

**PORT OF ILWACO**  
**Marine Structures Replacement**  
*Ilwaco, WA*

**Appendix A**

**Local, State, and Federal Project Permits, and  
Approvals**

**PORT OF ILWACO**  
**Marine Structures Replacement**  
***Ilwaco, WA***

**Appendix A1**

**USACE Permit No. NWP-2022-525, PENDING ISSUANCE IN JULY 2024**



PORT OF ILWACO  
**Marine Structures Replacement**  
*Ilwaco, WA*

**Appendix A2**

**NMFS ESA Section 7(a)(2) LOC**

## England, Victoria

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**From:** David Price - NOAA Federal <david.price@noaa.gov>  
**Sent:** Thursday, May 16, 2024 2:51 PM  
**To:** erin.kendle@dot.gov  
**Cc:** Tom Hausmann - NOAA Federal; Schwertner, Margaret; England, Victoria; tlofstrom@portofilwaco.org; stephen.lebo@dot.gov  
**Subject:** WCRO-2022-03087 IWWE, FWS/R1/2023-0026807 ) Port of Ilwaco, East Bulkhead Resilience Projec

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

**CAUTION:** This email originated from outside of the organization.

Mr. Kendle,

I've reviewed your request to extend the in-water work window for WCRO-2022-03087 Port of Ilwaco East Bulkhead Resilience Project from Nov 1 - Feb 28 to Sept 1 - Feb 28. We understand that the project description otherwise remains the same. All proposed avoidance, minimization, and mitigation measures will still be implemented as described in the permit documents. The pile driving noise and turbidity are confined to a small water column volume in the northwest corner of the Ports marina, your requested extension to the work window does not change the effects analysis in WCRO-2022-03087 or our *not likely to adversely* affect concurrence with your conclusions. In this site-specific situation, NMFS approves your request to extend the in-water work window to September 1 through February 28. Good luck with your project.

--

David Price  
Branch Chief  
Lower Columbia/Washington Coast Branch  
Oregon Washington Coastal Area Office  
West Coast Region, NOAA  
253-317-1498  
[david.price@noaa.gov](mailto:david.price@noaa.gov)

**From:** [Tom Hausmann - NOAA Federal](#)  
**To:** [Gilson, Kristine \(MARAD\)](#); [Schwertner, Margaret](#); [Bonnie Shorin - NOAA Federal](#); [Consultationupdates WCR - NOAA Service Account](#)  
**Subject:** WCRO-2022-03087 Ilwaco East Bulkhead Resilience Project, Port of Ilwaco, Pacific County, Washington  
**Date:** Thursday, October 5, 2023 8:34:34 AM

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**CAUTION:** This email originated from outside of the organization.

On August 16, 2023, we concurred with your conclusion that the Ilwaco East Bulkhead Resilience Project (WCRO-2022-03087) is not likely to adversely affect CR chum salmon, LCR coho salmon, SR sockeye salmon, LCR Chinook salmon, UCR spring Chinook salmon, SR spring/summer Chinook salmon, SR fall Chinook salmon, UWR Chinook salmon, LCR steelhead, MCR steelhead, UCR steelhead, UWR steelhead, Southern DPS green sturgeon or Southern DPS eulachon or their designated critical habitat in the Columbia River estuary. On August 30, 2023 you informed us of 4 changes to the proposed action

1. You will not install 10 fiberglass fender piles
2. You will place 6 inch thick layer of fish mix gravel over the north shoreline riprap
3. You will remove floating timber debris from the south portion of the marina
4. These changes result in minor changes to your fill calculations

You determined that these changes do not change your determination that the proposed action is not likely to adversely affect the salmon, steelhead, green sturgeon or eulachon listed above or critical habitat for these species.

We've reviewed these changes to the proposed action and agree that they do not change our concurrence with your NLAA determinations and reinitiation of this consultation is not necessary. We will add Margaret Schwertner's August 30, 2023 email with the description of the proposed action changes and a copy of this email to the administrative record for this consultation.

Thank you,

Tom Hausmann

Biologist, Washington Coast, Lower Columbia River Branch

Oregon Washington Coastal Office

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Tom Hausmann

**From:** [Tom Hausmann - NOAA Federal](#)  
**To:** [Schwertner, Margaret](#)  
**Cc:** [Jennifer Carlson - NOAA Federal](#); [Bonnie Shorin - NOAA Federal](#); [Gilson, Kristine \(MARAD\)](#); [England, Victoria](#)  
**Subject:** Re: Ilwaco East Bulkhead Resilience Project letter of concurrence  
**Date:** Wednesday, August 30, 2023 9:39:24 AM  
**Attachments:** [image001.png](#)

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Margaret, I agree that these changes do not change our concurrence but I do think they need to be reflected in the project admin record and I'm not sure how to do that. Probably some kind of memo to the file? Bonnie is on leave this week but I will ask her next week and get back to you. Thanks for the update. Tom

On Wed, Aug 30, 2023 at 8:27 AM Schwertner, Margaret <[mschwertner@moftatnichol.com](mailto:mschwertner@moftatnichol.com)> wrote:

Hi Tom, Jennifer, and Bonnie,

Thank you very much for the LOC.

We have a short project update for the Port of Ilwaco East Bulkhead Resilience Project. There have been a few changes to the project description (removal of pile fender system due to cost) and some additional mitigation elements required as a result of ongoing coordination with the City of Ilwaco and Washington State Department of Fish and Wildlife (WDFW). This email provides a detailed summary of those recent project changes. The changes are minor in nature and do not impact the species Effect Determinations made for the project nor are they anticipated to warrant changes to the LOCs received (NMFS WCRO-2022-03087, FWS 2023-0025807). All proposed avoidance, minimization, and mitigation measures will still be implemented as described in the permit documents.

The project modifications are described below and are reflected in the attached revised design drawings.

### **Fender Pile System**

The installation of 10, 12-inch fiberglass fender piles external to the bulkhead to support temporary berthing is no longer proposed.

### **Fish Mix Placement**

A 6-inch layer (approximately 34 cy) of fish mix gravel will be placed over the north shoreline riprap below the high tide line (HTL) to provide beach nourishment and improved habitat for fish passing through the marina.

### **Debris Removal**

Floating timber debris will be removed from the south portion of the marina. This will remove approximately 2,510 sf of overwater coverage currently present in that portion of the marina.

## **Fill Impacts**

Minor fill impact changes have occurred due the removal of the fender pile system from the project, the addition of fish mix on the north shoreline, and changes to the way in which fill quantities are calculated including an update to the High Tide Line elevation used to calculate fill impacts. Fill impact changes are summarized in Table 1 and Table 2 below.

**Table 1. Fill Impacts Provided in Biological Evaluation Dated December 12, 2022 and Submitted for ESA Consultations**

<b>Activity</b>	<b>Fill below HTL (sf)</b>	<b>Fill below HTL (cy)</b>	<b>Fill above HTL (sf)</b>	<b>Fill above HTL (cy)</b>
<i>Bulkhead wall and shoreline protection installation</i>				
Sheetpile and fender pile installation	500 sf	40 cy	0 sf	0 cy
Bulkhead drainage rock placement	1,000 sf	400 cy	0 sf	0 cy
Rip-rap placement (north shoreline)	1,850 sf	140 cy	350 sf	25 cy
Rubble/ rip-rap removal (south shoreline)	-350 sf	-14 cy	-50 sf	-2 cy
Rip-rap replacement (south shoreline)	350 sf	30 cy	50 sf	5 cy
<i>Structure removal</i>				
Pile removal adjacent to existing bulkhead	-12 sf	-6 cy	0 sf	0 cy
North shoreline- creosote-treated timber retaining wall removal	-85 sf	-12 cy	0 sf	0 cy
Derelict pile/timber removal	-68 sf	-12 cy	0 sf	0 cy

**Table 2. Revised Fill Impacts**

<b>Activity</b>	<b>Fill below HTL (sf)</b>	<b>Fill below HTL (cy)</b>	<b>Fill above HTL (sf)</b>	<b>Fill above HTL (cy)</b>
<i>Bulkhead wall and shoreline protection installation</i>				
Sheetpile installation	400 sf	80 cy	0 sf	0 cy
Bulkhead drainage rock placement	1,000 sf	450 cy	0 sf	0 cy
Rip-rap shore protection and Fish Mix placement (north shoreline)	1,850 sf	172 cy	350 sf	26 cy
Concrete rubble removal (south shoreline)	-350 sf	-14 cy	-50 sf	-2 cy
Rip-rap replacement (south shoreline)	350 sf	30 cy	50 sf	5 cy
<i>Subtotal</i>	<i>3,250 sf</i>	<i>718 cy</i>	<i>350 sf</i>	<i>29 cy</i>
<i>Structure removal</i>				
Pile removal adjacent to existing bulkhead	-12 sf	-6 cy	0 sf	0 cy
North shoreline- retaining wall removal	-85 sf	-12 cy	0 sf	0 cy
Derelict pile/timber removal	-68 sf	-12 cy	0 sf	0 cy
Derelict Timber Structure/Debris Removal -South Marina	-2,510 sf	-350 cy	0 sf	0 cy
<i>Subtotal</i>	<i>-2,675 sf</i>	<i>-380 cy</i>	<i>0 sf</i>	<i>0 cy</i>
<i>Creosote removal from the Environment</i>	<i>34 tons</i>			

We do not anticipate that these minor modifications will change the overall assessment of potential impacts but would like to confirm that the LOCs do not need to be updated nor consultation reinitiated based on these minor revisions. Please reach out if you require any additional information or have any questions or concerns.

Thank you.

Regards,

Margaret

Margaret Schwertner  
Senior Environmental Scientist

505 S. 336<sup>th</sup> St. | Federal Way, WA 98422

P 253.237.5928 | M 206.818.2600



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**From:** Jennifer Carlson - NOAA Federal <[jennifer.carlson@noaa.gov](mailto:jennifer.carlson@noaa.gov)>  
**Sent:** Wednesday, August 16, 2023 8:00 AM  
**To:** [kristine.gilson@dot.gov](mailto:kristine.gilson@dot.gov)  
**Cc:** Schwertner, Margaret <[mschwertner@moffattnichol.com](mailto:mschwertner@moffattnichol.com)>; Tom Hausmann - NOAA Federal <[Tom.Hausmann@noaa.gov](mailto:Tom.Hausmann@noaa.gov)>; Bonnie Shorin - NOAA Federal <[bonnie.shorin@noaa.gov](mailto:bonnie.shorin@noaa.gov)>; Consultationupdates WCR - NOAA Service Account <[consultationupdates.wcr@noaa.gov](mailto:consultationupdates.wcr@noaa.gov)>  
**Subject:** Ilwaco East Bulkhead Resilience Project letter of concurrence

**CAUTION:** This email originated from outside of the organization.

Please find the letter of concurrence attached. This electronic copy is for your records and files. This email is part of a consultation response for WCRO-2022-03087.  
Thank you.

Jennifer McDonald Carlson (she/her)

*Oregon Washington Coastal Office  
NOAA Fisheries West Coast Region  
U.S. Department of Commerce*

[jennifer.carlson@noaa.gov](mailto:jennifer.carlson@noaa.gov)

[www.westcoast.fisheries.noaa.gov](http://www.westcoast.fisheries.noaa.gov)



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Tom Hausmann



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE**  
West Coast Region  
1201 NE Lloyd Boulevard, Suite 1100  
PORTLAND, OR 97232-1274

**Refer to NMFS No:**  
**WCRO-2022-03087**

August 16, 2023

Kristine Gilson  
Director, Office of Environmental Compliance  
U.S. Department of Transportation  
Maritime Administration  
1200 Ney Jersey Avenue, SE  
Washington, D.C. 20590

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens  
Fishery Conservation and Management Act Essential Fish Habitat Response for the  
Ilwaco East Bulkhead Resilience Project, Port of Ilwaco, Pacific County, Washington  
HUC 170800060500

Dear Ms. Gilson:

On December 13, 2022, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that U.S. Department of Transportation Maritime Administration (MARAD) funding of the Port of Ilwaco Resilience Project under the Port Infrastructure Development Program is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA and implementing regulations at 50 CFR 402.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order two days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the letter of concurrence would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

Thank you also for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)) for this action.

WCRO-2022-03087





This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available in the Environmental Consultation Organizer [<https://eco.fisheries.noaa.gov/>]. A complete record of this consultation is on file at Lacey, Washington.

### Consultation History

We received the consultation request and biological evaluation on December 15, 2022. We had a conference call to discuss the project with the Port of Ilwaco, MARAD, the USACE and USFWS on May 10, 2023. We initiated consultation on May 10, 2023.

### Proposed Action and Action Area



**Figure 1.** Project area and project elements

MARAD proposes to find modifications to a commercial fishing wharf within the Port of Ilwaco Marina (Figure 1 from BA).

**Replace bulkhead:** The eastern bulkhead of the wharf is creosote timbers supported by creosote piles. This bulkhead is failing and too low to protect the wharf from king tides and storm surges. A Port of Ilwaco contractor will remove 12 of the creosote timber piles and 3 steel pipe piles on the exterior of the bulkhead. The contractor will install a steel sheet pile bulkhead in front of the existing bulkhead. The new bulkhead is 225 feet long and its construction will take up to 8 hours of vibratory pile driver per day and up to 600<sup>1</sup> impact pile driver blows per day for 12 days. The contractor will fill the space between the new bulkhead and the old bulkhead with about 400 cubic yards of drainage rock. The contractor will cast a 7 foot tall by 3.25 foot wide concrete pile cap on top of the sheet pile. The top of the new bulkhead will be 3 feet higher than the existing bulkhead to accommodate storms and sea level rise. The contractor will stabilize the new bulkhead with 22 steel anchor cables from the pile cap to grout filled holes drilled into the bedrock beneath the wharf. The contractor will install twelve 12 inch diameter fiberglass coated concrete fender piles at the southern end of the new bulkhead with a vibratory pile driver and impact pile driver as needed.

**Replace shoreline protection:** The contractor will remove 16 cubic yards of riprap and concrete debris from the shoreline south of the bulkhead and replace it with 36 cubic yards of riprap to maintain slope stability.

**Replace retaining wall:** The contractor will remove 16 creosote treated timber piles and the creosote treated timbers of the retaining wall at the north end of the bulkhead and replace them with 165 cubic yards of riprap to maintain slope stability.

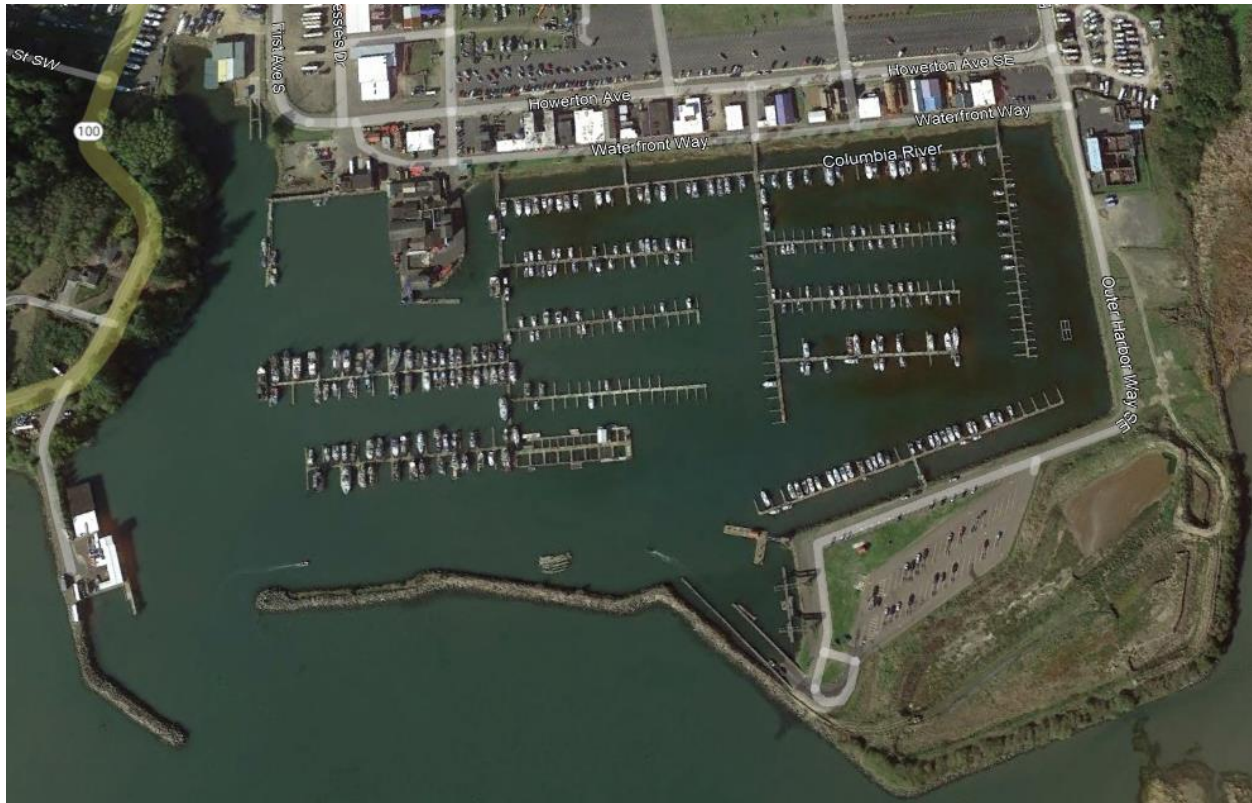
**Mitigation:** The contractor will remove an additional 36 derelict creosote treated piles from the wharf as mitigation for sacrificing 372 square yards of the soft benthic habitat between the old bulkhead and the new bulkhead and beneath the new riprap north and south of the new bulkhead.

**Action area:** The action area of the proposed action for aquatic species is defined by the point in space where the sound pressure level from pile driving decreases below 150 dB<sub>RMS</sub>. Since the marina is surrounded by a riprap breakwater (

**Figure 2**), all noise from the wharf construction is contained within the marina.

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<sup>1</sup> BA notes that 600 strikes are a worst case estimate.



**Figure 2.** East bulkhead resilience project action area

**Avoidance and Minimization Measures:**

- Containment booms will be used to surround in-water work areas or separate embankment work from surface water. The booms will serve to contain and collect any oily material and or floating debris potentially released during construction. Oil-absorbent materials will be employed immediately if visible sheen is observed. Accumulated debris will be collected daily and disposed of at a permitted upland site approved by the owner.
- Water quality standards and procedures that limit the impact of pollutants will be observed
- Land based staging areas for activities, such as storage of machinery, equipment, materials, and stockpiled soils will be established landward of the top of bank. A silt fence will be installed around the perimeter of the upland work areas and locations where machinery, materials, and stockpiled soils are situated. Any temporary stockpiles will be covered and bermed when not in use.
- All federal, state, and/or local construction permit requirements will be followed during demolition and construction activities.
- In water construction activities will comply with the in water construction window November 1 through February 28.
- Checking equipment for leaks and other problems that could result in the discharge of petroleum-based products or other material into waters of Baker Bay.

- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals in the water including:
  - Containment and cleanup efforts will begin immediately upon discovery of a spill and will be completed in an expeditious manner in accordance with all local, state, and federal regulations. Cleanup will include proper disposal of any spilled material and used cleanup material.
  - The cause of any spill will be ascertained, and appropriate actions taken to prevent further incidents of environmental damage.
  - Spills will be reported to the Washington State Department of Ecology Southwest Regional Spill Response Office pursuant to WAC 173-303-145 and WAC 173-182-260.
  - Work barges will not be allowed to ground out.
  - Excess or waste materials will not be disposed of or abandoned waterward of ordinary high water or allowed to enter waters of the state. Waste materials will be disposed of in an appropriate manner consistent with applicable local, state, and federal regulations.
  - Demolition and construction materials will not be stored where wave action or upland runoff can cause materials to enter surface waters.
  - Oil absorbent materials will be present on site for use in the event of a spill or if any oil product is observed in the water.
  - Removal of creosote treated piles will be conducted consistent with the BMPs established in U.S. Environmental Protection Agency (EPA) Region 10, Best Management Practices for Piling Removal and Placement in Washington State, dated February 18, 2016.
  - While creosote treated piles are being removed, a containment boom will surround the work area to contain and collect any floating debris and sheen. Debris will be retrieved and disposed of properly.
  - The piles will be dislodged with a vibratory hammer when possible and will not be intentionally broken by twisting or bending.
  - The piles will be removed in a single, slow, and continuous motion in order to minimize sediment disturbance and turbidity in the water column.
  - If a pile breaks above or below the mudline, it will be cut or pushed in the sediment consistent with agency approved BMPS (USACE, DNR, Ecology and EPA).
  - Removed piles, stubs, and associated sediments (if any) will be contained on a barge. If piles placed directly on the barge and not in a container, the storage area will consist of a row of hay or straw bales, filter fabric or similar material placed around the perimeter of the barge.
  - All creosote-treated material, pile stubs, and associated sediments (if any) will be disposed of by the contractor in a landfill approved to accept those types of materials.
- Steel piling will be installed with a vibratory hammer when possible. Impact hammering will start with light tapping, then increase to full force gradually.
  - A bubble curtain and one or more other noise attenuation methods such as wood cushion block will be used during impact installation or proofing of all steel piling.

- Pile driving will commence with soft start procedure (ramping up) in order to alert nearby wildlife, allowing them to move out of the area prior to construction activities. For impact pile driving, contractors will be required to provide an initial set of strikes from the hammer at reduced percent energy, each strike followed by no less than a 30 second waiting period. This procedure will be conducted a total of two times before impact pile driving begins.
- To avoid impacts to marine mammals, an exclusion zone will be monitored during and immediately before pile driving activities. The exclusion zone will include the entire marina area shoreward of the breakwaters. Although ESA listed species, including Southern Resident killer whales and humpback whales are not anticipated to occur with the marina where noise impacts could occur, this avoidance measure would provide further protections against potential noise impacts to these species.
- During pile driving activities a qualified observer will monitor the exclusion zone, if any marine mammals are observed within the exclusion zone, all in water Project activities shall cease. Project activities shall not commence or continue until the marine mammal has either been observed having left the exclusion zone, or at least 15 minutes have passed since the last sighting whereby it is assumed the marine mammal has voluntarily left the exclusion zone.
- Wet concrete will not contact surface waters.
- Forms for any concrete structure will be constructed to prevent leaching of wet concrete.
- Concrete process water will not be allowed to enter surface waters. Any process water/contact water will be routed to a contained area for treatment and will be disposed of at an upland location.

## Background and Action Agency's Effects Determination

MARAD concluded that the proposed action is not likely to adversely affect ESA listed species or their critical habitat in Table 1:

**Table 1.** MARAD effects determinations

<b>Species</b>	<b>Listing Classification, Date and Federal Register Notice</b>	<b>Critical Habitat Designation Date and Federal Register Notice</b>	<b>Action Agency Species Determination</b>	<b>Action Agency Critical Habitat Determination</b>
1. Columbia River Chum Salmon	Threatened 6/28/05 70 FR 37160	9/02/05 70 FR 52630	NLAA	NLAA
2. Lower Columbia River Coho Salmon	Threatened 6/28/05 70 FR 37160	2/24/16 81 FR 9252	NLAA	NLAA
3. Snake River Sockeye Salmon	Endangered 6/28/05 70 FR 37160	10/25/99 64 FR 57399	NLAA	NLAA
4. Lower Columbia River Chinook Salmon	Threatened 6/28/05 70 FR 37160	9/02/05 70 FR 52630	NLAA	NLAA
5. Upper Columbia River Spring Chinook	Endangered 6/28/05 70 FR 37160	9/02/05 70 FR 52630	NLAA	NLAA
6. Snake River Spring/Summer run Chinook Salmon	Threatened 6/28/05 70 FR 37160	10/25/99 64 FR 57399	NLAA	NLAA
7. Snake River Fall Run Chinook Salmon	Threatened 6/28/05 70 FR 37160	10/25/99 64 FR 57399	NLAA	NLAA
8. Upper Willamette River Chinook Salmon	Threatened 4/14/14 79 FR 20802	6/28/05 70 FR 37159	NLAA	NLAA
9. Lower Columbia River Steelhead	Threatened 1/05/06 71 FR 834	9/02/05 70 FR 52630	NLAA	NLAA
10. Mid Columbia River Steelhead	Threatened 1/05/06 71 FR 834	9/02/05 70 FR 52630	NLAA	NLAA
11. Upper Columbia River Steelhead	Threatened 1/05/06 71 FR 834	9/02/05 70 FR 52630	NLAA	NLAA
12. Snake River Basin Steelhead	Threatened 3/25/99 64 FR 14517	9/02/05 70 FR 52630	NLAA	NLAA
13. Upper Willamette River Steelhead	Threatened 4/14/14 79 FR 20802	9/02/05 70 FR 37159	NLAA	NLAA
14. Southern DPS of Green Sturgeon	Threatened 4/7/06 71 FR 17757	10/09/09 74 FR 52300	NLAA	NLAA

Species	Listing Classification, Date and Federal Register Notice	Critical Habitat Designation Date and Federal Register Notice	Action Agency Species Determination	Action Agency Critical Habitat Determination
15. Southern DPS of Eulachon	Threatened 3/18/10 75 FR 13012	10/20/11 76 FR 65324	NLAA	NLAA

MARAD determined that based on migration timing windows, adult salmon and steelhead of each species except SR sockeye are likely to migrate past the action area during some part of the in water work window but are unlikely to enter the marina itself to be exposed to project effects. MARAD determined that very low numbers juveniles from each salmon and steelhead species except juvenile sockeye salmon may be migrating through or rearing in the estuary during the in water work window because the in water work window is set to minimize the exposure of juvenile salmon and steelhead to the effects of projects in the estuary.

MARAD determined that the direct effect of the proposed action on juvenile salmon and steelhead is noise from pile installation:

*Noise from pile installation.* MARAD estimated that noise from the maximum vibratory and impact pile driving for steel sheet pile exceeds 183 dB<sub>SEL</sub> and 187 dB<sub>SEL</sub> within 24 meters and 13 meters of the pile driver respectively and exceeds 150 dB<sub>rms</sub> within 215 meters of the pile driver. MARAD concluded that the small noise effects radii, combined with the in water work window, make the likelihood of salmon and steelhead exposure to pile driving noise effects insignificant.

MARAD determined that the effects of the proposed action on salmon and steelhead critical habitat are temporary decrease in water quality during pile driving, permanent loss of benthic habitat covered by riprap and permanent reduction in sediment contaminant concentrations after creosote treated piles are removed.

*Water quality from turbidity during pile installation and removal.* MARAD estimated that suspended sediment concentrations associated with turbidity during pile driving and pile removal would be 5 to 10 milligrams per liter within 300 feet of the pile driver. MARAD concluded that the salmon and steelhead response to these low suspended sediment concentrations is insignificant.

*Habitat disturbance from benthic habitat covered by riprap.* MARAD estimated that 372 square yards of soft bottom benthic habitat would be permanently covered by riprap. MARAD concluded that the loss of this small area of low quality salmon and steelhead forage habitat within the marina and adjacent to the wharf is insignificant.

*Reduced creosote compound contamination in prey species.* MARAD concluded that reduced contaminant concentration in salmon and steelhead prey species following removal of 36 creosote treated piles is beneficial.

MARAD determined that based on life history, adult eulachon are likely to migrate past the action area during the in water work window. Larval eulachon are likely to be carried past the

action area by river currents and may be carried into the action area by tidal currents but eulachon larvae are very unlikely to still be in the estuary during the in water work window so all direct effects are discountable.

MARAD determined that the proposed action direct effects to adult eulachon are:

*Noise from pile installation.* MARAD concluded that the likelihood of migrating adult eulachon exposure to noise from pile driving is insignificant because they are unlikely to enter the marina.

*Water quality from turbidity during pile installation and removal.* MARAD concluded that adult eulachon response to estimated suspended sediment concentrations is insignificant.

*Habitat disturbance from benthic habitat covered by riprap.* MARAD concluded that the loss of low quality benthic habitat to eulachon is discountable.

*Reduced creosote compound contamination in prey species.* MARAD concluded that the decrease in creosote compounds in eulachon prey species is beneficial.

MARAD determined that based on their life history, green sturgeon are likely to be in the action area from June to August but are not likely to be in the action area during the in water work window. MARAD determined that the proposed action indirect effects to green sturgeon is a small decrease in benthic forage.

MARAD determined that the proposed action would affect EFH of groundfish, coastal pelagic species and salmonids.

MARAD determined that the proposed action would affect groundfish, coastal pelagic species and salmonid EFH by adding noise and suspended sediment to the water column and by converting 372 square yards of soft benthic habitat into hard shoreline armoring. MARAD determined that these effects would be minimized by Avoidance and Minimization Measures and offset by removing creosote created piles and timbers from the action area.

## **ENDANGERED SPECIES ACT**

### **Effects of the Action**

Under the ESA, “effects of the action” means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities caused by the proposed action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those that are extremely unlikely to occur.



The effects of the proposed action include:

1. Vibratory and impact pile driving noise (sound pressure waves)
2. Turbidity from pile driving
3. Benthic forage displaced by riprap

#### *Likelihood of exposure*

We concur with MARAD that all of the effects of pile driving to ESA listed species critical habitats are temporary changes to migration and rearing habitat water quality that returns to its baseline state shortly after the pile driver stops for the day and that riprap permanently changes the rearing substrate in a small part of the action area. We used our pile driving noise calculator to estimate that vibratory pile driving 10 24 inch wide steel sheet piles per day (for 12 days) results in noise greater than 150 dB<sub>RMS</sub> within 22 meters of the pile driver. Impact proofing these piles with 60 blows per pile results in a single injurious peak sound pressure wave greater than 212 dB<sub>peak</sub> within 3 meters of the pile driver and injurious cumulative sound pressure energy greater than 183 dB<sub>SEL</sub> within 10 meters of the pile driver. We estimate that pile driving and pile extraction will result in a turbidity plume extending up to 20 feet from the pile driver with a suspended sediment concentration up to 42 milligrams per liter (Weston Solutions, 2006).

#### *Salmon and steelhead*

We concur with MARAD exposure of migrating adult salmon and steelhead to the temporary and permanent effects of the proposed action is discountable because they are extremely unlikely to detour from their migration path to swim into the marina action area.

We concur with MARAD that the exposure of stream type juvenile salmonids (LCR steelhead, LCR coho, UCR chinook, UCR steelhead, UWR steelhead, MCR steelhead, SR sockeye, SR spring/summer Chinook, SR steelhead) to pile driving noise and turbidity is discountable. This is because their downstream migration times do not overlap the IWWW. We concur with MARAD that the permanent change to benthic forage from riprap is insignificant to these species because they migrate and forage in deeper, faster flowing water than is present in the marina action area. Thus the effects of the proposed action are NLAA juveniles from these ten species.

We concur with MARAD that the IWWW minimizes the likelihood that CR chum juveniles will be exposed to the temporary effects of the proposed action because their downstream migration times do not overlap the IWWW. We concur with MARAD that any change in the benthic food web from the conversion of 372 square yards of soft benthic habitat to hard rocky habitat is insignificant to CR chum because they are fry migrants to the ocean (Roegner et al., 2012) and do not search for forage at the channel margins, instead rearing in the lower estuary where available resources are more abundant.

Ocean type juvenile fall Chinook (SR fall chinook, LCR fall Chinook and UWR fall Chinook) are present in the estuary during the work window. However, in the winter their abundance is inversely related to salinity. For example, of 500 juvenile Chinook salmon captured by Roegner et al. (2012) just 25 were captured at the lower estuary sites, while 200 we captured in the middle estuary sites and 275 were captured in the tidal freshwater sites (catch per unit effort equal 1, 8 and 12 respectively). Furthermore, virtually all of the Chinook captured in lower estuary sites were early fry being passively transported to the ocean by the river current and thus they would

be very unlikely to drift through the narrow marina opening into the action area (Morrice et al., 2020). Therefore, we concur with MARAD that the likelihood of juvenile Chinook salmon exposure to pile driving effects is insignificant. We also concur that the effect of a small decrease in forage in the lower estuary is insignificant to juvenile Chinook growth and energy.

We concur with MARAD that adult eulachon are likely to swim past the action area during the IWWE but are unlikely to detour from their migratory path to swim into the marina action area and their exposure to temporary and permanent effects of the proposed action are discountable. Because larval eulachon outmigrate passively by drifting, it is unlikely that they will enter the marina to encounter the structural changes, and if they did, the modified habitat would not modify this migration pattern.

We concur with MARAD that green sturgeon are unlikely to be exposed to the temporary effects of the proposed action because they are not present in the Columbia River estuary during the IWWW. We concur with MARAD that any change to the estuary food web from the conversion of 372 square yards of benthic sandy habitat to rocky habitat inside the marina is discountable to green sturgeon foraging in the large Columbia River estuary.

## **Conclusion**

Based on this analysis, NMFS concurs with MARAD that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

## **Reinitiation of Consultation**

Reinitiation of consultation is required and shall be requested by [*name of action agency*] or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA consultation.

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. The MARAD also has the same responsibilities, and informal consultation offers action agencies an opportunity to address their conservation responsibilities under section 7(a)(1).

## **MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT**

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity",

and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects may result from actions occurring within EFH or outside of it and may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH (50 CFR 600.905(b)).

NMFS determined the proposed action would adversely affect Pacific Coast Salmon, groundfish and coastal pelagic species EFH as follows:

1. Pile driving noise temporarily degrades EFH aquatic habitat conditions.
2. Turbidity during pile driving temporarily degrades EFH water quality.
3. Riprap permanently displaces EFH benthic forage.

NMFS does not identify any additional measures to further reduce effects on EFH. This concludes the MSA consultation.

Please direct questions regarding this letter to Tom Hausmann, Natural Resource Specialist in Portland, Oregon, at [tom.hausmann@noaa.gov](mailto:tom.hausmann@noaa.gov), or 503-231-2315.

Sincerely,



Bonnie Shorin  
Chief, Washington Coast, Lower Columbia  
River Branch  
Oregon Washington Coastal Office

cc: Margaret Schwertner, Non-Federal Representative, Moffatt and Nichol

### **LITERATURE CITED**

- Morrice, K.J., Baptista, A.M., and Burke, B.J. (2020). Environmental and behavioral controls on juvenile Chinook salmon migration pathways in the Columbia River estuary. *Ecol Model* 427.
- Roegner, G.C., McNatt, R., Teel, D.J., and Bottom, D.L. (2012). Distribution, Size, and Origin of Juvenile Chinook Salmon in Shallow-Water Habitats of the Lower Columbia River and Estuary, 2002-2007. *Mar Coast Fish* 4, 450-472.
- Weston Solutions (2006). Jimmycomelately Piling Removal Monitoring Project (Port Gamble, WA: Weston Solutions).

**PORT OF ILWACO**  
**Marine Structures Replacement**  
***Ilwaco, WA***

**Appendix A3**

**USFWS ESA Section 7(a)(2) LOC**

## England, Victoria

---

**From:** Dennis, Mitchell (Mitch) <mitchell\_dennis@fws.gov>  
**Sent:** Monday, April 8, 2024 3:36 PM  
**To:** England, Victoria  
**Cc:** Tracy Lofstrom; Schwertner, Margaret; erin.kendle@dot.gov; Gilson, Kristine (MARAD; jennifer.carlson@noaa.gov; Good, Molly J  
**Subject:** RE: [EXTERNAL] Request to amend project in-water work window ( WCRO-2022-03087, FWS/R1/2023-0026807 ) Port of Ilwaco, East Bulkhead Resilience Project

Victoria,

I apologize for the delay in getting back to you. We, FWS, do not have any concerns with the earlier start date of September 1<sup>st</sup>. Your location of being well downstream of Bonneville Dam in the Columbia River means that bull trout would be exceeding rare, at best, independent of time of year. Consider our assessment and conclusion in the August 28, 2023 LOC to be valid under your earlier proposed start date of September 1<sup>st</sup>.

Thanks,  
Mitch

^^

Mitch Dennis  
(he/his/him)  
Fish and Wildlife Biologist  
US Fish and Wildlife Service - Lacey, WA  
Phone – 564-669-0716  
Email – [Mitchell\\_Dennis@fws.gov](mailto:Mitchell_Dennis@fws.gov)

---

**From:** England, Victoria <vengland@moffattnichol.com>  
**Sent:** Thursday, March 21, 2024 11:44 AM  
**To:** Dennis, Mitchell (Mitch) <mitchell\_dennis@fws.gov>; McReynolds, Ryan <ryan\_mcreynolds@fws.gov>; bonnie.shorin@noaa.gov; tom.hausmann@noaa.gov  
**Cc:** Tracy Lofstrom <tlofstrom@portofilwaco.org>; Schwertner, Margaret <mschwertner@moffattnichol.com>; erin.kendle@dot.gov; Gilson, Kristine (MARAD <kristine.gilson@dot.gov>; jennifer.carlson@noaa.gov  
**Subject:** [EXTERNAL] Request to amend project in-water work window ( WCRO-2022-03087, FWS/R1/2023-0026807 ) Port of Ilwaco, East Bulkhead Resilience Project

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Hello,

The Port of Ilwaco requests an amendment to the approved in-water work window (November 1 through February 28) provided in the services' concurrence letters (attached for reference) for the Port of Ilwaco East Bulkhead Resilience Project (WCRO-2022-03087, FWS/R1/2023-0026807). The Port would like the option to start the project in-water work early with the aim of completing the work prior to the start of crab season. The crab season varies in this area but can start as early as December of any year. The Port requests that the allowable in-water work window be amended to September 1 through February 28.

The project description remains the same as described in the permit documents and as updated via the August 30, 2023 email included in the email chain below. All proposed avoidance, minimization, and mitigation measures will still be implemented as described in the permit documents.

We do not anticipate that this minor modification will change the overall assessment of potential impacts but would like to confirm that the LOCs do not need to be updated nor consultation reinitiated based on this minor revision. Please reach out if you require any additional information or have any questions or concerns.

Thank you.

**Victoria R. England, LG, Env SP**  
Senior Environmental Scientist

600 University Street, Suite 610 | Seattle, WA 98101  
P 206.501.2332



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---

**From:**

**Sent:** Wednesday, September 6, 2023 9:25 AM

**To:** Gilson, Kristine (MARAD) <[kristine.gilson@dot.gov](mailto:kristine.gilson@dot.gov)>; Schwertner, Margaret <[mschwertner@moffattnichol.com](mailto:mschwertner@moffattnichol.com)>; Dennis, Mitchell (Mitch) <[mitchell\\_dennis@fws.gov](mailto:mitchell_dennis@fws.gov)>

**Cc:** McReynolds, Ryan <[ryan\\_mcreynolds@fws.gov](mailto:ryan_mcreynolds@fws.gov)>; England, Victoria <[vengland@moffattnichol.com](mailto:vengland@moffattnichol.com)>

**Subject:** Re: ( FWS/R1/2023-0026807 ) Port of Ilwaco, East Bulkhead Resilience Project

Hello,

On Aug. 28 we issued a Letter of Concurrence -- ( FWS/R1/2023-0026807 ) Port of Ilwaco, East Bulkhead Resilience Project.

Thank you for providing updates,,, There are quite a few!,,, And, It appears to me, the 'changes' further reduce impacts and improve long term nearshore habitat functions.

If Mitch agrees, And we do not have questions,,, We will place a copy of these correspondence in our files; Please do the same.

Answer To Process Question: No, If there are no changed or additional effects/ consequences of concern ( and here I see improvements ), Reinitiation of consultation is not warranted. Changes that further reduce impacts and improve long term functions, can be addressed with these records retained for our files.

Thank You --Ryan--

Ryan McReynolds  
Zone Team Supervisor  
Coastal, Lowland Aquatic, and Marine Zone  
U.S. Fish and Wildlife Service, Lacey WA  
[ryan\\_mcreynolds@fws.gov](mailto:ryan_mcreynolds@fws.gov)  
360.480.2336 (Work Cell)

*Working with others to conserve, protect, and enhance  
fish, wildlife, plants, and their habitats for the continuing  
benefit of the American people.*

---

**From:** Schwertner, Margaret <[mschwertner@moffattnichol.com](mailto:mschwertner@moffattnichol.com)>  
**Sent:** Wednesday, August 30, 2023 8:49 AM  
**To:** Dennis, Mitchell (Mitch) <[mitchell\\_dennis@fws.gov](mailto:mitchell_dennis@fws.gov)>; Rhodes, Darold <[darold\\_rhodes@fws.gov](mailto:darold_rhodes@fws.gov)>  
**Cc:** McReynolds, Ryan <[ryan\\_mcreynolds@fws.gov](mailto:ryan_mcreynolds@fws.gov)>; Gilson, Kristine (MARAD) <[kristine.gilson@dot.gov](mailto:kristine.gilson@dot.gov)>; England, Victoria <[vengland@moffattnichol.com](mailto:vengland@moffattnichol.com)>  
**Subject:** [EXTERNAL] RE: Port of Ilwaco East Bulkhead

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Hi Mitch and Darold,

Thank you very much for the LOC.

We have a short project update for the Port of Ilwaco East Bulkhead Resilience Project. There have been a few changes to the project description (removal of pile fender system due to cost) and some additional mitigation elements required as a result of ongoing coordination with the City of Ilwaco and Washington State Department of Fish and Wildlife (WDFW). This email provides a detailed summary of those recent project changes. The changes are minor in nature and do not impact the species Effect Determinations made for the project nor are they anticipated to warrant changes to the LOCs received (NMFS WCRO-2022-03087, FWS 2023-0025807). All proposed avoidance, minimization, and mitigation measures will still be implemented as described in the permit documents.



The project modifications are described below and are reflected in the attached revised design drawings.

#### **Fender Pile System**

The installation of 10, 12-inch fiberglass fender piles external to the bulkhead to support temporary berthing is no longer proposed.

#### **Fish Mix Placement**

A 6-inch layer (approximately 34 cy) of fish mix gravel will be placed over the north shoreline riprap below the high tide line (HTL) to provide beach nourishment and improved habitat for fish passing through the marina.

#### **Debris Removal**

Floating timber debris will be removed from the south portion of the marina. This will remove approximately 2,510 sf of overwater coverage currently present in that portion of the marina.

#### **Fill Impacts**

Minor fill impact changes have occurred due the removal of the fender pile system from the project, the addition of fish mix on the north shoreline, and changes to the way in which fill quantities are calculated including an update to the High Tide Line elevation used to calculate fill impacts. Fill impact changes are summarized in Table 1 and Table 2 below.

**Table 1. Fill Impacts Provided in Biological Evaluation Dated December 12, 2022 and Submitted for ESA Consultations**

Activity	Fill below HTL (sf)	Fill below HTL (cy)	Fill above HTL (sf)	Fill above HTL (cy)
<i>Bulkhead wall and shoreline protection installation</i>				
Sheetpile and fender pile installation	500 sf	40 cy	0 sf	0 cy
Bulkhead drainage rock placement	1,000 sf	400 cy	0 sf	0 cy
Rip-rap placement (north shoreline)	1,850 sf	140 cy	350 sf	25 cy
Rubble/ rip-rap removal (south shoreline)	-350 sf	-14 cy	-50 sf	-2 cy
Rip-rap replacement (south shoreline)	350 sf	30 cy	50 sf	5 cy
<i>Structure removal</i>				
Pile removal adjacent to existing bulkhead	-12 sf	-6 cy	0 sf	0 cy
North shoreline- creosote-treated timber retaining wall removal	-85 sf	-12 cy	0 sf	0 cy
Derelict pile/timber removal	-68 sf	-12 cy	0 sf	0 cy

**Table 2. Revised Fill Impacts**

Activity	Fill below HTL (sf)	Fill below HTL (cy)	Fill above HTL (sf)	Fill above HTL (cy)
<i>Bulkhead wall and shoreline protection installation</i>				
Sheetpile installation	400 sf	80 cy	0 sf	0 cy
Bulkhead drainage rock placement	1,000 sf	450 cy	0 sf	0 cy
Rip-rap shore protection and Fish Mix placement (north shoreline)	1,850 sf	172 cy	350 sf	26 cy
Concrete rubble removal (south shoreline)	-350 sf	-14 cy	-50 sf	-2 cy
Rip-rap replacement (south shoreline)	350 sf	30 cy	50 sf	5 cy
<i>Subtotal</i>	<i>3,250 sf</i>	<i>718 cy</i>	<i>350 sf</i>	<i>29 cy</i>
<i>Structure removal</i>				
Pile removal adjacent to existing bulkhead	-12 sf	-6 cy	0 sf	0 cy
North shoreline- retaining wall removal	-85 sf	-12 cy	0 sf	0 cy
Derelict pile/timber removal	-68 sf	-12 cy	0 sf	0 cy

Derelict Timber Structure/Debris Removal -South Marina	-2,510 sf	-350 cy	0 sf	0 cy
<i>Subtotal</i>	<i>-2,675 sf</i>	<i>-380 cy</i>	<i>0 sf</i>	<i>0 cy</i>
<i>Creosote removal from the Environment</i>	<i>34 tons</i>			

We do not anticipate that these minor modifications will change the overall assessment of potential impacts but would like to confirm that the LOCs do not need to be updated nor consultation reinitiated based on these minor revisions. Please reach out if you require any additional information or have any questions or concerns.

Thank you.

Regards,  
Margaret

**Margaret Schwertner**

Senior Environmental Scientist  
505 S. 336<sup>th</sup> St. | Federal Way, WA 98422  
P 253.237.5928 | M 206.818.2600



**From:** Rhodes, Darold [darold\\_rhodes@fws.gov](mailto:darold_rhodes@fws.gov)

**Sent:** Monday, August 28, 2023 1:57 PM

**To:** kristine.gilson [kristine.gilson@dot.gov](mailto:kristine.gilson@dot.gov)

**Cc:** Schwertner, Margaret [mschwertner@moffattnichol.com](mailto:mschwertner@moffattnichol.com); England, Victoria [vengland@moffattnichol.com](mailto:vengland@moffattnichol.com); [tlofstrom@portofilwaco.org](mailto:tlofstrom@portofilwaco.org); Dennis, Mitchell (Mitch) [mitchell\\_dennis@fws.gov](mailto:mitchell_dennis@fws.gov); McReynolds, Ryan [ryan\\_mcreynolds@fws.gov](mailto:ryan_mcreynolds@fws.gov)

**Subject:** Port of Ilwaco East Bulkhead

**CAUTION:** This email originated from outside of the organization.

Kris,

Attached is the signed concurrence for the above project.

No hard copy will follow but should you require one please respond to this email and one will be provided.

Darold Rhodes  
Administrative Assistant  
US Fish and Wildlife Service  
500 Desmond DR SE  
Suite 102  
Lacey, WA  
cell: 360-480-6921



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office  
510 Desmond Dr. S.E., Suite 102  
Lacey, Washington 98503



In Reply Refer to:  
**FWS/R1/2023-0026807**

August 28, 2023

Kris Gilson  
Maritime Administration  
U.S. Department of Transportation  
1200 New Jersey Avenue SE  
Washington, DC 20590

Dear Ms. Gilson:

Subject: Port of Ilwaco, East Bulkhead Resilience Project

This letter is in response to your December 14, 2022, request for our concurrence with your determination that the proposed action in Ilwaco, Pacific County, Washington, “may affect, but is not likely to adversely affect” federally listed species. We received your letter and Biological Evaluation (BE), providing information in support of “may affect, not likely to adversely affect” determinations, on December 14, 2022. On June 14, 2023, an email from Margaret Schwertner (Consultant or Agent) was received, describing minor changes and updates for the proposed action.

Specifically, you requested informal consultation pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA) for the federally listed species and designated critical habitat identified below:

Bull trout (*Salvelinus confluentus*)  
Designated bull trout critical habitat  
Marbled murrelet (*Brachyramphus marmoratus*)  
Streaked horned lark (*Eremophila alpestris strigata*)

The U.S. Department of Transportation, Maritime Administration (MARAD) has determined that the proposed action will have “no effect” on additional listed species and designated critical habitat that are known to occur in Pacific County. The determination of “no effect” to listed

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### PACIFIC REGION 1

IDAHO, OREGON\*, WASHINGTON,  
AMERICAN SAMOA, GUAM, HAWAII, NORTHERN MARIANA ISLANDS

\*PARTIAL

resources rests with the action agency. The U.S. Fish and Wildlife Service (Service) has no regulatory or statutory authority for concurring with “no effect” determinations, and no consultation with the Service is required. We recommend that the action agency document their analyses on effects to listed species and maintain that documentation as part of their project files.

### Project Description:

The proposed action has two goals: 1) To repair the failing bulkhead and restore serviceability and safety; and, 2) To increase the overall height of the structure, to better accommodate high tides and projected sea level rise. To accomplish these goals, MARAD and the Port of Ilwaco (Port) will replace the failing east bulkhead, repair/replace the slope protection north and south of the bulkhead, and pave and re-grade the upland wharf area directly landward, to mitigate the effects of sea level rise.

The east bulkhead has reached the end of its serviceable life, is failing, and requires replacement. To preserve the stability of some of the existing structures, a steel sheet pile wall will be constructed two to five feet waterward of the existing bulkhead, and the gap will be backfilled with rock (approximately 400 cubic yards, cy). Wherever possible, existing creosote-treated wood piles will be removed by direct pulling or with a vibratory hammer. Sheet piles will be driven with a vibratory hammer; an impact hammer may be required, if/where difficult driving conditions are encountered. When complete, the top of the bulkhead will be approximately three feet higher vertically than the current features, to withstand high tides and future sea level rise. The bulkhead repairs/ replacement will encroach on approximately 200 square feet (sf) of marine bed and waters (i.e., in excess of the original footprint of the bulkhead).

Slope protection repairs/replacement will be completed at two locations (north and south shoreline), and will include removal of creosote-treated wood piles and removal, adjustment, and augmentation of riprap armor and retaining walls. On the south shoreline, approximately 400 sf (16 cy) of riprap and concrete debris will be removed, and replaced with approximately 35 cy of riprap within the same approximate footprint (including approximately 30 cy placed waterward of the High Tide Line, HTL). On the north shoreline, approximately 2,200 sf (165 cy) of riprap will be placed on the embanked shoreline (including approximately 140 cy placed waterward of HTL), to replace the removed creosote-treated timber retaining wall and provide shore protection. The riprap slope protection will serve as grade transition, from the vertical bulkhead structure to the adjacent sloped shorelines north and south. Once complete, the top of the constructed/ re-constructed shoreline protection features will be raised to approximately +14 ft Mean Lower Low Water.

Approximately sixteen (16) 12-inch diameter creosote-treated wood or timber piles will be removed. If complete removal is not possible or the piles break during removal, the piles will be cut at the mudline. Additional debris removal is proposed and will be completed as mitigation. Grading and paving will be completed landward of the bulkhead. Approximately 8,000 sf of existing hard surface will be repaved with positive drainage away from buildings. The bulkhead will be fitted with scuppers.

Sufficient information has been provided to determine the effects of the proposed action and to conclude whether it would adversely affect federally listed species and/or designated critical habitat. Our concurrence is based on information provided by the action agency, best available science, and complete and successful implementation of the conservation measures included by the action agency.

## **EFFECTS SPECIFIC TO BULL TROUT AND MARBLED MURRELET**

### **I. Temporary Exposures and Effects**

Exposures are extremely unlikely (discountable) because of the following:

- The action is located in the lower Columbia River (downstream of Bonneville Dam), where at present, bull trout occurrence is rare and exposure to construction activities is extremely unlikely.
- The Port's facilities include a substantially altered, degraded, artificial embayment, and provide little or no suitable habitat for marbled murrelets. Exposure to construction activities is extremely unlikely.

### **II. Effects to Bull Trout and Marbled Murrelet Habitats and Prey**

With successful implementation of the conservation measures included by the action agency as part of the proposed action, effects will not be measurable, will not significantly disrupt normal behaviors (i.e., the ability to successfully feed, move, and/or shelter), and are therefore considered insignificant. We expect that the effects of the action will not measurably degrade or diminish habitat functions or prey resources in the action area. Therefore, the effects of the action are considered insignificant:

- Construction at or below Mean Higher High Water will be completed during the recommended in-water work window (November 1 to February 28).
- Construction activities and proposed permanent features may impact habitat that supports the species and/or their prey. These impacts will be limited in physical extent and/or duration, and will not measurably or significantly degrade habitat functions, including prey resources that are important to the species within the action area.
- The action will result in temporary impacts to water quality, including potential temporary increases in levels of turbidity and contaminants (e.g., compounds found in treated wood). These effects will be intermittent and limited in physical extent and duration. The action will remove and properly dispose of creosote-treated wood, and thereby provide benefits in the form of improved water and sediment quality.

