ( ) No

Remarks:

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-13	2.5Y 4/1	95	5YR 4/4	5	C	M	Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☑ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? ◉ Yes ○ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? ○ Yes ◉ No Depth (inches):

Water Table Present? ◉ Yes ○ No Depth (inches): 11

Saturation Present? (includes capillary fringe) ◉ Yes ○ No Depth (inches): 0

Wetland Hydrology Present? ◉ Yes ○ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Port of Ilwaco Wharf Bulkhead and Gangeway Access | City/County: Ilwaco | Sampling Date: 6.15.22

Applicant/Owner: Port of Ilwaco | State: WA | Sampling Point: SP-2

Investigator(s): J. Dadisman | Section, Township, Range: Section 34, Township 10 North, Range 11 West

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%): <5

Subregion (LRR): A | Lat: | Long: | Datum:

Soil Map Unit Name: Water | NWI Classification: EEM

Are climatic / hydrologic conditions on the site typical for this time of year? (●) Yes ( ) No (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? (●) Yes ( ) No

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	(●) Yes	( ) No	**Is the Sampled Area within a Wetland?**	(●) Yes ( ) No
Hydric Soil Present?	(●) Yes	( ) No		
Wetland Hydrology Present?	(●) Yes	( ) No		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft x 30ft)	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status
1.				
2.				
3.				
4.				
	= Total Cover			
Sapling/Shrub Stratum (Plot size: 5ft x 5ft)				
1.				
2.				
3.				
4.				
5.				
	= Total Cover			
Herb Stratum (Plot size: 5ft x 5ft)				
1. *Carex lyngbyei*	100	Y	100.0	OBL
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
	100 = Total Cover			
Woody Vine Stratum (Plot size: 30ft x 30ft)				
1.				
2.				
	= Total Cover			

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		100 (B)

Prevalence Index = B/A = 1.000

Hydrophytic Vegetation Indicators:

- [✓] 1 - Rapid Test for Hydrophytic Vegetation
- [✓] 2 - Dominance Test is >50%
- [✓] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] 5 - Wetland Non-Vascular Plants[1]
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? (●) Yes ( ) No

Remarks:

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-10	5Y	3/1	100						Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 10

Hydric Soil Present? ◉ Yes ○ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? ○ Yes ◉ No Depth (inches):

Water Table Present? ◉ Yes ○ No Depth (inches): 0

Saturation Present? (includes capillary fringe) ◉ Yes ○ No Depth (inches): 0

Wetland Hydrology Present? ◉ Yes ○ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX D
Ecology Wetland Rating Form

Wetland name or number _A__

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 6/15/22

Rated by J. Dadisman Trained by Ecology? X Yes ___No Date of training 6/2014

HGM Class used for rating Estuarine Wetland has multiple HGM classes?___Y ____N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.

Source of base aerial photo/map ArcMap (see delineation figure in report)

OVERALL WETLAND CATEGORY ____ I ___ (based on functions___ or special characteristics_ X)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
	Circle the appropriate ratings									
Site Potential	H	M	L	H	M	L	H	M	L	
Landscape Potential	H	M	L	H	M	L	H	M	L	
Value	H	M	L	H	M	L	H	M	L	**TOTAL**
Score Based on Ratings										

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I** **II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I** **II** **III** **IV**
None of the above	

Wetland name or number A___

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number A___

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   NO – go to 3 **YES** – The wetland class is **Flats**
   *If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

   NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

   NO – go to 5 **YES –** The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number A___

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number A___

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? X The dominant water regime is tidal, X Vegetated, and X With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? X The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. X — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 2.4** No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No **= Is not a bog**	**Cat. I**

Wetland name or number A

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

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GeoEngineers

Appendix D. Suitability Determination Memorandum

CENWP-NVW-W (Sediment Quality) 13 December 2024

Memorandum for: U.S. Army Corps of Engineers - Portland District, Regulatory Branch (CENWP-ODG, Friesen), Regulatory File No. NWP-2004-78-5, Port of Ilwaco, maintenance dredging project.

Subject: Portland Sediment Evaluation Team (PSET) Level 2A dredged material suitability determination memorandum (SDM) for maintenance dredging at the Port of Ilwaco (Port) in the town of Ilwaco, Pacific County, Washington. The Port is located on the northwestern shore of Baker Bay, near river mile (RM) 3.0 of the Columbia River.