- The action includes replacing bank armor within a slightly larger footprint, and will install a steel sheet pile wall waterward of the existing bulkhead. The action will continue to impair some natural shoreline processes. However, with the substantial removal of creosote-treated wood and debris, we conclude that the action will provide a net improvement to habitat conditions for the species and their prey.
- The action includes operations that will produce stormwater discharges. Approximately 8,000 sf of existing hard surface will be repaved. Discharges will be infrequent, episodic, and are unlikely to measurably affect water or sediment quality in the Port's artificial embayment.

## EFFECTS TO DESIGNATED BULL TROUT CRITICAL HABITAT

The final revised rule designating bull trout critical habitat (75 FR 63898 [October 18, 2010]) identifies nine Primary Constituent Elements (PCEs) essential for the conservation of the species. The 2010 designation of critical habitat for bull trout uses the term PCE. The new critical habitat regulations (81 FR 7214) replace this term with physical or biological features (PBFs). This shift in terminology does not change the approach used in conducting our analyses, whether the original designation identified PCEs, PBFs, or essential features. In this letter, the term PCE is synonymous with PBF or essential features of designated critical habitat.

The following PCEs are in the action area. Of the PCEs present, some will not be affected by the proposed action.

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

- The action may temporarily introduce an impediment or barrier within migration habitat. However, it will not preclude bull trout movement through the area, either during or after construction, and any effects will be temporary. Migration habitat will not be permanently altered, destroyed, or degraded.

*PCE 3: An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.*

- The action may temporarily reduce the food base via a small reduction of prey resources. However, the impacts will be temporary and/or components of the project design will avoid, reduce, or compensate for them.

PCE 4: *Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.*

- The action will maintain degraded habitat conditions by continuing to preclude and/or degrade natural shoreline processes, but will not result in further declines in shoreline complexity.

PCE 8: *Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.*

- The action may impact water quantity and/or quality. However, the effects will be temporary; components of the project design include actions to avoid, reduce, or compensate for the effects; and/or we would be unable to measure, detect, or evaluate the effects. The action will remove and properly dispose of creosote-treated wood, and thereby provide benefits in the form of improved water and sediment quality.

## **EFFECTS TO STREAKED HORNED LARK**

The action will not significantly disrupt normal streaked horned lark behaviors (i.e., the ability to successfully feed, move, and/or shelter). The effects of the action will not measurably degrade or diminish habitat functions. Therefore, the effects the action are considered insignificant.

- There is no suitable breeding habitat in the action area. Construction exposures and effects are extremely unlikely, and therefore considered discountable.

## **CONCLUSION**

This concludes consultation pursuant to the regulations implementing the ESA (50 CFR 402.13). Our review and concurrence with your effect determinations is based on implementation of the project as described. It is the responsibility of the federal action agency to ensure that the projects they authorize or carry out are in compliance with the regulatory permit and ESA. If a permittee or the federal action agency deviates from the measures outlined in a permit or project description, the federal action agency has the obligation to reinitiate consultation and comply with section 7(d).

This action should be re-analyzed and re-initiation may be necessary if 1) new information reveals effects of the action that may affect listed species or critical habitat in a manner, or to an extent, not considered in this consultation, 2) if the action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this consultation, and/or 3) a new species is listed or critical habitat is designated that may be affected by this action.

This letter constitutes a complete response by the Service to your request for informal consultation. A record of this consultation is on file at the Washington Fish and Wildlife Office, in Lacey, Washington. If you have any questions about this letter or our shared responsibilities under the ESA, please contact the consulting biologist identified below.

U.S. Fish and Wildlife Service Consultation Biologist:  
Mitchell Dennis (564-669-0716; mitchell\_dennis@fws.gov)

Sincerely,

*for* Brad Thompson, State Supervisor  
Washington Fish and Wildlife Office

cc:

Moffatt & Nichol, Federal Way and Vancouver, WA (M. Schwertner; V. England)  
Port of Ilwaco, Ilwaco, WA (T. Lofstrom)



**PORT OF ILWACO**  
**Marine Structures Replacement**  
*Ilwaco, WA*

**Appendix A4**

**JARPA**



# WASHINGTON STATE

## Joint Aquatic Resources Permit Application (JARPA) Form<sup>1,2</sup> [\[help\]](#)

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



US Army Corps  
of Engineers®  
Seattle District

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 East Bulkhead Resilience Project (Project)

### Part 2–Applicant

The person and/or organization responsible for the Project. [\[help\]](#)

2a. Name (Last, First, Middle)

Lofstrom, Tracy (Port Manager)

2b. Organization (If applicable)

Port of Ilwaco

2c. Mailing Address (Street or PO Box)

PO Box 307

2d. City, State, Zip

Ilwaco, WA 98624

2e. Phone (1)

2f. Phone (2)

2g. Fax

2h. E-mail

(360) 642-3143

(360)642-3148

tlofstrom@portofilwaco.org

<sup>1</sup>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.

<sup>2</sup>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](http://www.epermitting.wa.gov/site/alias_resourcecenter/jarpa_jarpa_form/9984/jarpa_form.aspx).

## 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.) [\[help\]](#)

<b>3a.</b> Name (Last, First, Middle)			
England, Victoria Renee			
<b>3b.</b> Organization (If applicable)			
Moffatt & Nichol			
<b>3c.</b> Mailing Address (Street or PO Box)			
600 University Street, Suite 610			
<b>3d.</b> City, State, Zip			
Seattle, WA, 98101			
<b>3e.</b> Phone (1)	<b>3f.</b> Phone (2)	<b>3g.</b> Fax	<b>3h.</b> E-mail
(206) 622-0222			vengland@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.

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

<b>5a.</b> Indicate the type of ownership of the property. (Check all that apply.) <a href="#">[help]</a>			
<input type="checkbox"/> Private			
<input type="checkbox"/> Federal			
<input checked="" type="checkbox"/> Publicly owned (state, county, city, special districts like schools, ports, etc.)			
<input type="checkbox"/> Tribal			
<input checked="" type="checkbox"/> Department of Natural Resources (DNR) – managed aquatic lands (Complete <a href="#">JARPA Attachment E</a> )			
<b>5b.</b> Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5p.) <a href="#">[help]</a>			
117 Howerton Avenue Southeast			
<b>5c.</b> City, State, Zip (If the Project is not in a city or town, provide the name of the nearest city or town.) <a href="#">[help]</a>			
Ilwaco, WA 98624			
<b>5d.</b> County <a href="#">[help]</a>			
Pacific County			
<b>5e.</b> Provide the section, township, and range for the Project location. <a href="#">[help]</a>			
<b>¼ Section</b>	<b>Section</b>	<b>Township</b>	<b>Range</b>
	33/34	10N	11W
<b>5f.</b> Provide the latitude and longitude of the Project location. <a href="#">[help]</a>			
<ul style="list-style-type: none"><li>Example: 47.03922 N lat. / -122.89142 W long. (Use decimal degrees - NAD 83)</li></ul>			
46.30442 N Lat. / -124.03852 W long.			
<b>5g.</b> List the tax parcel number(s) for the Project location. <a href="#">[help]</a>			
<ul style="list-style-type: none"><li>The local county assessor's office can provide this information.</li></ul>			
	<b>Owner</b>	<b>Parcel Number(s)</b>	
	Port of Ilwaco	73048003011, 73048003009	
	State of Washington	73031013000	
<b>5h.</b> Contact information for all adjoining property owners. (If you need more space, use <a href="#">JARPA Attachment C.</a> ) <a href="#">[help]</a>			
<b>Name</b>	<b>Mailing Address</b>	<b>Tax Parcel # (if known)</b>	
Port of Ilwaco	PO Box 307 Ilwaco, WA 98624	7304803011, 7303104000, 73031011001, 73048003114	

<b>5i.</b> List all wetlands on or adjacent to the Project location. <a href="#">[help]</a>
Not applicable
<b>5j.</b> List all waterbodies (other than wetlands) on or adjacent to the Project location. <a href="#">[help]</a>
Baker Bay
<b>5k.</b> Is any part of the Project area within a 100-year floodplain? <a href="#">[help]</a>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
<b>5l.</b> Briefly describe the vegetation and habitat conditions on the property. <a href="#">[help]</a>
<p>Vegetation and terrestrial habitat conditions are limited within the Project area. The site is in an industrial area within an active marina that serves recreational boating and commercial fishing vessels and is largely devoid of terrestrial vegetation. The Project would occur on an existing wharf and associated bulkhead wall, retaining wall, and rip rap shoreline. Little to no terrestrial and riparian habitat occurs here. The mudline at the base of the existing bulkhead is largely unvegetated and consists of a silty sand, sandy silt slope with rip rap extending on the shore slope to the north and south of the bulkhead. The upland adjacent to the bulkhead is a paved driveway servicing the Safe Coast Seafood facility. Existing vegetation consists of short-statured ruderal species behind the existing bulkhead wall and in viable spaces along the rip rap shoreline. Upland vegetation observed along the shoreline during a 2022 site survey included clover species (<i>Trifolium species</i>), Japanese knotweed (<i>Polygonum cuspidatum</i>), various grasses, dandelion (<i>tatxasum officinale</i>), and creeping buttercup (<i>Ranunculus repens</i>) (GeoEngineers 2022). There is no eelgrass on or adjacent to the Project site (GeoEngineers, 2022).</p> <p>A creosote timber revetment wall is located along the toe of the north slip slope and derelict creosote piles and cross members are located within the slip adjacent to the bulkhead. The marina is periodically dredged for maintenance to maintain operational draft for the vessels using the marina. The marina dredging is permitted under a separate permit.</p>
<b>5m.</b> Describe how the property is currently used. <a href="#">[help]</a>
<p>The Project vicinity generally consists of a marina used for year-round moorage of recreational and commercial fishing vessels, upland commercial buildings, and a boatyard. The Project site occurs at a commercial fishing wharf (herein referred to as 'wharf') (Figure 1, Sheets 1 and 2) located within the active Port of Ilwaco Marina (marina). The marina is mostly enclosed by upland to the north, east and southeast, a rubble breakwater to the south, and upland and a jetty to the west and southwest. The jetty and breakwater bound the entrance to the marina (Figure 1, Sheet 1). The wharf is an earth filled structure on the east side and pile supported on the west side. The wharf is protected by a creosote-treated timber bulkhead (to be replaced) along the eastern limits of the wharf (Figure 1, Sheets 1 through 4). The Port of Ilwaco Marina is located waterward of the existing bulkhead. To the north of the bulkhead wall, the shoreline is protected by a low timber retaining wall and large log (Figure 1). To the south of the bulkhead wall, shoreline protection consists of rip rap and concrete rubble (Figure 1). The Safe Coast Seafoods buildings are located on the wharf (Figure 1).</p>





**Figure 1. Project Location Aerial**

**5n.** Describe how the adjacent properties are currently used. [\[help\]](#)

The operating Ilwaco Marina is located to the waterside of the bulkhead. The marina is home to commercial and recreational fishing vessels and other recreational vessels. The marina is a busy and important destination for commercial fisheries as it is the first port of call from the mouth of the Columbia River. Safe Coast Seafood facilities and entrance driveway are located to the west and upland of the bulkhead. Waterfront Way and commercial storefronts are located on the upland to the north.

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

The Project site is currently occupied by a creosote-treated timber and steel cable tieback bulkhead that is in disrepair and leaning waterward, at risk of falling into the Ilwaco Marina slip to the east of the bulkhead (Figure 2). Monitoring for continued movement of the bulkhead was initiated in November 2022. Subsequent monthly monitoring events have recorded continued movement of the bulkhead face waterward by as much as  $\frac{1}{4}$  inch in one month at one measuring station along the bulkhead. The failure of the bulkhead would undermine the foundations of the adjacent Safe Coast Seafood buildings, risking potential structural damage and worker/marina user safety if bulkhead failure occurs before it can be replaced. The existing wharf floods during king tides and storm events and is susceptible to sea level rise (Figure 3). There is a rip rap shoreline (Figure 4) to the south of the bulkhead wall and a timber retaining wall (Figure 5) to the north of the bulkhead wall. The retaining wall to the north of the bulkhead consists of creosote-treated timber pilings and horizontal features and is non-functional in its current state due to a gap behind the wall.





**Figure 2. Damaged Bulkhead Wall**



**Figure 3. Typical Flooding During Storms and King Tides**





**Figure 4. Riprap Shoreline to the South of the bulkhead Wall**



**Figure 5. Retaining Wall to the North of the Bulkhead Wall**

The driveway adjacent to the bulkhead is currently closed for all but pedestrian access due to recommended load limitations based on observed movement of the bulkhead and roadway settlement resulting from the bulkhead moving waterward. This roadway was a secondary access for loading and unloading of equipment and cargo when it was operational. Closure of this access to all but pedestrian use negatively impacts the operations of the seafood facilities.



**5p.** Provide driving directions from the closest highway to the Project location, and attach a map. [\[help\]](#)

- From US 101 North traveling to the west
- In Ilwaco, turn left onto Elizabeth Ave SE
- Turn right onto Howerton Ave SE
- The site is located to the south of the intersection of Howerton Ave SE and Waterfront Way.

## Part 6–Project Description

**6a.** Briefly summarize the overall Project. You can provide more detail in 6b. [\[help\]](#)

The proposed Port of Ilwaco East Bulkhead Resilience Project (herein referred to as the 'Project') would consist of three primary elements;

1. Replacing the failing east bulkhead with an anchored steel sheetpile bulkhead (Preferred Alternative)
2. Repairing slope protection north and south of the bulkhead and raising top of slope at the head of the slip approximately 1.5 feet to accommodate future sea level rise resilience.
3. Paving and regrading the upland wharf area (access driveway) directly landward of the bulkhead to mitigate the effects of sea level rise.

As part of the above elements, creosote-treated timber that configures the external wall of the existing bulkhead and retaining wall will be removed along with select derelict creosote-treated piles next to the bulkhead. Additional derelict creosote piles and cross members will be removed from the slip adjacent to the bulkhead as mitigation for Project impacts resulting from drainage rock fill placement between the existing bulkhead and the new bulkhead necessary to maintain water pressure equilibrium on both sides of the bulkhead. The removal of creosote from the marine environment will also mitigate for impacts associated with the riprap shoreline protection that is proposed to replace the derelict creosote treated timber revetment/retaining wall and associated elements. A fish mix gravel layer will be placed between HTL and the toe of the riprap on the surface of the rip rap slope protection at the head of the slip to provide beach nourishment and habitat improvements for fish passing through the marina as mitigation for Project impacts. Additionally, an approximately 2,510 sf area of derelict timber floats floating timber debris will be removed from the south portion of the marina as mitigation for Project impacts.

Several alternatives were considered prior to identifying the preferred alternative. The following is a summary of the alternatives considered and how they were evaluated as the Project was developed.

- **No Action**

- The existing creosote treated timber bulkhead is actively failing with observed movement of up to 0.3 inch since monitoring began in November 2022.
- Left as-is, the bulkhead will eventually fail, which will result in:
  - Permanent access removal by permanently blocking the access driveway adjacent to the bulkhead,
  - Potential damage to buildings/building foundations,
  - Life/safety issue for Safe Coast Seafood workers and marina tenants,
  - Inability for Safe Coast Seafood to maintain operations resulting in loss of income and revenue for this small community.
  - Obstructing a portion of marina (adjacent slip) and making it unusable.

- **Removal of bulkhead prior to construction of new bulkhead wall**

- No bulkhead as-builts are available to identify how the existing bulkhead was constructed. Associated unknowns increase the risk of removing the structure prior to replacement.

- Removing the existing structure prior to replacement poses a high risk of slope failure and damage to:
  - the access drive,
  - Safe Coast building foundations, and
  - adjacent marina slip (including obstructing access to parts of the marina and potential damage to float structures).
- Bulkhead failure would pose unacceptable risks to life/safety for Safe Coast Seafood workers and marina tenants.
- **Sheetpile bulkhead placement behind existing bulkhead**
  - No as-builts: The bulkhead appears to be supported by cable tie backs, possibly anchored to deadman piles behind/shoreward of the bulkhead. There is a potential for:
    - Increased risk of failure if sheet piles were driven behind the existing wall, severing the support provided by the cable tiebacks.
    - Unknown obstructions that could damage or impede sheetpile installation, increasing cost, delays and potential risk of existing slope failure.
  - The Project area is restricted by the continued business need for the adjacent access drive and the close proximity of the facility buildings and infrastructure. Space limitations also pose constructability challenges relative to pile and cap placement for a new bulkhead.
- **Cantilever bulkhead waterward of the existing bulkhead**
  - The cantilever option placed waterward of the existing bulkhead would have essentially the same impacts to marine habitat as the Preferred Alternative and would also require placement of filter rock backfill in the space between the new and the existing bulkhead.
  - The placement of the cantilever and Preferred Alternative is dictated by the profile of the existing bulkhead which is leaning waterward by as much as 10 degrees in places and the need for a usable temporary berth area to replace the berth area rendered unusable by the deteriorated and unstable nature of the existing bulkhead.
  - The cantilever option would require more steel as the bulkhead sheetpiles would be both longer and thicker to provide the necessary slope support at the site. The requirement for more steel will result in a higher cost to the Port.
- **Preferred Alternative – Anchored Sheetpile Bulkhead**
  - The Preferred Alternative will result in commensurate environmental impacts (approximately the same footprint, backfill volume, etc.) as the cantilever bulkhead alternative, but will be a more economical solution for the Port.
  - The proposed placement of the bulkhead is controlled by the waterward lean of the existing bulkhead face and Safe Coast's need to replace the existing unusable temporary berth area with a usable temporary berth to support the facility's operations.
  - The size of the space/void between existing and replacement bulkheads results from the way the bulkhead leans waterward and the need for a usable berth area to replace existing one for Safe Coast Seafood operations.

The Project also includes increasing the top of slope elevation of the shoreline adjacent to the bulkhead to the north by approximately 1.5 feet to elevation +14 feet MLLW. As part of that work, the existing creosote treated timber revetment that provides limited shore protection to that slop will be removed and replaced with a layer of riprap under a layer fish mix rock as shore protection. Alternatives considered include the following.

- **No Action** – This would leave deteriorating creosote treated timber features in the marine environment and would not provide any preparation for future sea level rise protections.
- **Replacement with a stone or concrete revetment** – Placement of a new revetment would likely result in additional benthic/shoreline impacts as the structure would likely occupy a larger footprint.
- **Nature based shoreline protection/slope modification** – This alternative could not be accommodated while still maintaining access and operations in both the marina slip and the temporary berthing area along the Safe Coast bulkhead as the regraded slope required would limit marina slip access significantly.
- **Preferred Alternative** – The preferred alternative incorporates an increase to the top of slope elevation as part of sea level rise resilience planning and continued operation of the marina slip and accommodates the replacement of the temporary berthing area along the replacement bulkhead. Rip

rap shore protection will be placed with a fish mix cover layer that is beneficial to fish passing through the marina.

**6b.** Describe the purpose of the Project and why you want or need to perform it. [\[help\]](#)

The proposed Project is required for improved the safety, efficiency, and reliable use of the wharf. The Port is a key hub for commercial fishing, seafood and aquaculture processing, and recreation activities that greatly benefit the regional economy. The commercial fishing wharf, operated by Safe Coast Seafoods, is one of the most active in the state, landing roughly \$14 million in commercial seafood each year. Repair of the bulkhead wall is critical to ongoing operations at Safe Coast Seafoods. In its current condition, the bulkhead is in serious structural condition and at risk of failing. Recent biweekly and monthly measurements have been completed to monitor ongoing movement of the bulkhead. The monitoring has recorded movement along 13 monitoring points along the face of the bulkhead ranging from approximately 0.06 inch to up to 0.31 inch waterward i since monitoring began in November 2022. The monitoring indicates that the bulkhead is the process of active failure. Frequent flooding due to high water levels from “king tides” and severe winter storm surges further threaten the structural capacity of the bulkhead.

Bulkhead failure would shut down cargo operations at the Port and negatively impact a wide variety of businesses in maritime and non-maritime sectors including Safe Coast Seafoods. The shutdown of the Safe Coast site due to failure of the bulkhead would lead to a series of economic impacts for many more workers and businesses and the region. Bulkhead failure would also adversely affect the Port of Ilwaco Marina operations, likely fully blocking at least one slip from use and potentially causing damage to adjacent float structures and tenant vessels. Until this Project is completed, the facility is capacity-limited and at risk. The main access driveway to Safe Coast Seafoods has been blocked based on recommended load limitations in an effort to minimize vibration and load resulting from vehicles and machinery using the driveway located adjacent to the failing bulkhead. Without the Project, the eventual closure of the wharf will have cascading negative transportation and economic impacts for the region.

The Project would also serve the following purposes and provide the following benefits:

- The replacement bulkhead will serve as the initial phase to increase the facility’s climate change/sea level rise resiliency and will help protect wharf facilities from flooding. The bulkhead will be designed to accommodate the planned increase to wharf/Safe Coast facility ground floor elevations in the future.
- The top of the embankment elevation to the north of the bulkhead will be raised to approximately +14 feet (mean lower low water) MLLW and the existing creosote-treated retaining wall will be replaced with rip rap to improve shoreline protection. The increase to top of bank elevation will mitigate sea level rise impacts between the bulkhead and the marina access pier to the east.
- Re-grading and re-paving of the upland area behind the bulkhead wall will facilitate positive drainage away from the Safe Coast Seafoods buildings and help protect the facilities during flood events.
- The bulkhead replacement would prevent the shoreline from failing into a portion of the active Port of Ilwaco Marina, which would impact operations in the marina and potentially damage adjacent float structures and tenant vessels, if any, present at the time of failure.
- The new bulkhead will be designed to accommodate the temporary mooring of fishing vessels which will allow vessels to unload/load equipment and product and improve efficiencies at the Safe Coast Seafoods facility. Under existing conditions, the timber bulkhead is used for temporary mooring but cannot currently be used for loading/unloading of vessels due to its existing poor, unstable, deteriorating condition.
- The Project will allow trucks to drive safely on the bulkhead again, which will improve the efficiency of cargo transfer operations and improve the port’s competitiveness. The adjacent roadway has been closed to vehicle access due to load limitations recommended based on the poor condition of the

existing bulkhead, including measurements exhibiting ongoing movement of the failing bulkhead waterward as observed during monitoring episodes from November 2022 to the present.

- The removal of creosote-treated wood (north slip revetment, derelict piles and cross members, and portions of the existing bulkhead as safely able) from the marine environment will provide water quality benefits.
- Removal of derelict timber floats and other timber debris present in the south portion of the marina as part of project mitigation. This will remove approximately 2,510 SF of existing overwater coverage from the marina.
- Placement of a layer of fish mix gravel over the rip rap shoreline protection to be placed on the slope at the head of the adjacent slip.

**6c.** Indicate the Project category. (Check all that apply) [\[help\]](#)

- ☒ Commercial
 ☐ Residential
 ☐ Institutional
 ☐ Transportation
 ☐ Recreational  
☒ Maintenance
 ☐ Environmental Enhancement

**6d.** Indicate the major elements of your Project. (Check all that apply) [\[help\]](#)

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

☐ Other:

**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.

The work will occur within the Ilwaco Marina basin, located along the northeast shoreline in Baker Bay, and along the adjacent shoreline at the Safe Coast Seafoods facility (Sheets 1 through 3, attached).

### Bulkhead Replacement

Construction sequencing for the proposed bulkhead replacement will likely be as follows:

- Localized demolition of the existing bulkhead wall (Sheet 4)
- Installation of the new steel sheet pile wall just waterward off the existing bulkhead. (Sheet 5)
- Placement of drainage rock between the existing bulkhead wall and new bulkhead wall (Sheet 7)

The majority of the existing timber bulkhead will be abandoned in place behind the replacement bulkhead in order to protect the existing buildings at the Safe Coast Seafoods facility, as complete removal of the existing timber bulkhead will undermine the stability of the soil behind the bulkhead and the adjacent building foundations threatening Safe Coast buildings, infrastructure, and operations. Portions of the existing creosote-treated bulkhead will be removed as feasible. Localized bulkhead demolition will likely consist of removal of the rotten top several feet of the existing creosote-treated timber piles above the timber wale location. This local demolition will take place above mean higher high water (MHHW). In addition, there may be localized notching of the bulkhead wall to accommodate the installation of the new tie-back ground anchors.

Approximately twelve (12) 12-inch diameter creosote treated timber piles and three (3) 12-inch diameter steel pipe piles that are located directly waterward of the existing timber bulkhead will be removed. These piles will be removed by either pulling them out directly using a chain or with a vibratory hammer depending on the Contractors preferred means and methods. The piles will be cut at the mudline if complete removal is not possible or the piles break. Upland demolition will consist of removal of the existing pavement and surface features. (Sheets 1 through 4)

Post-localized demolition, a new steel sheet pile bulkhead wall will be installed in front of the existing timber bulkhead. The bulkhead wall will not increase in length. The top elevation of the new bulkhead wall will be approximately three feet (ft) higher than the existing top of bulkhead to accommodate for high tides and sea level rise. It is anticipated that the steel sheet piles will be driven using a vibratory hammer. The option for impact proofing will also be included in the event that difficult driving conditions are encountered. The sheet pile wall will be approximately 225 linear feet (lf) and the sheet pile tip elevation will be approximately -40 to -50 feet MLLW. The top of the bulkhead pile cap will be set at an elevation of +14.0 feet MLLW. (Sheet 5 through 7)

The replacement bulkhead will include approximately 20 grouted ground anchors extending from the cast-in-place concrete pile caps down to the bedrock layer below the site. The grouted ground anchors will be either high strength steel strands or steel bars that are connected to the pile caps and driven at an approximately 1:1 angle to elevation -70 to -80 feet MLLW. The anchor tie backs will be grouted for a minimum of 25 feet into the underlying siltstone unit (top elevation approximately -57 feet MLLW). The ground anchors will be installed using either land-based equipment or from a barge depending on the Contractors preferred means and methods. The anchor holes will be drilled with a full-length casing. All drill spoils will be contained and prevented from entering marine waters. The anchor holes will be filled with grout using a tremie tube and then pressure grouted after the anchor tendons are installed. The anchors will be tensioned after all anchors have been installed and have reached the required grout and concrete strengths. The cast-in-place concrete pile

cap will then be completed. The pile caps will be cast-in place in the dry and uncured concrete will not be allowed to come in contact with waters of Baker Bay. (Sheet 7)

The sheet pile placement in front of the existing bulkhead will result in an approximately 2- to 5-foot space between the existing bulkhead and the new bulkhead sheet piles (Sheet 7). The area between the existing structure and the new bulkhead will be backfilled with drainage rock to allow for water to flow in and out of the soil supporting the Safe Coast Seafood facility. It is anticipated that approximately 450 cubic yards of free draining drainage rock backfill will be placed between the existing timber bulkhead and the replacement bulkhead (Table 1). The drainage rock will likely be placed using a clamshell operating from a barge. The clean drainage rock will be obtained from a commercial supplier. This placement will minimize the risk of slope failure that removing the existing structure would exacerbate. The drainage rock placement in the space between the existing and replacement bulkhead structures will minimize additional pressure from trapped groundwater behind the new bulkhead.

The new bulkhead (including drain rock installation area) and pile cap will have a footprint of approximately 1,400 square feet (sf) in marine waters (measured below the high tide line [HTL]) (Table 1). Of the overall footprint in marine waters, 1,000 sf will come into contact with the bottom substrate and have benthic habitat impacts.

#### Slope Protection

Approximately 350 sf (approximately 14 cubic yards [cy]) of concrete debris shore protection from the shoreline to the south of the bulkhead wall will be removed to accommodate the bulkhead wall replacement (Sheet 4 and 5, Table 1). Approximately sixteen (16) 12-inch diameter creosote timber piles associated with the existing timber retaining wall will be removed from the shoreline along the north end of the bulkhead wall. The existing creosote-treated timber retaining wall to the north of the bulkhead will be completely removed. The associated piles will be removed by either pulling them out using a chain or with a vibratory hammer depending on the Contractors preferred means and methods. The piles will be cut at the mudline if complete removal is not possible or the piles break during removal.

The small area of concrete rubble shore protection (350 sf, 14 cy) that will be removed from the south portion of the Project to accommodate installation of the new bulkhead will be replaced with approximately 35 cy of riprap in the same 350 sf area to maintain slope stability (Table 1). Of the 35 cy placed along the shoreline, 30 cy will be placed below the HTL (Table 1).

One hundred ninety-eight (198) cy (2,200 sf) of riprap, 172 cy (1850 sf) of which occurs below the HTL, will be placed on the embankment to the north of the new bulkhead to replace the existing creosote treated timber retaining wall and provide shore protection (Sheets 4 through 6, Sheet 8, Table 1). The rip rap slope protection will serve as grade transitions from the vertical bulkhead structure to the adjacent sloped shorelines to the north and south. A layer of fish mix rock will be placed over the riprap located below HTL to provide fish habitat. The embankment height will be increased to an elevation of approximately +14.0 feet, MLLW between the bulkhead and the marina access pier to the east. The purpose of the increased embankment height is to mitigate the effects of sea level rise.

#### Paving and Grading

Upland paving and grading will be completed behind the bulkhead wall to mitigate sea level rise following construction of the new bulkhead (Sheet 6). The driveway will be regraded and repaved with structural fill base course and asphalt pavement. This will consist of 8,000 sf of asphalt repaving. The upland area will be re-graded and re-paved to maintain positive drainage away from the Safe Coast Seafoods buildings. The

bulkhead will be outfitted with scuppers to allow rainwater to flow into the marina rather than pooling along the driveway or draining toward the Safe Coast facilities.

#### Fill Impacts, Derelict Structure and Creosote Removal

Approximately twenty eight (28) creosote-treated timber piles (12-inch diameter) and three (3) steel piles (12-inch diameter) will be removed adjacent to the existing bulkhead and as part of the north shoreline rehabilitation. In addition, the Port proposes to remove approximately thirty-six (36) 12-inch diameter derelict creosote-treated timber piles and 3 creosote-treated timber pile caps as mitigation for the fill and benthic habitat impacts created by the placement of the new bulkhead wall in front of the existing structure. This will result in approximately 64 total creosote-treated timber piles and 3 steel piles being removed along with approximately 70 lf of creosote treated timber retaining wall, and 40 lf of creosote treated timber pile caps. (Sheets 3 and 4).

A derelict timber structure approximately 2,510 sf in area will be removed as part of the mitigation for Project impacts. This will result in decreasing overwater coverage in the south portion of the marina at the location of the existing derelict timber structure. (Sheet 9)

Approximately 1,400 sf of fill below the HTL will result from the placement of the new bulkhead and drainage rock backfill (Table 1). Of the overall footprint, 1,000 sf will come into contact with the bottom substrate and result in benthic habitat impacts.

North shoreline riprap placement will occur in a 2,200 sf area, 1,850 sf of which occurs below the HTL and would result in benthic habitat impacts (Table 1). Approximately 750 sf of this will occur waterward of the existing retaining wall. A 6-inch layer of fish mix gravel will be placed below HTL to provide beach nourishment and improved habitat for fish passing through the marina.

South shoreline riprap placement will not result in any additional benthic habitat impacts (Table 1). The removal of approximately sixty-four (64) 12-inch creosote-treated timber piles, three (3) 12-inch steel piles, 70 lf of timber retaining wall, and 40 lf of derelict creosote-treated timber pile caps, will restore approximately 165 sf of benthic habitat (Table 1) and remove approximately 34 tons of creosote from the marine environment.

**Table 1. Approximate Fill Impacts**

Activity	Fill below HTL (sf)	Fill below HTL (cy)	Fill above HTL (sf)	Fill above HTL (cy)
<i>Bulkhead wall and shoreline protection installation</i>				
Sheetpile installation	400 sf	80 cy	0 sf	0 cy
Bulkhead drainage rock placement	1,000 sf	450 cy	0 sf	0 cy
Rip-rap shore protection and Fish Mix placement (north shoreline)	1,850 sf	172 cy	350 sf	26 cy
Concrete rubble removal (south shoreline)	-350 sf	-14 cy	-50 sf	-2 cy
Rip-rap replacement (south shoreline)	350 sf	30 cy	50 sf	5 cy
<i>Subtotal</i>	<i>3,250 sf</i>	<i>718 cy</i>	<i>350 sf</i>	<i>29 cy</i>
<i>Structure removal</i>				
Pile removal adjacent to existing bulkhead	-12 sf	-6 cy	0 sf	0 cy
North shoreline- retaining wall removal	-85 sf	-12 cy	0 sf	0 cy
Derelict pile/timber removal	-68 sf	-12 cy	0 sf	0 cy
Derelict Timber Structure/Debris Removal -South Marina	-2,510 sf	-350 cy	0 sf	0 cy
<i>Subtotal</i>	<i>-2,675 sf</i>	<i>-380 cy</i>	<i>0 sf</i>	<i>0 cy</i>
<i>Creosote removal from the Environment</i>	<i>34 tons</i>			

<b>6f.</b> What are the anticipated start and end dates for Project construction? (Month/Year) <a href="#">[help]</a> <ul style="list-style-type: none"> <li>If the Project will be constructed in phases or stages, use <a href="#">JARPA Attachment D</a> to list the start and end dates of each phase or stage.</li> </ul>
Start Date: <u>November 2024</u> End Date: <u>February 2025</u> <input type="checkbox"/> See JARPA Attachment D
<b>6g.</b> Fair market value of the Project, including materials, labor, machine rentals, etc. <a href="#">[help]</a>
\$3.5 million
<b>6h.</b> Will any portion of the Project receive federal funding? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>If <b>yes</b>, list each agency providing funds.</li> </ul>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know    MARAD PIDP grant funding

## 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.) [\[help\]](#)

No wetlands within the Project area (GeoEngineers 2022). This section is not applicable

<b>7a.</b> Describe how the Project has been designed to avoid and minimize adverse impacts to wetlands. <a href="#">[help]</a>
<input type="checkbox"/> Not applicable
<b>7b.</b> Will the Project impact wetlands? <a href="#">[help]</a>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
<b>7c.</b> Will the Project impact wetland buffers? <a href="#">[help]</a>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
<b>7d.</b> Has a wetland delineation report been prepared? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>If <b>Yes</b>, submit the report, including data sheets, with the JARPA package.</li> </ul>
<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>7e.</b> Have the wetlands been rated using the Western Washington or Eastern Washington Wetland Rating System? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>If <b>Yes</b>, submit the wetland rating forms and figures with the JARPA package.</li> </ul>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
<b>7f.</b> Have you prepared a mitigation plan to compensate for any adverse impacts to wetlands? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>If <b>Yes</b>, submit the plan with the JARPA package and answer 7g.</li> <li>If <b>No, or Not applicable</b>, explain below why a mitigation plan should not be required.</li> </ul>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
<b>7g.</b> Summarize what the mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan. <a href="#">[help]</a>



**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 <sup>1</sup>	Wetland type and rating category <sup>2</sup>	Impact area (sq. ft. or Acres)	Duration of impact <sup>3</sup>	Proposed mitigation type <sup>4</sup>	Wetland mitigation area (sq. ft. or acres)

<sup>1</sup> 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.

<sup>2</sup> Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package.

<sup>3</sup> Indicate the days, months or years the wetland will be measurably impacted by the activity. Enter "permanent" if applicable.

<sup>4</sup> 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. [\[help\]](#)

**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. [\[help\]](#)

## 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

The Project will take place in the water and along the shoreline in the west portion of the Port of Ilwaco Marina which is located along the northeast shore of Baker Bay in Ilwaco, Washington.

The paving and regrading portions of the Project will all occur at the top of the shoreline in the dry. The bulkhead sheetpile wall caps will be cast in place and uncured concrete will not be allowed to come into contact with surface waters. The shoreline rip rap replacement will be placed in the dry to the extent practicable. The bulkhead demolition, placement of the new bulkhead, and appurtenances will be accomplished using equipment operated from a barge(s).

The following best management practices (BMP's) will be implemented for this Project:

#### General BMPs

1. Containment booms will be used to surround in-water work areas or separate embankment work from surface water. The booms will serve to contain and collect any oily material and/or floating debris potentially released during construction. Oil-absorbent materials will be employed immediately if visible product is observed. Accumulated debris will be collected daily and disposed of at a permitted upland site approved by the owner.
2. Hydraulic water jets will not be used to install piles.
3. Water quality standards and procedures that limit the impact of pollutants will be observed.
4. Land-based staging areas for activities, such as storage of machinery, equipment, materials, and stockpiled soils will be established landward of the top of bank. A silt fence will be installed around the perimeter of the upland work areas and locations where machinery, materials, and stockpiled soils are situated. Any temporary stockpiles will be covered and bermed when not in use.
5. All permit requirements will be followed during demolition and construction activities.

#### In, Over, and Near Water BMPs

1. In-water construction activities will comply with the in-water construction window (anticipated to be November 1 through February 28)
2. Typical construction BMPs for working in, over, and near water will be applied, including activities such as the following.
  - a. Checking equipment for leaks and other problems that could result in the discharge of petroleum-based products or other material into waters of Baker Bay.
  - b. Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including
    - i. Containment and cleanup efforts will begin immediately upon discovery of the spill and will be completed in an expeditious manner in accordance with all local, state, and federal regulations. Cleanup will include proper disposal of any spilled material and used cleanup material.
    - ii. The cause of the spill will be ascertained, and appropriate actions taken to prevent further incidents or environmental damage.

iii. Spills will be reported to Ecology Southwest Regional Spill Response Office pursuant to WAC 173-303-145 and WAC 173-182-260.

3. Work barges will not be allowed to ground out.
4. Excess or waste materials will not be disposed of or abandoned waterward of ordinary high water or allowed to enter waters of the state. Waste materials will be disposed of in an appropriate manner consistent with applicable local, state, and federal regulations.
5. Demolition and construction materials will not be stored where wave action or upland runoff can cause materials to enter surface waters.
6. Oil-absorbent materials will be present on site for use in the event of a spill or if any oil product is observed in the water.

#### Pile Removal and Installation BMPs

Pile removal BMPs will be applied, including activities such as the following:

1. Removal of creosote-treated piles will be conducted consistent with the BMPs established in EPA Region 10, Best Management Practices for Piling Removal and Placement in Washington State, dated February 18, 2016 (EPA 2016).
2. While creosote-treated piles are being removed, a containment boom will surround the work area to contain and collect any floating debris and sheen. Debris will be retrieved and disposed of properly.
3. The piles will be dislodged with a vibratory hammer when possible and will not be intentionally broken by twisting or bending.
4. The piles will be removed in a single, slow, and continuous motion in order to minimize sediment disturbance and turbidity in the water column.
5. If a pile breaks above or below the mudline, it will be cut or pushed in the sediment consistent with agency-approved BMPs (USACE, DNR, Ecology and EPA).
6. Removed piles, stubs, and associated sediments (if any) will be contained on a barge. If piles are placed directly on the barge and not in a container, the storage area will consist of a row of hay or straw bales, filter fabric, or similar material placed around the perimeter of the barge.
7. All creosote-treated material, pile stubs, and associated sediments (if any) will be disposed of by the contractor in a landfill approved to accept those types of materials.
8. Steel piling will be installed with a vibratory hammer when possible. Impact hammering will start with light tapping, then increase to full force gradually.
9. A bubble curtain and one or more other noise attenuation methods will be used during impact installation or proofing of all steel piling.
10. Pile-driving will commence with a soft start procedure (ramping up) in order to alert nearby wildlife, allowing them to move out of the area prior to construction activities. For impact pile driving, contractors will be required to provide an initial set of strikes from the hammer at reduced percent energy, each

strike followed by no less than a 30-second waiting period. This procedure will be conducted a total of two times before impact pile driving begins.

11. Use of a wood cushion block or other sound-reducing method shall be implemented if impact pile driving is to be employed. The use of wood cushion blocks during construction will result in a reduction in underwater noise.
12. To avoid impacts to marine mammals, an exclusion zone will be monitored during and immediately before pile driving activities. The exclusion zone will include the entire marina area shoreward of the breakwaters. Although ESA-listed species, including Southern Resident killer whales and humpback whales are not anticipated to occur within the marina where noise impacts could occur, this avoidance measure would provide further protections against potential noise impacts to these species.
13. During pile driving activities a qualified observer will monitor the exclusion zone, if any marine mammals are observed within the exclusion zone, all in-water Project activities shall cease. Project activities shall not commence or continue until the marine mammal has either been observed having left the exclusion zone, or at least 15 minutes have passed since the last sighting whereby it is assumed the marine mammal has voluntarily left the exclusion zone.

#### Overwater Concrete Placement Minimization and Concrete Placement BMPs

The Project has been designed to minimize the placement of concrete overwater. Where possible, pre-cast concrete elements will be used. On-site concrete placement, where needed, will follow appropriate BMPs, including the following:

1. Wet concrete will not contact surface waters.
2. Forms for any concrete structure will be constructed to prevent leaching of wet concrete.
3. Concrete process water will not be allowed to enter the water. Any process water/contact water will be routed to a contained area for treatment and will be disposed of at an upland location.

**8b.** Will your Project impact a waterbody or the area around a waterbody? [\[help\]](#)

☒ Yes   ☐ No

**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

The Project site has limited habitat function and value in its current condition due to the site's location in the busy Port of Ilwaco marina and its use as a temporary berth area by Safe Coast Seafoods. Additionally, the marina, including the Project site, is periodically dredged (under a separate permit) to maintain draft for the vessels using the marina and there are derelict creosote-treated timber piles and structures remaining in the slip adjacent to the existing bulkhead and a creosote-treated timber revetment at the head of the north slope (toe of slope). As such, the site should be considered disturbed in its existing condition.

The proposed Project will have localized impacts that will be minimized to the extent practicable with the BMPs summarized in 8a. Installation of the bulkhead wall, drainage rock, and rip rap will result in approximately 3,250 sf and 718 cy of fill in marine waters (measured below the HTL) (See Table under 8e). Approximately 3,250 sf of the fill in marine waters would come into contact with the bottom substrate and result in benthic habitat impacts. Impacts to the marine environment have been limited to the extent practicable through avoidance, minimization and reduction of impacts and the remaining impacts are mitigated through compensatory mitigation included in the Project action.

#### **Avoidance and Minimization**

The Project proposes to avoid and minimize impacts to habitat to the extent practicable by removing targeted piles (including creosote treated timber) and existing bulkhead features to accommodate placement of the bulkhead as close as possible to the existing bulkhead, minimizing new over water coverage, drainage rock fill placement volume, and benthic impacts to the extent practicable.

The BMPs summarized in 8a will be implemented during Project demolition and construction activities to avoid and minimize environmental impacts from the Project work. All permit requirements will be followed.

#### **Compensatory Mitigation**

Derelict creosote piles and structures present in the adjacent slip will be removed, restoring 165 sf of benthic habitat and removing approximately 34 tons of creosote from the marine environment which will improve the habitat conditions of the marina and lift its value from current conditions. The creosote treated timber revetment and debris present at the head of the adjacent slip will be removed and riprap will be placed as shore protection associated with raising the elevation of the top of the slope as part of sea level rise resilience. The north slip riprap area will be surfaced with fish mix rock to improve the habitat over the area of new riprap placed from the HTL down.

Additionally, floating timber debris will be removed from the south portion of the marina as part of the Project mitigation. This will remove approximately 2,510 sf of overwater coverage currently present in that portion of the marina.

Fill and benthic habitat impacts are anticipated to be offset by the removal of steel piles, and creosote-treated wood (piles, structures, and revetment), and floating debris from the marine environment and placement of a layer of fish mix over the riprap shore protection to be placed at the head of the slip as beach nourishment. The removal of approximately sixty-four (64) 12-inch creosote timber piles, three (3) 12-inch steel piles, 70 lf of timber retaining wall, 2,510 sf of floating timber debris and 40 lf of derelict timber pile caps, will restore approximately 2,675 sf of benthic habitat and remove approximately = 34 tons of creosote from the marine

environment (Table 8e). The removal of creosote-treated wood is anticipated to provide both water quality and benthic habitat improvements. A layer of fish mix rock/gravel (approximately 34 cy) will be placed over the portion of riprap placed below the HTL at the head of the slip to improve habitat and provide beach nourishment to that portion of shoreline. A Mitigation Sequencing and No Net Loss Narrative are included in this permit submittal.

**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. [\[help\]](#)

See response to 8c. The Project site should be considered disturbed habitat in its present state as it is periodically dredged (under a separate permit) for marina maintenance and creosote treated timber piles and features are present in the slip adjacent to the bulkhead and the head of the slip. Additional mitigation will be provided with removal of the derelict floats and timber from the south portion of the marina and placement of a layer of fish mix over the slope stabilization riprap at the head of the bulkhead slip. The proposed mitigation will lift the habitat value and function at the Project site through removal of creosote and overwater coverage from the marine environment and placement of fish mix along the slope at the head of the slip as beach nourishment.

The removal of creosote-treated wood would result in water quality and benthic habitat improvements that would be anticipated to offset potential adverse Project impacts. No additional mitigation is anticipated to be required.

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

Activity (clear, dredge, fill, pile drive, etc.)	Waterbody name <sup>1</sup>	Impact location <sup>2</sup>	Duration of impact <sup>3</sup>	Amount of material (cubic yards) to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
Creosote-treated timber pile removal/demolition for bulkhead replacement	Ilwaco Marina/Baker Bay	In-water, benthic habitat	Permanent	-6	-12
Creosote-treated timber retaining wall removal	Ilwaco Marina/Baker Bay	In-water, benthic habitat	Permanent	-12	-85
Derelict creosote treated timber pile/timber removal	Ilwaco Marina/Baker Bay	In-water, benthic habitat	Permanent	-12	-68
Floating timber debris removal	Ilwaco Marina/Baker Bay	In-water, overwater coverage	Permanent	-350	-2,510
Sheetpile installation	Ilwaco Marina/Baker Bay	In-water, benthic habitat	Permanent	80	400
Drainage Rock (behind bulkhead)			Permanent	450	1,00
Rip-rap replacement & fish mix (north shoreline)	Ilwaco Marina/Baker Bay	in-water, benthic habitat	Permanent	172	1,850
Rip-rap replacement (south shoreline)	Ilwaco Marina/Baker Bay	In-water, benthic habitat	Permanent	30	350
Rubble/rip-rap removal (south shoreline)			Permanent	-14	-350

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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. [\[help\]](#)

450 cy of clean structural fill and base coarse material will be used to repave and regrade the driveway adjacent to the bulkhead will be obtained from a commercial supplier. All of the repaving/regrading work will be completed onshore of the wharf and will not come into contact with waters of the marina/Baker Bay.

The clean, free draining gravel backfill (450 cy) that would be placed in the space created between the new bulkhead sheet piles and the existing bulkhead will be obtained from a commercial supplier. Similarly, the angular rip rap material to replace the slope protection to the north and south of the bulkhead will be obtained from a commercial supplier.

Approximately 172 cy of rip rap slope protection will replace the creosote treated timber revetment at the head of the slip and clean fish mix sand and gravel would be placed below HTL in an approximately 6-inch layer over the riprap. This material will be obtained from a commercial supplier.

**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. [\[help\]](#)

-NA-

## 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
USACE	Brad Johnson	(503) 808-4383	September 7, 2022
USACE	Kate Mott	(360)480-6921	November 10, 2022
USACE	Kinsey Friesen	(503)808-4378	May 5 2023
MARAD	Kristine Gilson	(202) 366-1939	June 7, 2023
WDFW	Lauren Bauernschmidt	(360) 480-2558	June 8, 2023
EPA	Sarah Burgess		January 23, 2023
Ecology	Zach Meyer	(360)481-9885	April 13, 2023
City of Ilwaco	Holly Beller	(360) 642-3145	April 14, 2023
USFWS	Mitch Dennis	(564)-669-0716	May 23, 2023
NOAA	Tom Hausman		March 15, 2023

**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>.

<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The Ilwaco Marina waters (Baker Bay) are listed as a Category 5 Water for Fecal Coliform.
<b>9c.</b> What U.S. Geological Survey Hydrological Unit Code (HUC) is the Project in? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>Go to <a href="http://cfpub.epa.gov/surf/locate/index.cfm">http://cfpub.epa.gov/surf/locate/index.cfm</a> to help identify the HUC.</li> </ul>
1708000605
<b>9d.</b> What Water Resource Inventory Area Number (WRIA #) is the Project in? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>Go to <a href="https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up">https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up</a> to find the WRIA #.</li> </ul>
24 - Willapa
<b>9e.</b> Will the in-water construction work comply with the State of Washington water quality standards for turbidity? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>Go to <a href="https://ecology.wa.gov/Water-Shorelines/Water-quality/Freshwater/Surface-water-quality-standards/Criteria">https://ecology.wa.gov/Water-Shorelines/Water-quality/Freshwater/Surface-water-quality-standards/Criteria</a> for the standards.</li> </ul>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable
<b>9f.</b> If the Project is within the jurisdiction of the Shoreline Management Act, what is the local shoreline environment designation? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>If you don't know, contact the local planning department.</li> <li>For more information, go to: <a href="https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Shoreline-laws-rules-and-cases">https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Shoreline-laws-rules-and-cases</a>.</li> </ul>
<input type="checkbox"/> Urban <input type="checkbox"/> Natural <input type="checkbox"/> Aquatic <input type="checkbox"/> Conservancy <input checked="" type="checkbox"/> Other: <u>High Intensity</u>
<b>9g.</b> What is the Washington Department of Natural Resources Water Type? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>Go to <a href="http://www.dnr.wa.gov/forest-practices-water-typing">http://www.dnr.wa.gov/forest-practices-water-typing</a> for the Forest Practices Water Typing System.</li> </ul>
<input checked="" type="checkbox"/> Shoreline <input type="checkbox"/> Fish <input type="checkbox"/> Non-Fish Perennial <input type="checkbox"/> Non-Fish Seasonal
<b>9h.</b> Will this Project be designed to meet the Washington Department of Ecology's most current stormwater manual? <a href="#">[help]</a> <ul style="list-style-type: none"> <li><b>If No</b>, provide the name of the manual your Project is designed to meet.</li> </ul>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Name of manual: _____
<b>9i.</b> Does the Project site have known contaminated sediment? <a href="#">[help]</a> <ul style="list-style-type: none"> <li><b>If Yes</b>, please describe below.</li> </ul>
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>9j.</b> If you know what the property was used for in the past, describe below. <a href="#">[help]</a>
<p>The Ilwaco marina area has been used for commercial and recreation fishing for more than 100 years. The Safe Coast "peninsula" was originally occupied by a dock that accommodated a train track for timber shipping. Safe Coast Seafood was previously operated by Jessie's Ilwaco Fish Company and historically occupied by a cannery.</p>
<b>9k.</b> Has a cultural resource (archaeological) survey been performed on the Project area? <a href="#">[help]</a> <ul style="list-style-type: none"> <li><b>If Yes</b>, attach it to your JARPA package.</li> </ul>



☒ 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. [\[help\]](#)**

The species in the table below have the potential to occur within the Project vicinity. 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 ESU	<i>Oncorhynchus tshawytscha</i>	NMFS	Threatened	Occurs in Project 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	<i>O. keta</i>	NMFS	Threatened	Occurs in Project Area
Coho Salmon	Lower Columbia River ESU	<i>O. kisutch</i>	NMFS	Threatened	Occurs in Project Area
Sockeye Salmon	Snake River ESU	<i>O. nerka</i>	NMFS	Endangered	Occurs in Project Area
Steelhead	Lower Columbia River DPS	<i>Onocorhynchus mykiss</i>	NMFS	Threatened	Occurs in Project 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	<i>Acipenser medirostris</i>	NMFS	Threatened	Occurs in Project Area
Eulachon	Southern DPS	<i>Thaleichthys pacificus</i>	NMFS	Threatened	Occurs in Project Area
Sea turtles	Leatherback	<i>Dermochelys coriacea</i>	NMFS	Endangered	None in Project Area
Killer Whale	Southern Resident	<i>Orcinus orca</i>	NMFS	Endangered	None in Project Area
Humpback Whale	Central America DPS	<i>Megaptera novaeangliae</i>	NMFS	Endangered	None in Project Area
	Mexico DPS			Threatened	None in Project Area
Bull Trout	N/A	<i>Salvelinus confluentus</i>	USFWS	Threatened	None in Project Area
Western Snowy Plover	N/A	<i>Charadrius nivosus nivosus</i>	USFWS	Threatened	None in Project Area
Marbled Murrelet	N/A	<i>Brachyramphus marmoratus</i>	USFWS	Threatened	None in Project Area
Streaked Horned Lark	N/A	<i>Eremophila alpestris strigata</i>	USFWS	Threatened	None in Project Area

**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. [\[help\]](#)**

The following Washington Department of Fish and Wildlife Priority Habitats and Species could occur in the Project vicinity.

- Coho Salmon (*Oncorhynchus kisutch*)
- Winter Steelhead (*Oncorhynchus mykiss*)
- Fall Chum (*Oncorhynchus keta*)
- Fall Chinook (*Oncorhynchus tshawytscha*)
- Marbled Murrelet (*Brachyramphus marmoratus*)
- Shorebird concentrations
- Waterfowl concentrations
- Wetlands
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Purple martin (*Progne subis*)

## 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](mailto: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). The expected decision date is \_\_\_\_\_.

☐ 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    ☐ Non-Federally Regulated Waters

**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: [d13-pf-d13bridges@uscg.mil](mailto:d13-pf-d13bridges@uscg.mil)

☐ Bridge Permit    ☐ Private Aids to Navigation (or other non-bridge permits)

**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. TS (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. TS (initial)

Tracy Lofstrom

Applicant Printed Name

Applicant Signature

Date

6/30/23

### 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.

Victoria England

Authorized Agent Printed Name

Authorized Agent Signature

July 3, 2023

Date

### 11c. Property Owner Signature (if not applicant) [\[help\]](#)

Not required if Project is on existing rights-of-way or easements (provide copy of easement with JARPA).

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

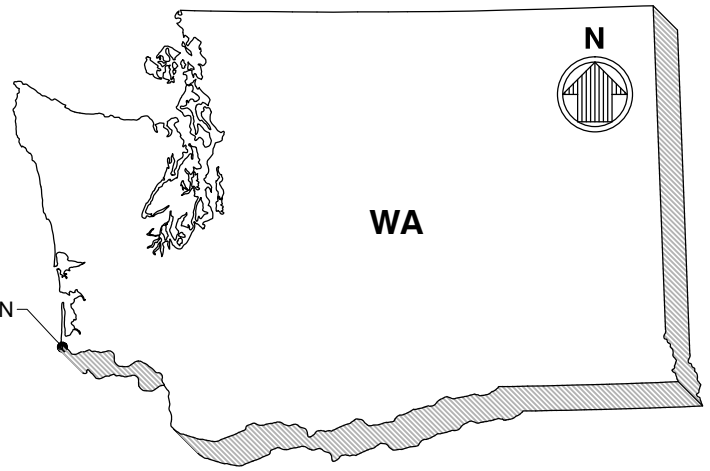
Date

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.

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ORIA-16-011 rev. 09/2018

TIDAL DATUM:  
 BASED ON NOAA TIDAL STATION NO.  
 9440581, IN US FEET. HTL/OHW DELINEATED  
 BY GEOENGINEERS DECEMBER, 2022.

LEVELS:  
 MHHW: +8.07'      MHW: +7.37'  
 MLW: 1.35'      MLLW: +0.00'  
 OHW (DELINEATED):    APPROX. +11.50'



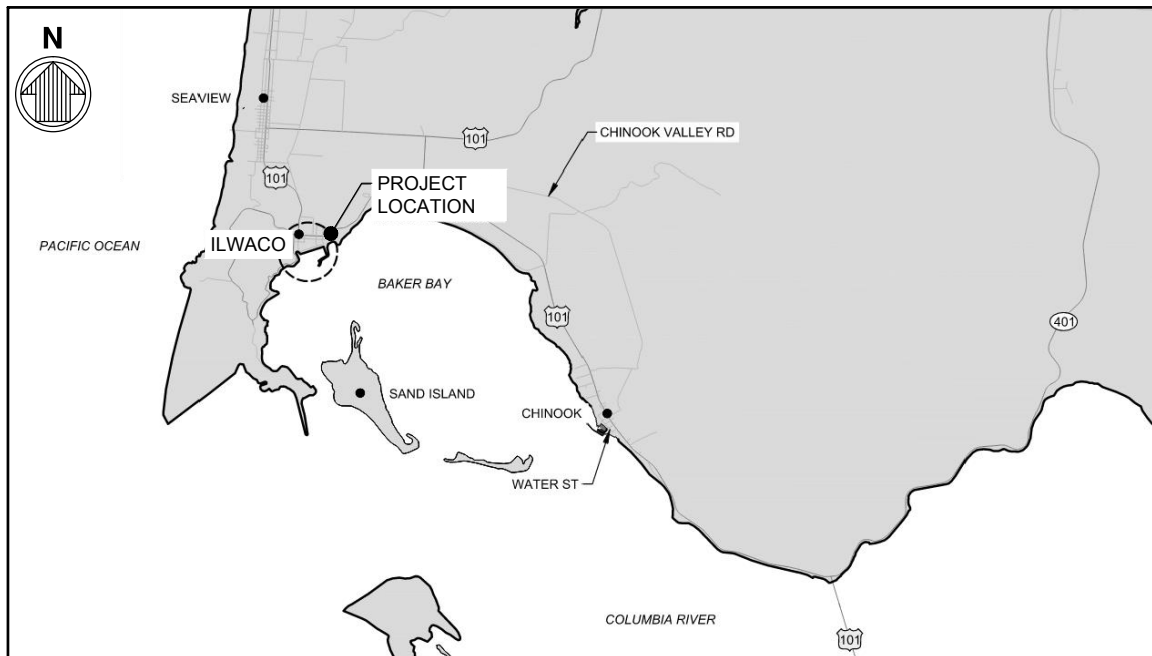
PROJECT LOCATION

DIRECTIONS TO SITE FROM SEATTLE:

- |  |          |
|--|----------|
| 1. I-5 S, US-101, WA-8 AND US-12 TO<br>WA-107 S/S MAIN ST IN MONTESANO | 98 MILES |
| 2. TAKE US-101 TO ILWACO   | 72 MILES |
| 3. ARRIVE AT PROJECT SITE  |          |

PROJECT ADDRESS:  
 PORT OF ILWACO  
 117 HOWERTON AVE SE  
 ILWACO, WA 98624

VICINITY MAP  
 SCALE: NTS



LOCATION MAP  
 SCALE: NTS

APPLICANT:  
 PORT OF ILWACO

ADJACENT PROPERTY OWNERS:  
 1) PORT OF ILWACO

LOCATION: PORT OF ILWACO  
 117 HOWERTON AVE SE  
 ILWACO, WA 98624

LAT/LONG: 46.30442 N, -124.03852 W

DATUM: MLLW  
SHEET: 1 OF 9 DATE: JUNE 2023

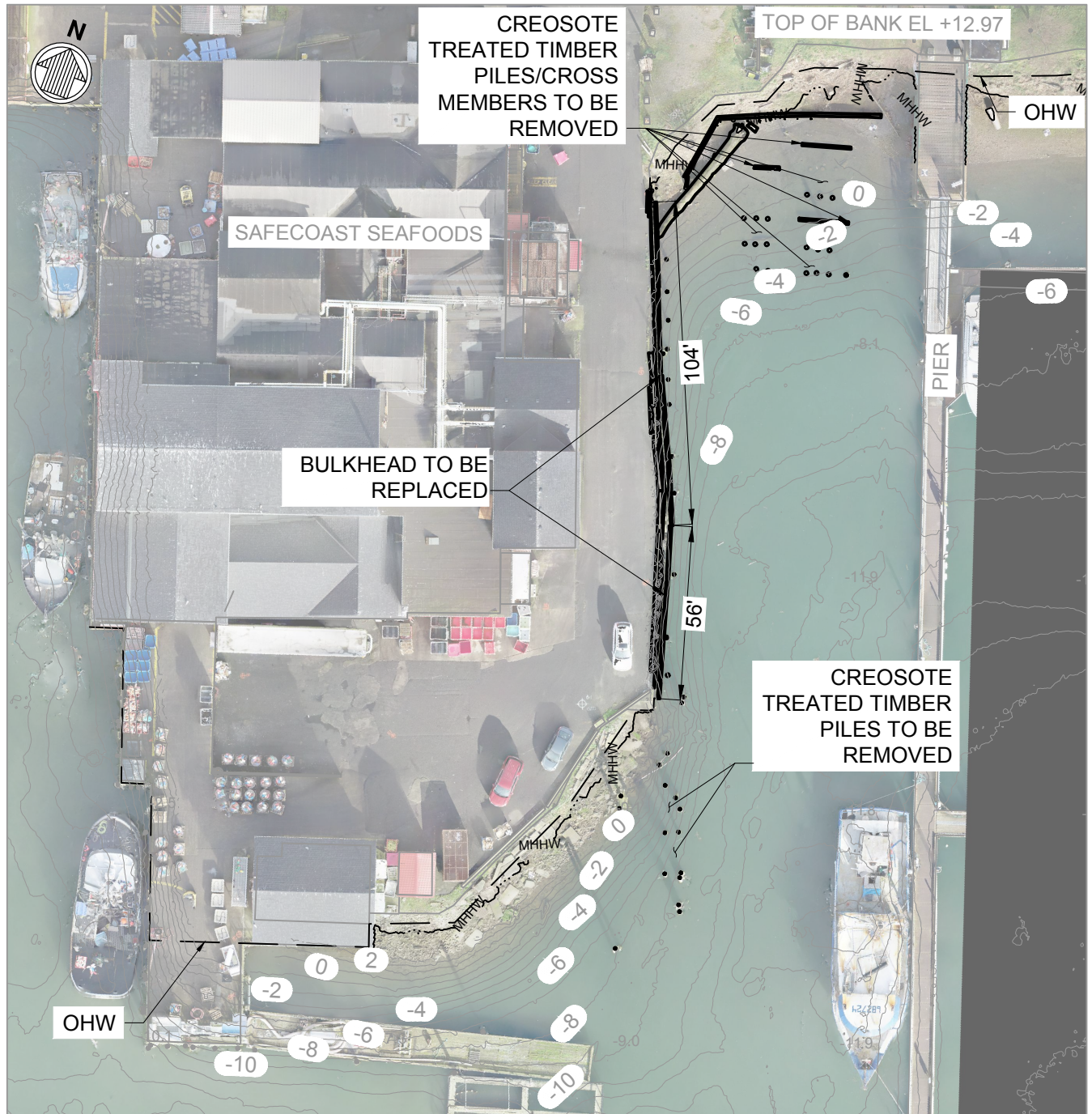
PROPOSED PROJECT: PORT OF ILWACO  
 EAST BULKHEAD RESILIENCE PROJECT

IN: BAKER BAY  
NEAR/AT: ILWACO  
COUNTY: PACIFIC STATE: WA  
SEC: 33/34 T: 10 N R: 11 W









# LEGEND

- PILES
- CREOSOTE-TREATED REVETMENT (TO BE REMOVED)
- CREOSOTE-TREATED LOG (TO BE REMOVED)
- BULKHEAD (TO BE REMOVED)



PLAN - EXISTING CONDITIONS  
SCALE: 1" = 50'

## LEVELS:

MHHW: +8.07'

MLW: 1.35'

OHW (DELINEATED):

MHW: +7.37'

MLLW: +0.00'

APPROX. +11.50'



SCALE: 1"=50'

APPLICANT:  
PORT OF ILWACO

ADJACENT PROPERTY OWNERS:  
1) PORT OF ILWACO

LOCATION: PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

LAT/LONG: 46.30442 N, -124.03852 W

DATUM: MLLW  
SHEET: 3 OF 9 DATE: JUNE 2023

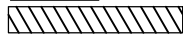
PROPOSED PROJECT: PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

IN: BAKER BAY  
NEAR/AT: ILWACO  
COUNTY: PACIFIC STATE: WA  
SEC: 33/34 T: 10 N R: 11 W





**LEGEND**



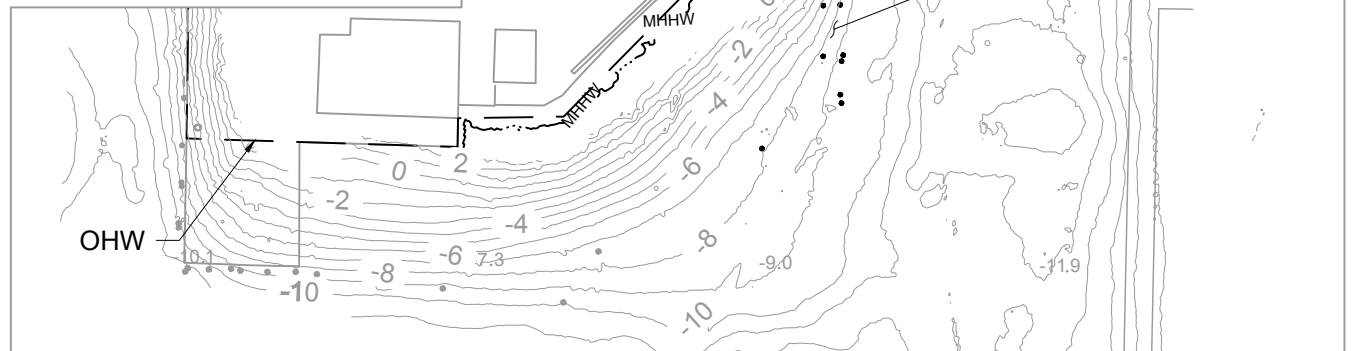
DEMOLITION AREAS



STEEL PILES

**DEMOLITION KEY NOTES**

- 1 REMOVE CREOSOTE-TREATED TIMBER REVETMENT AND LARGE LOG.
- 2 REMOVE TIMBER AND STEEL PILES ALONG TIMBER BULKHEAD
- 3 SELECTIVE DEMOLITION OF CREOSOTE-TREATED TIMBER BULKHEAD.
- 4 REMOVE PAVEMENT.
- 5 REMOVE CONCRETE CURB.
- 6 REMOVE FENCE.
- 7 SELECTIVE REMOVAL OF LARGE RUBBLE ON SHORELINE SLOPE TO ACCOMMODATE BULKHEAD INSTALLATION. SELECT RUBBLE MATERIAL WILL BE REPLACED WITH RIPRAP TO MAINTAIN SLOPE PROTECTION



**PLAN - DEMOLITION**  
SCALE: 1" = 50'

**LEVELS:**  
MHHW: +8.07'      MHW: +7.37'  
MLW: 1.35'      MLLW: +0.00'  
OHW (DELINEATED):      APPROX. +11.50'



SCALE: 1"=50'

**APPLICANT:**  
PORT OF ILWACO

**ADJACENT PROPERTY OWNERS:**  
1) PORT OF ILWACO

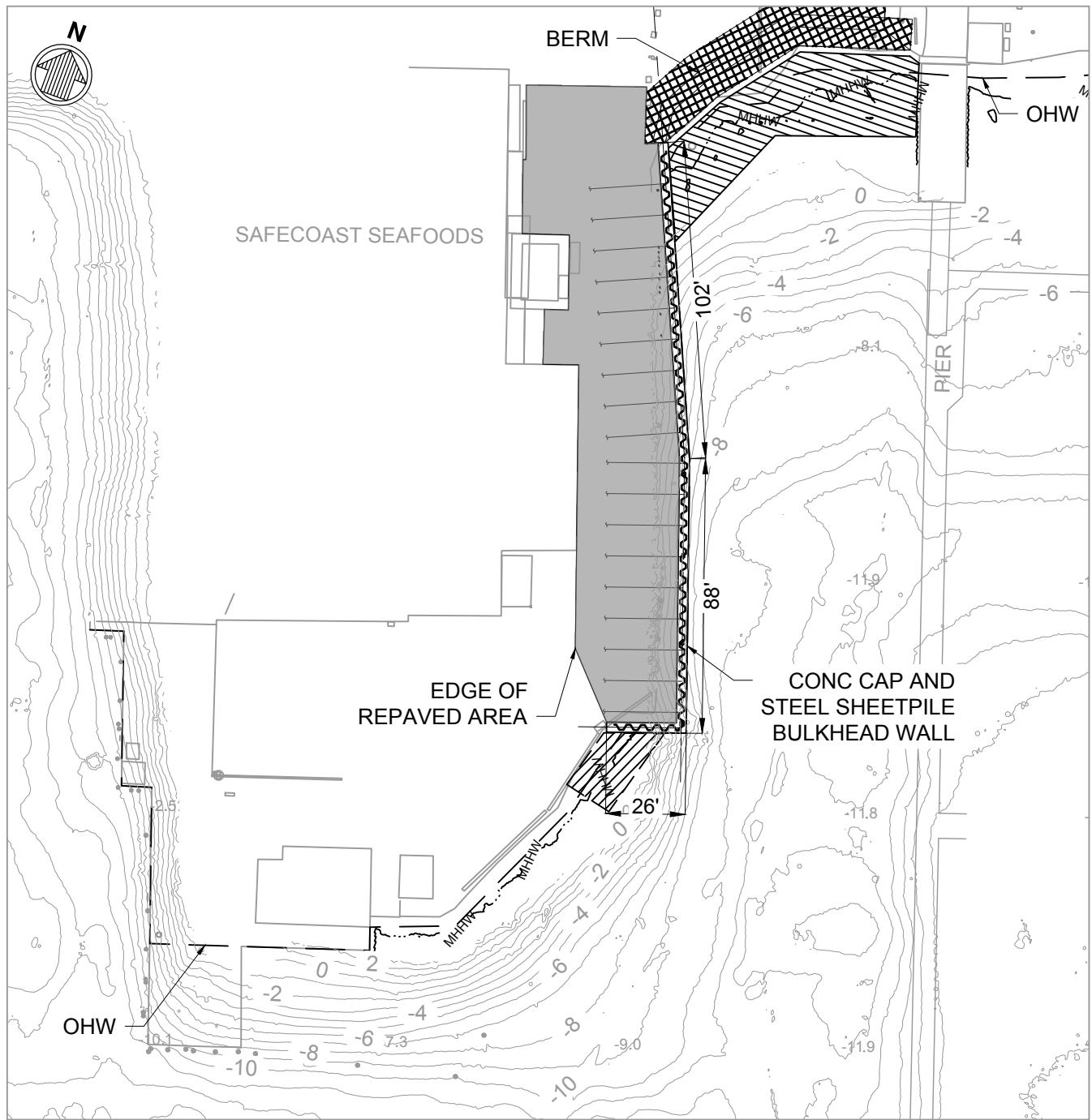
**LOCATION:** PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

**LAT/LONG:** 46.30442 N, -124.03852 W

**DATUM:** MLLW  
**SHEET:** 4 OF 9 **DATE:** JUNE 2023

**PROPOSED PROJECT:** PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

**IN:** BAKER BAY  
**NEAR/AT:** ILWACO  
**COUNTY:** PACIFIC **STATE:** WA  
**SEC:** 33/34 **T:** 10 N **R:** 11 W



#### LEGEND



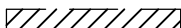
PAVING AREA LIMITS



BERM CONSTRUCTION



SLOPE PROTECTION



APPROXIMATE AREA OF SLOPE PROTECTION REPLACEMENT



TIEBACKS



PROPOSED BULKHEAD



PILES



PLAN - PROPOSED

SCALE: 1" = 50'

#### LEVELS:

MHHW: +8.07'

MLW: 1.35'

OHW (DELINEATED):

MHW: +7.37'

MLLW: +0.00'

APPROX. +11.50'

50' 0' 50' 100'

SCALE: 1"=50'

**APPLICANT:**  
PORT OF ILWACO

**ADJACENT PROPERTY OWNERS:**  
1) PORT OF ILWACO

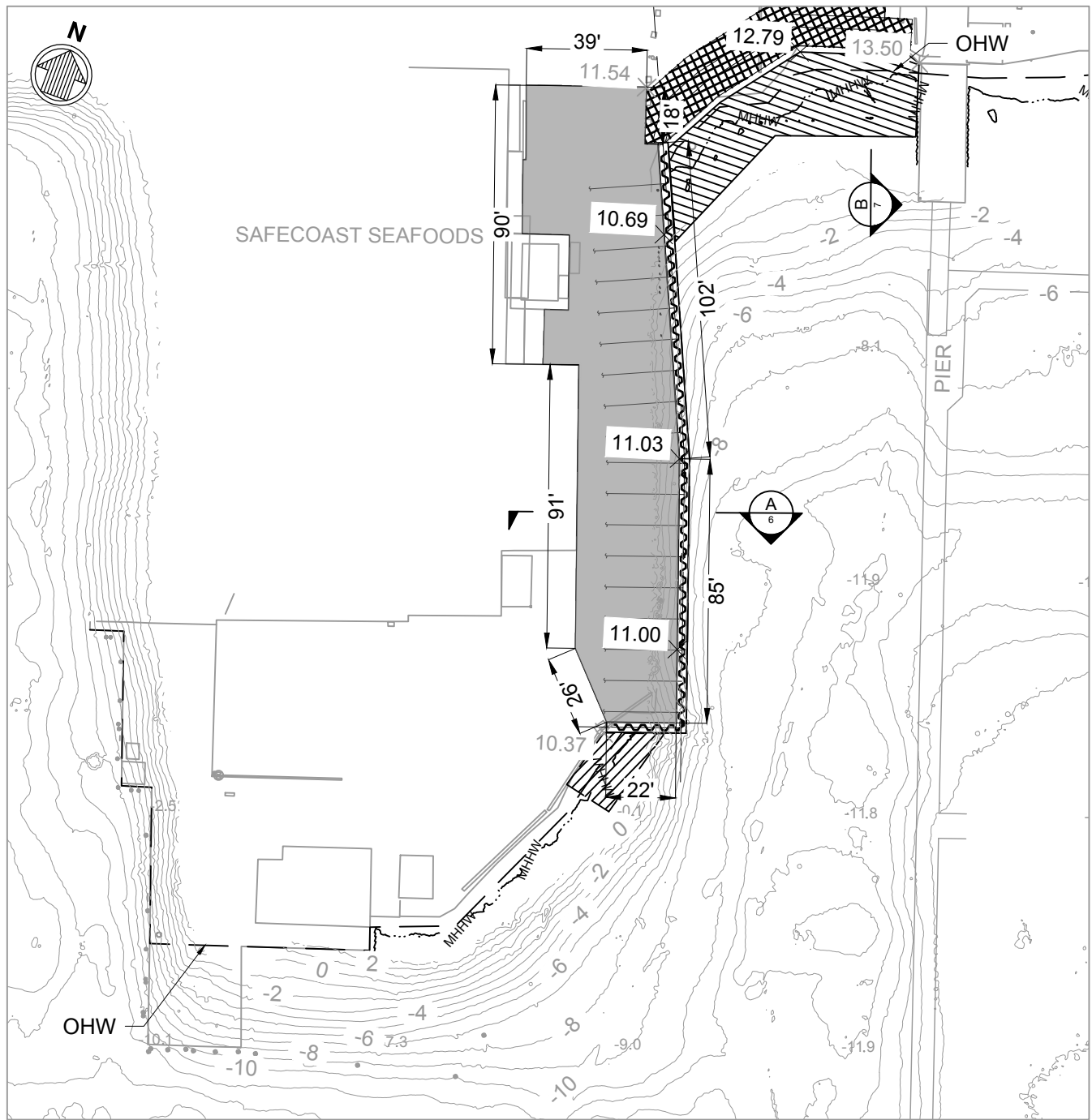
**LOCATION:** PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

**LAT/LONG:** 46.30442 N, -124.03852 W

**DATUM:** MLLW  
**SHEET:** 5 OF 9 **DATE:** JUNE 2023

**PROPOSED PROJECT:** PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

**IN:** BAKER BAY  
**NEAR/AT:** ILWACO  
**COUNTY:** PACIFIC **STATE:** WA  
**SEC:** 33/34 **T:** 10 N **R:** 11 W



# LEGEND

	PAVING AREA LIMITS
	BERM CONSTRUCTION
	SLOPE PROTECTION
	APPROXIMATE AREA OF SLOPE PROTECTION REPLACEMENT
	TIEBACKS
	PROPOSED BULKHEAD
	STEEL PILES
	EXISTING ELEVATION
	PROPOSED ELEVATION

PLAN - GRADING  
SCALE: 1" = 50'

LEVELS:	
MHHW: +8.07'	MHW: +7.37'
MLW: 1.35'	MLLW: +0.00'
OHW (DELINEATED):	APPROX. +11.50'

50' 0' 50' 100'  
SCALE: 1"=50'

APPLICANT:  
PORT OF ILWACO

ADJACENT PROPERTY OWNERS:  
1) PORT OF ILWACO

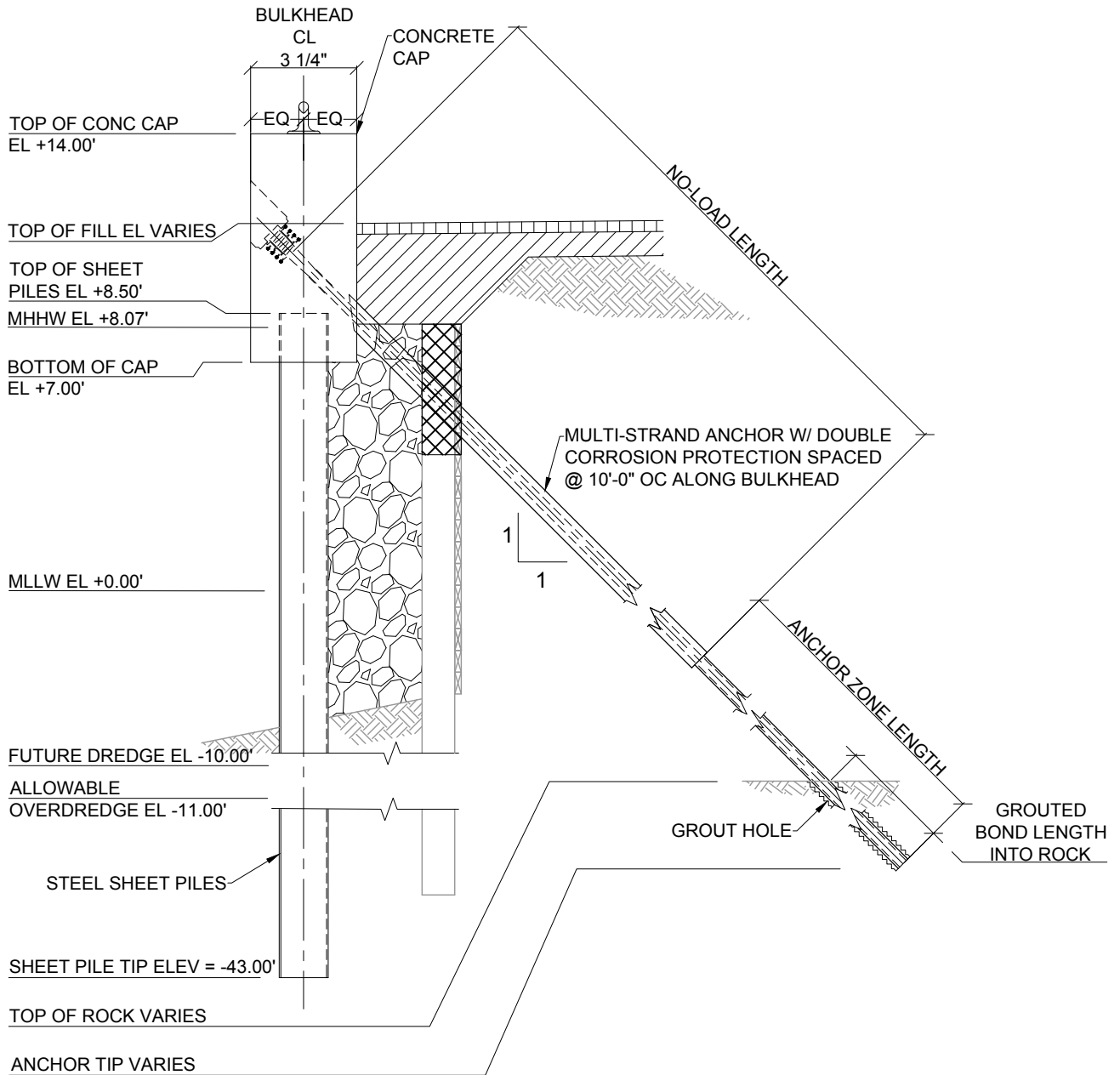
LOCATION: PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624




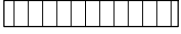
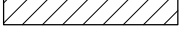

LAT/LONG: 46.30442 N, -124.03852 W

DATUM: MLLW  
SHEET: 6 OF 9 DATE: JUNE 2023

PROPOSED PROJECT: PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

IN: BAKER BAY  
NEAR/AT: ILWACO  
COUNTY: PACIFIC STATE: WA  
SEC: 33/34 T: 10 N R: 11 W

**LEGEND**

	CLEAT
	EXISTING CREOSOTE-TREATED TIMBER BULKHEAD, LAGGING TO REMAIN
	DRAIN ROCK BACKFILL
	ASPHALT PAVING
	STRUCTURAL FILL
	LOCAL DEMOLITION/REMOVAL OF CREOSOTE-TREATED TIMBER BULKHEAD FOR INSTALLATION OF GROUND ANCHORS

**A** SECTION - TYP BULKHEAD  
 6 SCALE: NTS

**APPLICANT:**  
PORT OF ILWACO

**ADJACENT PROPERTY OWNERS:**  
1) PORT OF ILWACO

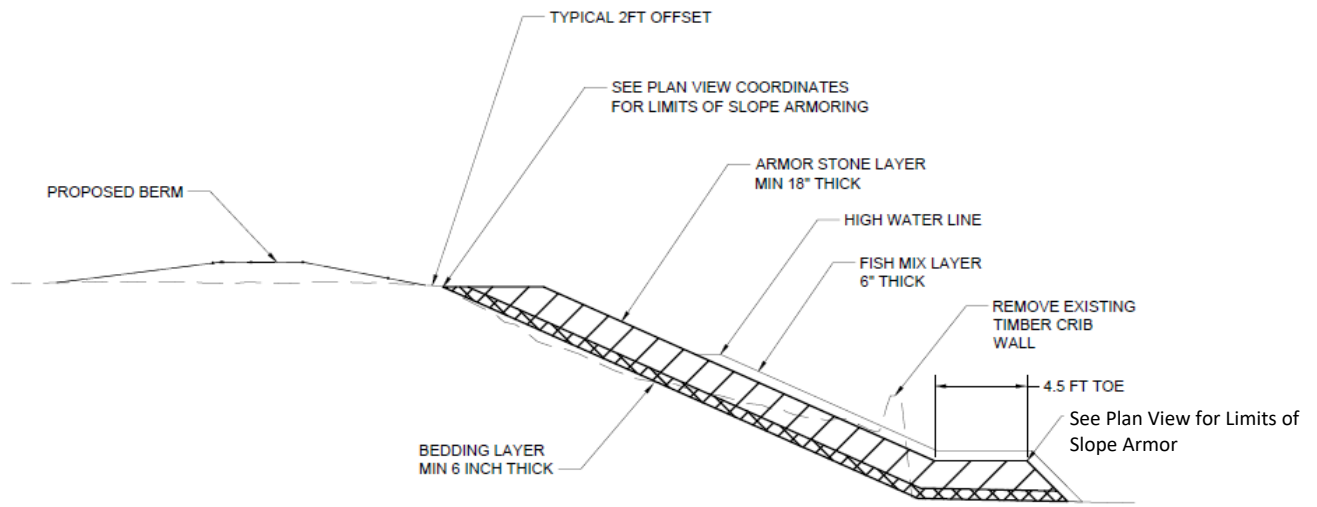
**LOCATION:** PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

**LAT/LONG:** 46.30442 N, -124.03852 W

**DATUM:** MLLW  
**SHEET:** 7 OF 9 **DATE:** JUNE 2023

**PROPOSED PROJECT:** PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

**IN:** BAKER BAY  
**NEAR/AT:** ILWACO  
**COUNTY:** PACIFIC **STATE:** WA  
**SEC:** 33/34 **T:** 10 N **R:** 11 W



**C1 SLOPE ARMOR SECTION 2**  
C-110 SCALE:

**APPLICANT:**  
PORT OF ILWACO

**ADJACENT PROPERTY OWNERS:**  
1) PORT OF ILWACO

**LOCATION:** PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

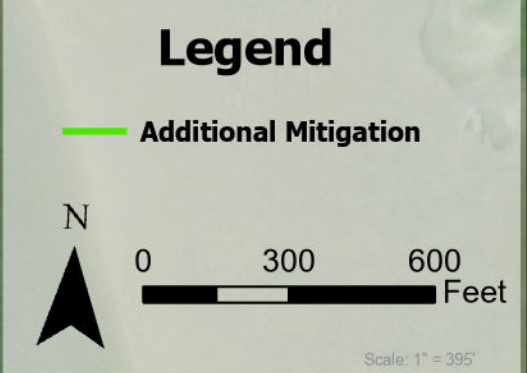
**LAT/LONG:** 46.30442 N, -124.03852 W

**DATUM:** MLLW  
**SHEET:** 8 OF 9 **DATE:** JUNE 2023

**PROPOSED PROJECT:** PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

**IN:** BAKER BAY  
**NEAR/AT:** ILWACO  
**COUNTY:** PACIFIC **STATE:** WA  
**SEC:** 33/34 **T:** 10 N **R:** 11 W





APPLICANT:  
PORT OF ILWACO

ADJACNET PROPERTY OWNERS:  
1) PORT OF ILWACO

LOCATION: PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA, 98624

LAT/LONG: 46.20442 N, -124.03852 W

DATUM: MLLW  
SHEET: 9 OF 9  
DATE: JUNE, 2023

PROPOSED: PORT OF ILWACO EAST BULKHEAD  
RESILIENCE PROJECT

IN: BAKER BAY  
NEAR/AT: PORT OF ILWACO  
COUNTY: PACIFIC  
SEC: 33/34 T: 10 N

STATE: WA  
R: 11 W



**WASHINGTON STATE**  
**Joint Aquatic Resources Permit**  
**Application (JARPA)** [\[help\]](#)



US Army Corps  
of Engineers  
Seattle District

AGENCY USE ONLY

Date received: \_\_\_\_\_; ☐ Town  
☐ Application Fee Received; ☐ Fee N/A  
☐ New Application; ☐ Renewal Application  
Type/Prefix #: \_\_\_\_\_; NaturE Use Code: \_\_\_\_\_  
LM Initials & BP#: \_\_\_\_\_  
RE Assets Finance BP#: \_\_\_\_\_  
New Application Number: \_\_\_\_\_  
Trust(s): \_\_\_\_\_; County: \_\_\_\_\_  
AQR Plate #(s): \_\_\_\_\_  
Gov Lot #(s): \_\_\_\_\_  
Tax Parcel #(s): \_\_\_\_\_

**Attachment E:**  
**Aquatic Use Authorization on**  
**Department of Natural Resources**  
**(DNR)-managed aquatic lands** [\[help\]](#)

Complete this attachment and submit it with the completed JARPA form only if you are applying for an Aquatic Use Authorization with DNR. Call (360) 902-1100 or visit <http://www.dnr.wa.gov/programs-and-services/aquatics/leasing-and-land-transactions> for more information.

- DNR recommends you discuss your proposal with a DNR land manager before applying for regulatory permits. Contact your regional land manager for more information on potential permit and survey requirements. You can find your regional land manager by calling (360) 902-1100 or going to <http://www.dnr.wa.gov/programs-and-services/aquatics/aquatic-districts-and-land-managers-map>. [\[help\]](#)
- The applicant may not begin work on DNR-managed aquatic lands until DNR grants an Aquatic Use Authorization.
- Include a \$25 non-refundable application processing fee, payable to the "Washington Department of Natural Resources." (Contact your Land Manager to determine if and when you are required to pay this fee.) [\[help\]](#)

DNR may reject the application at any time prior to issuing the applicant an Aquatic Use Authorization. [\[help\]](#)

Use black or blue ink to enter answers in white spaces below.

<b>1. Applicant Name</b> (Last, First, Middle)	
Lofstrom, Tracy	
<b>2. Project Name</b> (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) <a href="#">[help]</a>	
Port of Ilwaco East Bulkhead Resilience Project (Project)	
<b>3. Phone Number and Email</b>	
(360) 642-3143, tlofstrom@portofilwaco.org	
<b>4. Which of the following applies to Applicant?</b> Check one and, if applicable, attach the written authority – bylaws, power of attorney, etc. <a href="#">[help]</a>	
<input type="checkbox"/> Corporation <input type="checkbox"/> Limited Partnership <input type="checkbox"/> General Partnership <input type="checkbox"/> Limited Liability Company  Home State of Registration: _____	<input type="checkbox"/> Individual <input type="checkbox"/> Marital Community (Identify spouse): _____ <input checked="" type="checkbox"/> Government Agency <input type="checkbox"/> Other (Please Explain): _____

<b>5.</b> Washington UBI (Unified Business Identifier) number, if applicable: <a href="#">[help]</a>
<b>6.</b> Are you aware of any existing or previously expired Aquatic Use Authorizations at the project location?
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't know If Yes, Authorization number(s): _____
<b>7.</b> Do you intend to sublease the property to someone else?
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, contact your Land Manager to discuss subleasing.
<b>8.</b> If fill material was used previously on DNR-managed aquatic lands, describe below the type of fill material and the purpose for using it. <a href="#">[help]</a>
In 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.

<b>To be completed by DNR and a copy returned to the applicant.</b>
---

Signature for projects on DNR-managed aquatic lands:

Applicant must obtain the signature of DNR Aquatics District Manager OR Assistant Division Manager if the project is located on DNR-managed aquatic lands.

I, a designated representative of the Dept. of Natural Resources, am aware that the project is being proposed on Dept. of Natural Resources-managed aquatic lands and agree that the applicant or his/her representative may pursue the necessary regulatory permits. My signature does not authorize the use of DNR-managed aquatic lands for this project.

<b>Printed Name</b>	<b>Signature</b>	<b>Date</b>
Dept. of Natural Resources	Dept. of Natural Resources	
District Manager or Assistant Division Manager	District Manager or Assistant Division Manager	

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA Publication ORIA-16-016 rev. 10/2016
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**PORT OF ILWACO**  
**Marine Structures Replacement**  
***Ilwaco, WA***

**Appendix A5**

**Biological Evaluation**

## BIOLOGICAL EVALUATION

Produced for Port of Ilwaco

December 2022



moffatt & nichol

# PORT OF ILWACO

## Port of Ilwaco East Bulkhead Resilience Project

### Produced by:

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## Appendices

Appendix A: Design Drawings

Appendix B: Essential Fish Habitat Assessment



## 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
lf	Linear feet
MCR	Middle Columbia River
mg	milligram
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
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
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 purpose of this Biological Evaluation (BE) is to address potential effects of the Port of Ilwaco East Bulkhead Resilience 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.

The Project would consist of three primary elements;

1. Replacement of the failing bulkhead
2. Replacement of slope protection to the north and south of the bulkhead
3. Paving and grading the upland wharf area behind the bulkhead to mitigate the effects of sea level rise.

Creosote-treated structures would be removed as part of the proposed Project elements. The Port is also proposing to remove adjacent derelict creosote-treated piles as additional mitigation.

The Project has the potential to impact the following ESA-listed species and/or their critical habitat: Chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*Oncorhynchus keta*), Coho salmon (*Oncorhynchus kisutch*), sockeye salmon (*Oncorhynchus nerka*), steelhead (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), green sturgeon (*Acipenser medirostris*), eulachon (*Thaleichthys pacificus*), leatherback sea turtle (*Dermochelys coriacea*), southern resident killer whales (*Orcinus 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

The Project is located at the Port of Ilwaco on the southwest coast of Washington State near the mouth of the Columbia River (Figure 1). The Port area generally consists of a marina used for year-round moorage of recreational and commercial fishing vessels, upland commercial buildings, and a boatyard



(Figure 2). The Project site at the Port of Ilwaco is the bulkhead along the east side of the commercial fishing wharf (herein referred to as 'wharf'). The approximate coordinates of the Project site are latitude 46.30498 and longitude -124.0408. The wharf is an earth filled structure on the east side and pile supported on the west side. The wharf is protected by a failing creosote-treated timber bulkhead along the eastern limits of the wharf (Figure 2). The shoreline to the north of the bulkhead is protected by a low creosote-treated timber retaining wall and large log (Figure 2). The shoreline protection on the south side of the bulkhead consists of riprap and concrete rubble (Figure 2). The Safe Coast Seafoods buildings are located on the wharf (Figure 2). The Port and marina area is protected by a rubble breakwater (Figure 2).



**Figure 1. Vicinity Map**





**Figure 2. Project Location Aerial**

## 1.2. Purpose and Need

The proposed Project is required for improved the safety, efficiency, and reliable use of the wharf. The Port is a key hub for commercial fishing, seafood and aquaculture processing, and recreation activities that greatly benefit the regional economy. The commercial fishing wharf, operated by Safe Coast Seafoods, is one of the most active in the state, landing roughly \$14 million in commercial seafood each year. Repair of the bulkhead wall is critical to ongoing operations at Safe Coast Seafoods. In its current condition, the bulkhead is in serious structural condition and at risk of failing. Frequent flooding due to high water levels from “king tides” and severe winter storm surges further threaten the structural capacity of the bulkhead. Pavement settlement has been observed on the adjacent landward driveway and access is now restricted based on those conditions and the condition of the deteriorating bulkhead. The 2022 geotechnical investigations (GeoEngineers, 2022) indicated that the project site is underlain by liquefiable soil.

Bulkhead failure would shut down cargo operations at the Port and negatively impact a wide variety of businesses in maritime and non-maritime sectors including Safe Coast Seafoods. The shutdown of the Safe Coast site due to failure of the bulkhead would lead to a series of economic impacts for many more workers and businesses and the region. The facility is capacity-limited and at risk until the bulkhead is replaced and the Project is completed. Without the Project, the eventual closure of the Wharf would result in cascading negative transportation and economic impacts for the region.

The Project would serve the following purposes and provide the following benefits:

- The replacement bulkhead will serve as the initial phase to increase the facility's climate change/sea level rise resiliency and will help protect Wharf facilities from flooding. The bulkhead will be designed to accommodate the planned increase to Safe Coast Seafoods facility ground floor elevations in the future.
- The top of the embankment elevation to the north of the bulkhead will be raised to approximately +14 feet (ft) mean lower low water (MLLW) and the existing creosote-treated timber retaining wall will be replaced with riprap to improve shoreline protection. The increase to top of bank elevation will mitigate sea level rise impacts between the bulkhead and the marina access pier to the east.
- Re-grading and re-paving of the upland area behind the bulkhead wall will facilitate positive drainage away from the Safe Coast Seafoods buildings and help protect the facilities during flood events.
- The bulkhead replacement would prevent the shoreline from failing into a portion of the active Port of Ilwaco Marina, which would impact operations in the marina.
- The new bulkhead will be designed to accommodate the temporary mooring of fishing vessels which will allow vessels to unload/load equipment and product and improve efficiencies at the Safe Coast Seafoods facility. The timber bulkhead is used for temporary mooring under existing conditions, but cannot be used for loading/unloading of vessels due to its poor, unstable condition.
- The Project will allow trucks to drive safely on the bulkhead again, which will improve the efficiency of cargo transfer operations and improve the port's competitiveness. The adjacent roadway has been closed to vehicle access due to the poor condition of the existing bulkhead.
- The removal of creosote-treated wood from the marine environment will provide water quality benefits.



### 1.3. Project Description

The proposed East Bulkhead Resilience Project at the Port would consist of three primary elements:

- Replacing the failing east bulkhead (Figure 3, shown in red) and the installation of fiberglass fender piles external to the bulkhead to support temporary berthing (Figure 3, shown in blue);
- Repairing/replacing slope protection north and south of the bulkhead (Figure 3, shown in green); and,
- Paving and re-grading the upland wharf area directly landward of the bulkhead to mitigate the effects of sea level rise. (Figure 3, shown in yellow).



**Figure 3. Location of Proposed Project Activities**

As part of the above elements, creosote-treated timber that configures the external wall of the existing bulkhead and retaining wall will be removed along with select derelict creosote-treated piles next to the bulkhead.

Project details are described below.

### 1.3.1. Bulkhead Wall

Bulkhead replacement will include installing a new 225 linear feet (lf) steel sheet pile wall waterward of the existing creosote-treated timber wall. Select creosote-treated timber piles that configure the exterior portion of the existing wall will be removed to accommodate installation of the new bulkhead. Drainage rock will be placed between the existing and new bulkhead walls and a fender system will be installed on the outer face of the new sheet pile wall.

Removal of the entire existing east bulkhead wall is not feasible without undermining the stability of the soil behind the bulkhead and the adjacent building foundations. The majority of the existing timber bulkhead will be abandoned in place behind the replacement bulkhead in order to protect the existing buildings at the Safe Coast Seafoods facility. Localized bulkhead demolition will likely consist of removal of the rotted top several feet of the existing creosote-treated timber piles above the timber wale location. This targeted demolition will take place above mean higher high water (MHHW). In addition, there may be localized notching of the bulkhead wall to accommodate the installation of the new tie-back ground anchors. Approximately twelve (12) 12-inch diameter existing creosote-treated timber piles and three (3) 12-inch diameter steel pipe piles that are located directly waterward of the existing timber bulkhead will be removed. These piles will be removed by either pulling them out directly using a chain or with a vibratory hammer depending on the eventual contractors preferred means and methods. The piles will be cut at the mudline if complete removal is not possible or the piles break. Upland demolition will consist of removal of the existing pavement and surface features.

The replacement bulkhead will be positioned to the waterside of the existing east bulkhead and will consist of a 225 lf steel sheet pile bulkhead wall with grouted ground anchors extending from a cast-in-place concrete pile cap down to a bedrock layer. The bulkhead wall will not increase in length. The top elevation of the new bulkhead wall will be approximately three (ft) higher than the existing bulkhead to accommodate for high tides and sea level rise. It is anticipated that the steel sheet piles will be driven using a vibratory hammer. The option for impact proofing will also be included in the event difficult driving conditions are encountered. The ground anchors will consist of high strength steel strands or steel bars and will be installed using either land-based equipment or from a barge depending on the contractors preferred means and methods. The anchor holes will be drilled with a full-length casing. All drill spoils will be contained and prevented from entering marine waters. The anchor holes will be filled with grout using a tremie tube and then then pressure grouted after the anchor tendons are installed. The anchors will be tensioned after all anchors have been installed and have reached the required grout



and concrete strengths. The cast-in-place concrete pile cap will then be constructed. The pile cap will be cast-in place in the dry and uncured concrete will not be allowed to come in contact with waters of Baker Bay (Figure 1).

The sheet pile placement in front of the existing bulkhead will result in an approximately 2- to 5-foot space between the existing bulkhead and the new bulkhead sheet piles. The area between the existing structure and the new bulkhead will be backfilled with drainage rock to allow for water to flow in and out of the soil supporting the Safe Coast Seafood facility. Approximately 400 cubic yards (cy) of free draining drainage rock backfill will be placed between the existing timber bulkhead and the replacement bulkhead (Table 1). The drainage rock will likely be placed using a clamshell operating from a barge. The clean drainage rock will be obtained from a commercial supplier. This placement will minimize the risk of slope failure that removing the existing structure would exacerbate. The drainage rock placement in the space between the existing and replacement bulkhead structures will minimize additional pressure from trapped groundwater behind the new bulkhead.

The southern portion of the replaced east bulkhead wall will be designed to accommodate the temporary mooring of fishing vessels by incorporating fiberglass fender piles for temporary berthing (Figure 3, shown in blue). This will allow vessels to unload/load equipment and product to the Safe Coast Seafoods facility. Vessels have temporarily moored adjacent to the existing bulkhead but, as its condition deteriorated and has become unstable, it can no longer be used for loading/unloading of vessels. It is anticipated that the fiberglass fender piles will be driven using vibratory hammers and proofed with an impact hammer as necessary.

The new bulkhead, pile cap, and fender system will have a footprint of approximately 1,500 square feet (sf) in marine waters (measured waterward of the high tide line [HTL]). Of the overall footprint in marine waters, approximately 1,150 sf of the replacement structure will result in benthic habitat impacts. The completed project will result in an increase of overwater coverage of 200 sf.

### 1.3.2. Slope Protection

Proposed slope protection repairs/replacement include:

- Removing and replacing armoring along the southern shoreline to accommodate bulkhead wall replacement
- Removing the creosote-treated timber retaining wall along the northern shoreline and replacing it with riprap.



Approximately 400 sf (16 cy) of riprap and concrete debris from the shoreline to the south of the bulkhead wall will be removed to accommodate replacement bulkhead installation (Table 1). Approximately sixteen (16) 12-inch diameter creosote-treated timber piles associated with the existing timber retaining wall will be removed from the shoreline along the north end of the bulkhead wall. The existing creosote-treated timber retaining wall to the north of the bulkhead will be completely removed. The associated piles will be removed by either pulling them out using a chain or with a vibratory hammer depending on the contractor's preferred means and methods. The piles will be cut at the mudline if complete removal is not possible or the piles break during removal.

The 400 sf (16 cy) of riprap removed from the south portion of the project to accommodate installation of the new bulkhead will be replaced with approximately 35 cy of riprap in the same 400 sf area to maintain slope stability (Table 1). Approximately 30 cy of replacement riprap (total 35 cy) will be placed waterward of the HTL (Table 1).

Approximately 165 cy (2,200 sf) of riprap, 140 cy (1,850 sf) of which occurs below the HTL, will be placed on the embankment to the north of the new bulkhead to replace the existing creosote treated timber retaining wall and provide shore protection (Table 1). The riprap slope protection will serve as grade transition from the vertical bulkhead structure to the adjacent sloped shorelines to the north and south. The top of the embankment will be raised to approximately +14 ft MLLW between the bulkhead and the marina access pier to the east to mitigate the effects of sea level rise.

### **1.3.3. Upland Paving and Grading**

Upland paving and grading will be completed landward of the bulkhead wall along the wharf to mitigate sea level rise following construction of the new bulkhead. Approximately 8,000 sf of driveway along the wharf will be regraded and repaved with structural fill base course and asphalt pavement. The upland area will be re-graded and re-paved to maintain positive drainage away from the Safe Coast Seafoods buildings. The bulkhead will be outfitted with scuppers to allow rainwater to flow into the marina rather than pooling along the driveway or draining toward the Safe Coast facilities.

### **1.3.4. Benthic Habitat Impacts and Creosote Removal**

Approximately twenty-eight (28) creosote-treated timber piles (12-inch diameter) and three (3) steel piles (12-inch diameter) will be removed from adjacent to the existing bulkhead and as part of the north shoreline rehabilitation. The Port also proposes to remove approximately thirty-six (36) 12-inch diameter derelict creosote-treated timber piles and 3 creosote-treated timber pile caps as mitigation for the fill



and benthic habitat impacts created by the placement of the new bulkhead wall in front of the existing structure. This will result in approximately 64 total creosote-treated timber piles and 3 steel piles being removed along with approximately 70 lf of creosote-treated timber retaining wall, and 40 lf of creosote-treated timber pile caps.

Approximately 1,500 sf of drainage rock backfill (Table 1) will be placed below the HTL to encourage groundwater drainage between the existing bulkhead and the new bulkhead. The construction of the bulkhead will result in approximately 1,150 sf of benthic habitat impacts. The new fender system will result in approximately 200 sf of new overwater coverage.

The riprap to be placed on the north shoreline to replace the existing shoreline protection (creosote-treated timber retaining wall) will be placed over a 2,200 sf area, 1,850 sf of which occurs below the HTL and would result in benthic habitat impacts (Table 1). Approximately 750 sf of the riprap shore protection will be placed waterward of the existing retaining wall. The riprap to be replaced on the shoreline to the south of the bulkhead will not result in any additional benthic habitat impacts (Table 1).

The removal of approximately sixty-four (64) 12-inch creosote-treated timber piles, three (3) 12-inch steel piles, 70 lf of creosote-treated timber retaining wall, and 40 lf of derelict creosote-treated timber pile caps will restore approximately 165 sf of benthic habitat (Table 1) and remove approximately 20 tons of creosote from the marine environment.