Introduction: Per the May 2018 *Sediment Evaluation Framework for the Pacific Northwest* (SEF)[1], this SDM documents the consensus of the PSET agencies regarding the suitability of the Port of Ilwaco dredge prism (DP) for unconfined, aquatic placement and suitability of the post-dredge surface (PDS) for unconfined, aquatic exposure. The PSET reviewed the November 2024 *Port of Ilwaco Marina; Sediment Characterization; Dredged Material Characterization; USACE Permit No. NWP-2004-78-5* (SCR)[2], and the November 2024 *Port of Ilwaco Marina; Sediment Characterization Addendum; Dredged Material Characterization (SCRA)[3]; USACE Permit No. NWP-2004-78-5* prepared by Moffatt & Nichol (M&N). Sediment chemical testing results are summarized in the SCR; chemical analytical results were compared to the marine benthic toxicity screening levels (SEF SLs) published in the 2018 SEF. The PSET also used Washington State's practical quantitation limit of 5.0 ng/kg sum TEQ for dioxins and furans[4] and Oregon Department of Environmental Quality's (ODEQ's) sediment screening level value (SLV) for marine fish to evaluate bioaccumulation of PCBs[5].

PSET Sediment Suitability Summary:

Dredge Prism (DP):

☒Suitable – DMMUs 1 (partial), 2 (partial), 3 (partial), 4, and 5

☒Unsuitable – Portions of DMMUs 1 and 3 near Stations 1A/1B (crab dock); Portion of DMMU 2 at Station SP-11 (northeast corner)

Post-Dredge Surface (PDS):

☒Suitable – DMMUs 1 to 5 (post-dredge confirmation sampling required at SP-11 in DMMU 2)

☐Unsuitable

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[1] U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Washington Department of Ecology, Washington Department of Natural Resources, Oregon Department of Environmental Quality, Idaho Department of Environmental Quality, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. 2018. *Sediment Evaluation Framework for the Pacific Northwest*. Published May 2018, by the U.S. Army Corps of Engineers, Northwestern Division, 183 pp with Appendices.

[2] Moffatt and Nichol. 2024. *Port of Ilwaco Marina; Sediment Characterization; Dredged Material Characterization; USACE Permit No. NWP-2004-78-5.* Updated November 7, 2024, 427 pp with Figures, Tables, and Appendices.

[3] Moffatt and Nichol. 2024. *Port of Ilwaco Marina; Sediment Characterization Addendum; Dredged Material Characterization; USACE Permit No. NWP-2004-78-5*. Updated November 7, 2024, 598 pp with Tables, Figures, and Appendices.

[4] Sediment Cleanup User Manual, 2015. Sediment Cleanup Objective is the highest of natural background, PQL, or risk. For Columbia River, the highest value for tiered approach (Section 7.2.2.1) is PQL (Chapter 11 and table 11-1). Updated December 2021.

[5] Oregon Department of Environmental Quality. 2007. *Guidance for Assessing Bioaccumulative Chemicals of Concern in Sediment*. Updated April 3, 2007 by ODEQ Environmental Cleanup Program, 18 pp with Appendices.

SEF Special Conditions:

☒ **Data Recency Expiration**: Based on a "**Low-Moderate**" management area rank, the data recency for **DMMUs 1, 2, 3, 4 and 5** at the Port of Ilwaco expires in **October 2029**.

☒ Due to contamination at the crab dock (1-foot surface layer) and Station SP-11 (full dredge prism depth), **upland disposal** of **unsuitable** dredged materials from **portions of DMMUs 1, 2, and 3** (see SDM Figure 1) is required, unless marine biological testing (bioassays and bioaccumulation) is conducted per the SEF in coordination with the PSET.

☒ At least 30 days prior to dredging, submit a **Dredging and Disposal Quality Control Plan** consistent with this SDM, Corps permit, Endangered Species Act consultations from the USFWS and NMFS, and Washington Department of Ecology (Ecology) 401 certification, to the PSET, the Regulatory PM, and Washington Ecology for **approval prior to dredging**. A **pre-dredge conference call** with Ecology, the PSET, and the Regulatory PM is required at least **14 days prior to dredging each year** to discuss the Dredging and Disposal Quality Control Plan. Dredging, sequencing, positioning, post-dredge confirmation testing, PDS management, cover material placement, debris management, and dredged material placement will all need to be addressed with enough detail to provide assurance to the agencies that the Dredging and Disposal Quality Control Plan will be properly implemented.

☒ A **GIS layer or kmz file** of the **unsuitable areas** in DMMUs 1, 2, and 3 shall be submitted to the PSET, Corps, and Ecology prior to dredging those areas. The **upland disposal location** of **unsuitable sediments** shall be detailed in the Dredging and Disposal Quality Control Plan. **Areas of the upland sites** used for **disposal of unsuitable sediment cannot** be dredged and **placed inwater**.

☒ Pre-dredge and post-dredge **hydrographic surveys** of the dredge areas and in-water placement sites within 60 days of work.

☒ Due to elevated concentration of phthalates in **DMMU 2 (Station SP-11),** the post-dredge surface may be suitable for unconfined aquatic exposure if **post-dredge sampling** for SVOCs confirms concentrations are below the SEF marine screening levels (SLs). Two sampling stations in DMMU 2 shall be discretely analyzed for SVOCs, TOC, grain size, and total solids within 5 days of dredging. The results with detection and reporting limits must be submitted to PSET within 10 days of sampling. If results are not below marine SLs, a contingency post-dredge management plan will need to be coordinated and approved by the PSET. A **post-dredge surface SAP for DMMU 2** must be submitted to and approved by the PSET before dredging.

☒ If a clamshell or other **mechanical dredging method** is used, **debris management** (logs, rock, trees, man-made objects, trash) is mandatory for the aquatic placement of the dredged material. **Aquatic disposal of debris is prohibited**. Debris monitoring and reporting (observations, daily report forms, photographs, debris disposal site, or absence of debris) is required.

☒ Submit **post-dredge and placement report** with figures to PSET, Ecology, ODEQ, and the Regulatory PM approximately **60 days after** each dredge event (dates, locations, volumes, acreages, dredge depths, photographs, debris monitoring, biological observations, placement

site of suitable sediments, upland disposal site of unsuitable sediments, post-dredge sampling, and pre-dredge and post-dredge bathymetric surveys of the dredge area and aquatic placement site).

*** The PSET requests the Regulatory PM provide electronic copies of the Corps permit (NWP-2004-78-5) and associated 401 water quality certificates for our files ***

Reviewers: The PSET agencies include the U.S. Army Corps of Engineers (Corps), U.S. Environmental Protection Agency – Region 10 (EPA), National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife (USFWS), Washington Department of Ecology (Ecology), and ODEQ. Table 1 lists the PSET's review timeline for this project. Reviewers included:

☒ James Holm (Corps, Lead) ☒ Bridgette Lohrman (EPA, Co-Lead)
☒ Peter Anderson (ODEQ) ☒ Laura Inouye (Ecology) ☒ Dominic Yballe (Corps)
☒ Tom Hausmann (NMFS) ☒ Jeremy Buck (USFWS) ☒ Robin Van Meter (USFWS)
☒ Clayton Olinger (Corps)

Table 1. Review Timeline.

Draft Sampling and Analysis Plan (SAP) submitted to PSET	June 30, 2023
Draft SAP revisions request by PSET	July 21, 2023
Revised SAP submitted to PSET	September 25, 2023
Revised SAP revisions requested by PSET	October 5, 2023
Final SAP submitted to PSET[6]	October 10, 2023
SAP approved by PSET[7]	October 11, 2023
Pre-sampling SAP call	October 17, 2023
Sampling date(s)	October 23 to 26, 2023
Draft data submitted to PSET	December 8, 2023
Crab dock fire	January 22, 2024
Partial SDM issued by PSET[8]	January 29, 2024
Draft SCR received by PSET	March 26, 2024
SAP addendum requested by PSET due to crab dock fire	March 28, 2024
Draft SAP addendum submitted to PSET	April 26, 2024
SAP addendum revisions request by PSET	May 6, 2024
Final SAP addendum submitted to PSET[9]	May 20, 2024
SAP addendum approved by PSET[10]	May 23, 2024
Pre-sampling SAP addendum call	May 28, 2024
Sampling date(s)	May 30 2024
Draft SCR addendum submitted to PSET	September 27, 2024

[6] Moffatt and Nichol. *Sampling And Analysis Plan; Port of Ilwaco Marina, Dredged Material Characterization USACE Permit No. NWP-2004-78-5*. October 10, 2023. 54 pp + appendices.

[7] Portland Sediment Evaluation Team (PSET). 2023. [E-mail correspondence] *PSET Review: Port of Ilwaco (NWP-2004-78-5) SAP Approval.* E-mail sent by J. Holm (PSET Lead, Corps) October 11, 2023. 3 pp + attachment.

[8] Portland Sediment Evaluation Team (PSET). 2024. [E-mail correspondence] *PSET Review: Partial SDM - Port of Ilwaco 2024 dredging plan NWP-2004-78-5.* E-mail sent by J. Holm (PSET Lead, Corps) January 29, 2024. 3 pp + attachment.