**Table 1. Approximate Fill Impacts**

Activity	Fill below HTL (sf)	Fill below HTL (cy)	Fill above HTL (sf)	Fill above HTL (cy)
<i>Bulkhead wall and shoreline protection installation</i>				
Sheetpile and fender pile installation	500 sf	40 cy	0 sf	0 cy
Bulkhead drainage rock placement	1,000 sf	400 cy	0 sf	0 cy
Rip-rap placement (north shoreline)	1,850 sf	140 cy	350 sf	25 cy
Rubble/ rip-rap removal (south shoreline)	-350 sf	-14 cy	-50 sf	-2 cy
Rip-rap replacement (south shoreline)	350 sf	30 cy	50 sf	5 cy
<i>Structure removal</i>				
Pile removal adjacent to existing bulkhead	-12 sf	-6 cy	0 sf	0 cy
North shoreline- creosote-treated timber retaining wall removal	-85 sf	-12 cy	0 sf	0 cy
Derelict pile/timber removal	-68 sf	-12 cy	0 sf	0 cy

### 1.3.5. Construction Sequencing

Construction sequencing for the bulkhead replacement will likely be as follows:

- Localized demolition of the existing east bulkhead wall



- Installation of the new steel sheet pile wall
- Placement of drainage rock between the existing east bulkhead wall and new bulkhead wall
- Installation of new fender system along bulkhead

#### **1.4. Avoidance and Minimization Measures (AMMs)**

The Project will take place in the water and along the shoreline in the west portion of the Port of Ilwaco Marina which is located along the northeast shore of Baker Bay in Ilwaco, Washington. The paving and regrading portions of the Project will all occur at the top of the shoreline in the dry. The bulkhead sheetpile wall cap will be cast in place and uncured concrete will not be allowed to come into contact with surface waters. The shoreline riprap replacement will be placed in the dry to the extent practicable. The bulkhead demolition, placement of the new bulkhead, fenders and appurtenances will be accomplished using equipment operated from a barge(s).

The following AMMs will be used for this Project:

##### **1.4.1. General AMMs**

- Containment booms will be used to surround in-water work areas or separate embankment work from surface water. The booms will serve to contain and collect any oily material and/or floating debris potentially released during construction. Oil-absorbent materials will be employed immediately if visible sheen is observed. Accumulated debris will be collected daily and disposed of at a permitted upland site approved by the owner.
- Hydraulic water jets will not be used to install piles.
- Water quality standards and procedures that limit the impact of pollutants will be observed.
- Land-based staging areas for activities, such as storage of machinery, equipment, materials, and stockpiled soils will be established landward of the top of bank. A silt fence will be installed around the perimeter of the upland work areas and locations where machinery, materials, and stockpiled soils are situated. Any temporary stockpiles will be covered and bermed when not in use.
- All federal, state, and/or local construction permit requirements will be followed during demolition and construction activities.





### 1.4.2. In, Over, and Near Water AMMs

- In-water construction activities will comply with the in-water construction window (anticipated to be November 1 through February 28 within state and federal permits).
- Typical construction best management practices (BMPs) for working in, over, and near water will be applied, including activities such as the following:
  - Checking equipment for leaks and other problems that could result in the discharge of petroleum-based products or other material into waters of Baker Bay.
  - Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including:
    - Containment and cleanup efforts will begin immediately upon discovery of a spill and will be completed in an expeditious manner in accordance with all local, state, and federal regulations. Cleanup will include proper disposal of any spilled material and used cleanup material.
    - The cause of any spill will be ascertained, and appropriate actions taken to prevent further incidents or environmental damage.
    - Spills will be reported to the Washington State Department of Ecology (Ecology) Southwest Regional Spill Response Office pursuant to WAC 173-303-145 and WAC 173-182-260.
  - Work barges will not be allowed to ground out.
  - Excess or waste materials will not be disposed of or abandoned waterward of ordinary high water or allowed to enter waters of the state. Waste materials will be disposed of in an appropriate manner consistent with applicable local, state, and federal regulations.
  - Demolition and construction materials will not be stored where wave action or upland runoff can cause materials to enter surface waters.
  - Oil-absorbent materials will be present on site for use in the event of a spill or if any oil product is observed in the water.

### 1.4.3. Pile Removal and Installation AMMs

Pile removal BMPs will be applied, including activities such as the following:



- Removal of creosote-treated piles will be conducted consistent with the BMPs established in U.S. Environmental Protection Agency (EPA) Region 10, Best Management Practices for Piling Removal and Placement in Washington State, dated February 18, 2016 (EPA 2016).
- While creosote-treated piles are being removed, a containment boom will surround the work area to contain and collect any floating debris and sheen. Debris will be retrieved and disposed of properly.
- The piles will be dislodged with a vibratory hammer when possible and will not be intentionally broken by twisting or bending.
- The piles will be removed in a single, slow, and continuous motion in order to minimize sediment disturbance and turbidity in the water column.
- If a pile breaks above or below the mudline, it will be cut or pushed in the sediment consistent with agency-approved BMPs (U.S. Army Corps of Engineers [USACE], Department of Natural Resources [DNR], Ecology, and EPA).
- Removed piles, stubs, and associated sediments (if any) will be contained on a barge. If piles are placed directly on the barge and not in a container, the storage area will consist of a row of hay or straw bales, filter fabric, or similar material placed around the perimeter of the barge.
- All creosote-treated material, pile stubs, and associated sediments (if any) will be disposed of by the contractor in a landfill approved to accept those types of materials.
- Steel piling will be installed with a vibratory hammer when possible. Impact hammering will start with light tapping, then increase to full force gradually.
- A bubble curtain and one or more other noise attenuation methods such as a wood cushion block will be used during impact installation or proofing of all steel piling.
- Pile-driving will commence with a soft start procedure (ramping up) in order to alert nearby wildlife, allowing them to move out of the area prior to construction activities. For impact pile driving, contractors will be required to provide an initial set of strikes from the hammer at reduced percent energy, each strike followed by no less than a 30-second waiting period. This procedure will be conducted a total of two times before impact pile driving begins.
- To avoid impacts to marine mammals, an exclusion zone will be monitored during and immediately before pile driving activities. The exclusion zone will include the entire marina area shoreward of the breakwaters. Although ESA-listed species, including Southern Resident killer whales and humpback whales are not anticipated to occur within the marina where noise



impacts could occur, this avoidance measure would provide further protections against potential noise impacts to these species.

- During pile driving activities a qualified observer will monitor the exclusion zone, if any marine mammals are observed within the exclusion zone, all in-water Project activities shall cease. Project activities shall not commence or continue until the marine mammal has either been observed having left the exclusion zone, or at least 15 minutes have passed since the last sighting whereby it is assumed the marine mammal has voluntarily left the exclusion zone.

#### **1.4.4. Overwater Concrete Placement Minimization and Concrete Placement AMMs**

The Project has been designed to minimize the placement of concrete over water. Where possible, pre-cast concrete elements will be used. On-site (wet) concrete placement, where needed, will follow appropriate AMMs, including:

- Wet concrete will not contact surface waters.
- Forms for any concrete structure will be constructed to prevent leaching of wet concrete.
- Concrete process water will not be allowed to enter surface waters. Any process water/contact water will be routed to a contained area for treatment and will be disposed of at an upland location.



## **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”). The Action Area includes all areas that may be directly or indirectly affected by the proposed activities and expands beyond the immediate location of these activities. The Action Area includes the footprint, extent of potential water quality impacts, and all areas in which related noise will exceed background noise levels. The calculated Action Area was defined by the activity with the greatest potential for adverse impact. For the proposed Project, the greatest potential extent of an adverse impact is Project related noise. Therefore, noise was used to define the total extent of the Action Area (see Section 2.3 and Figure 4)

### **2.1. Proposed Project Footprint**

The Project footprint consists of the physical location of the proposed work. This includes the installation of the bulkhead and fender piles, installation of riprap on the northern shoreline, replacement of armoring on the southern shorelines, removal of the creosote-treated retaining wall, and removal of the derelict creosote-treated piles. The Project footprint is depicted above in Section 1, Figure 3.

### **2.2. Water Quality**

In-water construction activities have the potential to elevate turbidity levels due to sediment resuspension. The proposed activities including structure removal, pile installation, drainage rock placement, and riprap placement could result in small scale turbidity plumes however these would be anticipated to be minor, temporary, and localized to the immediate vicinity of the Project activities.

### **2.3. Underwater and Terrestrial Noise**

The proposed repairs have the potential to result in temporary elevated underwater and terrestrial noise levels, with the most substantial construction activity-related noise being the installation of the sheet pile wall and fender piles. The total extent of Project related noise is defined as the distance in which Project related noise will attenuate to background noise levels. Background in-water and in-air noise levels are discussed in Section 2.3.1. Noise levels associated with the proposed pile installation activities are described in Section 2.3.2.



## 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 commercial fishing operations 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 wharf and 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 2022). 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

The Project proposes to install a 225 lf steel sheet pile wall and approximately ten (10) 12-inch diameter fiberglass piles. The fiberglass piles consist of concrete piles with fiberglass casings and anticipated in-water noise levels are based on documented noise levels for concrete pile installation. Noise levels for



the installation of 12-inch diameter concrete piles are not available and therefore noise levels for the installation of 14-inch diameter concrete piles were used to conservatively approximate potential noise levels. It is anticipated that the steel sheet pile wall and fiberglass fender piles will be driven using a vibratory hammer. The option for impact proofing has been included in the event that difficult driving conditions are encountered. A bubble curtain would be used during the impact pile driving of steel sheet piles and a 5dB noise reduction has been assumed. Anticipated noise levels for the proposed pile installation activities are shown in Table 2.

Vibratory pile driving noise levels for the installation of fiberglass piles are not available. Therefore, vibratory noise levels are based on the impact installation of fiberglass piles. Vibratory pile driving generally results in noise levels that are 10 to 20 dB lower than impact pile driving (WSDOT 2020). The noise levels from vibratory installation have been conservatively assumed to be 10 dB lower than the noise levels emitted during impact installation (Table 2).

**Table 2. Anticipated In-water Pile Driving Noise Levels**

Pile Type	Installation Method	Anticipated Noise Level		
		dB peak	SEL	dBrms
Sheet Pile* <sup>1</sup>	Impact (attenuated)	204	161	170
Sheet Pile <sup>1</sup>	Vibratory	177	163	163
Concrete (14-inch diameter) <sup>1</sup>	Impact	183	146	157
Concrete (12-inch diameter) <sup>1,2</sup>	Vibratory	173	136	147

\* Assumes 5dB reduction for use of bubble curtain

<sup>1</sup> California Department of Transportation (Caltrans) 2020

<sup>2</sup> WSDOT 2020

<sup>3</sup> Sound exposure level (SEL)

The impact installation of steel sheet pile walls has the greatest potential to result in noise impacts and was therefore used to determine the total extent of in-water noise. In-water noise would dissipate to the 120 dBrms background noise levels within 13.5 miles of the proposed pile driving activities if not confined by adjacent land masses (Figure 4). The rubble breakwaters around the marina would be anticipated to limit the extent of in-water noise to the marina/port area (Figure 4). Noise calculations were completed in accordance with the WSDOT 2020 Biological Assessment Manual, using the practical spreading loss model and assuming a 4.5 dBA attenuation rate for each doubling distance.

### 2.3.2.2. In-air Noise Levels.

Airborne noise levels for the installation of steel sheet piles and/or fiberglass piles is not available. In general, vibratory pile drivers can result in airborne noise levels of up to 105 dBA at 50 ft from the source (WSDOT 2020). Similarly, impact pile drivers can result in noise levels of up to 105 dBA at 50 ft from the



source (WSDOT 2020). The piles proposed for installation are small in size and would likely result in noise levels of less than 105 dBA. However, for the purpose of this noise analysis, 105 dBA was used as a conservative estimate to assess potential airborne noise impacts. In-air pile driving noise would dissipate to 60 dBA background noise levels within 1.7 miles of the proposed pile driving activities (Figure 4). Noise calculations were completed in accordance with the WSDOT 2020 Biological Assessment manual, using the spherical spreading loss model and assuming a 6 BA attenuation rate for each doubling distance.







**Figure 4. Action Area as Defined by In-water and In-air Noise**

### 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 tshawytscha*) chum salmon (*Oncorhynchus keta*), Coho salmon (*Oncorhynchus kisutch*), sockeye salmon (*Oncorhynchus nerka*), steelhead (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), green sturgeon (*Acipenser medirostris*), eulachon (*Thaleichthys pacificus*), leatherback sea turtle (*Dermochelys coriacea*), southern resident killer whales (*Orcinus 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 (*Coccyzus americanus*) and monarch butterfly (*Danaus plexippus*) 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 2022a) and the NMFS West Coast Region protected species website and Protected Resources App database (NMFS 2022a and NMFS 2022b) on 20 June 2022. Additional information came from the Washington Department of Fish and Wildlife's (WDFW's) database, SalmonScape (WDFW 2022a).

**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)	<i>Oncorhynchus tshawytscha</i>	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	<i>O. keta</i>	NMFS	Threatened	Occurs in Action Area
Coho Salmon	Lower Columbia River ESU	<i>O. kisutch</i>	NMFS	Threatened	Occurs in Action Area



Species	ESU/DPS	Scientific Name	Agency	Federal Status	Critical Habitat
Sockeye Salmon	Snake River ESU	<i>O. nerka</i>	NMFS	Endangered	Occurs in Action Area
Steelhead	Lower Columbia River Distinct Population Segment (DPS)	<i>Oncorhynchus mykiss</i>	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	<i>Acipenser medirostris</i>	NMFS	Threatened	Occurs in Action Area
Eulachon	Southern DPS	<i>Thaleichthys pacificus</i>	NMFS	Threatened	Occurs in Action Area
Sea turtles	Leatherback	<i>Dermochelys coriacea</i>	NMFS	Endangered	None in Action Area
Killer Whale	Southern Resident	<i>Orcinus orca</i>	NMFS	Endangered	None in Action Area
Humpback Whale	Central America DPS	<i>Megaptera novaeangliae</i>	NMFS	Endangered	None in Action Area
	Mexico DPS			Threatened	None in Action Area
Bull Trout	N/A	<i>Salvelinus confluentus</i>	USFWS	Threatened	None in Action Area
Western Snowy Plover	N/A	<i>Charadrius nivosus</i>	USFWS	Threatened	None in Action Area
Marbled Murrelet	N/A	<i>Brachyramphus marmoratus</i>	USFWS	Threatened	None in Action Area
Streaked Horned Lark	N/A	<i>Eremophila alpestris strigata</i>	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).

**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	<i>Coccyzus americanus</i>	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	<i>Danaus plexippus</i>	USFWS	Candidate	Proposed activities would not destroy vegetation that could provide habitat. Impacts would not occur.

Source: USFWS (IPaC) database (USFWS 2022)



## 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-SS), 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 (Lower Columbia Fish Recovery Board [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
<b>Chinook Salmon</b>		
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 provides only marginal nearshore habitat for salmonids. 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 estuarine 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 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
<b>Steelhead</b>		
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. As previously discussed 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.

- ***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 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, though 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 nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.***

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 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.

- ***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 (river miles [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. 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 represents suitable nearshore habitat with suitable water quality and prey availability for Pacific eulachon.

## **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 (*Orcinus orca*)

The Southern Resident killer whale (SRKW, *Orcinus orca*) DPS was ESA-listed as endangered in 2005 (NMFS 2016). 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 14 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
<b>Killer Whale</b>		
Southern Resident DPS	9 October 2009	<i>Coastal Washington/Northern Oregon Inshore Area.</i> 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 (*Megaptera 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 Bering 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
<b>Humpback Whale</b>		
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 nmi <sup>2</sup> 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
<b>Streaked Horned Lark</b>		
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
<b>Western Snowy Plover</b>		
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 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. Environmental Baseline

This Section outlines the presence and condition of aquatic and terrestrial habitat features within the Action Area as they pertain to the species addressed in this BE. The Section summarizes the baseline habitat conditions and then analyzes the likely effects that the proposed action will have on the baseline.

### 5.1. General Setting

The Project occurs at the Port of Ilwaco on the southwest coast of Washington State, located just inside the Columbia River bar at the Pacific Ocean.

### 5.2. Terrestrial and Riparian Habitat

Vegetation and terrestrial habitat conditions are limited within the in-water Action Area. The site is in an industrial area and is largely devoid of terrestrial vegetation. The Project would occur within the Port's marina at the existing wharf and associated bulkhead wall, retaining wall, and riprap shoreline. Little to no terrestrial and riparian habitat occurs here. The mudline at the base of the existing bulkhead is largely unvegetated and consists of a silty sand, sandy silt slope with riprap extending on the shore slope to the north and south of the bulkhead. The upland adjacent to the bulkhead is a paved driveway servicing the Safe Coast Seafood facility, which is located on the wharf. Existing vegetation consists of short-statured ruderal species behind the existing bulkhead wall (Figure 5) and in viable spaces along the riprap shoreline (Figure 6). 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).





**Figure 5. Riprap Shoreline to the South of the Bulkhead Wall**



**Figure 6. Retaining Wall to the North of the Bulkhead**

### **5.3. Aquatic Habitat**

An eelgrass and macroalgae survey and wetland and stream delineation was conducted within the marina for a separate dredging project (GeoEngineers 2022). The survey included the entire Project area. The survey results identified one main bed of eelgrass within the marina with smaller adjacent patches

(Figure 7). The eelgrass bed is not anticipated to be impacted by the proposed Project. No wetlands or streams were identified within the marina.



Source: GeoEngineers 2022

**Figure 7. Eelgrass Identified During 2022 Eelgrass Survey (GeoEngineers 2022)**



## 6. 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.

### 6.1. 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 discussed short-term direct adverse impacts.

#### 6.1.1. Noise

In-water and in-air noise disturbances could occur as defined by the Action Area. The greatest potential for in-water noise impacts will occur during pile installation. Potential in-water noise impacts will be species specific and are further discussed in Sections 6.3 through 6.4 of this BE.

#### 6.1.2. Water Quality

General localized and temporary water quality/turbidity impacts could occur. In general, water quality and turbidity impacts from sediment resuspension are anticipated to be minor, localized, and temporary. Removal of existing creosote-treated timber (associated with derelict creosote-treated structures and piles; up to 30 cy/20 tons) will result in water quality improvements by reducing toxicity potential. Potential water quality impacts are species specific and are further defined below in Sections 6.3 and 6.4 below.

#### 6.1.3. Vessel Collision

Vessels will be used during construction to support Project activities and would travel to and from the site. Species that surface to breathe are susceptible to propeller strikes and vessel collisions. Potential vessel collision impacts are discussed in detail in Sections 6.3 and 6.4 below.

#### 6.1.4. Habitat Disturbance

Temporary and permanent habitat disturbances could occur. Installation of the replacement bulkhead wall, drainage rock, and riprap will result in approximately 3,350 sf of fill in marine waters (measured below the HTL). Approximately 3,000 sf of the fill would come into contact with the bottom substrate and result in permanent impacts to the existing aquatic soft bottom habitat. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates (Thrush and Dayton 2002). The installation of a fender system along the new bulkhead will



result in approximately 200 sf of new overwater coverage. This increase in overwater coverage is anticipated to be negligible and would not result in substantial impacts to ESA-listed species. Fill and benthic habitat impacts are anticipated to be offset by the removal of creosote-treated timber from the marine environment. Potential benthic habitat disturbance impacts are discussed in further detail in Sections 6.3 and 6.4 below.

## **6.2. 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.

### **6.2.1. Prey Species**

Adverse impacts to prey species are unlikely due to the minor, short-term, localized nature of the proposed activities. The Project will be anticipated to provide an overall long-term benefit to prey species by removing creosote treated wood and reducing toxicity potential. Potential impacts to prey species for the identified species are further discussed below in Section 6.3 and 6.4 below.

## **6.3. NMFS Listed Species**

### **6.3.1. Salmonids (Chinook, Coho, Sockeye, Steelhead)**

Direct and indirect adverse impacts could occur to salmonids but are unlikely given the extent of the proposed activities and proposed AMMs. 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 benthic habitat disturbances. Indirect impacts could occur due to impacts to prey species. Potential impacts to salmonids from the proposed activities are discussed below in Sections 6.3.1.1 through 6.3.1.4.

#### **6.3.1.1. Noise**

The main hearing organ in fish is the lateral line system that is sensitive to particle motion. Pressure waves can cause changes in the swim bladder which may cause damage or reduced hearing sensitivity. Impulsive noise sources such as impact pile driving are known to result in adverse impacts to fish when noise thresholds are exceeded (NMFS 2008c). Noise produced during pile installation activities has the greatest potential to exceed noise thresholds. These thresholds, as well as the distances to these



thresholds for the proposed pile driving activities, are shown in Table 19. Continuous noise sources such as vibratory pile driving are not held to the thresholds presented in Table 19.

The Project proposes to install a 225 lf steel sheet pile wall and approximately 10, 12-inch diameter fiberglass fender piles external to the wall. It is anticipated that the steel sheet pile wall and fiberglass fender piles will be driven using vibratory hammers. The option for impact proofing has been included in the event that difficult driving conditions are encountered.

To install the sheet pile wall, up to 8 hours of vibratory pile driving and up to 600 blows per day could be required. Sheet pile wall installation could occur for up to 12 total days. To install the 12-inch fiberglass fender piles, up to 2.5 hours of vibratory pile driving and up to 30 blows per pile could be required with up to 4 piles being installed in a day. Fiberglass pile installation could take a total of 3 days.

Anticipated in-water noise levels for the proposed pile installations are reported in Section 2, Table 2 of this report. Anticipated noise levels were compared to established noise thresholds using the NMFS Interim Injury Criteria Threshold Spreadsheet (NMFS 2009). The sound levels from the impact installation of steel sheet piles could exceed thresholds in which physical injury may occur within a small area no larger than 24 meters around each pile (Table 19). Impact pile driving of 12-inch diameter fiberglass fender piles could exceed thresholds in which physical injury may occur within a small area no larger than 1 meter around each pile (Table 19).

It is unlikely that fish will occur within close proximity to the active construction area and within the small Interim Injury Criteria threshold areas. Additionally, the analysis presented in this section conservatively assumes the maximum number of blows per day that could occur. In actuality far less are likely. Pile installation activities will be short-term and would occur during the approved in-water work window when salmonid presence is anticipated to be low. Steel sheet pile installation would only occur for 12 total days and fiberglass pile installation would only occur for 3 total days. Impacts from noise exceedances over the Interim Injury Criteria thresholds are unlikely.

The behavioral threshold, although not a formal regulatory standard, is 150 dBrms (NMFS 2008c). The behavioral threshold guideline could be exceeded within 215 meters of steel sheet pile installation and 29 meters of fiberglass pile installation. Behavioral impacts could include fleeing of the area, and or ceasing of feeding or spawning in the area. Whether or not substantial impacts occur at noise levels exceeding this threshold relies heavily on project timing, project duration, species life history and other site-specific factors (WSDOT 2020). Pile installation activities would be short-term. Any potential





impacts associated with exceedances over the behavioral threshold are anticipated to be minor and temporary.

**Table 19. Noise Criteria Thresholds for Fish**

	Onset of Physical Injury			Behavioral Threshold
	Peak dB	Cumulative SEL dB		
		Fish > 2 Grams	Fish < 2 Grams	
Threshold Value	206 dB	187 dB	183 dB	150 dBrms
Fiberglass Pile Installation Threshold Distance	0 meters	0 meters	1 meter	29 meters
Steel Sheet Pile Installation Threshold Distance	7 meters	13 meters	24 meters	215 meters

Source: NMFS 2008c and NMFS 2009b

### 6.3.1.2. Water Quality

Decreased water quality including turbidity has the potential to directly impact fish. There are several mechanisms by which suspended sediment could potentially impact fish. These mechanisms include increased potential for gill tissue damage, physiological stress, direct mortality, and behavioral changes (NMFS 2002). The proposed action may create focused areas of minor temporary water quality impacts due to sediments becoming suspended in the water column during in-water construction activities. Activities with the potential to cause turbidity include, structure removal, pile installation, drainage rock placement, and riprap placement. Potential turbidity plumes would be small in scale, temporary, and localized to the immediate vicinity of the Project activities.

Adverse turbidity impacts to fish do not typically occur until turbidity concentrations reach 1,000 milligrams (mg)/liter (l) or 580 mg/l for more sensitive species (Burton 1993 and Sherk et al. 1975). Suspended sediment concentrations during pile driving would be anticipated to range from 5 to 10 mg/l above background levels at approximately 300 ft from the pile driving activities (FHWA 2012). Although salmonids may alter their movements to avoid these turbid areas, changes in movement are anticipated to be too small to be meaningfully detected. The proposed Project activities would not be anticipated to result in turbidity concentrations that could cause adverse impacts. Any potential direct water quality adverse impacts are anticipated to be minor and temporary. The AMMs in Section 1.4 such as the implementation of spill prevention measures and compliance with the in-water work window will further reduce the potential for adverse water quality impacts.

The removal of approximately 30 cy/20 tons of creosote-treated timber is anticipated to result in long-term water quality benefits by reducing toxicity potential. AMMs such as the use of a containment boom to protect water quality during creosote-treated timber removal would be implemented.



### 6.3.1.3. Benthic Habitat Disturbance

The Project will result in temporary and permanent benthic habitat impacts. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates (Thrush and Dayton 2002). Permanent benthic habitat impacts include the conversion of approximately 3,000 sf of aquatic soft bottom habitat to hard shoreline armoring (bulkhead wall and riprap). The existing soft bottom habitat occurs within an active marina and adjacent to creosote-treated structures. Therefore, the existing habitat is not anticipated to be of high habitat value to salmonids.

Benthic habitat impacts to salmonids are anticipated to be minor and offset by the removal of the creosote-treated timber as part of the existing retaining wall, bulkhead, and derelict piles. The removal of approximately 64, 12-inch creosote-treated timber piles, 3, 12-inch steel piles, 70 lf of creosote-treated timber retaining wall, and 40 lf of derelict creosote-treated timber pile caps, will restore approximately 165 sf of benthic habitat and remove approximately 30 cy or 20 tons of creosote-treated timber.

### 6.3.1.4. 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 Project is located is not anticipated to provide optimal foraging habitat for salmonids.

As discussed in Section 6.3.1.3, the Project will result in temporary disturbance of and permanent impacts to benthic sediments. Benthic prey species would be anticipated to quickly recolonize temporarily disturbed benthic habitats (Thrush and Dayton 2002). However, the installation of the bulkhead wall and riprap shoreline may result in approximately 3,000 sf of reduced soft bottom foraging habitat. This area is anticipated to be of low habitat value to salmonids due to its presence within an active marina/port area and proximity to creosote-treated timber structures. Therefore, foraging impacts are anticipated to be minor. Fish prey species could be impacted by noise emitted during in-water construction activities. As discussed in Section 6.3.1.1, Project related noise would only exceed the Interim Injury Criteria Injury threshold for fish within a small area where salmonids would be unlikely to occur foraging (Table 19).

To reduce the potential for impacts to foraging, the Project would comply with the in-water work window for the area (anticipated to be November 1 through February 28) 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. The removal of creosote-treated timber could improve foraging habitat.



### 6.3.1.5. Determination

Due to a lack of identified substantial direct and indirect impacts the Project may affect, but is ***not likely to adversely affect (NLAA)***, Chinook, Coho, sockeye, and steelhead salmon. Critical habitat for Chinook, Coho, sockeye, and steelhead salmon occurs in the Action Area. The Project is ***NLAA*** Chinook, Coho, sockeye, and steelhead salmon critical habitat within the Action Area for the reasons given above.

### 6.3.2. 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 Pacific DPS 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 benthic habitat disturbances. Indirect impacts could occur due to impacts to prey species. Potential impacts to salmonids from the proposed activities are discussed below in Sections 6.3.2.1 through 6.3.2.4.

#### 6.3.2.1. Noise

As discussed in additional detail in Section 6.3.1.1, The sound levels from the impact installation of steel sheet piles could exceed thresholds in which physical injury may occur within a small area no larger than 24 meters around each pile installation activity (Table 19). Impact pile driving of 12-inch diameter fiberglass fender piles could exceed thresholds in which physical injury may occur within a small area no larger than 1 meter around each pile (Table 19). Impacts due to exceedances over the Interim Injury Criteria threshold are anticipated to be unlikely given the small threshold area, short-term nature of the pile driving activities, and compliance with the in-water work window.

The behavioral threshold guideline could be exceeded within 215 meters during steel sheet pile installation and 29 meters during fiberglass fender pile installation. Impacts due to exceedances over the behavioral threshold are anticipated to be minor given the short-term nature of the pile driving activities, and compliance with the in-water work window. Pile installation activities would be short-term.

#### 6.3.2.2. Water Quality

As discussed in additional detail in Section 6.3.1.2, decreased water quality including turbidity has the potential to directly impact fish. Project activities with the potential to cause turbidity include, structure removal, pile installation, drainage rock placement, and riprap placement. However, potential turbidity plumes would be small in scale, temporary, and localized to the immediate vicinity of the Project



activities. Any potential direct water quality adverse impacts are anticipated to be minor and temporary. The AMMs in Section 1.4 such as the implementation of spill prevention measures and compliance with the in-water work window will further reduce the potential for adverse water quality impacts.

The removal of approximately 30 cy/20 tons, of creosote-treated timber is anticipated to result in long-term water quality benefits. AMMs such as the use of a containment boom to protect water quality during creosote-treated timber removal would be implemented.

### **6.3.2.3. Benthic Habitat Disturbance**

As discussed in additional detail in Section 6.3.1.3, the Project will result in temporary and permanent benthic habitat impacts. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates. Permanent benthic habitat impacts include the conversion of approximately 3,000 sf of aquatic soft bottom habitat to hard shoreline armoring. Benthic habitat impacts to eulachon are anticipated to be minor and offset by the removal of the creosote-treated timber retaining wall, portions of the existing bulkhead, and derelict piles.

### **6.3.2.4. Prey Species**

As discussed in additional detail in Section 6.3.1.4, direct 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 for a short period of time. The active marina/port area in which the Project is located is not anticipated to provide optimal foraging habitat for eulachon and foraging impacts are anticipated to be minor. The removal of creosote-treated timber could also improve foraging habitat by removing toxins from the marine environment.

### **6.3.2.5. Determination**

Due to a lack of identified substantial direct and indirect impacts, the Project may affect, but is **NLAA** eulachon. Critical habitat for eulachon occurs in the Action Area. The Project is **NLAA** eulachon critical habitat within the Action Area for the reasons given above.

## **6.3.3. Green Sturgeon**

Direct and indirect adverse impacts could occur to green sturgeon but are considered unlikely given the extent of the proposed activities and proposed AMMs. 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, entrainment, and benthic habitat disturbances. Indirect impacts could occur due to impacts to prey species. Potential impacts to green sturgeon from the proposed activities are discussed below in Sections 6.3.3.1 through 6.3.3.4.

#### **6.3.3.1. Noise**

As discussed in additional detail in Section 6.3.1.1, The sound levels from the impact installation of steel sheet piles could exceed thresholds in which physical injury may occur within a small area no larger than 24 meters around each pile installation activity (Table 19). Impact pile driving of 12-inch diameter fiberglass fender piles could exceed thresholds in which physical injury may occur within a small area no larger than 1 meter around each pile (Table 19). Impacts due to exceedances over the Interim Injury Criteria threshold are unlikely given the small threshold area, short-term nature of the pile driving activities, and compliance with the in-water work window.

The behavioral threshold guideline could be exceeded within 215 meters during steel sheet pile installation and 29 meters during fiberglass fender pile installation. Impacts due to exceedances over the behavioral threshold are anticipated to be minor given the short-term nature of the pile driving activities and compliance with the in-water work window.

#### **6.3.3.2. Water Quality**

As discussed in additional detail in Section 6.3.1.2, decreased water quality including turbidity has the potential to directly impact fish. Project activities with the potential to cause turbidity include, structure removal, pile installation, drainage rock placement, and riprap placement. However, potential turbidity plumes would be small in scale, temporary, and localized to the immediate vicinity of the Project activities. Any potential direct water quality adverse impacts are anticipated to be minor and temporary. The AMMs in Section 1.4 such as the implementation of spill prevention measures and compliance with the in-water work window will further reduce the potential for adverse water quality impacts.

The removal of approximately 30 cy/20 tons of creosote-treated timber is anticipated to result in long-term water quality benefits by reducing toxicity potential. AMMs such as the use of a containment boom to protect water quality during creosote-treated timber removal would be implemented.

#### **6.3.3.3. Benthic Habitat Disturbance**

Green sturgeon are bottom dwelling fish that that may use subtidal soft bottom habitat within the Action Area. The existing soft bottom habitat occurs within an active marina/port area and adjacent to creosote-treated structures. Therefore, the existing habitat is not anticipated to be of high habitat value to green



sturgeon. As discussed in additional detail in Section 6.3.1.3, the Project will result in temporary and permanent benthic habitat impacts. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates. Permanent benthic habitat impacts include the conversion of approximately 3,000 sf of aquatic soft bottom habitat to hard shoreline armoring. Benthic habitat impacts to green sturgeon are anticipated to be minor and offset by the removal of the creosote-treated timber retaining wall, portions of the existing bulkhead, and derelict piles.

#### **6.3.3.4. Prey Species**

As discussed in additional detail in Section 6.3.1.4, 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. However, 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. The removal of creosote-treated timber could improve foraging habitat.

#### **6.3.3.5. Determination**

Due to a lack of identified substantial direct and indirect impacts the Project may affect, but is **NLAA** green sturgeon. Critical habitat for green sturgeon occurs in the Action Area. The Project is **NLAA** green sturgeon critical habitat within the Action Area for the reasons given above.

#### **6.3.4. 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.

Noise, water quality, habitat, and foraging impacts are not anticipated given that sea turtles would not be anticipated to occur within the enclosed marina/port area where construction activities are proposed. The potential for direct impacts due to vessel collision during transportation of materials to the site is evaluated below in Section 6.3.4.1.



#### 6.3.4.1. 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 potential for them to occur along the routes that vessels may travel when accessing the site. 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 vessel 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 construction vessels proposed. There is no proposed long-term increase in vessel use in Action Area as a result of Project. Therefore, long-term operational vessel collision risks are not anticipated.

#### 6.3.4.2. 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 critical habitat.

### 6.3.5. 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 AMMs. As discussed in Section 4.10 and 4.11, SRKWs and humpback whales 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 6.3.5.1 through 6.3.5.4.

#### 6.3.5.1. Noise

Noise has the potential to directly impact marine mammals by causing physical injury or altering behaviour 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. Potential noise impacts would be confined to the marina/port area by the rubble breakwaters. Noise impacts are not anticipated given that whales would not be anticipated to occur within the enclosed marina where construction activities are proposed. Although it is extremely unlikely that SRKW or humpback whales



would occur within the enclosed marina/ port area, a shutdown zone would be implemented to further protect whales from noise impacts. The shutdown zone would include the entire enclosed port/marina area. This shutdown zone would also be applied to all marine mammals. With the proposed shutdown zone, noise impacts to SRKW and humpbacks would be avoided.



**Figure 8. Marine Mammal Shutdown Zone**



#### **6.3.5.2. Water Quality**

Decreased water quality has the potential to directly impact SRKW and humpback whales. The Project may create focused areas of minor temporary water quality impacts due to suspended sediments during in-water construction activities, however any potential water quality would be anticipated to be confined to the marina/port area. Water quality impacts are therefore not expected given that whales would not be anticipated to occur within the enclosed marina/port area where construction activities are proposed. The AMMs in Section 1.4 such as the implementation of spill prevention measures and the proposed shutdown zone will further reduce the potential for adverse water quality impacts.

The removal of approximately 30 cy/20 tons of creosote-treated timber is anticipated to result in long-term water quality benefits. AMMs such as the use of a containment boom to protect water quality during creosote-treated timber removal would be implemented.

#### **6.3.5.3. Vessel Collision**

Because whales 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 whales are not anticipated to occur within the enclosed marina, there is the potential for them to occur along the routes that vessels may travel when accessing the site. 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 vessel activity. The increased risk of vessel collision due to construction related vessel activity is considered negligible given the rare occurrence of SRKW and humpback whales in the LCR and typical nature of the types of vessels proposed. There is no proposed long-term increase in vessel use in Action Area as a result of Project. Therefore, long-term operational vessel collision risks are not anticipated.

#### **6.3.5.4. Prey Species**

Direct impacts to prey species such as fish, for reasons outlined in section 6.3.1 are unlikely. Additionally, the marina 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.

#### **6.3.5.5. Determination**



Due to a lack of identified direct and indirect impacts the Project is **NLAA** SRKW and humpback whales. Critical habitat for humpback whales or SRKWs does not occur in the Action Area. The Project would have **No Effect** on SRKW or humpback whale critical habitat.

## 6.4. USFWS Listed Species

### 6.4.1. 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 AMMs. 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 LCR estuary and this species is typically associated with freshwater habitats.

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 bull trout from the proposed activities are discussed below in Sections 6.4.1.1 through 6.4.1.4.

#### 6.4.1.1. Noise

As discussed in additional detail in Section 6.3.1.1, The sound levels from the impact installation of steel sheet piles could exceed thresholds in which physical injury may occur within a small area no larger than 24 meters around each pile installation (Table 19). Impact pile driving of 12-inch diameter fiberglass fender piles could exceed thresholds in which physical injury may occur within a small area no larger than 1 meter around each pile (Table 19). Impacts due to exceedances over the Interim Injury Criteria threshold are anticipated to be unlikely given the small threshold area, short-term nature of the pile driving activities, and compliance with the in-water work window.

The behavioral threshold guideline could be exceeded within 215 meters during steel sheet pile installation and 29 meters during fiberglass fender pile installation. Impacts due to exceedances over the Level B threshold are anticipated to be minor given the short-term nature of the pile driving activities and compliance with the in-water work window.

#### 6.4.1.2. Water Quality

As discussed in additional detail in Section 6.3.1.2, decreased water quality including turbidity has the potential to directly impact fish. Project activities with the potential to cause turbidity include, structure removal, pile installation, drainage rock placement, and riprap placement. However, potential turbidity plumes would be small in scale, temporary, and localized to the immediate vicinity of the Project



activities. Any potential direct water quality adverse impacts are anticipated to be minor and temporary. The AMMs in Section 1.4 such as the implementation of spill prevention measures and compliance with the in-water work window will further reduce the potential for adverse water quality impacts.

The removal of approximately 30 cy/20 tons of creosote-treated timber is anticipated to result in long-term water quality benefits by reducing toxicity potential. AMMs such as the use of a containment boom to protect water quality during creosote-treated timber removal would be implemented.

#### **6.4.1.3. Benthic Habitat Disturbance**

As discussed in additional detail in Section 6.3.1.3, the Project will result in temporary and permanent benthic habitat impacts. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates. Permanent benthic habitat impacts include the conversion of approximately 3,000 sf of aquatic soft bottom habitat to hard shoreline armoring (bulkhead wall and riprap shoreline). As discussed previously, it is unlikely that bull trout would occur in that Action Area because it is located within the marine/mixing zone of the LCR estuary and this species is typically associated with freshwater habitats. Benthic habitat Impacts to bull trout are anticipated to be minor and any potential impacts are anticipated to be offset by the removal of the creosote-treated timber retaining wall, existing bulkhead, and derelict piles which would restore approximately 165 sf of benthic habitat and remove approximately 30 cy or 20 tons of creosote.

#### **6.4.1.4. Prey Species**

As discussed in additional detail in Section 6.3.1.4, direct 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. The Project may result in minor benthic habitat impacts that could result in impacts to benthic food supply. However, the active marina/port area in which the Project is located is not anticipated to provide optimal foraging habitat for bull trout. Fish prey species could be impacted by noise emitted during in-water construction activities. As discussed in Section 6.3.1.1, Project related noise would only exceed the Interim Injury Criteria Injury threshold for fish within a small area where salmonids would be unlikely to occur foraging (Table 19).

Substantial impacts to bull trout due to a reduced food supply are not anticipated given the nature and location of the proposed Project and proposed AMMs. The removal of creosote-treated timber could also improve foraging habitat.



#### 6.4.1.5. Determination

Due to a lack of identified direct and indirect impacts the Project is **NLAA** bull trout. Critical habitat for bull trout does not occur in the Action Area. The Project would have **No Effect** on bull trout critical habitat.

#### 6.4.2. Bird Species (Western Snowy Plover, Marbled Murrelet)

Direct and indirect adverse impacts could occur to western snowy plover and marbled murrelet could occur but are considered unlikely given the extent of the proposed activities and proposed AMMs. As discussed in Section 4.12, streaked horned lark are unlikely to occur in the Action Area and 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 of the project area. As discussed in Section 4.13, optimal western snowy plover habitat does not occur in the Action Area and 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. As discussed in Section 4.14, marbled murrelet have the potential to occur foraging within the Action Area.

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 bull trout from the proposed activities are discussed below in Sections 6.4.2.1 through 6.4.2.4.

##### 6.4.2.1. Noise

Noise has the potential to directly impact marbled murrelets, western snowy plover, and streaked horned lark. The Project could create in-air noise levels of up to 105 dBA at 50 ft from the source (WSDOT 2020). In-water noise levels of up to 170 dBrms, 161 dBSEL, and 204 dBpeak during the impact installation of steel sheet piles (Table 2). In-water noise levels of up to 157 dBrms, 146 dBSEL, and 183 dBpeak during the impact installation of fiberglass fender piles (Table 2).

Noise thresholds have not been developed for western snowy plover or streaked horned lark, but have been developed for marbled murrelets. In the absence of noise thresholds for western snowy plover and streaked horned lark, noise thresholds developed for marbled murrelets were used to consider potential noise impacts to all three bird species.

##### In-air

The USFWS completed a biological opinion (BO) on potential in-air noise impacts to marbled murrelets from the use of heavy machinery (USFWS 2015b). The BO establishes threshold distances to certain activities to help determine potential impacts to marbled murrelets during construction activities.



According to this BO, pile driving at a distance 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. Suitable nesting habitat does not occur within 0.25 miles of the proposed Project activities. The nearest suitable nesting habitat for marbled murrelets as defined by the critical habitat, is approximately 8 miles east of the Action Area (USFWS 2016). Therefore, noise impacts to nesting individuals are not anticipated.

In addition, the USFWS has developed thresholds for pile driving projects which when exceeded would result in masking impacts that could result in impaired essential communication between foraging murrelets. The USFWS determined that air-borne noise from 'typical' pile driving projects, results in insignificant masking impacts (USFWS 2013b). A 'typical' pile driving project involves the installation of up to 36-inch diameter steel piles and is defined as "a project which vibes in the piles as much as possible before impact driving to proof the piles". Piles proposed for installation under this Project are less than 36-inches in diameter and would be vibrated in as much as possible for impact proofing. Therefore, the Project is considered a 'typical' pile driving project that would have insignificant impacts on masking.

#### In-water

The USFWS has developed in-water auditory thresholds for marbled murrelets (Table 20). These auditory thresholds apply to repetitive impulsive noise sources such as impact pile driving (USFWS 2014a). There are currently no thresholds for continuous noise sources such as vibratory pile installation. The USFWS considers 150 dBrms a guideline, not a threshold. Marbled murrelets may respond to noise levels above this guideline, but the response may not constitute an adverse impact (USFWS 2014a). Potential impacts from noise exceedances above the behavioral guideline include masking, delayed or interrupted foraging, interference with mate identifications, courtship, and bonding. The USFWS Sound Exposure Level Calculator for Marbled Murrelet and Bull Trout was used to calculate the distance in which pile driving noise may exceed the established threshold (USFWS 2014b Table 20).

Noise levels would not exceed injury thresholds, but could exceed behavioral thresholds within 215 meters of the pile driving activities. It is unlikely that ESA-listed birds species will occur within close proximity to the active construction site and within the behavioral threshold area. Any potential behavioral impacts are anticipated to be minor and temporary.



**Table 20. Marbled Murrelet In-water Noise Thresholds**

	Injury		Behavioral
	Auditory	Non auditory	
<b>Threshold Value</b>	<b>202 dB SEL</b>	<b>208 dB SEL</b>	<b>150 dBrms</b>
Distance to Threshold (Steel Sheet)	Does not exceed	Does not exceed	215 meters
Distance to Threshold (12-inch fiberglass)	Does not exceed	Does not exceed	29 meters

Source: USFWS 2014a and USFWS 2014b

**6.4.2.2. 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 construction activities. Project activities with the potential to cause turbidity include, structure removal, pile installation, drainage rock placement, and riprap placement. However, potential turbidity plumes would be small in scale, temporary, and localized to the immediate vicinity of the Project activities. Any potential direct water quality adverse impacts are anticipated to be minor and temporary. The AMMs in Section 1.4 such as the implementation of spill prevention measures will further reduce the potential for adverse water quality impacts.

The removal of approximately 30 cy/20 tons of creosote-treated timber is anticipated to result in long-term water quality benefits by reducing toxicity potential. AMMs such as the use of a containment boom to protect water quality during creosote-treated timber removal would be implemented.

**6.4.2.3. Benthic Habitat Disturbance**

Marbled murrelets, western snowy plover, and streaked horned lark could use soft bottom habitat within the Project area for foraging. However, the existing soft bottom habitat occurs within an active marina/port area and adjacent to creosote-treated structures. Therefore, the existing habitat is not anticipated to be of high habitat value to marbled murrelet, western snowy plover, or streaked horned lark.

The Project will result in temporary and permanent benthic habitat impacts. Temporarily disturbed benthic habitat would be anticipated to be quickly recolonized by benthic species and in-benthic invertebrates. Permanent benthic habitat impacts include the conversion of approximately 3,000 sf of aquatic soft bottom habitat and 350 sf of upland soft bottom habitat to hard shoreline armoring. Benthic habitat impacts to marbled murrelets, western snowy plover, and streaked horned larks are anticipated



to be minor and any potential impacts are anticipated to be offset by the removal of the creosote-treated retaining wall, existing bulkhead, and derelict piles.

#### 6.4.2.4. 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. However, the active marina/port area in which the Project is located is not anticipated to provide optimal foraging habitat for marbled murrelets, western snowy plover, or streaked horned lark. Fish prey species could be impacted by noise emitted during in-water construction activities. As discussed in Section 6.3.1.1, Project related noise would only exceed the Interim Injury Criteria Injury threshold for fish within a small area where salmonids would be unlikely to forage (Table 20).

Substantial impacts to marbled murrelets, western snowy plover, or streaked horned lark due to a reduced food supply are not anticipated given the nature and location of the proposed Project and proposed AMMs. The removal of creosote-treated timber could improve foraging habitat.

#### 6.4.2.5. Determination

Due to a lack of identified direct and indirect impacts the Project is **NLAA** marbled murrelets and western snowy plover. Critical habitat for marbled murrelets and western snowy plover does not occur in the Action Area. The Project would have **No Effect** on marbled murrelet and western snowy plover critical habitat.

## 7. Conclusion

Direct and indirect adverse impacts could occur to protected species but are unlikely to occur given the extent of the proposed repairs and proposed AMMs. The Project could result in direct impacts from construction related noise, water quality, vessel collision, and benthic habitat disturbances. The Project could also result in indirect impacts due to impacts to prey species. Given the extent of the repairs 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 21

**Table 21. Effect Determination**

Species	Scientific Name	Federal Status	Effect Determination	Critical Habitat Determination
NMFS ESA-listed Species				
Chinook Lower Columbia River ESU	<i>Oncorhynchus tshawytscha</i>	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	<i>O. keta</i>	Threatened	NLAA	NLAA
Coho Lower Columbia River ESU	<i>O. kisutch</i>	Threatened	NLAA	NLAA
Sockeye Snake River ESU	<i>O. nerka</i>	Endangered	NLAA	NLAA
Steelhead Lower Columbia River DPS	<i>O. myskiss</i>	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	<i>Acipenser medirostris</i>	Threatened	NLAA	NLAA
Eulachon Southern DPS	<i>Thaleichthys pacificus</i>	Threatened	NLAA	NLAA
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Endangered	NLAA	No Effect
Southern Resident Killer Whale	<i>Orcinus orca</i>	Endangered	NLAA	No Effect
Humpback Whale Central America DPS	<i>Megaptera novaeangliae</i>	Endangered	NLAA	No Effect
Humpback Whale Mexico DPS		Threatened	NLAA	No Effect
USFWS ESA-listed Species				
Bull Trout	<i>Salvelinus confluentus</i>	Threatened	NLAA	No Effect
Western Snowy Plover	<i>Charadrius alexandrinus nivosus</i>	Threatened	NLAA	No Effect
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threatened	NLAA	No Effect
Streaked Horned Lark	<i>Eremophila alpestris strigata</i>	Threatened	NLAA	No Effect



## 8. References

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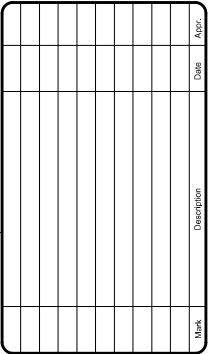
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## **Appendix A: Design Drawings**





[illegible]

**COVER SHEET, VICINITY  
& LOCATION MAPS AND  
SHEET INDEX**

Designed by:	DES	Date:	2024-08-24	Rev:	-
Drawn by:	DFT	Checked by:	CHK	M&N Project No. 211150	
Reviewed by:	REV	Drawing code:			
Submitted by:	EMY CARPENTER ?? MORFITT & NICHOL	Drawing Scale:		Plot scale: 1:1 (D SHEET)	



moffatt & nichol



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E	<b>GENERAL</b>																																											
	<div><div>1. THESE NOTES CONTAIN GENERAL INFORMATION AND ARE NOT COMPLETE FOR CONSTRUCTION PURPOSES. VERIFY INFORMATION GIVEN HERE WITH SPECIFICATIONS, REFERENCE DRAWINGS, AND OTHER DOCUMENTS AND BRING ANY CONFLICTS TO THE ATTENTION OF THE PORT BEFORE BEGINNING AFFECTED WORK INCLUDING FABRICATION, DEMOLITION, OR CONSTRUCTION. THE PORT WILL RESOLVE ANY SUCH CONFLICT.</div><div>2. VERIFY LOCATIONS OF EXISTING UTILITIES AND RELATED FEATURES IN A MANNER SIMILAR TO NOTE 1 ABOVE. USE A LOCATOR SERVICE AND EXCAVATE TO EXPOSE UTILITY LINES. BRING ANY CONFLICTS BETWEEN EXISTING UTILITIES OR RELATED FEATURES AND NEW CONSTRUCTION TO THE ATTENTION OF THE PORT.</div><div>3. IMMEDIATELY REPAIR ANY DAMAGE TO EXISTING UTILITIES OR RELATED FEATURES BY THE CONTRACTOR TO THE SATISFACTION OF THE PORT AND AT NO EXPENSE TO THE PORT. DRAWING G-003 CONTAIN THE PROJECT STRUCTURAL NOTES ASSOCIATED WITH THE FACILITY. NOTES ON ALL OTHER DRAWINGS ARE SUPPLEMENTAL.</div><div>4. AREAS OF THE FACILITY NOT UNDER CONSTRUCTION SHALL REMAIN IN OPERATION DURING THIS PROJECT. KEEP ALL CONSTRUCTION ACTIVITIES AND PERSONNEL CLEAR OF FACILITY OPERATIONS.</div><div>5. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, USE SIMILAR DETAILS OF CONSTRUCTION, SUBJECT TO REVIEW AND APPROVAL BY THE PORT.</div><div>6. VERIFY ALL SITE CONDITIONS, FEATURES, DIMENSIONS, AND ELEVATIONS PRIOR TO FABRICATION OF ASSEMBLIES OR CONSTRUCTION. COORDINATE THE SIZE AND LOCATION OPENINGS, AS WELL AS ALL OF ALL OPENINGS. VERIFY SIZE AND LOCATION OF ALL BY OTHER TRADES. THE CONDITIONS SHOWN ON THESE DRAWINGS ATTACHMENTS REQUIRED ARE BASED ON AVAILABLE EXISTING DATA. NOTIFY THE PORT IN WRITING OF ANY DISCREPANCIES BEFORE BEGINNING THE AFFECTED WORK. RESOLVE DISCREPANCIES AS APPROVED BY THE PORT BEGINNING THE AFFECTED WORK. RESOLVE DISCREPANCIES AS APPROVED BY THE PORT BEFORE BEGINNING THE AFFECTED WORK. LINES AND GRADES: ESTABLISH AND MAINTAIN THE DATUM AND CONSTRUCTION BASELINE.</div><div>7. SUBMIT SHOP DRAWINGS AND OTHER SUBMITTALS FOR REVIEW TO THE PORT PRIOR TO FABRICATION OF COMPONENTS. INCLUDE DEMOLITION PLANS, CONSTRUCTION JOINT LOCATIONS, AND CONSTRUCTION JOINT DETAILS. THE PORT WILL REVIEW THE SUBMITTALS.</div><div>8. SHOP DRAWING AND OTHER SUBMITTAL REVIEWS: REVIEW, VERIFY, AND STAMP BY BOTH THE CONTRACTOR AND THE CONTRACTORS QUALITY CONTROL MANAGER BEFORE SUBMITTING TO THE PORT. VERIFY CONFORMANCE WITH THE MEANS AND METHODS; TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION; AND ALL SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO. SUBMIT TO THE PORT FOR REVIEW WHEN COMPLETE.</div><div>9. BRING ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE STRUCTURAL DRAWINGS OR BETWEEN THE STRUCTURAL DRAWINGS AND THE DRAWINGS OF OTHER TRADES (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, ETC.) TO THE ATTENTION OF THE PORT BEFORE PROCEEDING WITH ANY WORK INVOLVED.</div><div>10. DO NOT SCALE WORKING DIMENSIONS FROM PLANS, SECTIONS OR DETAILS ON THE STRUCTURAL DRAWINGS.</div><div>11. SUBMIT CONTRACTOR-INITIATED CHANGES IN WRITING TO THE PORT FOR APPROVAL PRIOR TO SUBMITTAL OF SHOP DRAWINGS.</div><div>12. JOBSITE SAFETY; MEANS AND METHODS OF PERFORMING THE WORK; AND TECHNIQUES, SEQUENCES, AND PROCEDURES OF CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE PRESENCE OF THE PORT OR ITS REPRESENTATIVE DOES NOT NEGATE THE CONTRACTORS RESPONSIBILITY FOR JOBSITE SAFETY OR THE CONTRACTORS RESPONSIBILITY TO PERFORM ITS WORK IN COMPLIANCE WITH THE CONTRACT.</div><div>13. VERIFY THE STRUCTURAL CAPACITY OF EXISTING STRUCTURES FOR THE ANTICIPATED LOADS OF CONSTRUCTION EQUIPMENT AND OPERATIONS TO BE USED.</div><div>14. PROVIDE TEMPORARY BRACING TO UNFINISHED PORTIONS OF THE STRUCTURE. REMOVE TEMPORARY BRACING ONLY AFTER STABILITY OF THE FINISHED STRUCTURE IS ACHIEVED.</div><div>15. CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ALL EXISTING STRUCTURES THAT WILL REMAIN.</div></div>						<b>SURVEY NOTES:</b> <div><div>1. EXISTING SITE INFORMATION SHOWN ON THESE DRAWINGS IS BASED ON SURVEY INFORMATION PROVIDED BY SOLMAR HYDRO, DATED 13 APRIL, 2022.</div><div>2. DATE OF SURVEY: TOPOGRAPHIC AND BATHYMETRIC SURVEYS CONDUCTED BETWEEN 15 FEB, 2022 AND 4 MARCH 2022</div><div>3. HORIZONTAL DATUM FOR THIS PROJECT IS NAD83/11 WITH PROJECTION STATE PLANE COORDINATE SYSTEM WASHINGTON SOUTH ZONE.</div><div>4. VERTICAL DATUM FOR THIS PROJECT IS MLLW BASED ON PUBLISHED NOAA TIDAL BENCHMARK 944 0581 C</div><div>5. UNITS: U.S FEET.</div><div>6. CONTOUR INTERVAL: 1 FOOT.</div><div>7. ALL UNDERGROUND UTILITY LOCATIONS ARE BASED ON OBSERVED EVIDENCE OF STRUCTURES. NO GUARANTEE IS MADE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED OR THAT THE UNDERGROUND UTILITIES ARE SHOWN IN THEIR EXACT LOCATION. FIELD VERIFY THE LOCATION,SIZE, MATERIAL, AND DEPTH OF UTILITIES.</div><div>8. CONTRACTOR IS RESPONSIBLE FOR REQUESTING AND MAINTAINING LOCATES ON ALL UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS.</div></div> <div><b>CONTROL NOTES:</b><div>BASED STATION: SWLS ILWACO</div><div>NORTHING = 373487.13 FT</div><div>EASTING = 746918.05 FT</div><div>ELEVATION = 14.23 FT (NAVD88)</div></div> <div><b>DATUM:</b><div>ELEVATION DATUM FOR THIS PROJECT IS 0.0' MEAN LOWER LOW WATER (MLLW).</div></div> <div><b>TIDAL DATA:</b><div>TIDAL ELEVATIONS BASED ON NOAA TIDES AND CURRENTS DATUM FOR STATION 944 0581 CAPE DISAPPOINTMENT, WA EPOCH 1983 - 2001</div></div> <table><tr><th>ELEV(FT)</th><th>DATUM</th><th>DESCRIPTION</th></tr><tr><td>11.50</td><td>HOWL</td><td>HIGHEST OBSERVED WATER LEVEL</td></tr><tr><td>8.07</td><td>MHHW</td><td>MEAN HIGHER HIGH WATER</td></tr><tr><td>7.37</td><td>MHW</td><td>MEAN HIGH WATER</td></tr><tr><td>4.36</td><td>MTL</td><td>MEAN TIDAL LEVEL</td></tr><tr><td>1.35</td><td>MLW</td><td>MEAN LOW WATER</td></tr><tr><td>0.46</td><td>NAVD88</td><td>NORTH AMERICAN VERTICAL DATUM OF 1988</td></tr><tr><td>0.00</td><td>MLLW</td><td>MEAN LOWER LOW WATER</td></tr><tr><td>-2.95</td><td>LOWL</td><td>LOWEST OBSERVED WATER LEVEL</td></tr></table>						ELEV(FT)	DATUM	DESCRIPTION	11.50	HOWL	HIGHEST OBSERVED WATER LEVEL	8.07	MHHW	MEAN HIGHER HIGH WATER	7.37	MHW	MEAN HIGH WATER	4.36	MTL	MEAN TIDAL LEVEL	1.35	MLW	MEAN LOW WATER	0.46	NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988	0.00	MLLW	MEAN LOWER LOW WATER	-2.95	LOWL	LOWEST OBSERVED WATER LEVEL	<b>PERMIT REQUIREMENTS AND BMPS:</b> <div>CONTRACTOR SHALL COMPLY WITH ALL PROJECT PERMIT CONDITIONS AND APPLICABLE BMPS LISTED BELOW AND IDENTIFIED IN THE SPECIFICATIONS, THE PROJECT STORM WATER POLLUTION PREVENTION PLAN, AND WATER QUALITY PROTECTION AND MONITORING PLAN.</div> <div><div>1. DURING ANY IN-WATER AND EMBANKMENT WORK, CONTAINMENT BOOMS SHALL BE USED TO SURROUND THE WORK AREAS OR SEPARATE EMBANKMENT WORK FROM SURFACE WATER. THE BOOMS SHALL SERVE TO CONTAIN AND COLLECT ANY OILY MATERIAL RELEASED AS WELL AS FLOATING DEBRIS. OIL-ABSORBENT MATERIALS SHALL BE EMPLOYED IMMEDIATELY IF VISIBLE PRODUCT IS OBSERVED. ACCUMULATED DEBRIS SHALL BE COLLECTED DAILY AND DISPOSED OF AT A PERMITTED UPLAND SITE APPROVED BY THE PORT.</div><div>2. STEEL PILING SHALL BE INSTALLED WITH A VIBRATORY HAMMER WHEN POSSIBLE. IMPACT HAMMERING SHALL START WITH LIGHT TAPPING, THEN INCREASE TO FULL FORCE GRADUALLY.</div><div>3. A BUBBLE CURTAIN AND ONE OR MORE OTHER NOISE ATTENUATION METHODS SHALL BE USED DURING IMPACT INSTALLATION OR PROOFING OF ALL STEEL PILING.</div><div>4. HYDRAULIC WATER JETS SHALL NOT BE USED TO INSTALL PILES.</div><div>5. WORK BARGES, CONTAINMENT BOOMS, AND SILT CURTAINS SHALL NOT BE GROUNDED DURING CONSTRUCTION.</div><div>6. EXCESS AND/OR WASTE MATERIALS GENERATED DURING CONSTRUCTION SHALL NOT BE DISPOSED OF OR ALLOWED TO ENTER STATE WATERS. EXCESS OR WASTE MATERIALS SHALL BE COLLECTED AND RECYCLED OR DISPOSED OF AT A PERMITTED UPLAND FACILITY APPROVED BY THE PORT DEMOLITION AND CONSTRUCTION MATERIALS SHALL NOT BE STORED WHERE WAVE ACTION OR UPLAND RUNOFF CAN CAUSE MATERIALS TO ENTER SURFACE WATERS.</div><div>7. WATER QUALITY STANDARDS AND PROCEDURES THAT LIMIT THE IMPACT OF POLLUTANTS SHALL BE OBSERVED (WAC173-201A-210(1)(E)(I)).</div><div>8. LAND-BASED STAGING AREAS FOR ACTIVITIES, SUCH AS STORAGE OF MACHINERY, EQUIPMENT, MATERIALS, AND STOCKPILED SOILS SHALL BE ESTABLISHED LANDWARD OF THE TOP OF BANK IN ACCORDANCE WITH REQUIREMENTS IN THE SPECIFICATIONS. A SILT FENCE SHALL BE INSTALLED AROUND THE PERIMETER OF THE UPLAND WORK AREAS AND LOCATIONS WHERE MACHINERY, MATERIALS, AND STOCKPILED SOILS ARE SITUATED. ANY TEMPORARY STOCKPILES SHALL BE COVERED AND BERMED WHEN NOT IN USE.</div></div>				
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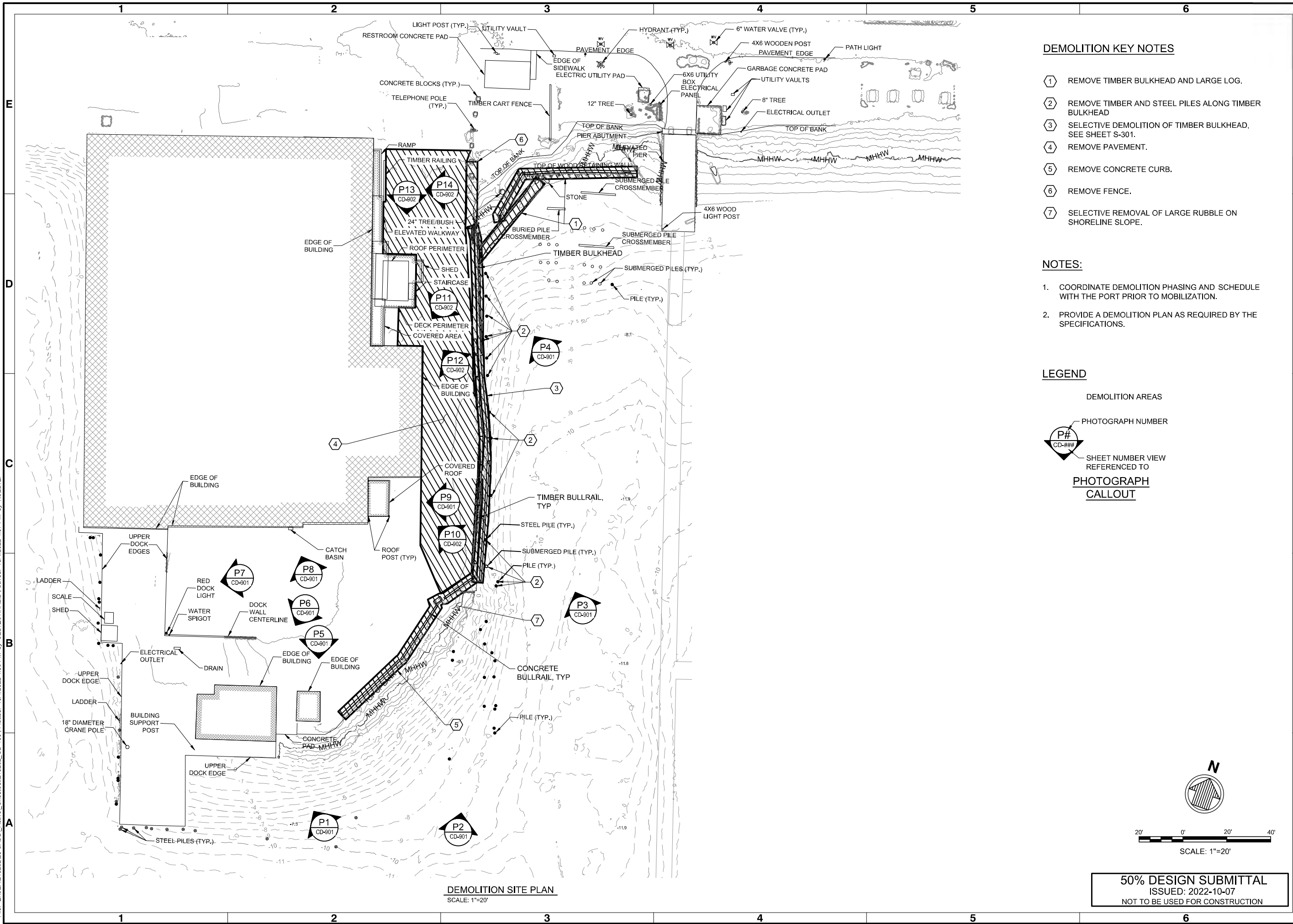


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DEX: 7 OF 25





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**P10**  
CD-100 SE CORNER OF BLDG  
LOOKING NORTHWEST



**P11**  
CD-100 NE CORNER OF BLDG  
LOOKING SOUTHWEST



**P12**  
CD-100 EQUIPMENT TOWER AND UTILITIES  
LOOKING NORTHWEST



**P13**  
CD-100 EQUIPMENT  
LOOKING SOUTHEAST



**P14**  
CD-100 BLDG FOUNDATION AND UTILITIES  
LOOKING WEST

**LEGEND**

 DEMOLITION AREAS



Rev.	Date	Appr.	Description	Mark

PORT OF ILWACO  
MARINA STRUCTURES  
REPLACEMENT  
  
DEMOLITION PHOTOS  
(2 OF 2)

DESIGNED BY: DES	DRAWN BY: CHK	DATE: 2022-08-24	PROJECT NO.: 211150	REVIEWED BY: REV	SUBMITTED BY: EMY CARPENTER ?? MOFFATT & NICHOL	DRAWING CODE: 	DRAWING SCALE: 1" = 10' (SHEET)
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STREET SUITE 610  
SEATTLE, WA 98101  
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INDEX: 10 OF 25

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



	PAVING AREA LIMITS
	BERM CONSTRUCTION
	SLOPE PROTECTION

1. PRIOR TO ANY GROUND DISTURBING ACTIVITIES, INSTALL TEMPORARY EROSION CONTROL MEASURES PER WSDOT TEMPORARY EROSION AND SEDIMENT CONTROL MANUAL, MAY 2019.
2. COORDINATE ACCESS AND CONSTRUCTION PHASING WITH TENANT OPERATIONS. INTERRUPTIONS SHALL BE MINIMIZED TO THE EXTENT POSSIBLE.
3. CONDUCT PRE-PRODUCTION ANCHOR TESTING PROGRAM, INSTALL AND TEST.
4. SAWCUT AND REMOVE PAVEMENT WITHIN LIMITS SHOWN, PROTECT ALL SURFACE FEATURES TO REMAIN.
5. REMOVE EXISTING TIMBER AND STEEL PILES WATERSIDE OF THE EXISTING TIMBER BULKHEAD.
6. PERFORM SELECTIVE DEMOLITION OF EXISTING TIMBER BULKHEAD, LARGE RUBBLE ON SHORELINE SLOPE, AND OTHER ITEMS AS NOTED ON THE DRAWINGS.
7. PROVIDE TEMPORARY SHORING AS NECESSARY.
8. DRIVE NEW SHEET PILES IN FRONT (WATERSIDE) OF THE EXISTING BULKHEAD.
9. PLACE BACKFILL BEHIND THE NEW BULKHEAD.
10. INSTALL BUT DO NOT TEST OR TENSION THE ANCHORS.
11. INSTALL PARTIAL CONCRETE CAP.
12. PRELOAD AND TEST THE ANCHORS AS DESCRIBED IN THE SPECIFICATIONS. COMPLETE THE PILE CAP.
13. IN CONJUNCTION WITH THE MARINE STRUCTURAL CONSTRUCTION, PLACE BACKFILL AND CONSTRUCT PAVEMENT.
14. DRIVE FENDER PILES.
15. INSTALL FENDER SYSTEM COMPONENTS, MOORING HARDWARE, DAVIT CRANES.
16. CLEAR AND GRUB EXISTING GROUND WITHIN FOOTPRINT OF PROPOSED BERM.
17. INSTALL SHORLINE PROTECTION.
18. CONSTRUCT BERM AND SEED ALL DISTURBED SURFACES.

NOTE: DREDGING OF THE MARINA (NIC) ADJACENT TO THE BULKHEAD MUST NOT OCCUR UNTIL AFTER COMPLETION OF THE BULKHEAD INSTALLATION.

1. THE CONTRACTOR MAY PROPOSE ALTERNATIVE CONSTRUCTION SEQUENCE.  
THE CRITERIA FOR ACCEPTANCE MUST INCLUDE:

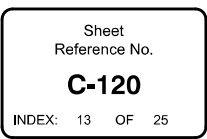
MAXIMUM ALLOWABLE SHEET PILE WALL STRESS,  $F_a=25\text{ksi.}$

THE CONTRACTOR MUST SUBMIT CALCULATIONS, STAMPED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF WASHINGTON DEMONSTRATING COMPLIANCE WITH THE ABOVE CRITERIA FOR ENGINEERS APPROVAL.



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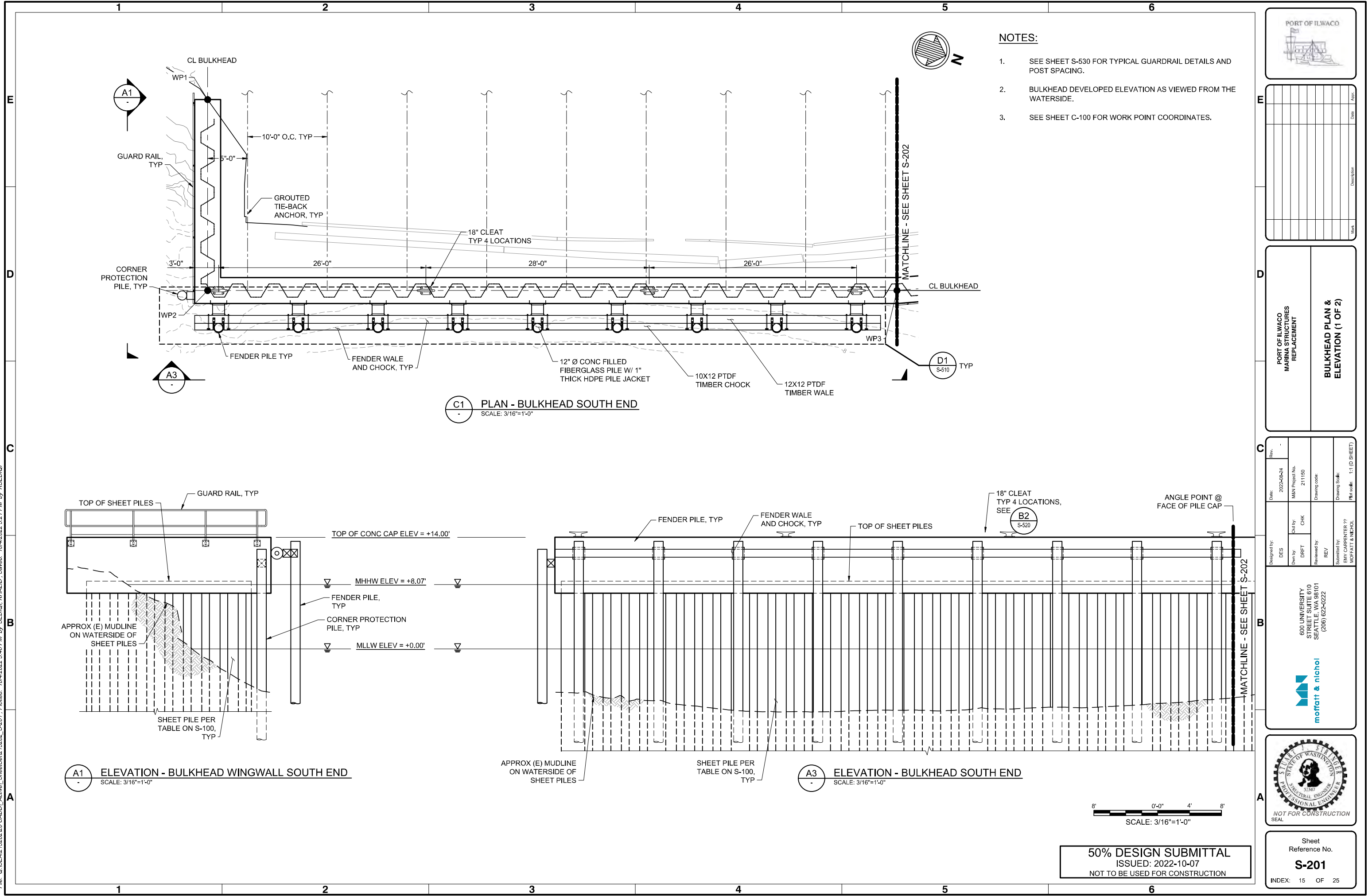
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INDEX: 13 OF 25

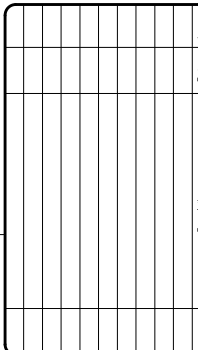




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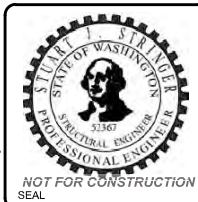


**BULKHEAD PLAN &  
ELEVATION (2 OF 2)**

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Reviewed by REV	Drawing code	
Submitted by: EMV GARRESTER ??		Drawing Scale:



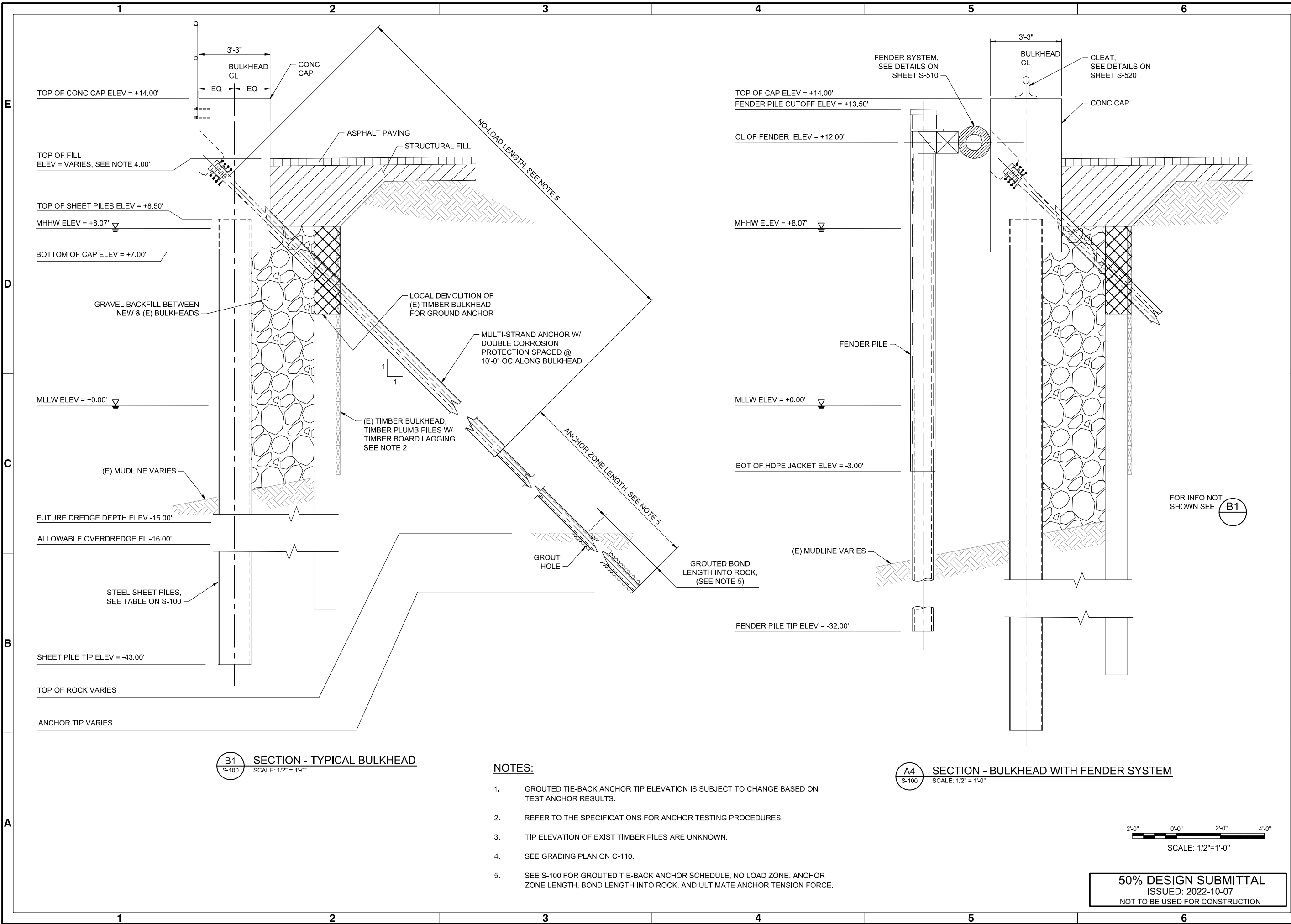
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**B1**  
SECTION - TYPICAL BULKHEAD  
SCALE: 1/2" = 1'-0"

- NOTES:**
1. GROUTED TIE-BACK ANCHOR TIP ELEVATION IS SUBJECT TO CHANGE BASED ON TEST ANCHOR RESULTS.
  2. REFER TO THE SPECIFICATIONS FOR ANCHOR TESTING PROCEDURES.
  3. TIP ELEVATION OF EXIST TIMBER PILES ARE UNKNOWN.
  4. SEE GRADING PLAN ON C-110.
  5. SEE S-100 FOR GROUTED TIE-BACK ANCHOR SCHEDULE, NO LOAD ZONE, ANCHOR ZONE LENGTH, BOND LENGTH INTO ROCK, AND ULTIMATE ANCHOR TENSION FORCE.

**A4**  
SECTION - BULKHEAD WITH FENDER SYSTEM  
SCALE: 1/2" = 1'-0"

2'-0" 0'-0" 2'-0" 4'-0"  
SCALE: 1/2"=1'-0"

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Rev.	Date	Author	Description

PORT OF ILWACO MARINA STRUCTURES REPLACEMENT	BULKHEAD TYPICAL SECTIONS
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DESIGNED BY: DES	DRAWN BY: CHK	CHECKED BY: REV	DATE: 2022/08/24	PROJECT NO. 211150	DRAWING CODE 	DRAWING SCALE 1" = 1'-0" (SHEET)
SUBMITTED BY: EMY CARPENTER ??			MOFFATT & NICHOL			

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**moffatt & nichol**

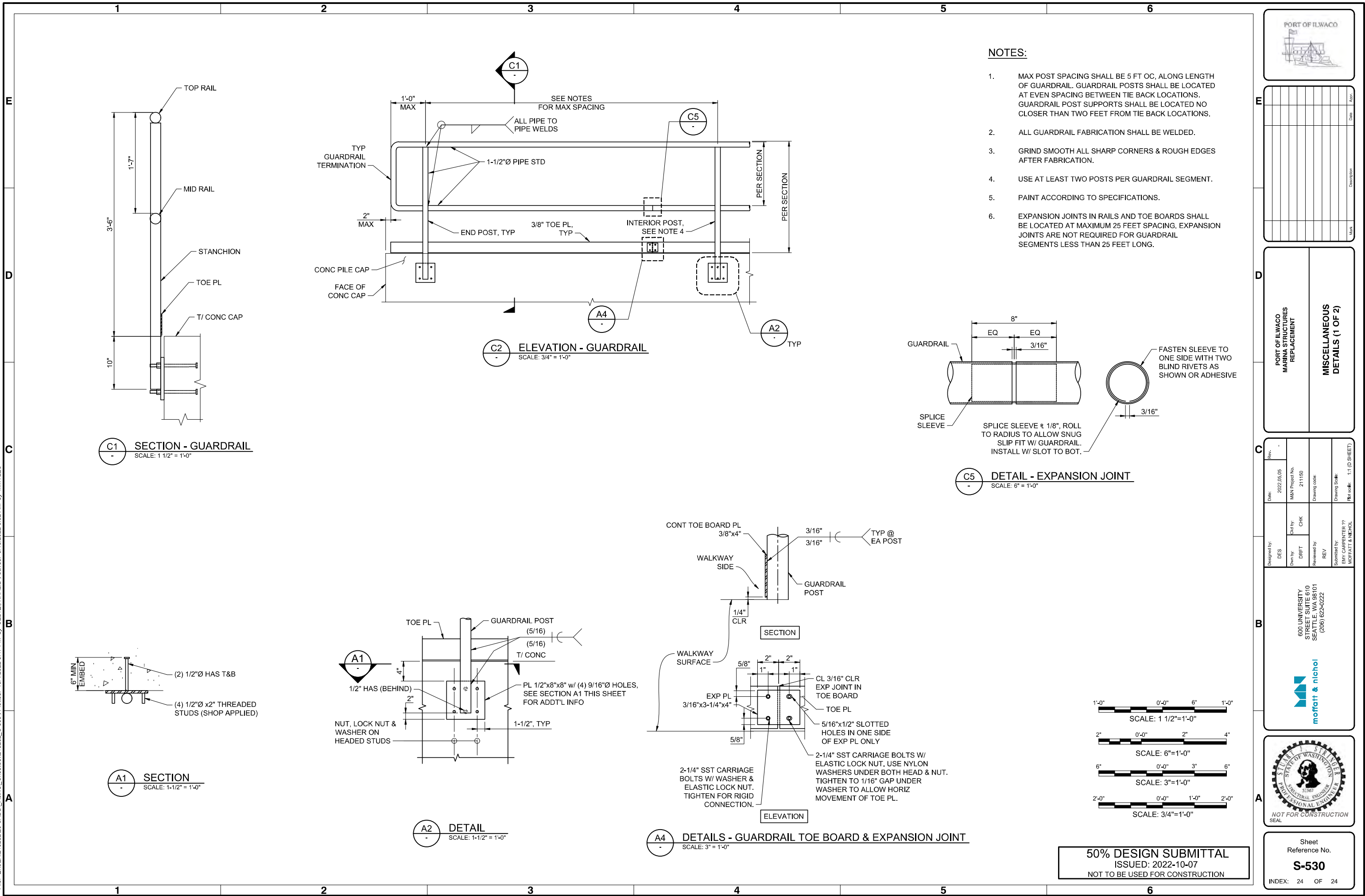


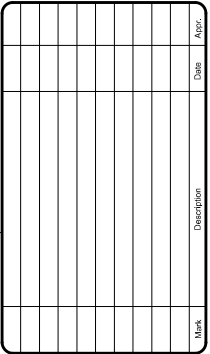
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PORT OF ILWACO MARINA STRUCTURES REPLACEMENT	MISCELLANEOUS DETAILS (2 OF 2)
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Drawn by:	DFT	Checked by:	CHK	M&N Project No. 211150	
Reviewed by:	REV	Drawing code:			
Submitted by:	EMY CARPENTER ?? MORFITT & NICHOL	Drawing Scale:		Plot scale: 1:1 (D SHEET)	



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INDEX: 25 OF 25

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## **Appendix B: Essential Fish Habitat Assessment**



## 9. Essential Fish Habitat

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. Temporary and permanent 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 bulkhead installation and riprap installation will result in the permanent conversion of approximately 3,000 sf of aquatic soft bottom habitat to hard shoreline armoring. Impacts to benthic habitat are anticipated to be offset by the removal of creosote-treated timber from the marine 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 Fisheries Management Plan (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. Construction of the bulkhead wall could cause minor impacts to coastal pelagic EFH. The removal of creosote-treated structures and piles would be anticipated to improve coastal pelagic Species 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. Construction of the replacement bulkhead wall could cause minor impacts to salmon EFH. The removal of creosote-treated structures and piles would be anticipated to improve 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:

#### Noise

In-water and in-air noise disturbances to managed species could occur. The greatest potential for in-water noise impacts will be during pile installations. Potential in-water noise impacts to fish species are discussed in Section 6.3.1.1 of this BE. In general, potential noise impacts are anticipated to be minor and temporary.

#### Water Quality

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 AMMs discussed in Section 1.4 of this BE will minimize the potential for this impact to be significant on aquatic species or habitat. Removal of creosote treated timber will result in water quality improvements by reducing toxicity potential.

#### Benthic Habitat Disturbance

Temporary and permanent 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 bulkhead installation and riprap installation will result in the permanent conversion of approximately 3,000 sf of aquatic soft bottom habitat to hard shoreline armoring. Impacts to benthic habitat are anticipated to be offset by the removal of creosote-treated timber from the marine environment.



*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.



**PORT OF ILWACO**  
**Marine Structures Replacement**  
***Ilwaco, WA***

**Appendix A6**

**USDOT MARAD NEPA FONSI and EA**

**Maritime Administration**  
**Finding of No Significant Impact**  
**For the Port of Ilwaco**  
**East Bulkhead Resilience Project**  
**Ilwaco, Washington**

This Finding of No Significant Impact (FONSI) and the accompanying Environmental Assessment (EA) are submitted pursuant to NEPA, 42 U.S.C. 4332 (2).

The Maritime Administration has determined that this project, for which Alternative 1 has been selected, will have no significant effect on the human or natural environment, individually or cumulatively, under normal conditions.

**Project Description**

The project is located at the Port of Ilwaco Marina in Ilwaco, Washington, and is proposing repairs and resiliency improvements at the Port's east bulkhead to protect existing infrastructure with a Port Infrastructure Development Program (PIDP) Fiscal Year (FY) 2021 grant.

The Port proposes replacement of the existing failing, creosote-treated timber east wharf bulkhead; replacement of a deteriorating creosote-treated timber revetment; raising the adjacent north slip top of shore; and reconstructing the existing paved drive behind the east wharf bulkhead to improve the safety efficiency, and reliable use of the wharf and mitigate sea level rise impacts. The access driveway behind the existing east bulkhead is currently load-restricted, with recommended limitations to pedestrian access only due to the poor condition of the bulkhead. The proposed project will improve the safety, efficiency, and reliable use of the existing fishing wharf, including returning full upland access to the Safe Coast Seafoods facilities.

The Purpose of the Project is proposed replacement of the east wharf bulkhead and improvements to the adjacent shoreline. The Need for the project includes repairs and replacement to the bulkhead and slopes to allow for continued use of the site by fishing vessels and to protect the viable commercial fishing wharf operated by Safe Coast Seafoods.

The Project is expected to have an immediate benefit on a local and state scale and will aid in maintaining the Port's infrastructure and facilities at the Safe Coast Seafoods facility and the Port of Ilwaco Marina so that they remain usable and optimize the productivity of critical waterfront property.

**Determination and Findings Under NEPA**

The proposed action will have minor impacts on the following resource areas: geology; soils and seismicity; air quality; climate change and GHG social justice; sediment quality; noise and vibration; ground and surface water, including water quality and waters of the U.S.; fish and wildlife; and threatened and endangered species, including critical habitat, and traffic.

## **Mitigation**

### **Mitigation Measures**

Rehabilitation of the existing bulkhead will improve operational efficiency and safety. A number of avoidance and minimization measures, including BMPs, will be implemented during construction and operations, along with mitigation as approved by the resource agencies, which minimize the potential for adverse impacts on the environment below the level of significance.

Fill and benthic habitat impacts are anticipated to be offset by the removal of steel piles, and creosote-treated wood (piles, structures, and revetment), and, as requested by the state Washington Department of Fish and Wildlife (WDFW), the removal of floating debris from the marine environment and placement of a layer of fish mix over the riprap shore protection to be placed at the head of the slip as beach nourishment.

The removal of approximately sixty-four (64) 12-inch creosote timber piles, three (3) 12-inch steel piles, 70 lf of timber retaining wall, 2,510 sf of floating timber debris, and 40 lf of derelict timber pile caps will restore approximately 2,675 sf of benthic habitat and remove approximately 890 cy or 34 tons of creosote from the marine environment. The removal of creosote-treated wood is anticipated to provide both water quality and benthic habitat improvements. A layer of fish mix rock/gravel (approximately 34 cy) will be placed over the portion of riprap placed below the High Tide Line (HTL) at the head of the slip to improve habitat and provide beach nourishment to that portion of the shoreline.

### **General Avoidance and Minimization Measures (AMMs) and Best Management Practices (BMPs)**

- Containment booms will be used to surround in-water work areas or separate embankment work from surface water. The booms will serve to contain and collect any oily material and/or floating debris potentially released during construction. Oil-absorbent materials will be employed immediately if a visible sheen is observed. Accumulated debris will be collected daily and disposed of at a permitted upland site approved by the owner.
- Hydraulic water jets will not be used to install piles.
- Water quality standards and procedures that limit the impact of pollutants will be observed.
- Land-based staging areas for activities, such as storage of machinery, equipment, materials, and stockpiled soils, will be established landward of the top of the bank. A silt fence will be installed around the perimeter of the upland work areas and locations where machinery, materials, and stockpiled soils are situated. Any temporary stockpiles will be covered and bermed when not in use.
- All federal, state, and/or local construction permit requirements will be followed during demolition and construction activities.
- To reduce disturbance to residents, contractors will be required to follow all local noise and vibration ordinances.
- The preparation of an Inadvertent Discovery Plan (IDP) prior to ground-disturbing construction work is proposed (to be completed prior to construction) to inform and guide contractors on cultural resources and protocols to follow should archaeological remains be encountered.

### **In, Over, and Near Water, AMMs and BMPs**

- In-water construction activities will comply with the in-water construction window (anticipated to be November 1 through February 28 within state and federal permits).
- Typical construction best management practices (BMPs) for working in, over, and near water will be applied, including activities such as the following:
  - Checking equipment for leaks and other problems that could result in the discharge of petroleum-based products or other materials into the waters of Baker Bay.
- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including:
  - Containment and cleanup efforts will begin immediately upon discovery of a spill and will be completed in an expeditious manner in accordance with all local, state, and federal regulations. Cleanup will include proper disposal of any spilled material and used cleanup material.
  - The cause of any spill will be ascertained, and appropriate actions taken to prevent further incidents or environmental damage.
  - Spills will be reported to the Washington State Department of Ecology (Ecology) Southwest Regional Spill Response Office pursuant to WAC 173-303-145 and WAC 173-182-260.
- Work barges will not be allowed to ground out.
- Excess or waste materials will not be disposed of or abandoned waterward of ordinary high water or allowed to enter the waters of the state. Waste materials will be disposed of in an appropriate manner consistent with applicable local, state, and federal regulations.
- Demolition and construction materials will not be stored where wave action or upland runoff can cause materials to enter surface waters.
- Oil-absorbent materials will be present on site for use in the event of a spill or if any oil product is observed in the water.

### **Pile Removal and Installation AMMs and BMPs**

- Pile removal BMPs will be applied, including activities such as the following:
  - Removal of creosote-treated piles will be conducted consistent with the BMPs established in U.S. Environmental Protection Agency (EPA) Region 10, Best Management Practices for Piling Removal and Placement in Washington State, dated February 18, 2016 (EPA 2016).
  - While creosote-treated piles are being removed, a containment boom will surround the work area to contain and collect any floating debris and sheen. Debris will be retrieved and disposed of properly.
  - The piles will be dislodged with a vibratory hammer when possible and will not be intentionally broken by twisting or bending.
  - The piles will be removed in a single, slow, and continuous motion in order to minimize sediment disturbance and turbidity in the water column.
  - If a pile breaks above or below the mudline, it will be cut or pushed in the sediment consistent with agency-approved BMPs (U.S. Army Corps of Engineers [USACE], Department of Natural Resources [DNR], Ecology, and EPA).
  - Removed piles, stubs, and associated sediments (if any) will be contained on a barge. If piles are placed directly on the barge and not in a container, the storage area will consist of a row of hay or straw bales, filter fabric, or similar material placed around the perimeter of the barge.

- All creosote-treated material, pile stubs, and associated sediments (if any) will be disposed of by the contractor in a landfill approved to accept those types of materials.
- Steel piling will be installed with a vibratory hammer when possible. Impact hammering will start with light tapping, then increase to full force gradually.
- A bubble curtain and one or more other noise attenuation methods such as a wood cushion block will be used during impact installation or proofing of all steel piling.
- Pile-driving will commence with a soft start procedure (ramping up) in order to alert nearby wildlife, allowing them to move out of the area prior to construction activities. For impact pile driving, contractors will be required to provide an initial set of strikes from the hammer at reduced percent energy, each strike followed by no less than a 30-second waiting period. This procedure will be conducted a total of two times before impact pile driving begins.
- To avoid impacts on marine mammals, an exclusion zone will be monitored during and immediately before pile driving activities. The exclusion zone will include the entire marina area shoreward of the breakwaters. Although ESA-listed species, including Southern Resident killer whales and humpback whales, are not anticipated to occur within the marina where noise impacts could occur, this avoidance measure would provide further protection against potential noise impacts to these species.
- During pile driving activities, a qualified observer will monitor the exclusion zone; if any marine mammals are observed within the exclusion zone, all in-water Project activities shall cease. Project activities shall not commence or continue until the marine mammal has either been observed having left the exclusion zone or at least 15 minutes have passed since the last sighting whereby it is assumed the marine mammal has voluntarily left the exclusion zone.

#### **Overwater Concrete Placement Minimization and Concrete Placement AMMs and BMPs**

The Project has been designed to minimize the placement of concrete over water. Where possible, pre-cast concrete elements will be used. On-site (wet) concrete placement, where needed, will follow appropriate AMMs, including:

- Wet concrete will not contact surface waters.
- Forms for any concrete structure will be constructed to prevent the leaching of wet concrete.
- Concrete process water will not be allowed to enter surface waters. Any process water/contact water will be routed to a contained area for treatment and will be disposed of at an upland location.

Similar to many other waterfront projects in Washington State, some compensatory mitigation for state-protected habitat and aquatic species is required for the Project. With the combination of impact avoidance and minimization, the implementation of conservation measures and BMPs, and implementation of the agreed upon mitigation, the Project will not adversely affect the environmental resources assessed in this EA.



The Maritime Administration has determined that the EA adequately and accurately discusses the environmental issues and effects of the proposed action and specifies appropriate mitigation measures and standard conditions of approval in order to minimize environmental effects. Therefore, a FONSI is warranted, and preparation of an Environmental Impact Statement, pursuant to the National Environmental Policy Act of 1969 (Public Law 91-190), is not required.



6/5/2024

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Office of Environmental Compliance Reviewer

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Date



6/5/2024

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Associate Administrator for Environment and Compliance

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Date

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# Port of Ilwaco

## East Bulkhead Resilience Project



Ilwaco  
Pacific County, Washington

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MARAD FY 2021 PORT INFRASTRUCTURE DEVELOPMENT PROGRAM (PIDP)  
GRANT

Submitted Pursuant to the National Environmental Policy Act 42 USC 4332(2)(c)

Presented to:

US Department of Transportation Maritime Administration and  
Port of Ilwaco

*June 3, 2024*

Prepared by:



moffatt & nichol

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# East Bulkhead Resilience Project

## Port of Ilwaco

Ilwaco  
Pacific County, Washington

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### MARAD FY 2021 PORT INFRASTRUCTURE DEVELOPMENT PROGRAM (PIDP) GRANT

Submitted Pursuant to the National Environmental Policy Act 42 USC 4332(2)(c)

Presented to:

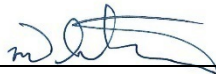
US Department of Transportation Maritime Administration and  
Port of Ilwaco

*May 6, 2024*

Prepared by:



moffatt & nichol



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Margaret Schwertner,  
NEPA Manager



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Victoria England,  
Project Manager

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## ACRONYMS AND ABBREVIATIONS

AMM: Avoidance and minimization measure	CH4: Methane CH4
APE: Area of Potential Effect	NAAQS: National Ambient Air Quality Standards
BE: Biological Evaluation	NEPA: National Environmental Policy Act
BMP: Best Management Practice	NHPA: National Historic Preservation Act
CalTrans: California Department of Transportation	NLAA: Not likely to adversely affect
CD: Consistency Decision	NMFS: National Marine Fisheries Service
CEQ: Council on Environmental Quality	NOAA Fisheries: National Marine Fisheries
City: City of Ilwaco	NOx: Nitrogen oxides
CO2: Carbon dioxide	NPDES: National Pollutant Discharge
Cy: Cubic yard	NRHP: National Register of Historic Places
CWA: Clean Water Act	OHWM: Ordinary High Water Mark
CZMA: Coastal Zone Management Act	PHS: Priority Habitats and Species
DAHP: Washington State Department of Historic Preservation	PM: Particulate matter
dba: A-weighted decibel	Port: Port of Ilwaco
DCIA: Direct community impact area	Project: Port of Ilwaco East Bulkhead Resilience Project
DSA: Demographic Study Area	RSET: Northwest Regional Sediment Evaluation Team
EA: Environmental Assessment [NEPA]	SAP: Sampling and Analysis Plan
Ecology: Washington State Department of Ecology	SEF: Sediment Evaluation Framework
EJ: Environmental Justice	SF: Square feet
EO: Executive Order	SHPO: State Historic Preservation Office
ESA: Endangered Species Act	SWPPP: Stormwater Pollution Prevention Plan
FEMA: Federal Emergency Management Agency	TESC: Temporary Erosion Control
FONSI: Finding of No Significant Impact [NEPA]	USEPA: United States Environmental Protection Agency
GHG: Greenhouse gas	USACE: United States Army Corps of Engineers
HTL: High tide line	USCG: United States Coast Guard
HPI: Historic Property Inventory	USDOT: United States Department of Transportation
IDP: Inadvertent Discovery Plan	USEPA: United States Environmental Protection Agency
IPaC: Information for Planning and Consultation	USFWS: United States Fish and Wildlife Service
Lf: Linear Feet	USGS: United States Geological Survey
LOC: Letter of Concurrence	WDFW: Washington Department of Fish and Wildlife
MARAD: USDOT Maritime Administration	Wharf: Commercial fishing wharf
MAO: MARAD Order	WOTUS: Waters of the U.S.
MBTA: Migratory Bird Treaty Act	WSDOT: Washington State Department of Transportation
MHHW: Mean higher high water	
MLLW: Mean lower low water	
MMPA: Marine Mammal Protection Act	
MPH: Miles per hour	
MSA: Magnuson-Stevens Fishery Conservation and Management Act	

## 1. INTRODUCTION

The Port of Ilwaco (Port), funded by the U.S. Department of Transportation (USDOT) Maritime Administration (MARAD), is proposing repairs and resiliency improvements at the Port's east bulkhead, to protect existing infrastructure including the Safe Coast Seafoods facility. This will improve the safety, efficiency, and reliable use of the existing fishing wharf.

This Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA); The Council on Environmental Quality (CEQ) regulations implementing NEPA (40 C.F.R. §§ 1500-1508); 42 U.S.C. §§ 4321-4370f; USDOT Order 5610.1C (Procedures for Considering Environmental Impacts); and MARAD Order (MAO) 600-1. The CEQ updated its implementing NEPA regulations on July 15, 2020. Pursuant to 40 C.F.R. § 1506.13, the new regulations went into effect on September 14, 2020. On January 20, 2021, President Biden issued Executive Order (EO) 13990, "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis". This EA was prepared under these new regulations. Appendices A through K include figures, site photographs, references, and supplemental assessments to support resource analysis.

### 1.1. Project Location

The Port of Ilwaco East Bulkhead Resilience Project (herein referred to as the "Project") is located at 117 Howerton Ave SE, in the rural maritime community of Ilwaco, Washington (geospatial coordinates: 46°18'17.3"N, 124°02'28.4"W / 46.304806, -124.041222). The Project occurs at the Port of Ilwaco on the southwest coast of Washington State, located just inside the Columbia River bar at the Pacific Ocean (Figure 1; Appendix A). The Port area generally consists of a marina used for year-round moorage of recreational and commercial fishing vessels, upland commercial buildings, and a boatyard (Figure 2; Appendix A).

The Project site at the Port is the bulkhead along the east side of the commercial fishing wharf (herein referred to as the 'wharf'). The wharf is an earth filled structure on the east side, pile supported on the west side, and protected by a timber bulkhead along its eastern limits (Figure 2; Appendix A). To the north of the bulkhead wall, the shoreline is protected by a low timber retaining wall and large log. To the south of the bulkhead wall, shoreline protection consists of rip rap and concrete rubble. The Safe Coast Seafoods buildings are located on the wharf (Figure 2; Appendix A).

### 1.2. Proposed Project Description

The Project consists of four primary elements (Figure 3; Appendix A):

- Replacing the east wharf bulkhead;
- Removal and replacement of shoreline armoring on the southern end of new bulkhead to accommodate replacement;
- Removal of the existing creosote-treated retaining wall and replacement with riprap slope stabilization on the northern end of the new bulkhead;
- Raising the top of slope at the north end of the adjacent slip by approximately 1.5 feet; and,
- Reconstructing the existing pavement section behind the east wharf bulkhead.

As part of the above elements, select portions of the creosote-treated timber that configures the external wall of the existing bulkhead will also be removed along with select derelict creosote-treated piles next to the bulkhead.

Project details are described in more detail in the following sections.

#### 1.2.1. Bulkhead Replacement

Bulkhead wall replacement will include installing a new 225 linear feet (lf) steel sheet pile wall waterward of the existing creosote-treated timber wall. Creosote-treated timber piles that configure the exterior portion of the existing wall will be removed. Drainage rock will be placed between the existing and new bulkhead walls.

The majority of the existing timber bulkhead will be abandoned in place behind the replacement bulkhead in order to protect the existing buildings at the Safe Coast Seafoods facility. Portions of the existing creosote-treated bulkhead will be removed as feasible.

Localized bulkhead demolition will likely consist of removal of the deteriorated top several feet of the existing creosote-treated timber piles above the timber wall location. This local demolition will take place above mean higher high water (MHHW). In addition, there may be localized notching of the bulkhead wall to accommodate the installation of the new tie-back ground anchors. Approximately twelve (12) 12-inch diameter creosote treated timber



piles and three (3) 12-inch diameter steel pipe piles that are located directly waterward of the existing timber bulkhead will be removed. These piles will be removed by either pulling them out directly using a chain or with a vibratory hammer depending on the Contractor's preferred means and methods. The piles will be cut at the mudline if complete removal is not possible or the piles break. Upland demolition will consist of removal of the existing pavement and surface features.

Post-localized demolition, a new steel sheet pile bulkhead wall will be installed in front of the existing timber bulkhead. The bulkhead wall will not increase in length. The top elevation of the new bulkhead wall will be approximately three feet (ft) higher than the existing top of bulkhead to accommodate high tides and sea level rise. It is anticipated that the steel sheet piles will be driven using a vibratory hammer. The option for impact proofing will also be included in the event that difficult driving conditions are encountered. The sheet pile wall will be approximately 225 linear feet (lf) and the sheet pile tip elevation will be approximately -40 to -50 feet mean lower low water (MLLW). The top of the bulkhead pile cap will be set at an elevation of +14.0 feet MLLW.

The replacement bulkhead will include approximately 20 grouted ground anchors extending from the cast-in-place concrete pile caps down to the bedrock layer below the site. The grouted ground anchors will be either high strength steel strands or steel bars that are connected to the pile caps and driven at an approximately 1:1 angle to elevation -70 to -80 feet MLLW. The anchor tie backs will be grouted for a minimum of 25 feet into the underlying siltstone unit (top elevation approximately -57 feet MLLW). The ground anchors will be installed using either land-based equipment or from a barge depending on the Contractor's preferred means and methods. The anchor holes will be drilled with a full-length casing. All drill spoils will be contained and prevented from entering marine waters. The anchor holes will be filled with grout using a tremie tube and then pressure grouted after the anchor tendons are installed. The anchors will be tensioned after all anchors have been installed and have reached the required grout and concrete strengths. The cast-in-place concrete pile cap will then be completed. The pile caps will be cast-in place in the dry and uncured concrete will not be allowed to come in contact with waters of Baker Bay.