[9] Moffatt and Nichol. *Sampling and Analysis Plan Addendum – Port of Ilwaco Marina (USACE Permit No. NWP-2004-78-5).* May 20, 2024. 81 pp + attachments.

[10] Portland Sediment Evaluation Team (PSET). 2024. [E-mail correspondence] *PSET Review: Port of Ilwaco SAPA Approval dioxins_furans (NWP-2004-78-5).* E-mail sent by J. Holm (PSET Lead, Corps) May 23, 2024. 3 pp + attachment.

Draft SCR and SCR addendum revisions requested by PSET	October 16, 2024
Final SCR and SCR addendum submitted to PSET	November 6, 2024
SDM submitted to Regulatory PM	December 13, 2024
Project management area ranking	Low-Moderate
Data recency determination*	6 years, October 2029

* If site conditions or the proposed project change, or if new information related contaminants of concerns is discovered, additional coordination with PSET is required to re-verify SDM.

Federal Regulatory Authorities:

☒ Section 10, Rivers and Harbors Act
☒ Section 404, Clean Water Act (CWA)
☒ Section 401, CWA
☒ Section 7, Endangered Species Act
☒ Section 305 of the Magnuson-Stevens Act
☒ Fish and Wildlife Coordination Act
☐ Section 103, Marine Protection, Research and Sanctuaries Act
☐ Comprehensive Environmental Response, Compensation, and Liability Act

Project Description: Table 2 summarizes the Port's dredging project. Maintenance dredging is needed to provide reliable navigation access and to restore capacity in the upland placement sites.

Table 2. Project Details.

Project location (latitude, longitude)	165 Howerton Ave, Ilwaco, Washington (46.304422° -124.038518°)
Waterbody/river mile	Baker Bay, Columbia River / RM 3.0
Total proposed dredging volume (cy)	Marina: ~735,000 (~280,288 initially; ~50,000 annually) Unsuitable sediment: ~3,900 (Crab dock), ~9,560 (SP-11) Upland sites: ~70,000 one-time event
Max. proposed dredging depths with overdredge (MLLW)	-8 and -10 and -16 (includes +2 ft. overdredge); Upland site: +12 ft
Dredge area (acres)	~6.5 (marina), ~2.5 (upland sites)
Dredging method(s)	Clamshell or hydraulic
Dredged material transport	Tug and barge or pipeline to upland sites
Proposed placement and disposal location(s)	Columbia River flow-lane placement, upland sites once capacity is reestablished, upland disposal areas for unsuitable sediments
Proposed dredging date(s)	Approved in-water work window
Dredged material mgmt. units (DMMUs)	5 DMMUs (3 marina, 2 upland sites)

Site History: See the 2023 SAP Section 2.3 for a description of the site history, and Section 1.0 of the SAPA for a description of the crab dock fire. Based on past and current site uses, sampling data, and nearby PSET reviews, M&N proposed to continue a "Low" rank for the Port's project. In October 2023, the PSET approved of the Port's SAP. The Port sampled the marina and upland placement sites in October 2023 per a PSET-approved SAP. On January 22, 2024, a fire occurred at the Ilwaco Landing crab dock adjacent to DMMUs 1 and 2. In

consideration of the fire, the PSET issued a partial suitability determination on 29 January 2024 for a one-time dredging event in portions of DMMUs 1, 2, and 3 that relied on upland placement of the dredged material; however, the Port was unable to dredge due to equipment failure. To support dredging the marina post-fire, the PSET requested a tiered sampling for dioxins and furans in surface sediments in proximity to the dock. The PSET approved the SAP Addendum on May 23, 2024. Samples were collected May 30, 2024, for dioxins and furans analysis.

Sampling and Analysis Description: The sampling and analytical program for the Port's marina is summarized in Table 3 per the 2018 SEF. Actual sample station locations for both the 2023 and 2024 sampling events are shown in SDM Figure 1. The Port collected grab samples representing the top six inches of the dredge prism from DMMU 1 and DMMU 2. In DMMU 3, the Port collected vibracore samples which varied in length from four to 16 feet long. The upland sites (DMMU 4, DMMU 5) were sampled to an elevation of +12 feet MLLW.

To assess contamination from the fire at the crab dock, the Port collected grab samples which sampled the top 6-inches of material.