The sheet pile placement in front of the existing bulkhead will result in an approximately 2- to 5-foot space between the existing bulkhead and the new bulkhead sheet piles. The area between the existing structure and the new bulkhead will be backfilled with drainage rock to allow for water to flow in and out of the soil supporting the Safe Coast Seafood facility. It is anticipated that approximately 450 cubic yards (cy) of free draining drainage rock backfill will be placed between the existing timber bulkhead and the replacement bulkhead (Table 1). The drainage rock will likely be placed using a clamshell operating from a barge. The clean drainage rock will be obtained from a commercial supplier. This placement will minimize the risk of slope failure that removing the existing structure would exacerbate. The drainage rock placement in the space between the existing and replacement bulkhead structures will minimize additional pressure from trapped groundwater behind the new bulkhead.

The new bulkhead (including drain rock installation area), and pile cap, will have a footprint of approximately 1,400 square feet (sf) in marine waters (measured below the high tide line [HTL]) (Table 1). Of the overall footprint in marine waters, 1,000 sf will come into contact with the bottom substrate and have benthic habitat impacts.

### **1.2.2. Slope Protection**

Approximately 350 sf (approximately 14 cy of concrete debris shore protection from the shoreline to the south of the bulkhead wall will be removed to accommodate the bulkhead wall replacement (Table 1). Approximately sixteen (16) 12-inch diameter creosote timber piles associated with the existing timber retaining wall will be removed from the shoreline along the north end of the bulkhead wall. The existing creosote-treated timber retaining wall to the north of the bulkhead will be completely removed. The associated piles will be removed by either pulling them out using a chain or with a vibratory hammer depending on the Contractor's preferred means and methods. The piles will be cut at the mudline if complete removal is not possible or the piles break during removal.

The 350 sf/14 cy of concrete rubble shore protection removed from the south portion of the Project to accommodate installation of the new bulkhead will be replaced with approximately 35 cy of riprap in the same 350 sf area to maintain slope stability (Table 1).

One hundred ninety-eight (198) cy (2,200 sf) of riprap, 172 cy (1,850 sf) of which occurs below the HTL, will be placed on the embankment to the north of the new bulkhead to replace the existing creosote treated timber retaining wall and provide shore protection (Table 1). The rip rap slope protection will serve as grade transitions from the vertical bulkhead structure to the adjacent sloped shorelines to the north and south. The embankment height will be increased to an elevation of approximately +14.0 feet, MLLW between the bulkhead and the marina access pier to the east. The purpose of the increased embankment height is to mitigate the effects of sea level rise.

### 1.2.3. Upland Paving and Grading

Upland paving and grading will be completed behind the bulkhead wall to mitigate sea level rise following construction of the new bulkhead. The driveway will be regraded and repaved with structural fill base course and asphalt pavement. This will consist of 8,000 sf of asphalt repaving. The upland area will be regraded and repaved to maintain positive drainage away from the Safe Coast Seafoods buildings. The bulkhead will be outfitted with scuppers to allow rainwater to flow into the marina rather than pooling along the driveway or draining toward the Safe Coast facilities.

### 1.2.4. Fill Impacts and Creosote Removal

Approximately twenty-eight (28) creosote-treated timber piles (12-inch diameter) and three (3) steel piles (12-inch diameter) will be removed adjacent to the existing bulkhead and as part of the north shoreline rehabilitation. In addition, the Port proposes to remove approximately thirty-six (36) 12-inch diameter derelict creosote-treated timber piles and 3 creosote-treated timber pile caps as mitigation for the fill and benthic habitat impacts created by the placement of the new bulkhead wall in front of the existing structure. This will result in approximately 64 total creosote-treated timber piles and 3 steel piles being removed along with approximately 70 lf of creosote treated timber retaining wall, and 40 lf of creosote treated timber pile caps.

A derelict timber structure approximately 2,510 sf in area will be removed as part of impact mitigation. This will result in decreasing overwater coverage in the south portion of the marina at the location of the existing derelict timber structure.

Approximately 1,400 sf of fill below the HTL will result from the placement of the new bulkhead and drainage rock backfill (Table 1). Of the overall footprint, 1,000 sf will come into contact with the bottom substrate and result in benthic habitat impacts.

North shoreline riprap placement will occur in a 2,200 sf area, 1,850 sf of which occurs below the HTL and will result in benthic habitat impacts (Table 1). Approximately 750 sf of this will occur waterward of the existing retaining wall. A 6-inch layer (approximately 34 cy) of fish mix gravel will be placed below HTL to provide beach nourishment and improved habitat for fish passing through the marina.

South shoreline riprap placement will not result in any additional benthic habitat impacts (Table 1). The removal of approximately sixty-four (64) 12-inch creosote-treated timber piles, three (3) 12-inch steel piles, 70 lf of timber retaining wall, and 40 lf of derelict creosote-treated timber pile caps, will restore approximately 165 sf of benthic habitat (Table 1) and remove approximately 34 tons of creosote from the marine environment.

Table 1. Approximate Fill Impacts

Activity	Fill below HTL (sf)	Fill below HTL (cy)	Fill above HTL (sf)	Fill above HTL (cy)
<b>Bulkhead wall and shoreline protection installation</b>				
Sheetpile installation	400 sf	80 cy	0 sf	0 cy
Bulkhead drainage rock placement	1,000 sf	450 cy	0 sf	0 cy
Rip-rap shore protection and Fish Mix placement (north shoreline)	1,850 sf	172 cy	350 sf	26 cy
Concrete rubble removal (south shoreline)	-350 sf	-14 cy	-50 sf	-2 cy
Rip-rap replacement (south shoreline)				
Subtotal	3,250 sf	718cy	350sf	29cy
<b>Structure removal</b>				
Pile removal adjacent to existing bulkhead	-12 sf	-6 cy	0 sf	0 cy
North shoreline- retaining wall removal	-85 sf	-12 cy	0 sf	0 cy
Derelict pile/timber removal	-68 sf	-12 cy	0 sf	0 cy
Derelict Timber structure/debris removal – South Marina	-2,510 sf	-350 cy	0 sf	0 cy
<b>Subtotal</b>	<b>-2,675 SF</b>	<b>-380 cy</b>	<b>0 sf</b>	<b>0 cy</b>
<b>Creosote removal from the environment</b>	<b>34 tons</b>			

## **2. PURPOSE, NEED, AND BENEFITS**

### **2.1. Existing Conditions Description**

The proposed Project is required to improve the safety, efficiency, and reliable use of the wharf. The Port is a key hub for commercial fishing, seafood and aquaculture processing, and recreation activities that greatly benefit the regional economy. In its current condition, the existing bulkhead is in serious structural condition and at risk of failing (Figures 4 through 7; Appendix A). A failure of the bulkhead will put the adjacent Safe Coast Seafood buildings at risk of damage if it occurs before the bulkhead can be replaced. In addition, the wharf at its existing grade floods during king tides and storm events and is susceptible to sea level rise (Appendix A).

The purpose of the Project is to install a new bulkhead and slope protection at the Port of Ilwaco.

The need for the Project is to complete repairs and replacement of the bulkhead and slopes to allow for continued use of the site by fishing vessels, and to protect the viable commercial fishing wharf, operated by Safe Coast Seafoods.

The benefits of the Project include:

- The replacement bulkhead will serve to increase the facility's climate change/sea level rise resiliency and will help protect wharf facilities from flooding.
- Replacement of the existing creosote-treated retaining wall with rip rap will improve shoreline protection and mitigate sea level rise impacts by raising the top of the embankment elevation between the bulkhead and the marina access pier to the east.
- Regrading and repaving of the upland area behind the bulkhead wall will facilitate positive drainage away from the Safe Coast Seafoods buildings and help protect the facilities during flood events.
- The bulkhead replacement will prevent the shoreline from failing into a portion of the active Port of Ilwaco Marina, which would impact operations in the marina.
- The new bulkhead will be designed to accommodate the temporary mooring of fishing vessels which will allow vessels to unload/load equipment and product and improve efficiencies at the Safe Coast Seafoods facility.
- The Project will allow trucks to drive safely on the bulkhead again, which will improve the efficiency of cargo transfer operations and improve the port's competitiveness.
- The removal of creosote-treated wood affiliated with the Project and mitigation as required by the regulatory agencies, as described in Section 6, will improve water and benthic quality.

## **3. ALTERNATIVES CONSIDERED**

In light of the stated Project purpose and need, the Port evaluated several alternative concepts, designs, and configurations to rehabilitate the terminal to continue service into the future. Alternative designs, however, were very limited given the constraints of the site and repair needs and therefore were eliminated from further consideration as they did not meet the purpose and need of the Project. Only one action alternative was able to meet the purpose and need and that action alternative is considered alongside the No Action Alternative.

### **3.1. Alternative 1 – Proposed Action**

The Proposed Action Alternative consists of:

- Replacing the east wharf bulkhead;
- Removal and replacement of shoreline armoring on the southern end of new bulkhead to accommodate replacement;
- Removal of the existing creosote-treated retaining wall and replacement with riprap slope stabilization on the northern end of the new bulkhead;
- Raising the top of slope at the north end of the adjacent slip by approximately 1.5 feet; and,
- Reconstructing the existing pavement section behind the east wharf bulkhead.

As part of the above elements, select portions of the creosote-treated timber that configures the external wall of the existing bulkhead will also be removed along with select derelict creosote-treated piles next to the bulkhead.

This alternative is the least damaging practicable alternative that satisfies the Project's purpose and need.

## **3.2. Alternative 2 – “No Action”**

Council of Environmental Quality (CEQ) regulations require the analysis and consideration of the No Action Alternative. As such, the No Action alternative must be considered as a baseline for comparison throughout this EA. The No Action Alternative does not meet the purpose and need of improving the safety, efficiency, and reliable use of the wharf; however, it is considered throughout this EA as a means of providing a baseline for evaluating the impacts of the Proposed Action. The No Action would also likely result in an eventual failure of the existing bulkhead with attendant environmental and local business ramifications. Resource specific impacts from the No Action Alternative are discussed further in section 4.

## **3.3. Other Action Alternatives**

It is to be noted that the U.S. Army Corps of Engineers (USACE) Section 404 (b)(1) Guidelines provide that the discharge of dredged or fill material into waters of the United States will not be permitted “if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other notable adverse environmental consequences.” 40 C.F.R. (230.10)(a). The guidelines further provide that “[a]n alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall Project purposes.” Several other alternatives were considered for the bulkhead replacement prior to identifying the proposed alternative. Alternatives considered include removal prior to replacement, sheetpile bulkhead placement behind the existing bulkhead, and a cantilever bulkhead waterward of the existing bulkhead. Other alternatives for shore protection were also considered and included replacement of the timber revetment with a stone or concrete revetment, or nature-based shoreline protection/slope modification. The other alternatives as listed above would result in either increased risk, increased negative environmental impacts, technically infeasible constructability or notably increased costs compared to the proposed alternative.

### **3.3.1. Anticipated Benefits of Proposed Action**

The anticipated benefit based on a comparison of “Build” to “No Action” alternatives is improved the safety, efficiency, and reliable use of the wharf. The Project will allow trucks to drive safely on the bulkhead again, which will improve the efficiency of cargo transfer operations and improve the port’s competitiveness. Without the East Bulkhead Resilience Project, the eventual closure of the wharf will cascade negative transportation and economic impacts for the region. The Project not only brings the infrastructure to a state of good repair, but it will ensure its durability for the next 50 to 100 years.

## **4. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND NO ACTION ALTERNATIVE**

### **4.1. Resources Not Considered in this Environmental Assessment**

No categories of investigation were omitted in the preparation of this EA.

### **4.2. Resources Considered in this Environmental Assessment**

#### **4.2.1. Geology, Soils, and Seismicity**

A Geology, Soils, and Seismicity Report was completed for the Project site by Geoengineers, Inc. (2023a; Appendix C). This section summarizes information and analysis from that report. The potential for environmental impacts to geology and soils during construction and operations of the Proposed Action are reviewed, along with conditions under the No Action Alternative.

##### **4.2.1.1. Proposed Action**

##### **4.2.1.1.1. Construction**

Short term construction associated with the Proposed Action will require temporary modifications to the existing bulkhead and shoreline geometry, but the temporary condition will not increase the risk of structural failure in the event of seismic activity. The design of the Proposed Action complies with seismic structural design standards and will increase the resilience of the wharf during seismic activity in the long term. A United States Geological Survey (USGS) map summarizes the seismic risk for the area (Figure 8; Appendix A).

Soils observed at the Project site generally consist of fill overlying native alluvial deposits and the regional bedrock. Portions of fill areas are located both above and below the plane of the Ordinary High Water Mark (OHWM) and the HTL and are hydrologically influenced by tidal activity.

Geologic hazards evaluated as part of preparing this section include liquefaction potential, surface rupture potential, lateral spreading potential, and static slope stability. The Proposed Action is expected to have negligible effects on the surrounding geology, soils and seismicity for both construction and operations. Long-term benefits to soils will result from prevention of bulkhead and supported soils failures and increased resiliency.

#### **4.2.1.1.2. Operations**

The proposed bulkhead will be more resilient to seismic activity than the existing deteriorated structure. The Proposed Action can be completed without increasing the likelihood of occurrence, or the severity, of the considered geologic hazards at the Project site and surrounding area.

The Proposed Action consists of a developed wharf and marina including the bulkhead (to be replaced), wharf and fish processing facilities, and both concrete and creosote timber revetment shore protection. The Proposed Action is expected to have negligible effects on the surrounding geology, soils and seismicity for both construction and operations. Long-term benefits to soils will result from prevention of bulkhead and supported soils failures and increased resiliency.

#### **4.2.1.2. No Action**

The No Action alternative will result in long term increased risk of structural failure during seismic activity. The No Action would also likely result in an eventual failure of the existing bulkhead (irrespective of seismic activity) with attendant environmental and local business ramifications.

### **4.2.2. Public Utilities and Services**

#### **4.2.2.1. Proposed Action**

##### **4.2.2.1.1. Construction and Operations**

The water main system installed in 2001 (which supplies average water supply and fire flow demand) and the 2004 wastewater systems will not be negatively impacted by the Proposed Action. Storm drainage improvements were completed in 2003 as part of the First Avenue, Howerton Way, and Waterfront Way street projects. All of these systems are spatially removed from the proposed construction area. This is also the case for the underground electrical primary feed lines parallel to Howerton Way. The Proposed Action does not represent a direct or cumulative impact to utilities and services.

#### **4.2.2.2. No Action**

##### **4.2.2.2.1. Construction and Operations**

The No Action alternative would have no impact on existing public services or utilities.

### **4.2.3. Air Quality, Climate Change, and GHG Social Justice**

An Air Quality Report was completed for the Project site by Geoengineers, Inc. (2023b; Appendix D). This section summarizes information and analysis from that report and considers it with respect to climate change and greenhouse gas (GHG) social justice. The potential for environmental impacts to air quality, climate change, and GHG social justice during construction and operations of the Proposed Action are reviewed, along with conditions under the No Action Alternative.

#### **4.2.3.1. Proposed Action**

Daily vessel traffic at the Port of Ilwaco consists of fishing vessels. The rehabilitation and replacement of the bulkhead and dock area will return the structure to its pre-damage condition. The use of the facility, along with vessel traffic will not change. The Project will improve sustainability and resiliency, and prevent collapse of the bulkhead which would render the facility unusable.

Clean Air Act (CAA) regulations require the U.S. Environmental Protection Agency (USEPA) set national air quality standards (NAAQs) for established criteria pollutants (including carbon monoxide, lead, particulate matter, ozone, nitrogen dioxide, and sulfur dioxide). Criteria pollutants are considered harmful to public health and standards have been set to ensure the established standards are not exceeded. Areas which do not exceed the national standards are designated as "attainment areas" and areas which exceed the national standards are considered "non-attainment





areas.” The portion of Washington County in which the Port of Ilwaco is located is designated as an attainment area for all criteria air pollutants.

#### 4.2.3.1.1. Construction

Construction activities during the Proposed Action, which may cause impacts to air quality include excavation, grading, pile driving, paving, and other use of heavy machinery. Demolition and removal of existing structures would be localized and temporary. Replacement of the failing bulkhead and regrading activities will result in temporary increases in emissions but will not contribute to reduced air quality at the site.

The Proposed Action is projected to take approximately 200 days to complete and will involve the use of a barge, crane, pile driving equipment, excavators, graders, and paving equipment. Construction activities would occur intermittently throughout these 200 days (i.e., equipment and activities for this relatively small project would not be occurring every day or all day). Estimated short-term construction-related emissions of carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), methane (CH<sub>4</sub>), and particulate matter (PM) associated with the Proposed Action are based on calculations using the Federal Highway Administration (FHWA) approach and Infrastructure Carbon Estimator (GASCAP) to estimate key emissions based on similar equipment with limited data inputs. Quantities for Project construction (spanning approximately 200 days within one year) are summarized as follows and in Table 2: 104.17 tons/year of CO<sub>2</sub>, 0.001 tons/year of NO<sub>x</sub>, 0.02 tons/year of CH<sub>4</sub>, and 0.02 tons/year of PM. This is equivalent to 104.89 metric tons per year of CO<sub>2</sub> equivalent.

*Table 2: Total calculated emissions by major equipment type and total emissions compared to USEPA de minimis thresholds*

Equipment (largest contributors)	Emissions			
	CO <sub>2</sub> (tons)	NO <sub>x</sub> (grams)	CH <sub>4</sub> (grams)	PM (grams)
Crane and Vibratory Hammer	6.3	87.0	37.3	633.8
Excavator	25.9	355.6	163.5	6675.8
Tractors/Loaders/Backhoe	12.0	125.3	138.2	5398.2
Grader	4.6	63.6	28.8	776.1
<b>Project Estimated Annual Emissions (tons/year)</b>	<b>104.17</b>	<b>0.001</b>	<b>0.02</b>	<b>0.02</b>

The Proposed Action is expected to have minor, localized, and temporary effects on the surrounding air quality but will not contribute to reduced air quality at the site, nor produce any substantial change in the climate from construction. The Project involves the necessary replacement of an existing bulkhead wall to support existing maritime commerce at a small but critical Washington port. There is no anticipated change in energy consumption, nor adverse social justice implications due to this maintenance and rehabilitation Project.

#### 4.2.3.1.2. Operations

Once construction is completed, emissions and air quality are expected to return to pre-construction levels, since operations are assumed to remain the same. Current air quality is within an attainment area pursuant to USEPA National Ambient Air Quality Standards (NAAQs).

This Project does not expand the operational footprint or result in an increase in vessel or vehicular traffic relative to previous operations. The Proposed Action is not expected to contribute to reduced air quality during long-term operations, nor produce any substantial change in the climate as vessel and vehicle traffic will not change. There are no adverse changes in energy consumption nor adverse social justice implications due to this rehabilitation Project.

#### 4.2.3.2. No Action

The No Action Alternative would result in no immediate change in emissions and to the current air quality in the area.

The No Action alternative could eventually lead (due to bulkhead failure) to decommissioning of the facilities supported by the current bulkhead. Ceasing operation of the facilities would decrease associated emissions and consequently improve ambient air quality. However, this alternative does not meet the overall Project purpose and need and would have detrimental impacts on the local economy in the form of lost income to the Port and lost wages within the community. Pacific County is currently in attainment of national ambient air quality and continued use of the wharf following maintenance would not appreciably decrease air quality in the region.

#### **4.2.4. Sediment Quality, Hazardous Materials, and Waste Management**

##### **4.2.4.1. Proposed Action**

The marina basin sediment, including the sediment at the mudline adjacent to the existing bulkhead to be replaced, has been characterized to support maintenance dredging permits in 1991, 1992, 2001, and 2015. The marina sediment was found suitable for open water placement based on current Sediment Evaluation Framework (SEF) screening level guidelines based on sampling results from all of the previous characterization events (Northwest Regional Sediment Evaluation Team [RSET] 2018). Additional sediment characterization was completed in 2023 in support of renewed maintenance dredging permits for the marina. Hazardous materials are not anticipated to be encountered during construction activities that disturb the mudline (e.g. pile removal, sheetpile driving, etc.) based on the characterization data collected between 1991 and 2015.

A regulatory database search completed for the 2023 Port of Ilwaco Marina Dredged Material Characterization Sampling and Analysis Plan ([SAP] Moffatt & Nichol 2023a) focused on potential sites of historical environmental concern within 0.25 miles of the Ilwaco marina (including the fuel dock adjacent to the marina) and their potential to impact the marina (including the Project site). The most recent sampling indicates that contaminants the sites of concern identified have not impacted the Project site at concentrations greater than SEF guidelines. Additionally, the Port is not aware of any upland contamination sources that will impact sediment quality in the boat basin, including the Project site (Figure 9; Appendix A). It is not anticipated that hazardous materials will be encountered during construction activities that will disturb the bulkhead or north adjacent shoreline, including regrading and repaving of the Safe Coast Seafoods driveway.

##### **4.2.4.1.1. Construction**

The Proposed Action will remove creosote-treated timber from the environment as part of the bulkhead demolition to accommodate the new bulkhead, adjacent revetment and timber debris removal (north adjacent shoreline), and mitigation (derelict pile and other structure removal from the adjacent slip). The creosote treated timber will be handled in accordance with Best Management Practices (BMPs) established in USEPA Region 10, Best Management Practices for Piling Removal and Placement in Washington State, dated February 18, 2016 (USEPA 2016). The creosote treated timber removed from the site will be disposed of by the contractor in a landfill approved to accept those types of materials.

If unexpected hazardous materials are encountered during construction, any such material will be addressed and disposed of according to Washington State Department of Ecology (Ecology) regulations. Hazardous materials, such as fuel and lubrication oils, will be used in the equipment used to construct the proposed project. Any hazardous materials discovered or spill created during construction will be immediately reported by telephone to the Washington Emergency Management Division at 1-800-258-5990 and the Southwest Regional Office at number 360-407-6300. The Department of Ecology will instruct on what practices will be used. With the understanding of the removal of existing creosote timbers and policies in place for correct disposal, it is not anticipated that the construction will result in a hazardous materials impact (avoidance and minimization measures [AMMs], and BMPs for the entire Project are listed in Section 6).

The Proposed Action is expected to have negligible effects on the surrounding marina basin sediment environment for construction given compliance with the proposed AMMs and BMPs.

##### **4.2.4.1.2. Operations**

The Proposed Action is expected to have negligible effects on the surrounding marina basin sediment environment for operations long-term use changes are not proposed, no new hazardous materials or chemicals are proposed for storage or production at the site, and some benefit is anticipated from the removal of creosote-treated timber from the marine environment.

##### **4.2.4.2. No Action**

No generation of hazardous materials or non-regulated wastes will occur under the No Action Alternative. The No Action would also likely result in an eventual failure of the existing bulkhead (irrespective of seismic activity) with attendant sediment and water quality environmental and local business ramifications.

#### **4.2.5. Noise and Vibration**

A Noise Report was completed for the Project site by Geoengineers, Inc. (2023c; Appendix E). This section summarizes information and analysis from that report. The potential for noise and affiliated vibration impacts during



construction and operations of the Proposed Action are reviewed, along with conditions under the No Action Alternative.

#### *4.2.5.1. Proposed Action*

The local soundscape is presently affected by residential and commercial activity. The largest contribution to soundscape in the immediate vicinity of the Project is attributed to nearby traffic as well as Port, commercial fishing loading and unloading, and other marina operations. Howerton Avenue, a two-lane road, is approximately 150 feet from the Project site. The speed limit for Howerton Avenue is 25 miles per hour (mph).

The Washington State Department of Transportation (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 vehicles per hour to 6,000 vehicles per hour. Given the rural nature of the area and realistic annual operations at the Project site, the lower end of that range for the analysis was used. Traffic noise levels for traffic counts of approximately 125 vehicles per hour traveling at speeds of 35 mph, is 57.3 A-weighted decibels (dBA) at 50 feet from the source. The Project is located within an area zoned as light industrial and adjacent to areas zoned as low density commercial (City of Ilwaco 2022). Commercial and industrial activities within the vicinity will 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, which is consistent with the in-air noise assessment provided in the Project-related Biological Evaluation (Moffatt & Nichol 2022).

Continuous vibration levels of 0.08 inches/second will be “readily perceptible” to humans, whereas transient vibration levels of 0.035 inches/second will be “barely perceptible” to humans (California Department of Transportation [CalTrans] 2013). The nearest residence is approximately 700 feet away from existing operations. It is assumed that baseline vibrations from existing operations do not exceed the 0.08 inches/second threshold on a regular basis and are likely as low as 0.035 inches/second in practice.

#### *4.2.5.1.1. Construction*

Noise and vibration at the site affiliated with the Proposed Action will be temporarily increased during construction. Primary contributing sources of noise and vibration during construction are attributed to vibratory pile work and regrading activities. While noise and vibration will temporarily and intermittently increase during construction, the land use of the wharf and existing surrounding operational facilities will not change from their current designated uses.

Airborne noise levels for the installation of steel sheet piles and/or fiberglass piles are not available. In general, vibratory pile drivers can result in airborne noise levels of up to 105 dBA at 50 feet from the source (WSDOT 2020). Similarly, impact pile drivers can result in noise levels of up to 105 dBA at 50 feet from the source (WSDOT 2020). The piles proposed for installation are relatively small and will likely result in noise levels of less than 105 dBA. However, for the purpose of this noise analysis, 105 dBA was used as a conservative estimate to assess potential airborne noise impacts. In-air pile driving noise will dissipate to 60 dBA background noise levels within 1.7 miles of the proposed pile driving activities. Residential areas are noted to be between 0.2 and 0.4 miles away from the site. Therefore, residential areas located between 0.2 and 1.7 miles may be temporarily affected by increased construction noise and impacts will cease upon completion of the Proposed Action. To reduce disturbance to residents, contractors will be required to follow all local noise and vibration ordinances. To protect wildlife, a bubble curtain and one or more other noise attenuation method will be used to reduce adverse noise effects. Pile-driving also will commence with a soft start procedure (ramping up) in order to alert nearby wildlife, allowing them to move out of the area prior to construction activities. See Section 6 for a detailed list of AMMs and BMPs. Noise calculations were completed in accordance with the WSDOT 2020 Biological Assessment manual, using the spherical spreading loss model and assuming a 6 dBA attenuation rate for each doubling distance (Moffatt & Nichol 2022).

Vibration: Construction equipment and activities associated with the proposed Project, such as graders, pile installation and driving equipment, compaction equipment, and haul trucks, could generate groundborne vibrations that result in temporary increases in vibrations levels that could affect the surrounding community. Similar nearshore construction projects that include regrading and bulkhead installation can generate vibrations from large equipment use that will be approximately 0.04 to 0.02 inches/second at a distance of 0.2 to 0.4 miles. This is where residential homes are located within the vicinity of the Proposed Action. This potential increase due to construction activities is equal to or below assumed background values and at the threshold of being barely perceptible (CalTrans 2013).

Increased effects to noise and vibration are expected to be temporary and commensurate with construction activity. Construction activity will take place during daylight hours and during working calendar days to avoid unnecessary increased disturbance to the community and local environment. The Proposed Action will be required to follow all local noise and vibration ordinances to minimize impacts to residential receptors in the vicinity of the Project. The Proposed Action is expected to have temporary and localized effects on noise for construction, minimized by the proposed AMMs and BMPs.

#### **4.2.5.1.2. Operations**

Increases in airborne noise and vibration will not appreciably increase beyond baseline values for operations. For this reason, the Proposed Action will have no operational or long-term effects on noise and vibration in the local vicinity.

#### **4.2.5.2. No Action**

The No Action alternative will eventually lead to decommissioning of the wharf and operational facilities for the safety of the public. Objectively, disuse of the wharf and operational facilities due to bulkhead failure would decrease associated operational noise and vibration. However, this alternative does not meet the overall Project purpose and need and would have detrimental impacts on the local economy in the form of lost income to the Port and lost wages within the community.

### **4.2.6. Groundwater and Surface Water, Including Water Quality**

#### **4.2.6.1. Proposed Action**

The Project site is located within the City of Ilwaco's commercial waterfront in the northwest portion of the Port of Ilwaco Marina located in Baker Bay along the north shore of the Columbia River. The Port of Ilwaco is the first port of call for vessels traveling from the Pacific Ocean up the Columbia River. The Project site is not located within an EPA-designated sole source aquifer or recharge area.

The Terrace Deposits aquifer has been identified below the Ilwaco-Seaview area, the top of which is 50 feet or greater below ground surface depending on location (Gray & Osborne, 2011). The geotechnical borings completed at the site (ranging in depth from 65.5 to 70.5 feet below ground surface, GeoEngineers 2023a) did not encounter the Terrace Deposits aquifer. The proposed bulkhead is not likely to encounter or impact the aquifer given the proposed construction design.

Shallow groundwater upland of the site is located approximately 5 feet below ground surface and likely varies due to tidal influence at the Project site and nearshore areas (GeoEngineers 2023a). Some areas of groundwater contamination were identified at upland sites during the Ecology file review and do not appear to have impacted the marina based on the results from earlier marina sediment characterizations.

Surface water within Baker Bay (including the waters of the marina) are listed for one Category 5 parameter, fecal coliform, according to Ecology's impaired water bodies 303(d) list and Water Quality Atlas Listing 6685 (Ecology 2023). Periodic fecal coliform exceedances are not uncommon throughout more developed reaches of the Columbia River.

#### **4.2.6.1.1. Construction**

Project construction could potentially only encounter groundwater during pile installation and removal and sheetpile wall installation as there is no further excavation associated with the Project. These activities will have only negligible effects, if any, on groundwater conditions at the site given the nature of the project, installation of the new steel bulkhead wall will have limited and localized impacts to groundwater flow only at the location of the installation. Minor localized impacts could include minor and hyper-localized changes in groundwater flow around the replaced bulkhead wall, which would not affect overall groundwater flow at the site.

Pile and bulkhead wall removal and replacement could also result in temporary, localized, minor increases to turbidity in marine waters. All inwater work will be conducted in accordance with state and federal water quality standards, including compliance with the Clean Water Act (CWA) in the way of required federal and state permits (Appendix K).

The Project is not required to obtain a National Pollutant Discharge (NPDES) Construction Stormwater General Permit because the total disturbed area is less than one acre. Stormwater currently sheetflows from the Safe Coast

Seafoods peninsula across the paved drive and failing bulkhead into the waters of the marina/Baker Bay. The Safe Coast access drive will be regraded and repaved. Stormwater will continue to sheetflow across the resurfaced drive, as it does presently, and flow to the waters of the marina/Baker Bay through scuppers that will be placed along the new bulkhead cap. However, engineering review is required by the City and a Temporary Erosion and Sediment Control (TESC) is required on final site plans. The Proposed Action must also comply with Ecology's 2019 Stormwater Management Plan (Ecology 2024) and the selected contractor shall prepare a Spill Prevention, Containment, and Countermeasures (SPCC) Plan prior to the start of construction. Other applicable AMMs and BMPs, such as the fact that land-based staging areas for the storage of machinery, equipment, materials, and stockpiled soils will be established landward of the top of bank and a silt fence will be installed around the perimeter of the upland work and stockpile areas will also be implemented (Section 6).

The Proposed Action is expected to have negligible effects on the surrounding groundwater, marine surface water, and water quality for construction given the small scale of the project and the extensive AMMs and BMPs, some of which include adherence to state water quality standards and the implementation of AMMs and BMPs for avoidance and response to construction-related spills and waste materials (Section 6).

#### **4.2.6.1.2. Operations**

The Proposed Action is expected to have negligible effects on the surrounding groundwater, marine surface water, and water quality for operations given the benefits to the surrounding marine waters from the prevention of bulkhead and supported soils failures and from increased long-term facility resiliency. Stormwater flow/conditions will be largely unchanged. There will be some slight improvement in overall surface water quality through removal of creosote from the marine environment.

#### **4.2.6.2. No Action**

The existing bulkhead is leaning and in danger of failure and the creosote treated timber piles and features will remain in place and in the waters of Baker Bay under the No Action Alternative. There is the potential for the existing bulkhead to fail, releasing portions of the Safe Coast Seafoods shore and facility into marina waters. This would likely impact turbidity of the marina waters in the short term if the bulkhead were to fail if it is not repaired or replaced. The

Stormwater and groundwater conditions and flow would not be impacted under the No Action Alternative.

### **4.2.7. Waters of the U.S. and Wetlands**

#### **4.2.7.1. Proposed Action**

The Port and Project site are located in Baker Bay at the mouth of the Columbia River. No wetlands or streams were identified within the marina (Geoengineers 2022). No Wild and Scenic Rivers are present in or near the site. The nearest Wild and Scenic River is a segment of the White Salmon River over 100 miles east of the Project site.

The Proposed Action will replace the existing bulkhead at the wharf and requires activities within waters of the U.S.

#### **4.2.7.1.1. Construction**

The Proposed Action will not require effects to jurisdictional or non-jurisdictional wetlands as none are present within the Project boundaries. All effects are proposed to open waterway or shallow water habitat elements of Waters of the U.S. (WOTUS). Within Baker Bay, activities include pile driving and removal and bulkhead replacement within a small portion of the marina.

Construction activities within the waterway will have a temporary effect on the environment and vessel access and operations. Effects include limited vessel access for users and temporary environmental impacts, such as increased localized turbidity, to marine waters at the bulkhead wall. Berthing at the wharf will be temporarily impacted. Coordination with Safe Coast and users of the site will be coordinated by the Port to minimize impacts (i.e., busy fishing seasons will be avoided if possible). All of the area proposed to be disturbed is already disturbed by the existing wharf. No untouched, natural area will be impacted by the Proposed Action, and the majority of construction activities will occur along the existing wharf bulkhead wall (replacement) or immediately landward of that wall (pavement regrading).

The Proposed Action is expected to have temporary effects from construction on Waters of the U.S. given the small scale of the project and the implementation of user coordination, the avoidance of busy fishing seasons, and the adherence to inwater construction AMMs and BMPs, including adherence to state water quality standards,

avoidance of allowing construction debris into WOTUS, and response to construction-related spills and waste materials (Section 6).

#### **4.2.7.1.2. Operations**

Replacement of the bulkhead wall will reestablish the temporary mooring of fishing vessels so they can unload/load equipment and product and improve efficiencies at the Safe Coast Seafoods facility. Under existing conditions, the timber bulkhead cannot be used for loading and unloading of vessels due to its existing poor, unstable, deteriorating condition. The Proposed Action does not expand the operational footprint of the facility adjacent to the wharf or result in an increase in vessel or vehicular traffic relative to previous operations. There will be no impact to wetlands or WOTUS from operations.

#### **4.2.7.2. No Action**

The existing bulkhead wall is in danger of failure. The No Action would likely result in an eventual failure of the existing bulkhead with attendant environmental and local business ramifications. No Action could result in the loss of access to WOTUS and navigable waters (i.e., waters below MHW). Bulkhead failure would shut down seafood processing operations and block a portion of the Ilwaco Marina vessel access at the Port and negatively impact maritime and non-maritime sectors including Safe Coast Seafoods. Without the Project, the eventual closure of the wharf would result in cascading negative transportation and economic impacts for the region.

### **4.2.8. Coastal Zone**

#### **4.2.8.1. Proposed Action**

##### **4.2.8.1.1. Construction and Operations**

The Proposed Action area is located within the coastal zone. Any project that may affect coastal uses or resources is subject to state review to determine if the proposed activity is consistent with the enforceable policies of the Coastal Zone Management Act (CZMA) as managed by the Washington State CZM Program. The Proposed Action is a common activity within commercial marinas and CZMA current review by the Washington State Department of Ecology is underway. A Coastal Zone Management Consistency Decision (CD) was issued by Ecology on February 26, 2024 (Appendix K).

#### **4.2.8.2. No Action Alternative**

##### **4.2.8.2.1. Construction and Operations**

The No Action Alternative would not trigger a requirement for CZM consistency immediately. Compliance with the CZMA would be required if the existing bulkhead failed and emergency repair was required.

### **4.2.9. Floodplains**

#### **4.2.9.1. Proposed Action**

The proposed Project is sited within Baker Bay, with direct connection to the Columbia River and the Pacific Ocean. This is a tidal waterway. The Project site is often inundated during high tides and storms. The location is sited within a Federal Emergency Management Agency (FEMA) National Flood Hazard area (Zone AE) that has a 1% Annual Chance of Flood Hazard. (Figure 10; Appendix A).

##### **4.2.9.1.1. Construction**

Pursuant to Executive Order (EO) 11988, floodplain encroachment will occur, but construction is limited to only that required to replace the failing bulkhead at the wharf and there is no practicable alternative to the proposed construction activities outside the floodplain that still meet the purpose and need of the Project.

Construction related adverse impacts to the floodplain are not anticipated as a result of Proposed Action. The Project is rehabilitative in nature and is intended to improve resiliency. The replacement bulkhead on waters with a direct connection to the Pacific Ocean will not have an effect on floodplains around the Project.

##### **4.2.9.1.2. Operations**

Design for the Proposed Action does consider resiliency against coastal flooding due to high tides, storm surge, and sea level rise. Replacement of the bulkhead will serve as the initial phase to increase the facility's climate change/sea level rise resiliency and will help protect wharf facilities from flooding. The bulkhead will be designed to



not prevent any planned improvement to the wharf and the adjacent Safe Coast facility ground floor elevations in the future (there are no current or funded plans).

The Proposed Action involves raising the top of the embankment elevation to the north of the bulkhead to approximately +14 feet MLLW and the existing creosote-treated retaining wall will be replaced with rip rap to improve shoreline protection. The increase to top of bank elevation will minimize sea level rise impacts between the bulkhead and the marina access pier to the east. Regrading and repaving of the upland area behind the bulkhead wall will facilitate positive drainage away from the Safe Coast Seafoods buildings and help protect the facilities during flood events.

Due to the direct connection of the Proposed Action to the nearby major waterways (including the Pacific Ocean) it is not possible for the improvements to adversely affect the Flood Hazard Elevation for surrounding areas and the Proposed Action has no effect on the surrounding floodplain for operations.

#### *4.2.9.2. No Action*

There would be no immediate effect to floodplains under the No Action Alternative, given the direct connection to the Pacific Ocean (failure of the bulkhead would not be expected to cause any rise in the surrounding floodplain).

#### **4.2.10. Fish and Wildlife**

A Biological Resources Report was completed for the Project site by Moffatt & Nichol (M&N 2023b; Appendix F). This section summarizes information and analysis from that report. The potential for environmental impacts to fish and wildlife during construction and operations of the Proposed Action are reviewed, along with conditions under the No Action Alternative.

##### *4.2.10.1. Proposed Action*

The Proposed Action occurs on the southwest coast of Washington State, located just inside the Columbia River bar at the Pacific Ocean. The Port area generally consists of a marina used for year-round moorage of recreational and commercial fishing vessels, upland commercial buildings, a boatyard, and wharf (Project site). The wharf is an earth filled structure on the east side and pile supported on the west side. The wharf is protected by a failing creosote-treated timber bulkhead along the eastern limits of the wharf. The shoreline is protected by a combination of riprap and a creosote-treated timber retaining wall. The entire Port and marina area is confined by a rubble breakwater.

##### Terrestrial, Riparian, and Aquatic Habitat

Vegetation and terrestrial habitat conditions are limited within the Project area. The site is located in a commercial/industrial area within an active marina that serves recreational boating and commercial fishing vessels and is largely devoid of terrestrial vegetation. The Proposed Action will occur on an existing wharf and associated bulkhead wall, retaining wall, and rip rap shoreline. Little to no terrestrial and riparian habitat occurs. The mudline at the base of the existing bulkhead is largely unvegetated and consists of a silty sand, sandy silt slope with rip rap extending on the shore slope to the north and south of the bulkhead. The upland adjacent to the bulkhead is a paved driveway servicing the Safe Coast Seafood facility. Existing vegetation consists of short-statured ruderal species behind the existing bulkhead wall and in viable spaces along the rip rap shoreline (Appendix F).

An eelgrass and macroalgae survey was conducted within the marina for a separate project (Geoengineers 2022). The survey included the Proposed Action site. Survey results identified one main bed of eelgrass within the marina with smaller adjacent patches, all of which are located east of the footprint for the Proposed Action and separated from possible construction impacts by an existing marina dock. A wetland and stream delineation was also completed for the Project site (Geoengineers 2022). No wetlands or streams were identified within the marina.

##### Fish and Wildlife

Multiple species of fish, birds, and marine mammals could occur within the vicinity of the Project. Salmonids could pass by or enter the marina during their migrations. In-water work will comply with the in-water work window for the area to avoid key migration times, which is anticipated to be November 1 through February 28<sup>1</sup>.

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<sup>1</sup> Final in-water work window is subject to change given final state and federal permits.





The Washington Department of Fish and Wildlife (WDFW) manages state conservation efforts for at-risk species. The WDFW has classified 46 species as endangered, threatened, or sensitive (WDFW 2023). These species were evaluated for their potential to occur in the Project Area. Out of the 46 state-listed species, only marbled murrelets were identified as having potential to occur within the Project Area according to the WDFW Priority Habitats and Species (PHS) database (WDFW 2023). WDFW also identifies priority habitat and species that require protective measures to ensure survival due to the species' population status, sensitivity to habitat alteration, and recreational, commercial, or tribal importance.

While many species of fish and wildlife could access the site, the Proposed Action occurs within an active marina. Existing habitat is not of high habitat value and species presence is limited. The Port and marina are confined within a rubble breakwater which limits aquatic species access to the area. Baker Bay and the lower Columbia River have designated critical habitats for chinook salmon, chum salmon, coho salmon, sockeye salmon, steelhead, green sturgeon, and eulachon (Appendix F).

Baker Bay and the lower Columbia River are situated within the Pacific Flyway which supports a variety of migratory birds. The Pacific Flyway includes the entire west coast of North America reaching from northern Alaska and Canada to the southern tip of Mexico.

#### **4.2.10.1.1. Construction**

The Proposed Action has been designed to avoid and minimize impacts to local fish, wildlife, and habitat to the maximum extent practicable. Elements of the Proposed Action are relatively well understood, and construction activities are temporary in nature. Temporary and localized impacts from construction include in-water and in-air noise, localized and temporary water quality/turbidity impacts, and habitat disturbance. These temporary construction impacts will be confined to the Port/marina area by the rubble breakwater. The Proposed Action is expected to have temporary effects on fish and wildlife. Impacts will be minimized through the implementation of AMMs and BMPs, including the adherence to in-water work windows, use of containment booms to surround the inwater work area, equipment staging landward of the top bank, implementation of BMPs to avoid and minimize potential spills and debris from entering marine waters, implementation of shutdown zones during pile driving, and the use of vibratory pile driving (rather than impact driving) when possible. The US Fish and Wildlife Service (USFWS's) Nationwide Standard Conservation Measures for protection of migratory birds will also be adhered to (USFWS 2023; Appendix G), although impacts to migratory birds are not anticipated. Fill and benthic habitat impacts will be offset (mitigated) by the removal of steel piles, and creosote-treated wood (piles, structures, and revetment), and, as requested by the state WDFW, removal of floating debris from the marine environment and placement of a layer of fish mix over the riprap shore protection to be placed at the head of the slip as beach nourishment. A full list of AMMs and BMPs, along with a detailed description of proposed mitigation elements are described in full in Section 6.

#### **4.2.10.1.2. Operations**

The Proposed Action does not change the overall use of the facility or the overall operational footprint of the wharf and facility. The Proposed Action will, however, result in just under 3,000 square feet (sf) of permanent benthic habitat impacts. Permanent fill and benthic habitat impacts have been avoided and minimized as much as feasible and impacts will be offset (mitigated) by the removal of creosote-treated timber and over-water cover from the marine environment, which provides habitat as described in Section 6. Long-term benefits to marine waters and benthic habitat (important for wildlife that move through and use the marina) are anticipated from the removal of creosote-treated timber from the marine environment.

#### **4.2.10.2. No Action Alternative**

Under the No Action Alternative, the Port/ marina area will continue to have limited habitat for fish and wildlife. Creosote-treated structures would remain in place and result in continued water quality and benthic habitat impacts. The bulkhead structure would likely continue failing and may collapse into the water if repairs are not conducted.

#### **4.2.11. Threatened and Endangered Species, including Critical Habitat**

Letters of Concurrence (LOCs) from both National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), along with approved modifications, have been obtained for the Project (Appendix G) as required for compliance with Section 7 of the Endangered Species Act (ESA) and other federal regulations applicable to federally protected species and habitat. A Biological Evaluation was completed and submitted to both NMFS and USFWS as part of Section 7 (M&N 2023; Appendix G). The BE included an Essential Fish Habitat (EFH) Assessment at the end of the document.

This section summarizes information from these LOCs. The potential for environmental impacts to threatened and endangered species and Critical Habitat during construction and operations of the Proposed Action are reviewed, along with conditions under the No Action Alternative.

#### 4.2.11.1. Proposed Action

Multiple federal laws and regulations apply to species and habitat, including:

- Endangered Species Act (ESA), administrated by NMFS and USFWS
- Marine Mammal Protection Act (MMPA), administrated by NMFS
- Bald and Golden Eagle Protection Act, administrated by USFWS
- Migratory Bird Treaty Act (MBTA), administrated by USFWS
- Magnuson-Stevens Fishery Conservation and Management Act (MSA), administrated by NMFS

Species lists were obtained from the USFWS Information for Planning and Consultation (IPaC) database (USFWS 2023) and the National Marine Fisheries (NOAA Fisheries, also referred to as NMFS) West Coast Region website (NOAA 2023). ESA-listed species include multiple fish, mammal, reptile, and bird species (no threatened or endangered plant species were identified). Species include ESA-listed salmonids, green sturgeon, eulachon, sea turtles, cetaceans, and marine-dependent birds, such as the marbled murrelet and could occur within approximately 1 mile of the Project site (see Appendix F and Appendix G for a more detailed list of species). Critical habitat for several of these species also occurs in the Project area (Appendix F and Appendix G). The rubble breakwaters likely minimize access for many identified species from entering the enclosed Port and marina area. The BE (Appendix G) provides additional information on the ESA-listed species with potential to occur in the Proposed Action area as well as the potential for adverse impacts on these listed species. Table 3 below includes the conclusions of the BE.

The NMFS LOC dated August 16, 2023, and the USFWS LOC, dated August 28, 2023, both included in Appendix G, agreed with MARAD's conclusions of the BE that the Proposed Action is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the ESA. Minor modifications to the Proposed Action, including the removal of proposed fender pile installation from the Project description and the addition of mitigation elements (removal of creosote-treated timber and application of fish mix gravel on riprap) required as a result of ongoing coordination with the City of Ilwaco and Washington State Department of Fish and Wildlife (WDFW), were also approved by NMFS on October 5, 2023 and by USFWS on September 6, 2023 (both agreed that the modifications would not change the original NLAA determinations; Appendix G).

Although a NLAA determination was made for the western snowy plovers (WSP), this was not included in the USFWS LOC due to a lack of identified impacts. USFWS considered WSP to not be at or near the Action Area and considered the action to be "No Effect" to the species for the action which was why they were not included in the original LOC (see correspondence dated April 8, 2024, and included in Appendix G with the other USFWS documentation).

Essential fish habitat (EFH) has been identified within the Proposed Action area. Three Fisheries Management Plans (FMPs) have been identified including 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). In its August 16, 2023 letter, NMFS determined the proposed action would adversely affect Pacific Coast Salmon, groundfish and coastal pelagic species EFH as follows: 1) Pile driving noise temporarily degrades EFH aquatic habitat conditions; 2) Turbidity during pile driving temporarily degrades EFH water quality; and, 3) Riprap permanently displaces EFH benthic forage. NMFS did not identify any additional measures to further reduce effects on EFH other than those the BE proposed and are included in Section 6 of this EA (adherence to inwater work windows, use of vibratory driving when possible, rather than impact driving, and use of shutdown zones during pile driving). Mitigation (removal of creosote-treated timber from the marine environment and placement of fish mix gravel on a portion of the riprap) is also proposed (Section 6).

Pinnipeds like harbor seals and sea lions are protected under the Marine Mammal Protection Act (MMPA) and are likely the most abundant non-ESA listed marine mammal to occur in the area. Other protected marine mammals include non-ESA listed cetaceans (porpoises and dolphins). To avoid impacts to all marine mammals, an exclusion zone will be monitored during and immediately before pile driving activities. The exclusion zone will include the entire marina area shoreward of the breakwaters. During pile driving activities a qualified observer will monitor the exclusion zone, and if any marine mammals are observed within the exclusion zone, all in-water pile driving activities shall cease. Pile driving shall not commence or continue until the marine mammal has either been observed having left the exclusion zone, or at least 15 minutes have passed since the last sighting whereby it is assumed the marine mammal has voluntarily left the exclusion zone. If the Port wanted to obtain take approval to disturb marine



mammals, an Incidental Harassment Authorization (IHA) could be applied for. However, given the enclosed nature of the marina, the mobility of marine mammals to avoid construction areas, and the small footprint of the Project, this is not deemed necessary.

Baker Bay and the lower Columbia River are also situated within the Pacific Flyway which supports a variety of migratory birds. The Pacific Flyway includes the entire west coast of North America reaching from northern Alaska and Canada to the southern tip of Mexico. As noted in the IPaC list (Appendix G after the BE), multiple birds could be present in the area, including the bald eagle (*Haliaeetus leucocephalus*), brown pelican (*Pelecanus occidentalis*), California gull (*Larus californicus*), common loon (*Gavia immer*), common murre (*Uria aalge*), red-throated loon (*Gavia stellata*), ring-billed gull (*Larus delawarensis*), surf scoter (*Melanitta perspicillata*), western grebe (*Aechmophorus occidentalis*), and white-winged scoter (*Melanitta fusca*).

Table 3: MARAD Effects Determinations

Species	Scientific Name	Federal Status	Effect Determination	Critical Habitat Determination
NMFS ESA-listed Species				
Chinook Lower Columbia River ESU	Oncorhynchus tshawytscha	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	Orcinus orca	Endangered	NLAA	No Effect
Humpback Whale Central America DPS	Megaptera novaeangliae	Endangered	NLAA	No Effect
Humpback Whale Mexico DPS		Threatened	NLAA	No Effect
USFWS ESA-listed Species				
Bull Trout	Salvelinus confluentus	Threatened	NLAA	No Effect
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
Yellow-billed Cuckoo	Coccyzuz americanus	Threatened	No Effect	No Effect

#### 4.2.11.1.1. Construction

The Proposed Action may affect, but is not likely to adversely affect (NLAA) the ESA-listed species identified as having the potential to occur within the Project area- see Table 3. NLAA and No Effect determinations were also made for critical habitat. As stated in the previous section, the Proposed Action has been designed to avoid and



minimize impacts to protected fish, wildlife, and habitat to the maximum extent practicable. Elements of the Proposed Action are relatively well understood, and construction activities are temporary in nature. Temporary and localized impacts from construction include in-water and in-air noise, localized and temporary water quality/turbidity impacts, and habitat disturbance. These temporary construction impacts will be confined to the Port/marina area by the rubble breakwater. The Proposed Action is expected to have temporary effects on fish and wildlife. Impacts will be minimized through the implementation of AMMs and BMPs, including the adherence to in-water work windows, use of containment booms to surround the inwater work area, equipment staging landward of the top bank, implementation of BMPs to avoid and minimize potential spills and debris from entering marine waters, implementation of shutdown zones during pile driving, and the use of vibratory pile driving (rather than impact driving) when possible. The USFWS's Nationwide Standard Conservation Measures for protection of migratory birds will also be adhered to (USFWS 2023; Appendix G). Fill and benthic habitat impacts will be offset (mitigated) by the removal of steel piles, and creosote-treated wood (piles, structures, and revetment), and, as requested by the state WDFW, removal of floating debris from the marine environment and placement of a layer of fish mix over the riprap shore protection to be placed at the head of the slip as beach nourishment. A full list of AMMs and BMPs, along with a detailed description of proposed mitigation elements are described in full in Section 6. Further discussion of potential impacts to threatened and endangered species and critical habitat is available in Appendix G. .

#### **4.2.11.1.2. Operations**

The Proposed Action does not change the overall use of the facility or the operational footprint of the wharf and facility and, therefore, there are no anticipated operational impacts. As described in Section 4.2.9, the Proposed Action will result in just under 3,000 sf of permanent benthic habitat impacts. Permanent fill and benthic habitat impacts have been avoided and minimized as much as feasible and impacts will be offset (mitigated) by the removal of creosote-treated timber and over-water cover from the marine environment as described in Section 6. Long-term benefits to marine waters and benthic habitat (important for wildlife that move through and use the marina) are anticipated from the removal of creosote-treated timber from the marine environment.