Equal volumes from six stations were mixed to form one DP composite sample each from DMMU 1 and DMMU 2 (marina). Five stations were mixed to form one DP composite sample and one PDS composite sample for DMMU 3 (marina). Four stations were mixed to form each upland composite sample (DMMU 4, DMMU 5). For the dioxin and furans analysis, 10 discrete DP samples were collected across DMMUs 1, 2, and 3 and archived at the analytical laboratory. The Port analyzed four discrete samples (1A, 1B, 2B, and 2C) from the tiered locations nearest the crab dock for dioxins and furans.

Table 3. October 2023 and May 2024 Sampling and Analysis Description

Sampling Description										
Sample collection method		Power grab		Vibracore	Excavator, Hand Auger		Power Grab			
DMMU ID		DMMU 1 (Marina)	DMMU 2 (Marina)	DMMU 3 (Marina)	DMMU 4 (Upland)	DMMU 5 (Upland)	Crab dock Tier 1 (1A, 1B)		Crab dock Tier 2 (2B, 2C)	
DMMU volume (cy)		85,247	92,477	90,450	37,325	37,965	3,900		Included in DMMU's 1 & 2	
Proposed dredge depth (ft, MLLW)		-8, -10	-10	-16	+12	+12	Top 1 foot		Top 1 foot	
DMMU rank		Low-Moderate								
DP composite sample ID		DMMU 1	DMMU 2	DMMU 3	DMMU 4	DMMU 5	1A	1B	2B	2C
PDS composite sample ID		N/A	N/A	DMMU 3Z	N/A	N/A	N/A	N/A	N/A	N/A
Dredge Prism	Depth range (ft, MLLW)	-7.0 to -8.9	-6.2 to -8.8	-1.9 to -16.0	+24 to +12	+26 to +12	-1.3, -8.5		-9.6, -6.5	
	Composite (Y/N)	Y	Y	Y	Y	Y	N		N	
	Subsamples /DMMU	6	6	5	5	6^	1	1	1	1
	Subsample Archive (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y
PDS Layer	Depth range (ft, MLLW)	- N/A	N/A	-16.0 to -18.0	N/A	N/A	N/A	N/A	N/A	N/A
	Composite (Y/N)	N/A	N/A	5*	N/A	N/A	N/A	N/A	N/A	N/A
	Subsample /PDS-layer	N/A	N/A	5*	N/A	N/A	N/A	N/A	N/A	N/A
	Subsample Archive (Y/N)	N/A	N/A	Y*	N/A	N/A	N/A	N/A	N/A	N/A
Sediment Physical and Chemical Analysis per DMMU (No. DP/No. PDS)										
Grain size		1/-	1/-	1/-*	1/-	1/-	-/-	-/-	-/-	-/-
Total organic carbon		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Total solids		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Ammonia		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Total sulfides		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Metals, marine + mercury		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
PAHs		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
SVOCs (chlorinated hydrocarbons, phthalates, phenols, misc. extractables)		1/-	1/-	1/1	1/-	1/-	-/-	-/-	-/-	-/-
Dimethyl phthalate		-/-	6#/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
Butyl benzyl phthalate		-/-	6#/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
bis(2-ethylhexyl) phthalate		-/-	-/-	-/-	-/-	6#/-	-/-	-/-	-/-	-/-
Pesticides		1/-	1/-	1/-	1/1	1/-	-/-	-/-	-/-	-/-
PCBs (Total Aroclors)		1/-	1/-	1/-	1/1	1/-	-/-	-/-	-/-	-/-
TPH (dx/rx)		1/-	1/-	1/-	1/1	1/-	-/-	-/-	-/-	-/-
Tributyltin		1/-	1/-	1/-	1/1	1/-	-/-	-/-	-/-	-/-
Dioxins/furans		-/-	-/-	-/-	-/-	-/-	1/-	1/-	1/-	1/-

* = PDS interval collected for composite and chemical analyses but inadvertently discarded before material were collected for archive or physical analyses; ^ = sediment from station UP-10 was excluded from the composite sample (DMMU 5) due minor hydraulic leak, a subsample was archived; # = subsamples discretely analyzed due to exceedance in the composite sample.

Deviations from the SAP: Deviations from the PSET-approved SAP are listed in SCR Section 2.2 and include the following:

Marina:

- The SP-3 sample location was moved greater than 25 feet west of the proposed station location because there was a lack of accumulation at the proposed sample site. This sample station relocation was coordinated during field sampling with James Holm (PSET lead).
- Material collected for the DMMU 3Z composite sample was inadvertently discarded without collecting sufficient material for grain size analysis and archive materials.
- The DMMU 2 composite sample exceeded the SEF SLs for dimethyl phthalate and butyl benzyl phthalate. Discrete analyses of sub-samples (SP-7 through -12) showed the exceedance was confined to Station SP-11.

Upland Sites:

- DMMU 5 composite sample exceeded the marine SEF SL for bis(2-ethylhexyl) phthalate. Discrete analysis of sub-samples (UPS-6 through UPS-11) did not detect concentrations above the SEF SL.
- A slight sheen was observed during the test pit excavation of sample station UPS-10. After inspection it was determined that hydraulic fluid was dripping from a broken hose coupling located on the excavator arm. The hydraulic fluid was contained by stopping work immediately and removing the excavator from the site. Additional details regarding the hydraulic fluid release include the following:
    - Allison Kinney (M&N Field Lead) spoke with James Holm (PSET Lead) at the time the leak was discovered and received verbal approval that it would be acceptable to the PSET to exclude the UPS-10 subsample from the DMMU 5 composite sample.
    - The estimated amount of hydraulic fluid that dripped from the hose is less than five ounces.
    - The hydraulic fluid used in the excavator is mineral oil with a carbon range of C15 to C50. The material safety data sheet for the hydraulic fluid is included as Appendix C.
    - The UPS-10 test pit was backfilled the next day with decontaminated equipment.
    - The UPS-10 sample was archived for potential future analysis if needed.
    - A hand auger was used to collect the UPS-11 sample station material to complete the DMMU 5 composite sample.

Results and Discussion: The sediment results for the Port's marina and upland sites are summarized in SDM Table 4. The chemical results are compared to the 2018 SEF marine SLs. Additionally, ODEQ's bioaccumulation SLV for marine fish (47 ug/kg) was used to evaluate PCB Total Aroclors and Ecology's PQL-based 5.0 ng/kg sum TEQ was used to evaluate dioxins/furans.

The dredge prism sediments in the northwest portion of the marina (DMMU 1) are 88.1% fine-grained material (67.9% silt, 20.2% clay), 8.7% sand and 3.3% gravel. Total organic carbon

(TOC) in the dredge prism sediments is approximately 1.8%. Total solids in the dredge prism sediments are approximately 39.5%.

The eastern marina dredge prism sediments (DMMU 2) are 73.1% fine-grained material (53.3% silt, 19.8% clay), 25.6% sand and 1.2% gravel. The TOC in the dredge prism sediments is approximately 1.8%. Total solids in the dredge prism sediments are approximately 38.2%.

The marina entrance dredge prism sediments (DMMU 3) are 87.5% fine-grained material (72.5% silt, 15% clay), 12.5% sand and 0.1% gravel. The TOC in the dredge prism sediments is approximately 1.3%. Total solids in the dredge prism sediments are approximately 52%. The post-dredge surface sample (DMMU 3Z) was inadvertently discarded before collecting sediments for physical analysis.

The western upland placement site sediments (DMMU 4) are composed of silt (48.4%) with clay (16.6%), gravel (0.06%) and sand (34.3%). The TOC in the western upland placement site sediments is approximately 1.8%. Total solids in DMMU 4 are approximately 68.8%.

The eastern upland site sediments (DMMU 5) are composed of silt (63.2%) with clay (16.1%), gravel (0.08%) and sand (20.0%). The TOC in the upland placement site sediments is approximately 1.5%. Total solids in DMMU 5 are approximately 64.8%.

Detected exceedances above SEF SLs or Ecology's 5 ng/kg sum TEQ for dioxins/furans include the following:

1. 2,3,7,8-TCDD sum TEQ in a portion of the surface sediments in DMMU 1 (Station 1A) and DMMU 3 (1B) next to the crab dock fire site.
    a. Due to the elevated 2,3,7,8-TCCD sum TEQs detected at Stations 1A (11.89 ng/kg) and 1B (6.24 mg/kg) above Ecology's accepted PQL, the surface sediments (~1 foot) surrounding the stations are unsuitable for unconfined aquatic placement without biological testing per the SEF (see the yellow polygon on SDM Figure 1).
2. Dimethyl phthalate and butyl benzyl phthalate in DMMU 2 at the northeast corner of the marina.
    a. The six subsamples for DMMU 2 were analyzed for dimethyl phthalate and butyl benzyl phthalate. Both parameters were detected above their SEF SLs only at Station SP-11. The dredged prism sediments surrounding Station SP-11 are unsuitable for unconfined aquatic placement without biological testing per the SEF (see the pink polygon on SDM Figure 1).
3. Bis(2-ethylhexyl) phthalate in DMMU 5 for the eastern upland site.
    a. The six subsamples for DMMU 5 were analyzed for bis(2-ethylhexyl) phthalate and no subsamples detected bis(2-ethylhexyl) phthalate above the SEF SLs. Therefore, DMMU 5 is suitable for unconfined aquatic placement without further testing per the SEF.