#### **4.2.11.2. No Action Alternative**

Under the No Action Alternative, the Port/marina area will continue to have limited habitat for federally protected species. Creosote-treated structures will remain in place and result in continued water quality and benthic habitat impacts. The bulkhead structure would likely continue failing and fall into the water.

### **4.2.12. DOT Section 4(f) and Parks/Recreational Resources**

Section 4(f) refers to the original section within the USDOT Act of 1966 which provided for consideration of park and recreation lands, wildlife and waterfowl refuges, and historic sites during transportation project development. There are no 4(f) properties or historic/cultural resources located at or near the Project area.

#### **4.2.12.1. Proposed Action**

##### **4.2.12.1.1. Construction and Operations**

While the Proposed Action is within Ilwaco's downtown corridor, the nature of the replacement work along the wharf will not have a direct effect on nearby upland parks, recreational facilities, or historic/cultural resources. Given the Proposed Action does not change the use or footprint of the wharf, long-term operational impacts on 4(f) resources are not anticipated.

#### **4.2.12.2. No Action**

The No Action Alternative will have no effect on park or recreation resources.

### **4.2.13. Cultural, Tribal, and Historic Resources**

A cultural and historic resources investigation was completed for two projects at the Port of Ilwaco by Willamette Cultural Resources Associates (Willamette CRA 2022) to comply with Section 106 of the National Historic Preservation Act (NHPA). After completion of the initial assessment, the Washington State Department of Archaeology and Historic Preservation (DAHP) requested, on February 2, 2023, that MARAD and the Port expand the Area of Potential Effect (APE). This was completed in an Addendum (Willamette CRA 2023), which was approved by DAHP in May of 2023. All cultural and historic resources reports and affiliated key DAHP correspondence can be found in Appendix H.

The U.S. Department of Housing and Urban Development Tribal Directory Assessment Tool was used to identify Native American Tribes that may have an interest in the Project. Three Native American tribes were identified and



contacted (Confederated Tribes of the Chehalis Reservation, Confederated Tribes of the Grand Ronde Community of Oregon, and the Confederated Tribes of the Warm Springs Reservation of Oregon) along with the Department of Archaeology and Historic Preservation (DAHP). No tribes responded. Copies of all correspondence with MARAD, DAHP, and the tribes are also included in Appendix H.

The cultural and historic resources investigation included a review of records on file with Oregon State Historic Preservation Office (SHPO) and Washington DAHP; historic map and archival research; and field investigations (reconnaissance level). The Port has not been subject to previous archaeological investigations and there are no known archaeological resources within the Project area and specifically the APE. 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 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. The center point of the site was recorded about 240 meters northwest of the Project area, centered around the intersection of 2nd Avenue SW and Main Street SE.

Willamette CRA also completed a Historic Property Inventory (HPI) form for DAHP (Appendix H). The dilapidated and failing east bulkhead does not meet the criteria for National Register of Historic Places (NRHP) eligibility as the structure does not maintain sufficient integrity to convey its historical significance (Willamette CRA 2022, Appendix H). 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 (Willamette CRA 2022, Willamette CRA 2023, Appendix H).

#### *4.2.13.1. Proposed Action*

##### *4.2.13.1.1. Construction and Operations*

Due to the presence of nearby 45PC1, a reported Chinookan village and cemetery site proximal to the Port, the preparation of an Inadvertent Discovery Plan (IDP) prior to ground-disturbing construction work is proposed (to be completed prior to construction) to inform and guide contractors on cultural resources and protocols to follow should archaeological remains be encountered (Willamette CRA 2023 and Willamette CRA 2022, Appendix H). Although there are structures more than 50 years old within the viewshed of the APE, the Proposed Action will not create visual impacts.

On January 26, 2023, MARAD requested consultation with the determination that the proposed project will not affect historic properties within or adjacent to the APE and subsequently submitted an Addendum to the Cultural Resources Assessment for the proposed project. DAHP concurred with the effect determination on May 26, 2023 (Appendix H). MARAD also sent consultation letters to the Confederated Tribes of the Chehalis Reservation, the Confederated Tribes of the Grand Ronde Community of Oregon, and the Confederated Tribes of the Warm Springs Reservation of Oregon. The contacted tribes did not submit any responses, questions, or concerns. The Proposed Action does not effect the surrounding cultural, tribal, or historic resources for both construction and operations.

##### *4.2.13.2. No Action*

There would be no effect to cultural resources under the No Action Alternative.

#### **4.2.14. Environmental Justice**

An Environmental Justice (EJ) analysis<sup>2</sup> has been conducted to assess whether the Demographic Study Area (DSA) population meets the criteria for the presence of a minority and/or low-income population (Appendix I). The USEPA has published the Environmental Justice Primer for Ports (USEPA 2020), which provides guidance to help port decision-makers better understand the needs of near-port communities, how they can help address these needs, and build productive community relationships during planning activities and operations. The USEPA also has a Ports Initiative to improve the environmental performance and increase economic prosperity to help address disproportionate and adverse effects to people living and working near ports (USEPA 2023).

An EJ analysis has been conducted to study the potential for the Proposed Action to result in disproportionate and adverse human health or environmental effects on low-income and/or minority populations (Appendix I, Figures 11 and 12; Appendix A). Appendix I illustrates the DSA in comparison to the Block Groups it includes. EJ populations are defined by census tract comparison of minority and low-income population percentages against county, state and national averages. U.S. Census tracts with percentages larger than the regional average are identified as containing EJ populations.

The community analysis determined that in Block Group 1, Census Tract 9505.02, the White population is calculated at 95% of the total population. There is 1% Native Hawaiian/Pacific Islander, and 4% mixed races. None of these totals qualify a group as a possible EJ concern. The analysis did identify that low-income populations are present in the direct community impact area (DCIA) (at 21% versus the county average of 14% and state average of 10% (Appendix I). The rehabilitation of the Ilwaco bulkhead will not have a disproportionate or adverse impact on the identified low-income communities. The nearest residence to the Project within the Census Tract is approximately 750 feet away, and commercial and industrial buildings are interspersed between.

##### **4.2.14.1. Proposed Action**

###### **4.2.14.1.1. Construction**

The Proposed Action involves the repair of an existing bulkhead to maintain existing operations at the Port's wharf facilities. While low-income populations are present in the DCIA, no notably adverse community impacts are anticipated and impacts to low-income populations do not appear to be disproportionate and adverse. Temporary construction impacts on the community, such as intermittent changes in air emissions, noise, and transportation (including access to marina parking), will have no disproportionate and adverse effects to environmental justice communities. Emergency access and public safety will be maintained throughout construction. Construction work will be confined to the area around the existing wharf. No disparate impacts are anticipated under Title VI and related statutes.

###### **4.2.14.1.2. Operations**

Given the Proposed Action does not change the use or footprint of the facility, long-term disproportionate and adverse effects on EJ are not anticipated. Long-term benefits and burdens resulting from the Proposed Action are anticipated to be equitably distributed throughout the community. Replacement of the bulkhead will support long-term function of the bulkhead which will support the continued success of the Port's tenant and local seafood business (Safe Coast Seafoods), allowing the facility to continue operating safely and employing local community members. No new development plans are anticipated to be generated because of the Proposed Action and there will be no physical, social, or perceptible changes to aspects of community stability and neighborhood cohesions or impacts to the social characteristics in the area. No disparate impacts are anticipated under Title VI and related statutes.

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<sup>2</sup> E.O. 14096 "Revitalizing Our Nation's Commitment to Environmental Justice for All," was issued on April 21, 2023. E.O. 14096 builds on the foundational Environmental Justice order, E.O. 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations". MARAD continues to perform environmental justice analyses under existing NEPA implementing procedures and longstanding agency practice and, in addition to referring to the text of E.O. 14096 and E.O. 12898, continues to look to CEQ's 1997 *Environmental Justice Guidance under the National Environmental Policy Act* and the 2016 report *Promising Practices for EJ Methodologies in NEPA Reviews* to inform analysis related to environmental justice.



#### *4.2.14.2. No Action*

The No Action Alternative will not result in disproportionate and adverse human health or environmental effects on low-income and minority populations. However, if the bulkhead fails, impacts to the seafood company could result in a loss of jobs for low income workers.

#### **4.2.15. Traffic and Safety**

The Port is working closely with MARAD so that the area surrounding the Safe Coast Seafoods facility and existing wharf remains safe and functional. The road that runs parallel to the bulkhead is critical for commercial fishing and seafood/aquaculture processing at Safe Coast Seafoods and allows for the transport of cargo coming to and from the Port. The nearest major road to the Project is U.S. Highway 101.

##### *4.2.15.1. Proposed Action*

###### *4.2.15.1.1. Construction*

The Proposed Action will temporarily and intermittently result in some construction traffic (construction vessels in the water, trucks on land) as the bulkhead undergoes repair and the area behind the bulkhead is regraded. It is anticipated that construction truck traffic will access the site from US 101 and First Avenue South, passing through predominantly industrial and commercial areas instead of residential areas. This will minimize temporary and intermittent impacts from construction. Temporary access and traffic changes will require cargo and Safe Coast Seafoods operations to be temporarily closed or to be modified to use other areas of the facility. Routes will mainly continue those used for operations.

Construction activities are not expected to have any direct effect on public health and safety. The Proposed Action will not involve construction methods, procedures or locations that will pose safety or security problems. All construction activities will occur in areas restricted to general public access (e.g., appropriate barricades, fencing, and signage will be used). The Port also complies with, and requires contractors to comply with, all worker safety standards.

###### *4.2.15.1.2. Operations*

The Proposed Action will not result in overall changes to existing vehicular or vessel traffic patterns or volumes in the area. It will also not introduce traffic to areas that do not currently support traffic. Repair of the bulkhead wall at the wharf will replace failing infrastructure and reestablish operational use and efficiency of the wharf for commercial fishing and seafood processing. Vehicular and marine routes will not change and will continue pursuant to present conditions.

Ongoing operations are not expected to have any direct effect on public health and safety.

##### *4.2.15.2. No Action*

The No Action Alternative may not affect traffic in the short-term but will eventually result in longer closure time of the road if the bulkhead fails. The site would need to be remediated and then repaired. Cargo and Safe Coast Seafoods operations would need to be moved and therefore would increase traffic and reduce capacity of transportation routes in the region.

The No Action Alternative will have negative impacts on public health and safety. If the bulkhead is not repaired, it could potentially fail and displace the deteriorated bulkhead and soil into the marina slip nearest land. While it is not a huge impact upon the marina's operations should it fail, cleanup and remediation could partly impact marina operations. Furthermore, the adjacent Safe Coast Seafood buildings will be at risk of additional damage or structural failure.

The No Action Alternative would have no immediate effect on public health and safety within the study area, but serious long term safety implications if the bulkhead fails abruptly. These implications could range from operational impacts to the adjacent marina, to severe impacts to Safe Coast Seafoods that would render the building and wharf unusable and unstable.

#### **4.2.16. Visual Impacts and Land Use**

The existing land use at the Port and wharf is industrial, recreational, and commercial.



#### 4.2.16.1. Visual Impacts Proposed Action

There will be no change or impact to the general scenic integrity or character of the area or the surrounding community. Proposed activities and improvements include replacement of the bulkhead, replacement of the existing creosote-treated retaining wall, rip rap improvements, and regrading/repaving of the upland area.

#### 4.2.16.2. Visual Impacts No Action

The No Action Alternative would not alter or change the viewshed of the site.

#### 4.2.16.3. Land Use Proposed Action

The existing land use and zoning at the Port and wharf is not expected to change. The southern portion of the new bulkhead will be designed to accommodate for temporary mooring of fishing vessels which may slightly change the unload/load pattern.

#### 4.2.16.4. Land Use No Action

The No Action Alternative would not alter existing land use.

## 5. INDIRECT AND CUMULATIVE IMPACTS

### 5.1. Indirect and Cumulative Impacts

Guidelines prepared by CEQ broadly define Project-related “effects” as having three components, direct, indirect, and cumulative. Direct effects are caused by the Proposed Action and occur at the same time and place as the action. Indirect effects are also caused by the action but occur later in time and occur farther away in distance as compared to direct effects but are still reasonably foreseeable. Cumulative impacts are the impacts on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

#### 5.1.1. Proposed Action

Overall, the indirect, cumulative, and secondary impacts due to the Project are projected to be very low to negligible due to the rehabilitative and reconstructive nature of this initiative. The Project is not intended to result in more volumes of traffic, but rather is seeking to sustainably protect and preserve the existing wharf and seafood company by replacing the bulkhead that is failing. The Proposed Action will be designed to not prevent any planned improvement to the wharf and the adjacent Safe Coast facility ground floor elevations in the future (there are no current or funded plans). The projects listed below represent the accumulated improvements to the Port of Ilwaco area, and no additional projects are currently planned.

The Pacific County Comprehensive Plan 2020-2040 (Pacific County 2021) does not directly specify improvements to the Port of Ilwaco. It does however provide support for continued recreational and commercial vessel traffic in locations including the Port of Ilwaco with:

*“With the large amount of river frontage and associated harbors in Pacific County, waterways historically facilitated considerable transport of goods and people. While ships no longer handle freight and passengers on a scheduled basis, waterfront commerce including commercial fishing remains important. Ocean-going vessels, barges, and fishing boats regularly visit the Ports of Chinook, Ilwaco, Peninsula, and Willapa Harbor. Regular maintenance of navigation channels to these Ports and within their marinas is encouraged to support recreational and commercial boat access to Port facilities.”*

The Port of Ilwaco Marina Master Plan revised in 2019 gives the following information on completed infrastructure projects.

#### Roadways

Howerton Way was completely rebuilt and resurfaced in 2003. New streetlights on Howerton Way and First Avenue were also installed in 2003. A new sidewalk was constructed on the south side (port side) of Howerton Way in 2003; a new sidewalk on the north side will be completed in May 2005. The landscaping of the area between the south sidewalk and the street was completed in 2003; low maintenance native plants were used. Waterfront Way was also completely rebuilt and resurfaced in 2003.

#### Water System





In 2001, a 12-inch water main was installed along Waterfront Way connecting on the east at Elizabeth and Lake Streets and connecting on the west at First Avenue and Eagle Street. With these improvements, both average water supply and fire flow demand will be met for existing and future site users.

#### Wastewater System

In 2004, the City of Ilwaco completed the expansion of the existing wastewater treatment plant to treat Ilwaco's newly annexed service area; the U.S. Coast Guard (USCG) Station, and Cape Disappointment State Park. In 2003, as part of the rebuild of Howerton Way, a 12-inch gravity sewer main was installed. Sewer stubs were also installed at the intersections of Howerton Way with Advent, Pearl and Williams Avenues. The primary feed lies along the south side of Howerton Way.

#### Electric Power

In 2003, as part of the rebuild of Howerton Way, electrical power was moved underground. The primary feed lies along the south side of Howerton Way.

#### Telecommunications (July 2019)

Revised Code of Washington (RCW) 53.08.005, 53.08.370 and 53.08.380 allow ports and public utility districts to build telecommunication infrastructure and offer it wholesale to service providers. Under these provisions, a telecommunications plan and infrastructure projects will be developed in the future to facilitate enhanced telecommunications to improve services countywide.

#### Storm Drainage

Storm drainage improvements were completed in 2003 as part of the First Avenue, Howerton Way, and Waterfront Way street projects. Filter systems were also installed at that time.

From a cumulative environmental impact, these improvement projects do not represent a notable negative cumulative impact when combined and considered with the proposed bulkhead replacement and sustainability Project. The Marina Master Plan also states the following regarding the mooring facilities and potential investment needed:

*"The Port of Ilwaco has developed a successful program for providing seasonal moorage during the fishing season. Transient revenues are particularly strong for recreational boats during the months of July, August and September, when 100% of the mooring slips are occupied. This program is working well for the Port of Ilwaco and should be enhanced, if possible, by additional marketing. The opportunities to retain existing boats and to attract new boats are in some ways beyond the control of the Port of Ilwaco. Fishing conditions will dictate how large the commercial and recreational fleets will be. It is likely that the size of the commercial fleet (fishing and charter boats) will continue to contract in the Port of Ilwaco and along the West Coast. Under these conditions, the Port of Ilwaco can improve facilities to support the industry within limits imposed by funding and permitting. Significant investment of reconditioning and / or replacement of docks (improving power and lighting, improving security) will attract more recreational boats (fishing and non-fishing) as well as justify the increase in moorage rates."*

It should be noted that the current conditions in the Project study area are not considered to be ecologically and socioeconomically sustainable due to the probable outcome of the bulkhead failing, and thereby degrading the water and economic conditions in the area.

#### **5.1.2. No Action**

The No Action Alternative, when considered with other past and future actions, would be expected to result in the continued existing conditions.

## **6. MITIGATIVE MEASURES**

Rehabilitation of the existing bulkhead will improve operational efficiency and safety. A number of avoidance and minimization measures, including BMPs, will be implemented during construction and operations, along with mitigation as approved by the resource agencies, which minimize the potential for adverse impacts on the environment below the level of significance.

Fill and benthic habitat impacts are anticipated to be offset by the removal of steel piles, and creosote-treated wood (piles, structures, and revetment), and, as requested by the state WDFW, removal of floating debris from the marine

environment and placement of a layer of fish mix over the riprap shore protection to be placed at the head of the slip as beach nourishment.

The removal of approximately sixty-four (64) 12-inch creosote timber piles, three (3) 12-inch steel piles, 70 lf of timber retaining wall, 2,510 sf of floating timber debris and 40 lf of derelict timber pile caps, will restore approximately 2,675 sf of benthic habitat and remove approximately 890 cy or 34 tons of creosote from the marine environment. The removal of creosote-treated wood is anticipated to provide both water quality and benthic habitat improvements. A layer of fish mix rock/gravel (approximately 34 cy) will be placed over the portion of riprap placed below the HTL at the head of the slip to improve habitat and provide beach nourishment to that portion of shoreline.

### **6.1. General Avoidance and Minimization Measures (AMMs) and Best Management Practices (BMPs)**

- Containment booms will be used to surround in-water work areas or separate embankment work from surface water. The booms will serve to contain and collect any oily material and/or floating debris potentially released during construction. Oil-absorbent materials will be employed immediately if visible sheen is observed. Accumulated debris will be collected daily and disposed of at a permitted upland site approved by the owner.
- Hydraulic water jets will not be used to install piles.
- Water quality standards and procedures that limit the impact of pollutants will be observed.
- Land-based staging areas for activities, such as storage of machinery, equipment, materials, and stockpiled soils will be established landward of the top of bank. A silt fence will be installed around the perimeter of the upland work areas and locations where machinery, materials, and stockpiled soils are situated. Any temporary stockpiles will be covered and bermed when not in use.
- All federal, state, and/or local construction permit requirements will be followed during demolition and construction activities.
- To reduce disturbance to residents, contractors will be required to follow all local noise and vibration ordinances.
- The preparation of an IDP prior to ground-disturbing construction work is proposed (to be completed prior to construction) to inform and guide contractors on cultural resources and protocols to follow should archaeological remains be encountered.
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### **6.2. In, Over, and Near Water AMMs and BMPs**

- In-water construction activities will comply with the in-water construction window (anticipated to be November 1 through February 28 within state and federal permits).
- Typical construction best management practices (BMPs) for working in, over, and near water will be applied, including activities such as the following:
- Checking equipment for leaks and other problems that could result in the discharge of petroleum-based products or other material into waters of Baker Bay.
- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including:
- Containment and cleanup efforts will begin immediately upon discovery of a spill and will be completed in an expeditious manner in accordance with all local, state, and federal regulations. Cleanup will include proper disposal of any spilled material and used cleanup material.
- The cause of any spill will be ascertained, and appropriate actions taken to prevent further incidents or environmental damage.
- Spills will be reported to the Washington State Department of Ecology (Ecology) Southwest Regional Spill Response Office pursuant to WAC 173-303-145 and WAC 173-182-260.
- Work barges will not be allowed to ground out.

- Excess or waste materials will not be disposed of or abandoned waterward of ordinary high water or allowed to enter waters of the state. Waste materials will be disposed of in an appropriate manner consistent with applicable local, state, and federal regulations.
- Demolition and construction materials will not be stored where wave action or upland runoff can cause materials to enter surface waters.
- Oil-absorbent materials will be present on site for use in the event of a spill or if any oil product is observed in the water.

### **6.3. Pile Removal and Installation AMMs and BMPs**

Pile removal BMPs will be applied, including activities such as the following:

- Removal of creosote-treated piles will be conducted consistent with the BMPs established in U.S. Environmental Protection Agency (EPA) Region 10, Best Management Practices for Piling Removal and Placement in Washington State, dated February 18, 2016 (EPA 2016).
- While creosote-treated piles are being removed, a containment boom will surround the work area to contain and collect any floating debris and sheen. Debris will be retrieved and disposed of properly.
- The piles will be dislodged with a vibratory hammer when possible and will not be intentionally broken by twisting or bending.
- The piles will be removed in a single, slow, and continuous motion in order to minimize sediment disturbance and turbidity in the water column.
- If a pile breaks above or below the mudline, it will be cut or pushed in the sediment consistent with agency-approved BMPs (U.S. Army Corps of Engineers [USACE], Department of Natural Resources [DNR], Ecology, and EPA).
- Removed piles, stubs, and associated sediments (if any) will be contained on a barge. If piles are placed directly on the barge and not in a container, the storage area will consist of a row of hay or straw bales, filter fabric, or similar material placed around the perimeter of the barge.
- All creosote-treated material, pile stubs, and associated sediments (if any) will be disposed of by the contractor in a landfill approved to accept those types of materials.
- Steel piling will be installed with a vibratory hammer when possible. Impact hammering will start with light tapping, then increase to full force gradually.
- A bubble curtain and one or more other noise attenuation methods such as a wood cushion block will be used during impact installation or proofing of all steel piling.
- Pile-driving will commence with a soft start procedure (ramping up) in order to alert nearby wildlife, allowing them to move out of the area prior to construction activities. For impact pile driving, contractors will be required to provide an initial set of strikes from the hammer at reduced percent energy, each strike followed by no less than a 30-second waiting period. This procedure will be conducted a total of two times before impact pile driving begins.
- To avoid impacts to marine mammals, an exclusion zone will be monitored during and immediately before pile driving activities. The exclusion zone will include the entire marina area shoreward of the breakwaters. Although ESA-listed species, including Southern Resident killer whales and humpback whales are not anticipated to occur within the marina where noise impacts could occur, this avoidance measure would provide further protections against potential noise impacts to these species.
- During pile driving activities a qualified observer will monitor the exclusion zone, if any marine mammals are observed within the exclusion zone, all in-water Project activities shall cease. Project activities shall not commence or continue until the marine mammal has either been observed having left the exclusion zone, or at least 15 minutes have passed since the last sighting whereby it is assumed the marine mammal has voluntarily left the exclusion zone.

## **6.4. Overwater Concrete Placement Minimization and Concrete Placement AMMs and BMPs**

The Project has been designed to minimize the placement of concrete over water. Where possible, pre-cast concrete elements will be used. On-site (wet) concrete placement, where needed, will follow appropriate AMMs, including:

- Wet concrete will not contact surface waters.
- Forms for any concrete structure will be constructed to prevent leaching of wet concrete.
- Concrete process water will not be allowed to enter surface waters. Any process water/contact water will be routed to a contained area for treatment and will be disposed of at an upland location.

## **7. AGENCY COORDINATION AND PUBLIC INVOLVEMENT**

### **7.1. Agency Coordination and Public Involvement**

#### **7.1.1. Agency Coordination**

Agency coordination to date has included coordination with applicable federal, state, and local agencies as part of the agency and public involvement process (Appendix J) and as part of early coordination with the resource agencies required for permitting (Appendix K).

#### **7.1.2. Tribal Consultation**

The U.S. Department of Housing and Urban Development Tribal Directory Assessment Tool was used to identify Native American Tribes that may have an interest in the Project. Three Native American tribes were sent letters concerning the Project as listed below:

- Confederated Tribes of the Chehalis Reservation
- Confederated Tribes of the Grand Ronde Community of Oregon
- Confederated Tribes of the Warm Springs Reservation of Oregon

No tribes responded. Copies of all correspondence with the tribes are included in Appendix H.

#### **7.1.3. Agency Coordination and Public Involvement**

Solicitation of public comments and concerns was completed for the Project on May 19<sup>th</sup>, 2023, following a 30-day comment period. This solicitation was a three-pronged approach, consisting of:

- Two signs were placed at locations near the Project advertising the public notice process. The signs gave instructions for accessing the website and comment form. See Appendix J for photos of these signs.
- The Project's official comment period was from April 20<sup>th</sup> to May 19<sup>th</sup>, 2023.
- The website was opened up for comments on April 20<sup>th</sup>, 2023. An email notification was sent to a list of persons expressing an interest in being notified of updates on April 20<sup>th</sup>, 2023 (Appendix J).

No public comments were received regarding the Project.

## **8. CONCLUSION**

In conjunction with the USDOT MARAD, the Port is proposing to replace the failing east bulkhead with an anchored steel sheetpile bulkhead, repair slope protection north and south of the bulkhead, and pave and regrade the upland wharf area (access driveway) directly landward of the bulkhead to mitigate the effects of sea level rise.

The Project is expected to have immediate local and regional benefits by improving the safety, efficiency, and reliable use of the wharf. The Port is a key hub for commercial fishing, seafood and aquaculture processing, and recreation activities.

Similar to many other waterfront projects in coastal Washington, some compensatory mitigation for state-protected habitat and aquatic species has been requested by WDFW. With the combination of impact avoidance and minimization, the implementation of conservation measures and BMPs, and implementation of the agreed upon mitigation, the Project will not adversely affect the environmental resources assessed in this EA.

The Port of Ilwaco has demonstrated that the Project site and Proposed Action is best suited for the Project, as it is repair and replacement to a bulkhead for an existing commercial fishing wharf.

## **9. LIST OF PREPARERS**

### **Moffatt & Nichol (M&N)**

- Margaret Schwertner – Senior NEPA Specialist and Environmental Scientist
- Marc Hamel – Senior NEPA Specialist
- Victoria England – Senior Environmental Scientist
- Taylor Myers – Environmental Scientist
- Casey Gilson – Environmental Scientist

### **GeoEngineers, Inc. (GeoEngineers)**

- Kelly Werdick – Wetland Biologist
- Morgan McArthur, PE – Geological Engineer
- Jason Stutes – Senior Marine Ecologist
- Joe Callaghan – PWS, CESCL, Senior Biologist

### **Willamette Cultural Resources Associates, LTD (Willamette CRA)**

- Breanne Taylor, M.A., RPA – Senior Archaeologist and Laboratory Director
- Adam Alsobrook – Senior Architectural Historian

## **10. REFERENCES**

See Appendix B – References.

## **Appendix A: Figures and Photographs**





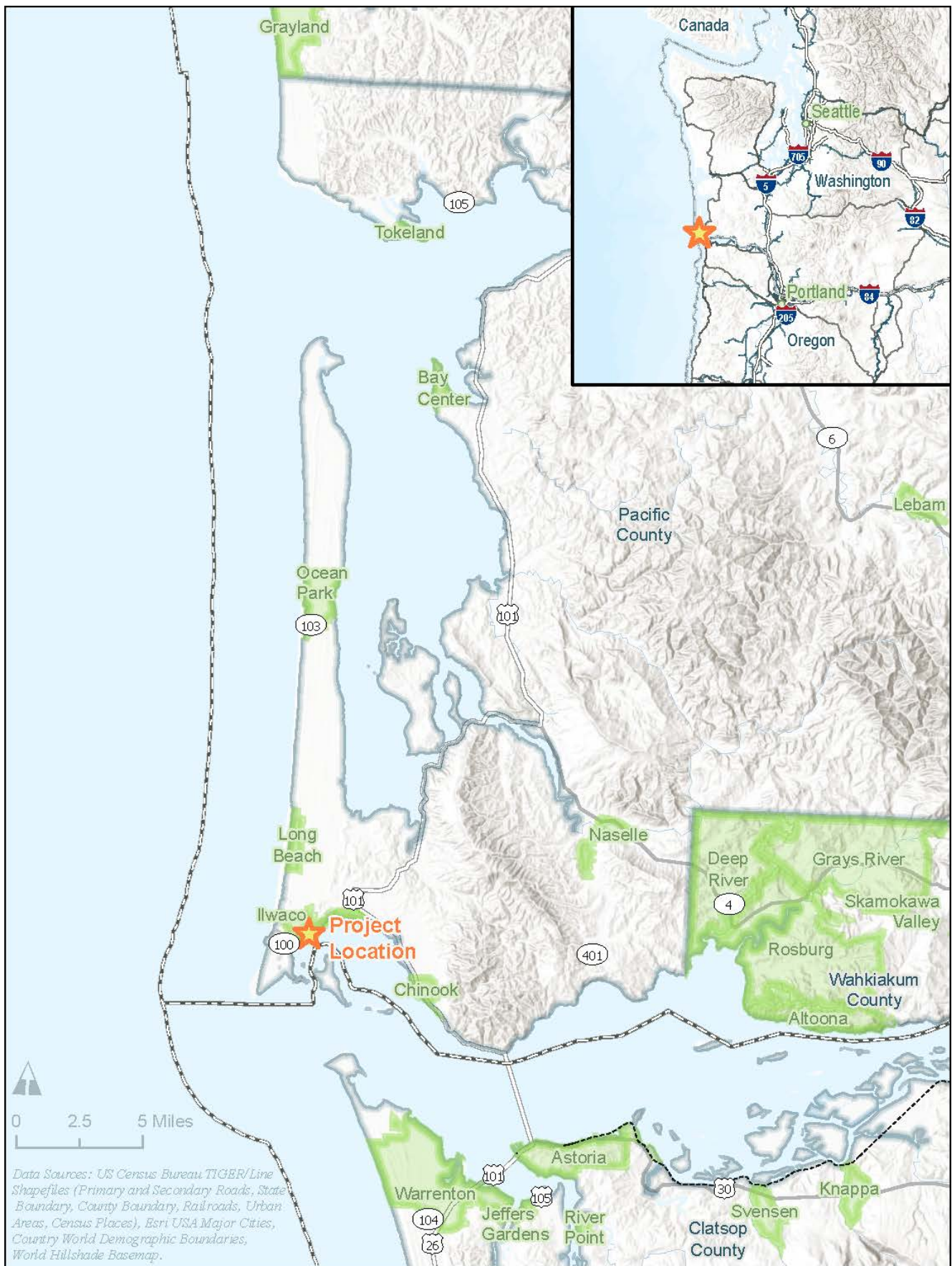


Figure 1. Vicinity Map





Figure 2. Project Location Aerial



Figure 3. Location of Proposed Project Activities



Figure 1. Damaged Bulkhead Wall





*Figure 2. Flooding during Storms and King Tides*



*Figure 3. Rip Rap Shoreline to the South of the Bulkhead Wall*



*Figure 4. Retaining Wall to the North of the Bulkhead*



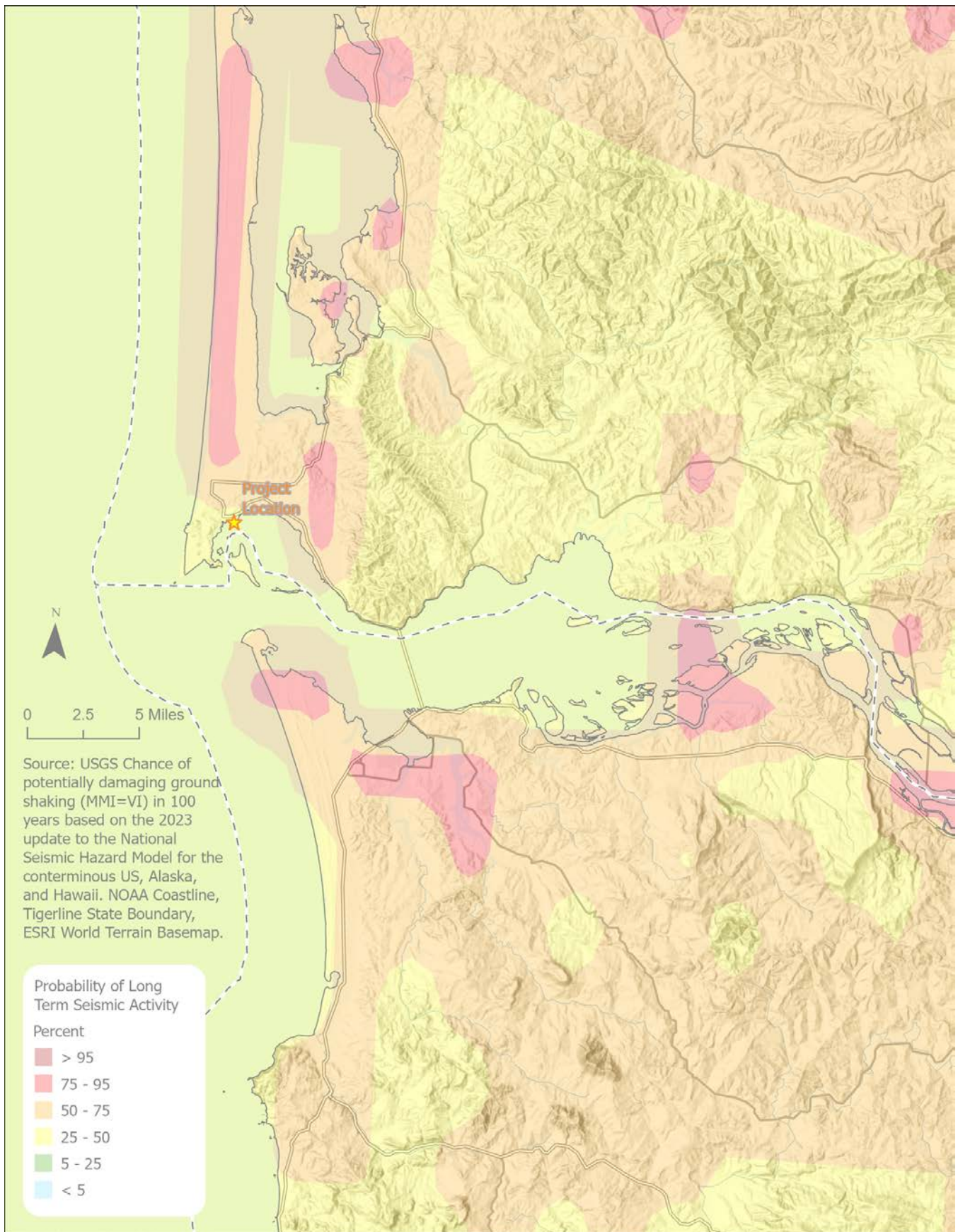


Figure 8. Seismic Probability (USGS 2023)





#### EPA Facility Registry Service Listings

##### Active Status

- ▲ National Pollutant Discharge Elimination System (NPDES)
- ▲ NPDES & Integrated Compliance Information System (ICIS)
- ▲ Emission Inventory System (EIS)
- ▲ Occupational Safety and Health Administration Information System (OSHA-OIS)

##### Inactive Status

- National Pollutant Discharge Elimination System (NPDES)
- Resource Conservation and Health Administration Information System (RCRAInfo)
- RCRCInfo & Biennial Reporter for Hazardous Waste (BR)
- NPDES & RCRAInfo

##### State Facility Information

- Washington - Facility / Site Identification System

Location	Name						
1	PORT OF ILWACO BOATYARD AND MARINA				x		x
2	WILCOX AND FLEGEL OIL ILWACO PLANT				x		
3	OCEAN BEACH HOSPITAL	x					
4	WA317947328 - TRE-FIN GROUP LLC					x	
5	WA317945068 - SUNSET CHARGE LLC					x	
6	BAKER BAY ILWACO DRUM						x
7	PRO MARINE INC ILWACO PORT						x
8	OCEAN BEACH SCHOOL DIST TRANSPORTAT				x		
9	ILWACO AUTO REPAIR	x					x
10	ILWACO WASTEWATER TREATMENT PLANT				x		
11 A	JESSIES ILWACO FISH CO				x		
11 B	SAFE COAST SEAFOODS WASHINGTON, LLC			x			
12	A1 REDIMIX ILWACO PLANT				x		
13	HILLTOP MIDDLE SCHOOL						x
14	ILWACO HIGH SCHOOL						x
15	INDIAN CREEK WATER PLANT				x		

Figure 9. Hazardous Materials Locations



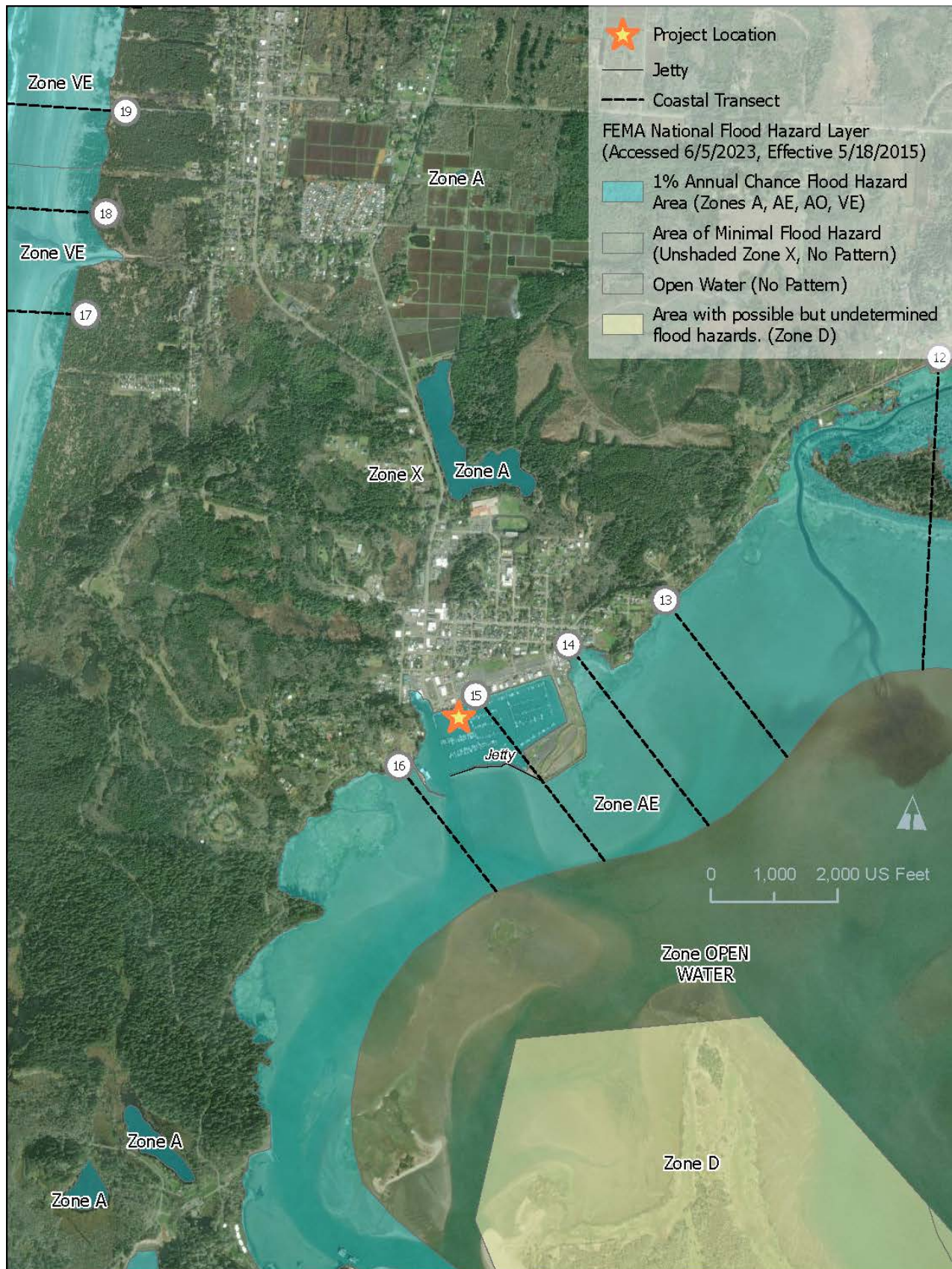


Figure 10. FEMA Flood Mapping



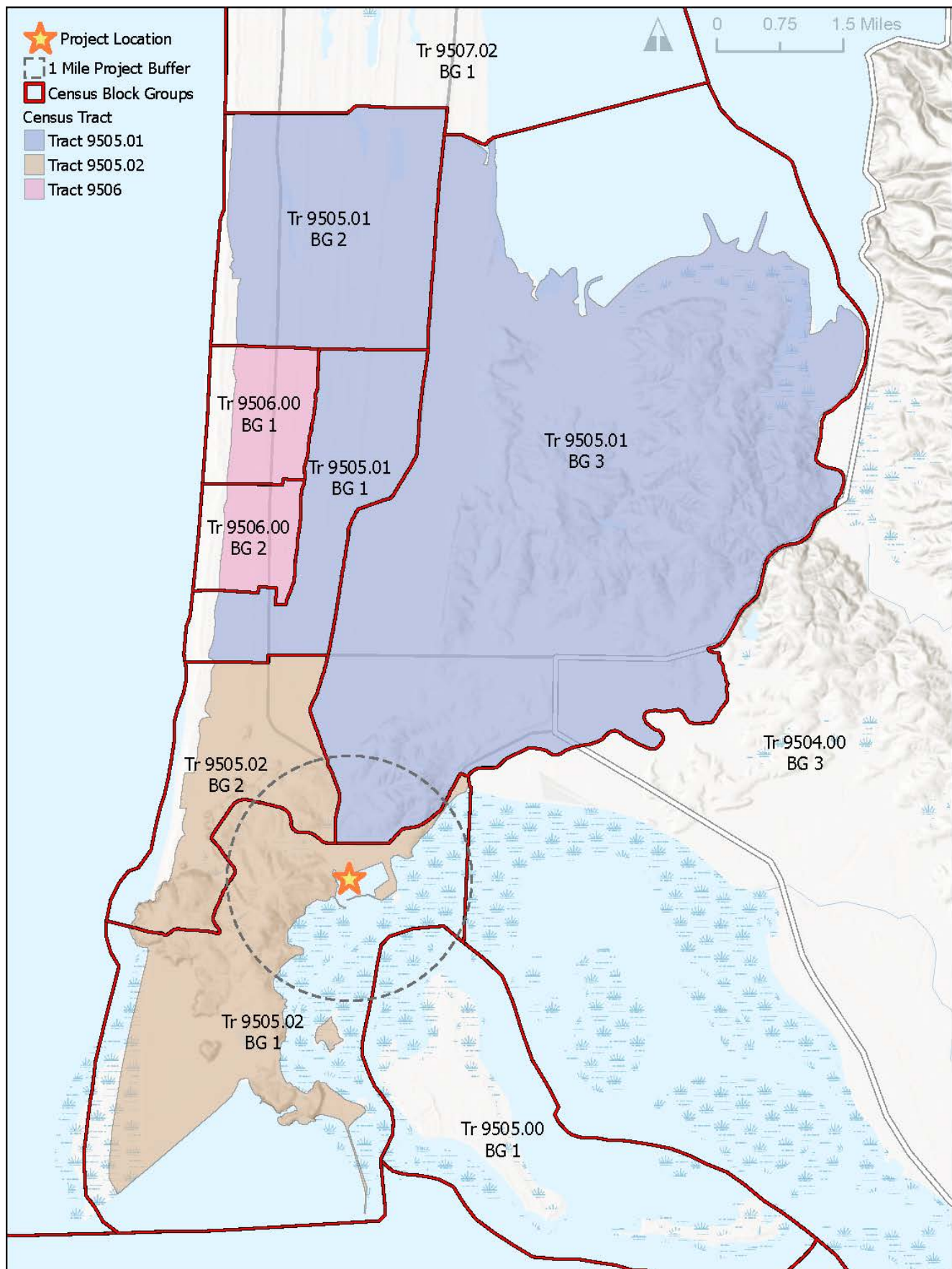
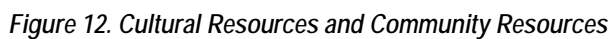


Figure 11. Census Tract Data





## **Appendix B: References**



## APPENDIX B – REFERENCES

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- Washington State Department of Transportation (WSDOT). 2020. Biological Assessment Manual – Construction Noise Impact Assessment.
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## **Appendix C: Geology, Soils, and Seismicity**





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**To:** Moffatt & Nichol

**From:** Kelly Werdick, Morgan McArthur, Jason Stutes, and Joe Callaghan, GeoEngineers, Inc.

**Date:** November 27, 2023

**File:** 21551-003-01

**Subject:** Subsurface Conditions and Geologic Hazard Assessment Summary

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## EXECUTIVE SUMMARY

The Port of Ilwaco (Port or POI), with the U.S. Department of Transportation (USDOT) Maritime Administration (MARAD), is proposing repairs and resiliency improvements at the Port's east bulkhead, to protect existing infrastructure including the Safe Coast Seafoods facility and improve the safety, efficiency, and reliable use of the existing wharf. This technical memorandum is intended to support the National Environmental Policy Act (NEPA) environmental analysis for subsurface conditions and geologic hazards.

Improvements include replacing the existing east bulkhead, replacing existing shoreline armoring to the north and south of the existing bulkhead, and reconstructing the existing pavement section behind the existing bulkhead. Short term construction associated with the action alternative will require modifications to the existing bulkhead and shoreline geometry, but the temporary condition during construction will not increase the risk of structural failure in the event of seismic activity. The no-action alternative would maintain or increase the risk of structural failure during seismic activity. The proposed design of the action alternative complies with seismic structural design standards and would overall increase the resilience of the wharf during seismic activity in the long term.

## INTRODUCTION & PROJECT UNDERSTANDING

This memorandum summarizes our understanding of subsurface conditions and evaluation of geologic hazards completed as part of our geotechnical study for the Port of Ilwaco, East Bulkhead Resilience Project (the project). The project site is located at 1170 Howerton Avenue East in Ilwaco, Washington. The Port of Ilwaco (Port) in partnership with the U.S. Department of Transportation (USDOT) Maritime Administration (MARAD), intends to replace the Port's east bulkhead wall to protect existing infrastructure including the Safe Coast Seafoods facility and improve the safety, efficiency, and reliable use of the existing wharf.

GeoEngineers, Inc. (GeoEngineers) prepared a geotechnical report for the project dated October 4, 2023 (Project Geotechnical Report). This memorandum summarizes and generalizes information presented in the Project Geotechnical Report and is intended to support National Environmental Policy Act (NEPA) documentation for an Environmental Assessment for the project. This memorandum does not provide geotechnical engineering recommendations and is not intended to be relied upon for the design of the project. Please reference the Project Geotechnical Report for design recommendations and additional details.

The proposed project consists of four primary elements:

- Replacing the east wharf bulkhead;
- Removal and replacement of shoreline armoring on the southern end of new bulkhead to accommodate replacement;
- Removal of existing creosote-treated retaining wall and replacement with riprap slope stabilization on the northern end of the new bulkhead;
- Reconstructing the existing pavement section behind the east wharf bulkhead.

The existing bulkhead consists of creosote treated timber piles, lagging, and walers. The bulkhead wall is in disrepair and will be replaced with a new sheet pile wall. The existing bulkhead wall will be abandoned in place and the new wall will be constructed in front of it. The new sheet pile will be embedded into the underlying siltstone and will include tieback anchors.

Improvements to shoreline areas surrounding the wharf east bulkhead are also planned. Most of the improvements consist of slope armoring using rip rap. We understand improvements within the shoreline area northeast of the proposed bulkhead will consist of removal of a relic timber wall on the shoreline slope and installation of rip rap slope protection along the shoreline and a small berm that will be constructed at the top of the slope. The berm will be approximately one-foot tall and is being included to mitigate the effects of future sea-level rise. At the south end of the bulkhead, we understand that existing concrete rubble slope armoring will be removed and replaced with riprap approximately 18 inches thick.

We understand that existing asphalt pavements behind the bulkhead and along the wharf will be replaced as part of this project. Pavement improvements will necessitate excavation to reestablish subgrades and placement of structural fill materials and pavements.

## **SUBSURFACE CONDITIONS**

### **Geologic Setting**

According to Washington Department of Natural Resources Geologic Information Portal, the site geology is characterized as, “Qa” for Quaternary alluvium – unconsolidated or semi-consolidated alluvial clay, silt, sand, gravel and/or cobble deposits. To the north, the site geology is characterized as, “Tm” for Tertiary marine sedimentary – Miocene lithofeldspathic or feldspatholithic sandstone and siltstone. To the south, the site geology is characterized as, “Tv(c)” for Tertiary volcanic rocks, crescent formation – lower to middle Eocene dominantly submarine basalt flows and flow breccia.

### **Soil Conditions**

Our understanding of soil conditions at the site is based on review of prior geotechnical studies completed in the project vicinity and information obtained from two soil borings completed to support design of the new bulkhead. A detailed description of the subsurface exploration program completed for this project is provided in the Project Geotechnical Report (GeoEngineers 2023).

We identified three primary soil units at the site: fill, native alluvium, and siltstone. Fill soils are present in upland areas and along the wharf behind the existing/proposed bulkhead. Fill soils consist primarily of loose to medium dense sand and gravel with occasional cobbles. Fill was observed from the ground surface (approximately Elevation +13 feet behind the existing bulkhead) to about Elevation 0 feet in the borings (Elevations referenced to the mean lower low water datum). The alluvium underlying the fill typically consisted of silt and clay with varying sand content extending to around Elevation -17 feet and soft to medium stiff silt brown fat clay, extending to about Elevation -47 feet. Below the alluvium soils, siltstone was observed extending to full depth of the exploration (about Elevation -57 feet).

### **Groundwater Conditions**

Geoengineers reviewed the Pacific and Wahkiakum County Description of Groundwater Resources to support this assessment (Cline 1969). Generally, groundwater in the region is driven primarily by precipitation and infiltration into the floodplain throughout the wet season. Little to no recharge occurs in summer and early fall. Alluvium deposits occur at river mouths in lower parts of valleys. The alluvium yields only small amounts of water and minimal infiltration due to its high silt content. Beach deposits consist primarily of sand with clay, silt, and some gravel at depth. These deposits located along the shoreline allow precipitation to infiltrate quickly – resulting in little to no surface runoff in these areas. Along shorelines within the mouth of the Columbia River, groundwater is heavily hydrologically influenced by tidal level and/or river stage due to permeability of nearshore soils (typically alluvial deposits).

At this site where the bulkhead is being replaced, groundwater was encountered at approximately 5 feet below ground surface during the geotechnical exploration effort. Given the site's proximity to the tidally-influenced water, the water table should be expected to vary with tide level—but given the high silt content of the uppermost soils, saturated soils should be expected up to the high tide elevation.

### **Project Specific Conditions to Consider**

Soils observed at the project site generally consist of fill overlying native alluvial deposits and the regional bedrock. Portions of fill areas are located both above and below the plane of Ordinary High Water and High Tide Line and are hydrologically influenced by tidal activity.

## **EFFECTS OF PROPOSED ACTION**

Proposed activities associated with the project include rehabilitation of an existing armored shoreline and bulkhead in a developed area within the Ilwaco marina. Earthwork activities related to bulkhead replacement and shoreline rehabilitation include shoreline armor removal and replacement and upland paving and grading landward of the bulkhead. The proposed sheet-pile wall will be installed waterward of the existing bulkhead. A portion of the existing deteriorated bulkhead will be abandoned in place to minimize the potential failure of the existing bulkhead during construction. Targeted demolition of portions of the bulkhead will be needed to accommodate the installation of the new tie-back ground anchors. Existing creosote treated wharf and bulkhead material to be removed will be extracted using vibratory equipment and disposed of at an approved upland location.

The area within and adjacent to the proposed action consists of a developed wharf and marina including the bulkhead (to be replaced), wharf and fish processing facilities, and both concrete and creosote timber revetment shore protection. The proposed action is expected to improve seismic resilience of the wharf through rehabilitation and have negligible effects on the surrounding geology, soils and seismicity over both the short- and long-term.

## **NO-ACTION ALTERNATIVE**

The no-action alternative will have no effect on existing soils, geology, or seismicity.

## **GEOLOGIC HAZARD ASSESSMENT SUMMARY**

The following geologic hazards were evaluated as part of preparing the Project Geotechnical Report: Liquefaction potential, surface rupture potential, lateral spreading potential, static slope stability.