4. Total chlordane was not detected (U) in DMMU 3 and DMMU 3Z but had elevated method detection limits (MDLs) of 3.27 ug/kg U above the SEF SL of 2.8 ug/kg due to chromatographic interference and a 10 times dilution of the sample.
    a. The elevated MDL is only due to elevated trans-chlordane MDL of 3.27 ug/kg. No chlordane compounds were detected in any DMMU at the marina or upland sites.
    b. Total chlordane was not detected (U) in the 2016 SDM for the marina but also had an elevated MRL (3.7 ug/kg) due to chromatographic interference.
    c. No detections of total chlordane compounds are reported at the marina. Therefore, it is unlikely that chlordane compounds are present in DMMU 3 at concentrations above the SEF SL. Sediments at DMMU 3 are suitable for unconfined aquatic placement and exposure.

All other analytes were reported below SEF marine SLs (detected or non-detected with MRLs/MDLs below SLs). There were no exceedances of ODEQ's marine fish-based, marine bioaccumulative SLV for Total PCB Aroclors.

PSET Suitability Determination:

Dredge Prism – Chemical concentrations in the dredge prism and upland site composite samples, **excluding the crab dock and Station SP-11**, were below the SEF marine SLs and ODEQ's SLV as discussed above. As such, the Port of Ilwaco marina and upland placement site **dredged prism materials** are **suitable for unconfined, aquatic placement** per the 2018 SEF guidance without additional testing.

The Port's dredge area adjacent to the crab dock (**1A, 1B**, upper 1-foot, yellow polygon) and **Station SP-11** (full dredge prism, pink polygon), are **not suitable** for **unconfined in-water placement** without further testing. **Upland disposal is required**.

NOTE: If unsuitable materials from the crab dock and Station SP-11 are disposed of in the upland sites, the materials should be isolated from any material deemed suitable for in-water placement. If separation of the two types of material, unsuitable and suitable, is not done, none of the material in the upland site could be considered for in-water placement in the future.

Post-Dredge Surface – Based on the "Low-Moderate" management area rank, analytical results of the overlying dredge prism sediments, the results of the 2016 SDM, and known site history, the PSET is inferring that the Port of Ilwaco marina **post-dredge surfaces (except for Station SP-11)** are **suitable for unconfined, aquatic exposure** per the 2018 SEF guidance without additional testing.

Post-dredge surface sampling at Station SP-11 (pink polygon) **is required** to confirm unconfined, aquatic exposure suitability. If the PDS at Station SP-11 has elevated SVOCs concentrations, post-dredge surface management is required. Post-dredge surface management may include over dredging 1 foot and placement of a 1-foot layer of clean sand.

A post-dredge surface evaluation of the upland placement sites is not required.

Debris Management: Due to the Port and tenant operations, debris management is required when mechanical dredging (i.e. clamshell, excavator) occurs to remove and isolate unsuitable materials and debris (logs, trees, large wood fragments, consolidated rock, deleterious waste and any anthropogenic materials or trash) from the suitable sediments for aquatic placement. **Aquatic disposal of debris is prohibited.** Debris shall be disposed of or recycled at an appropriate upland site. Daily monitoring and reporting of debris management and observation is required for every dredge event, and a debris management section should be included in the dredging and disposal quality control plans. If no debris is found in two consecutive dredge events within the marina, then waiving the debris management requirement will be evaluated by PSET.

Contact: This memorandum was prepared by James Holm (PSET Lead, Corps) and reviewed by the participating PSET agencies, identified above. Questions regarding the PSET's suitability determination should be directed to James Holm by email at james.a.holm@usace.army.mil or by telephone at 503-808-4963.

Table 4. Sediment Analytical Summary – DMMU 1 to DMMU 5 with subsample and dioxins and furans results (sampled October 2023 and May 2024)

Sample ID (decision unit): Parameter	DMMU 1 (Marina DP)	DMMU 2 (Marina DP)	DMMU 3 (Marina DP)	DMMU 3Z (Marina PDS)	DMMU 4 (Upland)	DMMU 5 (Upland)	SEF marine SL (SLV †)
Grain size: gravel, sand, silt, clay (%)	3.3, 8.7, 67.9, 20.2	1.2, 25.6, 53.3, 19.8	0.1, 12.5, 72.5, 15.0	--	0.06, 34.3, 48.4, 16.6	0.08, 20.0, 63.2, 16.1	--
Total Solids (%)	39.5	38.2	52.0	57.3	68.8	64.8	--
Total Organic Carbon (%)	1.8	1.4	1.3	1.2	1.8	1.5	--
Ammonia (mg/kg)	22.1 J	21.0 J	208	199 H, D	30.6 D	36.0	--
Total Sulfides (mg/kg)	1,370	1,130	2,560	2,450 D	588	833	--
Metals (mg/kg)	Non-Detect, Detect <SLs U, J	Non-Detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U	Various
PAHs (ug/kg)	Non-Detect, Detect <SLs U, J	Non-detect, Detect <SLs J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Various
LPAHs (ug/kg)	169 J	232 J	88.4 J	124.1 J	74.7 J	176 J	5,200
HPAHs (ug/kg)	1,350	1,665	484.7	628.9	550	742.3	12,000
SVOCs (ug/kg) phenols, chlorinated hydrocarbons, misc. extractables), except parameters below	Detect <SLs U, J	Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Various
Dimethyl phthalate (sub-samples)	9.3	**1,490** (45.0 SP-07, 5.2 SP-08, 8.1 SP-09, 37.0 SP-10, **1,210 SP-11**, 14.5 SP-12)	1.0 U	1.0 U	3.0 J	2.5 J	71
Butyl benzyl phthalate (sub-samples)	7.5	**760** (20.0 SP-07, 20.0 SP-08, 20.0 SP-09, 20.0 SP-10, **344 SP-11**, 9.5 SP-12)	0.7 U	5.0 J	0.7 U	0.7 U	63
bis(2-ethylhexyl) phthalate (subs-samples)	132 B	231 B	34.2 J, B	19.6 J, B	20.6 J	**3,510 D** (80.1 UPS-6, 24.3 UPS-7, 39.4 UPS-8, 63.2 UPS-9, 55.3 UPS-610, 27.5 UPS-11)	1,300
Pesticides except below (ug/kg)	Non-detect, Detect <SLs U	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U	Non-detect, Detect <SLs U	Non-detect, Detect <SLs U, J	Non-detect, Detect <SLs U, J	Various
4,4'-DDD	0.32 U	1.01 J	3.20 U	3.20 U	1.77 P1	1.04	16
4,4'-DDE	0.13 U	0.14 U	1.35 U	1.35 U	0.96 J	0.82 J	9
4,4'-DDT	0.32 U	0.34 U	3.25 U	3.25 U	0.32 U	0.32 U	12
Total Chlordane (trans-chlordane)	0.33 U (0.33 U)	0.34 U (0.34 U)	**3.27 U (3.27 U, D)**	**3.27 U (3.27 U, D)**	0.33 U (0.33 U)	0.33 U (0.33 U)	2.8
PCBs, Total Aroclors (ug/kg)	15.3	7.8	9.6 J	8.8	10.5 J	12.3	130 (47†)

TPH dx/rx (mg/kg)	97.6 / 455	61.6 / 217	55.5 D / 160 D	54.7 H / 99.6 H	41.8 / 154	41.8 D / 155 D	--
Bulk Tributyltin (ug/kg)	<0.446	<0.447	<0.447	<0.446	<0.447	2.76 J	73
Dioxins/Furans (ng/kg)	Stations 1A/1B	--	Stations 2B/2C	--	--	--	--
2,3,7,8-TCDD sum TEQ (ND=1/2 EDL / EMPC)	**11.89 / 6.24**	--	2.17 / 3.01	--	--	--	5.0
2,3,7,8-TCDD sum TEQ (ND=0)	**11.58 / 5.99**	--	2.03 / 3.00	--	--	--	

BOLD = detection exceeds SEF SL or bioaccumulation value; J = estimated concentration value detected between the method reporting limit and method detection limit; U = not detected (ND) at or above the method reporting limit or method detection limit, MRL/MDL reported; D = the reported value is from dilution; H = hold time was exceeded; TEQ = Toxicity Equivalence; EMPC = estimated maximum possible concentration qualifier for high resolution gas chromatography mass spectrometry (HRGCMS) dioxin; P1 = reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable. † = ODEQ fish-based, marine SLV.

Figure 1. Port of Ilwaco DMMU boundaries, bathymetry, stations, and unsuitable areas (sampled October 2023 and May 2024).