The proposed bulkhead will be more resilient to seismic activity than the existing deteriorated structure. The project has been designed to comply with International Building Code 2018 (IBC 2018) which references the 2016 *Minimum Design Loads for Buildings and other structures* (American Society of Civil Engineers 7-16). In our opinion the project can be completed without increasing the likelihood of occurrence, or the severity, of the considered geologic hazards at the project site and surrounding area. Please refer to the Project Geotechnical Report for details on our geologic hazard assessment, mitigation recommendations and associated geotechnical design recommendations.

## **USE OF THIS TECHNICAL MEMORANDUM**

We have prepared this technical memorandum for the exclusive use of Moffatt & Nichol, the Port of Ilwaco, and their authorized agents. Moffatt & Nichol and the Port of Ilwaco may distribute copies of this report authorized agents and regulatory agencies as may be required for the project.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. The conclusions, recommendations, and opinions presented in this report are based on our professional knowledge, judgment, and experience. No warranty or other conditions, express or implied, should be understood.

## REFERENCES

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KMW:MM:JPS:JC:atk

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

## **Appendix D: Air Quality and Emissions**





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**To:** Moffatt & Nichol

**From:** Kelly Werdick, Jason Stutes and Joe Callaghan  
GeoEngineers, Inc.

**Date:** November 30, 2023

**File:** 21551-003-01

**Subject:** Air Quality and Emissions

---

## EXECUTIVE SUMMARY

The Port of Ilwaco (Port or POI), with the U.S. Department of Transportation (USDOT) Maritime Administration (MARAD), is proposing repairs and resiliency improvements at the Port's east bulkhead, to protect existing infrastructure including the Safe Coast Seafoods facility and improve the safety, efficiency, and reliable use of the existing wharf. This technical memorandum is intended to support the National Environmental Policy Act (NEPA) environmental analysis for air quality and emissions.

Improvements include replacing the existing east bulkhead and replacing existing shoreline armoring to the north and south of the existing bulkhead. Greenhouse gas emissions (GHG; CO<sub>2</sub> and CH<sub>4</sub>) are likely to be temporarily increased as part of construction activities, but established criteria pollutants (including particulate matter, ozone, nitrogen dioxide, and sulfur dioxide) are within national attainment area thresholds set by the Environmental Protection Agency (EPA). The proposed action alternative will have elevated emissions during construction, however, the increase in emissions will be temporary and will not result in violation of de minimis thresholds for national attainment areas.

## INTRODUCTION AND PROJECT UNDERSTANDING

This memorandum summarizes the potential effects to air quality and emissions for the Port of Ilwaco, East Bulkhead Resilience Project (the project). The project site is located at 1170 Howerton Avenue East in Ilwaco, Washington. The Port of Ilwaco (Port) in partnership with the U.S. Department of Transportation (USDOT) Maritime Administration (MARAD), intends to replace the Port's east bulkhead wall to protect existing infrastructure including the Safe Coast Seafoods facility and improve the safety, efficiency, and reliable use of the existing wharf.

This memorandum summarizes specific information related to Clean Air Act requirements and is intended to support National Environmental Policy Act (NEPA) documentation for an Environmental Assessment for the project.

The proposed project consists of four primary elements:

- Replacing the east wharf bulkhead;
- Removal and replacement of shoreline armoring on the southern end of new bulkhead to accommodate replacement;

- Removal of existing creosote-treated retaining wall and replacement with riprap slope stabilization on the northern end of the new bulkhead;
- Reconstructing the existing pavement section behind the east wharf bulkhead

The current bulkhead consists of creosote treated timber piles, lagging, and walers. The current bulkhead wall is in disrepair and will be replaced with a new sheet pile wall. The existing bulkhead wall will be abandoned in place and the new wall will be constructed in front of it. The new sheet pile will be embedded into the underlying siltstone and will include tieback anchors.

Re-grading activities are planned within the shoreline area behind the proposed bulkhead. The driveway behind the bulkhead will be regraded and repaved.

The shoreline to the north of the bulkhead is protected by a low timber retaining wall made up of sixteen (16) 12-inch piles. This retaining wall will be removed and replaced with riprap and fish mix over the existing shoreline and a small berm will be constructed at the top of the slope. The berm will be on the order of 1 foot tall and is being included to mitigate the effects of future sea-level rise.

The shoreline to the south of the bulkhead consists of riprap and concrete rubble. This material would be removed and replaced with riprap over a smaller area to accommodate the bulkhead replacement.

## **AFFECTED ENVIRONMENT**

Clean Air Act (CAA) regulations require the EPA set national air quality standards (NAAQs) for established criteria pollutants (including carbon monoxide, lead, particulate matter, ozone, nitrogen dioxide, and sulfur dioxide). Criteria pollutants are considered harmful to public health and standards have been set to ensure the established standards are not exceeded. Areas which do not exceed the national standards are designated as “attainment areas” and areas which exceed the national standards are considered “non-attainment areas.” State and local governments in non-attainment areas must develop regional plans outlining how areas will attain and maintain national air quality standards through reduction of emissions over time. Pacific County is currently designated as an attainment area (EPA NAAQs 2023).

Air quality is determined by the measured concentration of pollutants in the atmosphere. Air quality regulators (EPA, state, tribal, and local agencies) use this information to ensure that pollutants remain at levels that protect public health and the environment. Atmospheric pollutants are affected by the local environmental setting including topography and local weather patterns. Impacts to ambient air quality are possible from both construction and operational elements of the project. Current ambient air quality at the project site is affected by vehicular traffic, marina usage, and pier operations. In addition to potential effects on air quality by project generated air pollutants, greenhouse gas emissions and fugitive dust would be temporarily elevated during maintenance activity from construction equipment and machinery in operation. Despite these temporary increases in emissions, ambient air quality is expected to return to ambient levels upon completion of the project.

Construction activities during maintenance which may cause impacts to air quality include excavation, grading, pile driving, paving, and other use of heavy machinery. Demolition and removal of existing structures would be localized and temporary. Replacement of the existing wharf and bulkhead would reset the lifespan of the structure and subsequently the lifetime emissions.

## PROPOSED ACTION

Proposed activities associated with the project include rehabilitation of an existing armored shoreline and bulkhead in a developed area within the Ilwaco marina. The proposed action seeks to maintain current operations of the facility without an expansion of services or actions that would contribute to increased greenhouse gas emissions or other airborne pollutants. To help estimate the emissions associated with the construction of the proposed action, a Federal Highway Administration (FHWA) approach was used to estimate these emissions based on similar equipment and sequencing. Designed as a spreadsheet-based model for practitioners, FHWA's Infrastructure Carbon Estimator (GASCAP) is based on data collected from various state Departments of Transportation (DOT), a nationwide database of construction bid documents, and consultation with transportation engineers and lifecycle analysis experts. The estimator allows users to create "ballpark" estimates of energy and GHG emissions and airborne pollutants using limited data inputs. Various project parameters (duration, equipment used, project sequence, etc.) were used to develop an overall emission scenario so that comparison to current emissions and thresholds for airborne pollutants could be made (Gallivan et al. 2014).

The proposed activity is projected to take approximately 200 days to complete and would involve the use of a barge, crane, pile driving equipment, excavators, graders, and paving equipment. Types and duration of equipment use were entered into the estimator and sequenced according to the most similar DOT action in the database of the model (Bridge Repair/Replacement). The output was then reviewed and tailored to the anticipated sequence and consistency of the proposed action with similar nearshore infrastructure projects (see model output in Appendix A). Based on the output of the model (presented in Table 1), the use of this equipment would temporarily alter ambient greenhouse gas emissions and air quality during construction, but not in a significant way. Additionally, this increase in emissions would be limited to seven months over one construction season. The final model output predicted a total of 104.17 tons of CO<sub>2</sub> would be generated over the span of construction but less than de minimis values for NO<sub>x</sub> and Particulate Materials (PM). Based on this analysis, replacement of the failing bulkhead and regrading activities will result in temporary increases of emissions but not contribute to reduced air quality at the site. Once construction is completed, emissions and air quality are expected to return to pre-construction levels, since operations are assumed to remain the same. Current air quality is within an attainment area pursuant to EPA NAAQs.

**TABLE 1 TOTAL CALCULATED EMISSIONS BY MAJOR EQUIPMENT TYPE AND  
TOTAL EMISSIONS COMPARED TO EPA DE MINIMIS THRESHOLDS**

Equipment (largest contributors)	Emissions			
	CO <sub>2</sub> (tons)	NO <sub>x</sub> (grams)	CH <sub>4</sub> (grams)	PM (grams)
Crane and Vibratory Hammer	6.3	87.0	37.3	633.8
Excavator	25.9	355.6	163.5	6675.8
Tractors/Loaders/Backhoe	12.0	125.3	138.2	5398.2
Grader	4.6	63.6	28.8	776.1
<b>Project Estimated Annual Emissions (tons/year)</b>	<b>104.17</b>	<b>0.001</b>	<b>0.02</b>	<b>0.02</b>
EPA De Minimis Thresholds (tons/year)	N/A	100	N/A	100

## **NO-ACTION ALTERNATIVE**

The no-action alternative will have no additional effect on existing air quality.

The no-action alternative could eventually lead to decommissioning of the facilities supported by the current bulkhead. Objectively, ceasing operation of the facilities would decrease associated emissions and consequently improve ambient air quality. This would have detrimental impacts on the local economy in the form of lost income to the Port and lost wages within the community. Pacific County is currently in attainment of national ambient air quality, therefore, continued use of the wharf following maintenance would not appreciably decrease air quality in the region.

## **AVOIDANCE AND MINIMIZATION**

The proposed action alternative was designed to only affect repairs to the existing facilities without expanding operations or capacity. This not only limits potential effects of increased operations at the facility, but also minimizes the effects of construction by limiting the size and duration of construction to in kind replacement. Also, construction activities are planned to occur over seven months to adhere to in-water work windows to protect salmonids that might occur within the nearshore of the site. This would limit construction related emissions to one construction season. This limits construction impacts to only what is needed for repair to maintain existing operations and minimizes the temporal impact based on construction sequencing.

## **AIR QUALITY ASSESSMENT SUMMARY**

The project will not change the land use or operational capacity of the wharf and surrounding vicinity. The construction activity associated with the project will temporarily increase emissions and potential air quality impacts, however, in our opinion, the proposed project can be completed with de minimis temporary effects on air quality and without permanently increasing greenhouse gas emissions or permanently impacting ambient air quality.

## **USE OF THIS TECHNICAL MEMORANDUM**

We have prepared this technical memorandum for the exclusive use of Moffatt & Nichol, the Port of Ilwaco, and their authorized agents. Moffatt & Nichol and the Port of Ilwaco may distribute copies of this report authorized agents and regulatory agencies as may be required for the project.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of NEPA impact analysis in this area at the time this report was prepared. The conclusions, recommendations, and opinions presented in this report are based on our professional knowledge, judgment, and experience. No warranty or other conditions, express or implied, should be understood.

## REFERENCES

Gallivan, Frank, E. Rose, J., Choe, S. Williamson, J. Houk. 2014. "FHWA Infrastructure Carbon Estimator: Final Report and User's Guide". FHWA-HEP-14-052. Available at: <https://rosap.ntl.bts.gov/view/dot/32650>.

United States Environmental Protection Agency, National Ambient Air Quality standards, accessed September 15, 2023, available at: <https://www.epa.gov/criteria-air-pollutants>.

### Attachments:

Appendix A. GASCAP Ilwaco Bulkhead Replacement Summary Output

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

**APPENDIX A**  
**GASCAP Ilwaco Bulkhead Replacement**  
**Summary Output**



## EQUIPMENT TOTALS

[Change Unit](#)

Direct CO <sub>2</sub>	104.17	(mt)
Direct CH <sub>4</sub>	0.02	(mt)
Direct N <sub>2</sub> O	0.00	(mt)
Direct PM <sub>BC</sub>	0.02	(mt)
Direct CO <sub>2</sub> Equivalent from HFCs	0.00	(mt)
<b>Direct CO<sub>2</sub> Equivalent</b>	<b>104.89</b>	<b>(mt)</b>
Upstream CO <sub>2</sub>	13.81	(mt)
Upstream CH <sub>4</sub>	0.26	(mt)
Upstream N <sub>2</sub> O	0.00	(mt)
Upstream PM <sub>BC</sub>	0.00	(mt)
Upstream SF <sub>6</sub>	0.01	(kg)
<b>Upstream CO<sub>2</sub> Equivalent</b>	<b>20.71</b>	<b>(mt)</b>
<b>Combined CO<sub>2</sub> Equivalent</b>	<b>0.00</b>	<b>(mt)</b>

[Reset](#)[Save](#)

EQUIPMENT ACTIVITY ESTIMATION

Year	Description	Fuel Type	Power Rating	Hours	Air Conditioning	Direct CO <sub>2</sub> (g)	Direct CH <sub>4</sub> (g)	Direct N <sub>2</sub> O (g)	Direct PM <sub>2.5</sub> (g)	CO <sub>2</sub> Equiv. from HF	Direct CO <sub>2</sub> Equiv. (g)	Upstream CO <sub>2</sub> (g)	Upstream CH <sub>4</sub> (g)	Upstream N <sub>2</sub> O (g)	Upstream PM <sub>2.5</sub> (g)	Upstream SF <sub>6</sub> (mg)	Upstream CO <sub>2</sub> Equiv. (g)	Fuel Use	Fuel Unit
4 - Construct / Reconstruct Bridge																			
2008 Bore/Drill Rigs	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Cement & Mortar Mixers	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Dumpers/Tenders	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Concrete/Industrial Saws	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Cranes	Diesel	300	45 No	2448279.841	14.60248726	34.036283	248.0135913	0	2458787.71	354656.9452	7626.450256	5.064044	11.8161027	262.4609883	552811.3972	1688.0147	gallons		
2008 Crushing/Proc. Equipment	Diesel	75	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Crawler Tractors	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Excavators	Diesel	175	225 No	9846963.339	62.13303216	135.17136	2537.686736	0	9888797.73	1422566.756	30590.50371	20.3124195	47.3956454	1052.758959	2217385.354	6770.8065	gallons		
2008 Graders	Diesel	300	24 No	1763739.164	10.95587973	24.2260608	295.6628993	0	1771232.427	254959.2511	5482.5771	3.64048944	8.49447536	188.6805205	397410.4603	1213.4965	gallons		
2008 Off-Highway Tractors	Diesel	750	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Off-Highway Trucks	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Pavers	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Paving Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	9.9 No	118516.2878	36.37354248	0.368911719	1.458899141	0	119535.5621	10192.5881	73.45032325	2.02901445	0.47958523	5.736024477	12764.27385	36.891172	gallons		
2008 Plate Compactors	4 Stroke Gasoline (10% Ethanol RFG)	6	10 No	50651.60535	47.627216	0.1794463	3.161338474	0	51895.75935	5232.579614	37.7072826	1.04163727	0.24620517	2.944708884	6552.808615	18.93886	gallons		
2008 Rollers	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rough Terrain Forklifts	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rubber Tire Loaders	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Scrapers	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Signal Boards	Diesel	25	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Skid Steer Loaders	Diesel	75	20 No	169646.957	1.105857296	1.7923836	27.12079003	0	170208.7338	23816.4676	512.1430947	0.34006846	0.79349306	17.62518318	37123.23955	113.35615	gallons		
2008 Surfacing Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Trenchers	Diesel	75	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Tampers/Rammers	2 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Tractors/Loaders/Backhoes	Diesel	100	225 No	2907273.173	33.61797108	30.4789905	1313.075086	0	2917196.362	477891.1334	10276.44463	6.82366934	15.9218951	353.6594471	744899.173	2274.5564	gallons		
2008 Other Construction Equipment	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Aerial Lifts	Diesel	75	79.8 No	709602.7001	4.617967535	7.497596232	110.2247606	0	711952.433	99625.02322	2142.310462	1.42251691	3.31920612	73.7266883	155287.6633	474.1723	gallons		
2008 Forklifts	Gasoline (4 Stroke)	75	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Sweepers/Scrubbers	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Other General Industrial Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	9.5 No	114647.3295	43.9530648	0.344049606	1.765914178	0	115848.6829	9505.677754	68.50027655	1.89227283	0.44726449	5.349455871	11904.04957	34.040461	gallons		
2008 Other Material Handling Equipment	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Chain Saws	2 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Chippers/Stump Grinders (Commercial)	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Commercial Turf Equipment (Comm.)	4 Stroke Gasoline (10% Ethanol RFG)	25	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Light Commercial Generator Sets	4 Stroke Gasoline (10% Ethanol RFG)	11	95.2 No	1291220.67	389.5012648	4.223273062	15.63820287	0	1302216.737	116683.9668	840.8536667	23.2280918	5.49025498	65.66556824	146124.428	422.3271	gallons		
2008 Light Commercial Pumps	4 Stroke Gasoline (10% Ethanol RFG)	6	32.2 No	202663.0369	230.41893	0.761397529	15.29363584	0	208650.4067	22202.03587	159.9933888	4.41970687	1.04465799	12.49451267	27803.81813	80.358307	gallons		
2008 Light Commercial Air Compressors	4 Stroke Gasoline (10% Ethanol RFG)	6	200 No	1215522.741	1301.28473	4.2998144	86.36720081	0	1249335.704	125380.8029	903.5252294	24.9592065	5.89946157	157015.5575	453.80474	gallons			
2008 Light Commercial Welders	4 Stroke Gasoline (10% Ethanol RFG)	16	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Light Commercial Pressure Washers	4 Stroke Gasoline (10% Ethanol RFG)	6	94 No	729745.2144	775.2377159	2.85401202	51.45339105	0	749976.6529	83221.8057	599.7170169	16.5667684	3.91578163	46.83425934	104219.4492	301.21397	gallons		
4 - Construct / Reconstruct Bridge																			
2008 Bore/Drill Rigs	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Cement & Mortar Mixers	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Dumpers/Tenders	4 Stroke Gasoline (10% Ethanol RFG)	11	2.1 No	20127.17751	4.591258224	0.054284328	0.18413845	0	20258.13569	1499.810841	10.8080097	0.2985638	0.07059663	0.844039964	1878.227209	5.4284328	gallons		
2008 Concrete/Industrial Saws	4 Stroke Gasoline (10% Ethanol RFG)	11	5.5 No	80067.15012	34.62721328	0.27095211	1.390722189	0	81013.57418	7486.081657	53.9465551	1.49023661	0.35223774	4.212899333	9374.890397	27.095211	gallons		
2008 Cranes	Diesel	300	20 No	1088124.374	6.489994336	15.127228	110.2282628	0	1092794.538	157625.309	3389.533447	2.25068622	5.25160118	116.6493281	245693.9543	750.22874	gallons		
2008 Crushing/Proc. Equipment	Diesel	75	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Crawler Tractors	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Excavators	Diesel	175	175 No	7658749.264	48.32569168	105.13328	1973.756351	0	7691287.123	1106440.81	23792.614	15.7985485	36.8632798	818.812524	1724633.053	5266.1828	gallons		
2008 Graders	Diesel	300	24 No	1763739.164	10.95587973	24.2260608	295.6628993	0	1771232.427	254959.2511	5482.5771	3.64048944	8.49447536	188.6805205	397410.4603	1213.4965	gallons		
2008 Off-Highway Tractors	Diesel	750	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Off-highway Trucks	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Pavers	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Paving Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	10.7 No	128093.3616	39.31281864	0.398722767	1.57678998	0	129195.0015	11016.23158	79.38570291	2.19297522	0.51833396	6.199541606	13795.73032	39.872277	gallons		
2008 Plate Compactors	4 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rollers	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rough Terrain Forklifts	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rubber Tire Loaders	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Scrapers	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Signal Boards	Diesel	25	0 No	0	0	0	0	0	0	0									

2008 Paving Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	18.7 No	223864.0993	68.70558024	0.696833247	2.755696377	0	225789.3951	19252.66641	138.7394995	3.83258286	0.90583222	10.8347129	24110.29505	69.683325	gallons
2008 Plate Compactors	4 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rollers	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rough Terrain Forklifts	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rubber Tire Loaders	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Scrapers	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Signal Boards	Diesel	25	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Skid Steer Loaders	Diesel	75	10 No	84823.47851	0.552928648	0.8961918	13.56039502	0	85104.36688	11908.2338	256.0715474	0.17003423	0.39674653	8.81259159	18561.61977	56.678076	gallons
2008 Surfacing Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Trenchers	Diesel	75	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Tampers/Rammers	2 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Tractors/Loaders/Backhoes	Diesel	100	125 No	1615151.763	18.6766506	16.9327725	729.4861589	0	1620664.645	265495.0741	5709.136684	3.79092741	8.8454973	196.4774706	413832.8739	1263.6425	gallons
2008 Other Construction Equipment	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Aerial Lifts	Diesel	75	82.2 No	730944.1347	4.756853777	7.723087848	113.539791	0	733364.5363	102621.2645	2206.740851	1.46529937	3.41903186	75.94403231	159957.9689	488.43312	gallons
2008 Forklifts	Gasoline (4 Stroke)	75	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Sweepers/Scrubbers	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Other General Industrial Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	30.8 No	371698.7103	142.5004627	1.115445038	5.72527965	0	375593.6245	30818.40788	222.0851071	6.13494771	1.45007855	17.34349004	38594.18175	111.5445	gallons
2008 Other Material Handling Equipment	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Chain Saws	2 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Chippers/Stump Grinders (Comm.)	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Commercial Turf Equipment (Comm.)	4 Stroke Gasoline (10% Ethanol RFG)	25	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Light Commercial Generator Sets	4 Stroke Gasoline (10% Ethanol RFG)	11	197.8 No	2682809.333	809.278884	8.774625754	32.49198033	0	2705656.203	242437.9058	1747.067808	48.2619416	11.4072735	136.4332626	303607.2573	877.48259	gallons
2008 Light Commercial Pumps	23.9 Gasoline (2 Stroke Ethanol RFG)	23.9	194.03 No	171.0252307	0.565136675	11.35148747	0	154967.8484	16479.15095	118.7538569	3.28046566	0.77538279	9.273877416	20636.95544	59.64483	gallons	
2008 Light Commercial Air Compressors	4 Stroke Gasoline (10% Ethanol RFG)	6	125 No	759701.7133	813.290456	2.687384	53.9795005	0	780834.8152	78363.00181	564.7032684	15.5995378	3.68716348	44.0989808	98134.72346	283.62796	gallons
2008 Light Commercial Welders	4 Stroke Gasoline (10% Ethanol RFG)	16	0.6 No	11398.97344	6.064706477	0.047431632	0.243454366	0	11564.72572	1310.479074	9.443637931	0.26087398	0.06166112	0.737490809	1641.125258	4.7431632	gallons
2008 Light Commercial Pressure Washers	4 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons

4 - Construct / Reconstruct Bridge

2008 Bore/Drill Rigs	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Cement & Mortar Mixers	4 Stroke Gasoline (10% Ethanol RFG)	11	64.2 No	752051.1771	196.2728871	2.346928456	7.882110061	0	757657.3839	64842.81691	467.2734555	12.9081065	3.05100699	36.491221	81203.26888	234.69285	gallons
2008 Dumpers/Tenders	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Concrete/Industrial Saws	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Cranes	Diesel	300	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Crushing/Proc. Equipment	Diesel	75	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Crawler Tractors	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Excavators	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Graders	Diesel	300	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Off-Highway Tractors	Diesel	750	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Off-highway Trucks	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Pavers	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Paving Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Plate Compactors	4 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rollers	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rough Terrain Forklifts	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rubber Tire Loaders	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Scrapers	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Signal Boards	Diesel	25	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Skid Steer Loaders	Diesel	75	10 No	84823.47851	0.552928648	0.8961918	13.56039502	0	85104.36688	11908.2338	256.0715474	0.17003423	0.39674653	8.81259159	18561.61977	56.678076	gallons
2008 Surfacing Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Trenchers	Diesel	75	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Tampers/Rammers	2 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Tractors/Loaders/Backhoes	Diesel	100	75 No	969091.0578	11.20599036	10.1596635	437.6916953	0	972396.7872	159297.0445	3425.48201	2.27455645	5.30729638	117.8864624	246299.7243	758.18546	gallons
2008 Other Construction Equipment	Diesel	600	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Aerial Lifts	Diesel	75	276.1 No	2455154.204	15.97770472	25.94093132	381.3666216	0	2463284.045	344692.5929	7412.179429	4.92176589	11.4841204	255.0869504	537279.7473	1640.5886	gallons
2008 Forklifts	Gasoline (4 Stroke)	75	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Sweepers/Scrubbers	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Other General Industrial Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	143.5 No	1731778.082	663.9226104	5.196959838	26.67459837	0	1749924.841	143585.764	1034.714704	28.5832791	6.75604779	80.80493869	179813.8013	519.69598	gallons
2008 Other Material Handling Equipment	Diesel	175	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Chain Saws	2 Stroke Gasoline (10% Ethanol RFG)	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Chippers/Stump Grinders (Commercial)	Diesel	100	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Commercial Turf Equipment (Comm.)	4 Stroke Gasoline (10% Ethanol RFG)	25	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Light Commercial Generator Sets	4 Stroke Gasoline (10% Ethanol RFG)	11	259 No	3390810.582	1022.84996	11.090528	41.06670922	0	3419686.809	306417.98	2208.124125	60.997904	14.4176864	172.4410931	383730.1154	1109.0528	gallons
2008 Light Commercial Pumps	4 Stroke Gasoline (10% Ethanol RFG)	6	26.1 No	164270.3498	186.7681389	0.617157625	12.39639427	0	169123.4663	17996.06013	129.6840823	3.58243231	0.84675694	10.12753977	22536.63519	65.135149	gallons
2008 Light Commercial Air Compressors	4 Stroke Gasoline (10% Ethanol RFG)	6	200 No	1215522.741	1301.26473	4.2998144	86.36720081	0	1249335.704	125380.8029	903.5252294	24.9592605	5.89946157	70.55983693	157015.5575	453.04744	gallons
2008 Light Commercial Welders	4 Stroke Gasoline (10% Ethanol RFG)	16	3.3 No	62694.35389	33.35589562	0.260873976	1.339999012	0	63605.99148	7207.634908	51.94000862	1.43408067	0.33913617	4.056199485	9026.189916	26.087396	gallons
2008 Light Commercial Pressure Washers	4 Stroke Gasoline (10% Ethanol RFG)	6	0 No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons

4 - Construct / Reconstruct Bridge

2008 Bore/Drill Rigs	Diesel	175	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Cement & Mortar Mixers	4 Stroke Gasoline (10% Ethanol RFG)	11	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Dumpers/Tenders	4 Stroke Gasoline (10% Ethanol RFG)	11	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Concrete/Industrial Saws	4 Stroke Gasoline (10% Ethanol RFG)	11	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Cranes	Diesel	300	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Crushing/Proc. Equipment	Diesel	75	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Crawler Tractors	Diesel	175	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Excavators	Diesel	175	200	No	8752856.301	55.22936192	120.15232	2255.721544	0	8790042.427	1264503.783	27191.55886	18.055484	42.1294626	935.7857417	1971009.203	6018.4947	gallons
2008 Graders	Diesel	300	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Off-highway Tractors	Diesel	750	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Off-highway Trucks	Diesel	600	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Pavers	Diesel	175	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Paving Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Plate Compactors	4 Stroke Gasoline (10% Ethanol RFG)	6	10	No	50651.60535	47.62716	0.1794463	3.161338474	0	51895.75935	5232.579614	37.70726926	1.04163727	0.24620517	2.944708884	6552.808615	18.93886	gallons
2008 Rollers	Diesel	100	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rough Terrain Forklifts	Diesel	100	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Rubber Tire Loaders	Diesel	175	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Scrapers	Diesel	600	9.3	No	1249421.08	6.47103419	17.1551055	189.0341878	0	1254695.078	180543.2954	3882.355837	2.57792552	6.01515955	133.0095976	281416.7119	859.30851	gallons
2008 Signal Boards	Diesel	25	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Skid Steer Loaders	Diesel	75	10	No	84823.47851	0.552928648	0.8961918	13.56039502	0	85104.36688	11908.2338	256.0715474	0.17003423	0.39674653	8.81259159	18561.61977	56.678076	gallons
2008 Surfacing Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Trenchers	Diesel	75	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Tampers/Rammers	2 Stroke Gasoline (10% Ethanol RFG)	6	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Tractors/Loaders/Backhoes	Diesel	100	100	No	12921.2141	14.94132048	13.546218	583.5889271	0	1296531.716	212396.0593	4567.309347	3.03274193	7.07639784	157.1819765	331066.2991	1010.914	gallons
2008 Other Construction Equipment	Diesel	600	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Aerial Lifts	Diesel	35	38.5	No	354891.3501	2.308983768	3.748796116	55.11236031	0	355976.2165	49812.51151	1071.155203	0.71125845	1.65960308	36.865330154	77643.83154	237.088	gallons
2008 Forklifts	Gasoline (4 Stroke)	75	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Sweepers/Scrubbers	Diesel	175	0	No	0	0	0	0	0	0	0	0	0	0	0	0	0	0 gallons
2008 Other General Industrial Equipment	4 Stroke Gasoline (10% Ethanol RFG)	11	6.1	No	73615.65366	28.22249424	0.220916063	1.133902788	0	74387.04901	6103.645716	43.9843881	1.21503835	0.28719088	3.43491377	7643.652879	22.091606	gallons

2008 Other Material Handling Equipment	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Chain Saws	2 Stroke Gasoline (10% Ethanol RFG)		6	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Chippers/Stump Grinders (Commercial)	Diesel		100	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Commercial Turf Equipment (Comm.)	4 Stroke Gasoline (10% Ethanol RFG)		25	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Light Commercial Generator Sets	4 Stroke Gasoline (10% Ethanol RFG)		11	47.3	No	641541.3622	193.523124	2.098327896	7.769821384		647004.7442	57974.28182	417.7770984	11.5408034	2.72762627	32.62585481		72601.73784	209.83279	gallons		
2008 Light Commercial Pumps	4 Stroke Gasoline (10% Ethanol RFG)		6	14.5	No	91261.30546	103.7600772	0.342865347	6.886885703		93957.48126	19997.81183	72.04671236	1.99024067	0.07402052	5.626410985		12520.35288	36.186194	gallons		
2008 Light Commercial Air Compressors	4 Stroke Gasoline (10% Ethanol RFG)		6	80.8	No	488955.6648	524.409686	1.73825203	34.80598192		503482.2888	50528.46357	364.1206874	1.0358582	2.37748301	28.43561428		63277.26669	182.88314	gallons		
2008 Light Commercial Welders	4 Stroke Gasoline (10% Ethanol RFG)		16	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Light Commercial Pressure Washers	4 Stroke Gasoline (10% Ethanol RFG)		6	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
4 - Construct / Reconstruct Bridge																						
2008 Bore/Drill Rigs	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Cement & Mortar Mixers	4 Stroke Gasoline (10% Ethanol RFG)		11	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Dumpers/Tenders	4 Stroke Gasoline (10% Ethanol RFG)		11	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Concrete/Industrial Saws	4 Stroke Gasoline (10% Ethanol RFG)		11	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Cranes	Diesel		300	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Crushing/Proc. Equipment	Diesel		75	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Crawler Tractors	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Excavators	Diesel		175	160	No	7002285.041	44.18348954	96.121856	1804.577235		7032033.941	1011603.026	21753.24708	14.4443872	33.7035701	748.6285934		1576807.363	4814.7957	gallons		
2008 Graders	Diesel		300	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Off-Highway Trucks	Diesel		750	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Off-highway Trucks	Diesel		600	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Pavers	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Paving Equipment	4 Stroke Gasoline (10% Ethanol RFG)		11	48.1	No	575821.5601	176.7327911	1.792389261	7.088186734		580773.7916	49521.56441	356.8647019	9.85814094	2.33010604	27.868696741		62016.32042	179.23893	gallons		
2008 Plate Compactors	4 Stroke Gasoline (10% Ethanol RFG)		6	10	No	50651.60535	47.627616	0.1744663	3.161338474		51895.75935	5232.579614	37.70726926	1.04163727	0.24020517	3.194700884		6552.808615	19.83886	gallons		
2008 Rollers	Diesel		100	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Rough Terrain Forklifts	Diesel		100	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Rubber Tire Loaders	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Scrapers	Diesel		600	25	No	339858.818	17.3952532	46.115875	508.1564187		3372836.23	485331.4391	10436.44042	6.92990732	16.1697837	359.1655849		756496.5374	2309.9691	gallons		
2008 Signal Bores	Diesel		25	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Skid Steer Loaders	Diesel		75	35	No	296882.1748	1.935250268	3.1366713	47.46138256		297865.2841	41678.8131	896.2504158	0.5951198	1.38861286	30.84407056		64965.66921	198.37327	gallons		
2008 Surfacing Equipment	4 Stroke Gasoline (10% Ethanol RFG)		11	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Trenchers	Diesel		100	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Tampers/Rammers	2 Stroke Gasoline (10% Ethanol RFG)		6	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Tractor/Loaders/Backhoes	Diesel		100	150	No	1938182.116	22.41198072	20.319327	875.3833906		1944797.574	318594.0889	6850.964021	4.5491129	10.6145968	235.7279647		496599.4487	1516.371	gallons		
2008 Other Construction Equipment	Diesel		600	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Aerial Lifts	Diesel		75	100	No	889226.4413	5.786926736	9.395484	138.1262664		892170.9687	124843.3875	2684.599576	1.78260264	4.15940816	92.38933371		194596.0693	594.20088	gallons		
2008 Forklifts	Gasoline (4 Stroke)		75	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Sweepers/Scrubbers	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Other General Industrial Equipment	4 Stroke Gasoline (10% Ethanol RFG)		11	122.1	No	1473519.887	564.9125466	4.421942831	22.89664433		1488960.447	122172.9741	880.4088176	24.3206856	5.74852568	68.7545854834		152998.363	442.19628	gallons		
2008 Other Material Handling Equipment	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Chain Saws	2 Stroke Gasoline (10% Ethanol RFG)		6	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Chippers/Stump Grinders (Commercial)	Diesel		100	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Commercial Turf Equipment (Comm.)	4 Stroke Gasoline (10% Ethanol RFG)		25	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Light Commercial Generator Sets	4 Stroke Gasoline (10% Ethanol RFG)		11	258	No	339810.5862	1022.84696	11.095036	41.0697021		3419866.809	306417.88	2208.124126	60.99790	14.4176886	172.441093		383730.1154	1109.0526	gallons		
2008 Light Commercial Pumps	4 Stroke Gasoline (10% Ethanol RFG)		6	24.3	No	152941.3602	173.8675776	0.57459503	11.54147052		157459.7789	16754.96253	120.7403524	3.35356885	0.788259991	9.420987853		20982.38449	60.63027	gallons		
2008 Light Commercial Air Compressors	4 Stroke Gasoline (10% Ethanol RFG)		6	200	No	1215522.741	4.2098144	86.36720081	6.240013		1249335.704	125380.8029	903.5252294	24.9592065	8.89946157	70.55983693		157015.5675	453.80474	gallons		
2008 Light Commercial Welders	4 Stroke Gasoline (10% Ethanol RFG)		16	2.8	No	53195.20936	28.30196356	0.221347616	1.136120374		53968.72004	6115.569013	44.07031035	1.21741189	0.2877519	3.441623776		7658.584536	22.134762	gallons		
2008 Light Commercial Pressure Washers	4 Stroke Gasoline (10% Ethanol RFG)		6	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
4 - Construct / Reconstruct Bridge																						
2008 Bore/Drill Rigs	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Cement & Mortar Mixers	4 Stroke Gasoline (10% Ethanol RFG)		11	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Dumpers/Tenders	4 Stroke Gasoline (10% Ethanol RFG)		11	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Concrete/Industrial Saws	4 Stroke Gasoline (10% Ethanol RFG)		11	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Cranes	Diesel		300	50	No	2720310.935	16.22498584	37.81807	275.570657		2731986.344	394063.2724	8473.833618	5.62671555	13.129003	291.6233203		614234.8858	1875.719	gallons		
2008 Crushing/Proc. Equipment	Diesel		75	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Crawler Tractors	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Excavators	Diesel		175	31.9	No	1396080.58	8.800893226	19.16429504	359.787862		1402011.767	201688.3533	4337.053638	2.87984969	6.71964828	149.2578258		314375.9679	959.9499	gallons		
2008 Graders	Diesel		300	15	No	1102336.977	6.847424832	15.141288	184.7893121		1107020.267	159349.5319	3426.610687	2.27530585	5.3090471	117.9253253		248381.5377	758.4353	gallons		
2008 Off-Highway Trucks	Diesel		750	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Off-highway Trucks	Diesel		600	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Pavers	Diesel		175	110	No	4708837.7552	29.627772552	64.642966	1156.55509		472884.025	680314.0627	14629.2658	9.71400794	22.6601683	503.4608		1064020.14	3238.026	gallons		
2008 Paving Equipment	4 Stroke Gasoline (10% Ethanol RFG)		11	7.6	No	90862.20077	27.92312352	0.28320456	1.11969527		91764.67394	7824.613088	56.38610764	1.55762726	0.36816644	4.403412729		9798.83649	28.320496	gallons		
2008 Plate Compactors	4 Stroke Gasoline (10% Ethanol RFG)		6	4.5	No	22793.22241	21.432222	0.080750835	1.422602313		23533.09171	2634.660826	16.96827117	0.46873677	0.11079233	1.321118998		2948.73587	8.5224868	gallons		
2008 Rollers	Diesel		100	44.1	No	1327888.442	8.1693915	16.31974126	459.7190644		1332955.959	219018.6157	4709.719069	3.1273035	7.2970415	162.0829455		341389.02	1042.4345	gallons		
2008 Rough Terrain Forklifts	Diesel		100	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Rubber Tire Loaders	Diesel		175	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Scrapers	Diesel		600	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Signal Bores	Diesel		25	0	No		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	gallons
2008 Skid Steer Loaders	Diesel		75	118752.8699	No	0.774100107	1.25466852															

## **Appendix E: Noise and Vibration**



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**To:** Moffatt & Nichol

**From:** Kelly Werdick, Jason Stutes, and Joe Callaghan  
GeoEngineers, Inc.

**Date:** November 27, 2023

**File:** 21551-003-01

**Subject:** Noise and Vibration

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## EXECUTIVE SUMMARY

The Port of Ilwaco (Port), with the U.S. Department of Transportation (USDOT) Maritime Administration (MARAD), is proposing repairs and resiliency improvements at the Port's east bulkhead, to protect existing infrastructure including the Safe Coast Seafoods facility and improve the safety, efficiency, and reliable use of the existing wharf. This technical memorandum is intended to support the National Environmental Policy Act (NEPA) environmental analysis for noise and vibration.

Improvements include replacing the existing east bulkhead and replacing existing shoreline armoring to the north and south of the existing bulkhead. Noise and vibration at the site affiliated with the proposed action alternative would be temporarily increased during project construction. Primary contributing sources of noise and vibration during construction are attributed to vibratory pile work and re-grading activities. While noise and vibration would temporarily increase during construction, the land use of the wharf and existing surrounding operational facilities would not change from their current designated uses. For these reasons, the proposed action alternative would have no long-term effects on noise and vibration in the local vicinity.

## INTRODUCTION AND PROJECT UNDERSTANDING

This memorandum summarizes the potential effects of noise and vibration from the Port of Ilwaco, Marina Structures Replacement project (the project). The project site is located at 1170 Howerton Avenue East in Ilwaco, Washington. The Port in partnership with the USDOT MARAD, intends to replace the Port's east bulkhead wall to protect existing infrastructure including the Safe Coast Seafoods facility and improve the safety, efficiency, and reliable use of the existing wharf.

This memorandum summarizes specific information intended to support NEPA documentation for an Environmental Assessment for the project. In-water noise analyses are provided in the Biological Evaluation dated December 12, 2022, prepared by Moffatt & Nichol.

The proposed project consists of four primary elements:

- Replacing the east wharf bulkhead;
- Removal and replacement of shoreline armoring on the southern end of new bulkhead to accommodate replacement;
- Removal of existing creosote-treated retaining wall and replacement with riprap slope stabilization on the northern end of the new bulkhead and
- Reconstructing the existing pavement section behind the east wharf bulkhead.



The existing bulkhead consists of creosote treated timber piles, lagging, and walers. The bulkhead wall is in disrepair and will be replaced with a new sheet pile wall. The existing bulkhead wall will be abandoned in place and the new wall will be constructed in front of it. The new sheet pile will be embedded into the underlying siltstone and will include tieback anchors.

Improvements to shoreline areas surrounding the wharf east bulkhead are also planned. The majority of the improvements consist of slope armoring using rip rap. We understand that within the shoreline area northeast of the proposed bulkhead a relic timber wall on the shoreline slope will be removed, rip rap slope protection will be installed along the shoreline, and a small berm will be constructed at the top of the slope. The berm will be 1 foot tall and is being included to mitigate the effects of future sea-level rise. At the south end of the bulkhead the existing concrete rubble slope armoring will be removed and replaced with riprap 18 inches thick.

The existing asphalt pavement behind the bulkhead and along the wharf will be replaced as part of this project. Pavement improvements will necessitate excavation to reestablish subgrades and placement of structural fill materials and pavement.

## **AFFECTED ENVIRONMENT**

The local soundscape is presently affected by residential and commercial activity. The largest contribution to soundscape in the immediate vicinity of the project is attributed to nearby traffic as well as Port and marina operations. Howerton Avenue, a two (2)-lane road, is approximately 150 feet from the project site. The speed limit for Howerton Avenue is 25 miles per hour (mph). The Washington State Department of Transportation (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 vehicles per hour to 6,000 vehicles per hour. Given the rural nature of the area and realistic annual operations at the project facility, the lower end of that range for the analysis was used. Traffic noise levels for traffic counts of approximately 125 vehicles per hour traveling at speeds of 35 mph, is 57.3 A-weighted decibels (dBA) at 50 feet 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 2022). Commercial and industrial activities within the vicinity are 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, which is consistent with the in-air noise assessment provided in the project-related Biological Evaluation (Moffatt & Nichol 2022).

## **OPERATIONAL VIBRATION**

A quantitative analysis of ambient vibration levels was not conducted for existing Port operations at the project site. Generally, continuous vibration levels of 0.08 in/sec will be “readily perceptible” to humans, whereas transient vibration levels of 0.035 in/sec will be “barely perceptible” to humans (CalTrans 2013). The nearest residence is approximately 700 feet away from the existing operations. It is assumed that baseline vibrations from existing operations do not exceed the 0.08 in/sec threshold on a regular basis and are likely as low as 0.035 in/sec in practice. Due to the distance of the Project from sensitive receptors, as well as ambient current vibrations, the Project operationally will have a negligible effect.

## **PROPOSED ACTION - CONSTRUCTION**

Localized bulkhead demolition will consist of removal of the rotted top several feet of the existing timber piles above the timber wall location. This local demolition will take place above mean higher high water (MHHW) and prevent conflict with the new paving subgrade. In addition, there will be localized notching of the bulkhead wall to accommodate the installation of the new tie-back anchors. Approximately twelve, 12-inch diameter existing creosote-treated timber piles and three, 12-inch diameter steel pipe piles that are located directly waterward of the existing timber bulkhead will be removed in their entirety. These piles will be removed by either pulling them out directly using a chain or with a vibratory hammer, depending on the eventual contractors preferred means and methods. If complete removal isn't possible or the piles break, the piles will be cut below the mudline. Upland demolition will consist of removal of the existing pavement and surface features.

The Project proposes to install a 225 linear foot steel sheet pile wall and ten, 12-inch diameter fiberglass piles. The fiberglass piles consist of concrete piles with fiberglass casings.

Re-grading, replacement of slope armor, paving, and general large equipment activity will contribute to short term increases in airborne noise and vibrations during construction. Standard construction equipment including trucks, cranes, backhoes, and pile drivers will be used during construction. Construction will intermittently increase noise and vibration depending on which portions of the project are being constructed. Activity will take place during daylight hours and during working calendar days to avoid unnecessary increased disturbance to the community and local environment.

### **Construction Noise**

Airborne noise levels for the installation of steel sheet piles and/or fiberglass piles are not available. In general, vibratory pile drivers can result in airborne noise levels of up to 105 dBA at 50 feet from the source (WSDOT 2020). Similarly, impact pile drivers can result in noise levels of up to 105 dBA at 50 feet from the source (WSDOT 2020). The piles proposed for installation are relatively small and will likely result in noise levels of less than 105 dBA. However, for the purpose of this noise analysis, 105 dBA was used as a conservative estimate to assess potential airborne noise impacts. In-air pile driving noise will dissipate to 60 dBA background noise levels within 1.7 miles of the proposed pile driving activities. Residential areas are noted to be between 0.2 and 0.4 miles away from the project. Therefore, residential areas located between 0.2 and 1.7 miles may be temporarily affected by increased construction noise and impacts will cease upon completion of the project. Noise calculations were completed in accordance with the WSDOT 2020 Biological Assessment manual, using the spherical spreading loss model and assuming a 6 BA attenuation rate for each doubling distance (Moffatt & Nichol 2022).

### **Construction Vibration**

Construction equipment and activities associated with the proposed Project, such as graders, pile installation and driving equipment, compaction equipment, and haul trucks, could generate ground-borne vibrations that result in temporary increases in vibrations levels that are barely perceptible to the surrounding community. A quantitative analysis of vibration levels was not conducted for the proposed project, but relevant data are available from similar or larger projects that we can use to extrapolate potential increases in vibration. Similar nearshore construction projects that include re-grading and bulkhead installation could generate vibrations from large equipment use that will be approximately 0.04 to 0.02 in/second at a distance of 0.2 to 0.4 miles. This is where residential homes occur within the vicinity of the project. This potential increase due to construction activities is equal to or below assumed background values and at the threshold of being barely perceptible (CalTrans 2013).

### **NO-ACTION ALTERNATIVE**

The no-action alternative will eventually lead to decommissioning of the wharf and operational facilities for the safety of the public. Objectively, disuse of the wharf and operational facilities will decrease associated operational noise and vibration.

### **AVOIDANCE AND MINIMIZATION**

The proposed action was designed to only affect repairs to the existing facilities without expanding operations or capacity. This not only limits potential long-term effects to those that are presently incurred by operations, it also limits the effects of construction minimizing those impacts to what is needed for repair to maintain existing operations. The contractor will be required to follow all local noise and vibration ordinances to minimize impacts to residential receptors in the vicinity of the project.

### **NOISE AND VIBRATION ASSESSMENT SUMMARY**

Increases in airborne noise will not appreciably increase beyond baseline values for operations. Temporary increases in airborne noise will not be biologically relevant and only “barely perceptible” by humans. Increases in construction related vibrations will not substantially increase beyond assumed baseline conditions, especially when considered at the distance where residential homes are located (0.2 to 0.4 miles from the project site). Increased effects to noise and vibration are expected to be temporary and commensurate with construction activity. The proposed project can be completed without increasing the likelihood for potential impacts from temporary noise and vibration associated with construction of the project.

### **USE OF THIS TECHNICAL MEMORANDUM**

We have prepared this technical memorandum for the exclusive use of Moffatt & Nichol, the Port, and their authorized agents. Moffatt & Nichol and the Port may distribute copies of this report authorized agents and regulatory agencies as may be required for the project.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of NEPA impact analysis in this area at the time this report was prepared. The conclusions, recommendations, and opinions presented in this report are based on our professional knowledge, judgment, and experience. No warranty or other conditions, express or implied, should be understood.

## REFERENCES

- California Department of Transportation (CalTrans). 2013. Transportation and construction vibration guidance manual. September. Sacramento, CA.
- City of Ilwaco Zoning Map. 2017. Available at: [https://cdn.townweb.com/ilwaco-wa.gov/wp-content/uploads/2018/07/ilwaco\\_zoning2\\_2017.pdf](https://cdn.townweb.com/ilwaco-wa.gov/wp-content/uploads/2018/07/ilwaco_zoning2_2017.pdf).
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## **Appendix F: Fish and Wildlife**



# TECHNICAL MEMORANDUM

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**From:** Margaret Schwertner and Taylor Meyers, Moffatt & Nichol (M&N)  
**Project:** Port of Ilwaco East Bulkhead Resilience Project  
**Date:** November 30, 2023  
**Subject:** Biological Resources Report

---

## 1. Introduction

The Port of Ilwaco (Port) is proposing repairs and resiliency improvements at the Port's east bulkhead, to protect existing infrastructure including the Safe Coast Seafoods facility and improve the safety, efficiency, and reliable use of the Port of Ilwaco commercial fishing wharf (herein referred to as the 'Wharf').

## 2. Project Summary

The proposed East Bulkhead Resilience Project (herein referred to as the 'Project') at the Port would consists of three primary elements:

- Replacing the failing east wharf bulkhead (Figure 1, shown in red);
- Removal and replacement of shoreline armoring on the southern end of new bulkhead to accommodate replacement (Figure 1, shown in green);
- Removal of the existing creosote-treated retaining wall and replacement with riprap slope stabilization on the northern end of the new bulkhead (Figure 1, shown in green);
- Raising the top of slope at the north end of the adjacent slip by approximately 1.5 feet (ft); and,
- Reconstructing the existing pavement section behind the east wharf bulkhead (Figure 1, shown in yellow).

As part of the above elements, creosote-treated timber that configures the external wall of the existing bulkhead will also be removed along with select derelict creosote-treated piles next to the bulkhead.

Section 1.2 of the East Bulkhead Resilience Project National Environmental Policy Act (NEPA) Environmental Assessment (EA) describes the proposed Project in additional detail.





**Figure 1. Location of Proposed Project Activities**

### **3. Purpose and Need**

The proposed Project is required for improved the safety, efficiency, and reliable use of the Wharf. The Port is a key hub for commercial fishing, seafood and aquaculture processing, and recreation activities that greatly benefit the regional economy. The commercial fishing wharf, operated by Safe Coast Seafoods, is one of the most active in the state, landing roughly \$14 million in commercial seafood each year. Repair of the bulkhead wall is critical to ongoing operations at Safe Coast Seafoods. In its current condition, the bulkhead is in serious structural condition and at risk of failing. Frequent flooding due to high water levels from “king tides” and severe winter storm surges further threaten the structural capacity of the bulkhead.

Bulkhead failure would shut down cargo operations at the Port and negatively impact a wide variety of businesses in maritime and non-maritime sectors including Safe Coast Seafoods. The shutdown of the Safe Coast site due to failure of the bulkhead would lead to a series of economic impacts for many more workers and businesses and the region. Until this project is completed, the facility is capacity-limited and at risk. Without the Project, the eventual closure of the Wharf will cascade negative transportation and economic impacts for the region.

## 4. Existing Conditions

### 4.1 General Setting

The Project occurs at the Port of Ilwaco on the southwest coast of Washington State, located just inside the Columbia River bar at the Pacific Ocean (Figure 2). The Port area generally consists of a marina used for year-round moorage of recreational and commercial fishing vessels, upland commercial buildings, and a boatyard (Figure 3). The project site at the Port of Ilwaco is the bulkhead along the east side of the commercial fishing wharf (herein referred to as 'Wharf'). The approximate coordinates of the Project site are latitude 46.30498 and longitude -124.0408. The Wharf is an earth filled structure on the east side and pile supported on the west side. The Wharf is protected by a creosote-treated timber bulkhead along the eastern limits of the Wharf (Figure 3). To the north of the bulkhead wall, the shoreline is protected by a low timber retaining wall and large log (Figure 3). To the south of the bulkhead wall, shoreline protection consists of rip rap and concrete rubble (Figure 3). The Safe Coast Seafoods buildings are located on the Wharf (Figure 3).



Figure 2. Vicinity Map





**Figure 3. Project Location Aerial**

## **4.2 Terrestrial and Riparian Habitat**

Vegetation and terrestrial habitat conditions are limited within the Project area. The site is in an industrial area and is largely devoid of terrestrial vegetation. The Project would occur on the existing Wharf and associated bulkhead wall, retaining wall, and rip rap shoreline. Little to no terrestrial and riparian habitat occurs here. The mudline at the base of the existing bulkhead is largely unvegetated and consists of a silty sand, sandy silt slope with rip rap extending on the shore slope to the north and south of the bulkhead. The upland adjacent to the bulkhead is a paved driveway servicing the Safe Coast Seafood facility. Existing vegetation consists of short-statured ruderal species behind the existing bulkhead wall (Figure 4) and in viable spaces along the rip rap shoreline (Figure 5). 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).



**Figure 4. Rip Rap Shoreline to the South of the Bulkhead Wall**

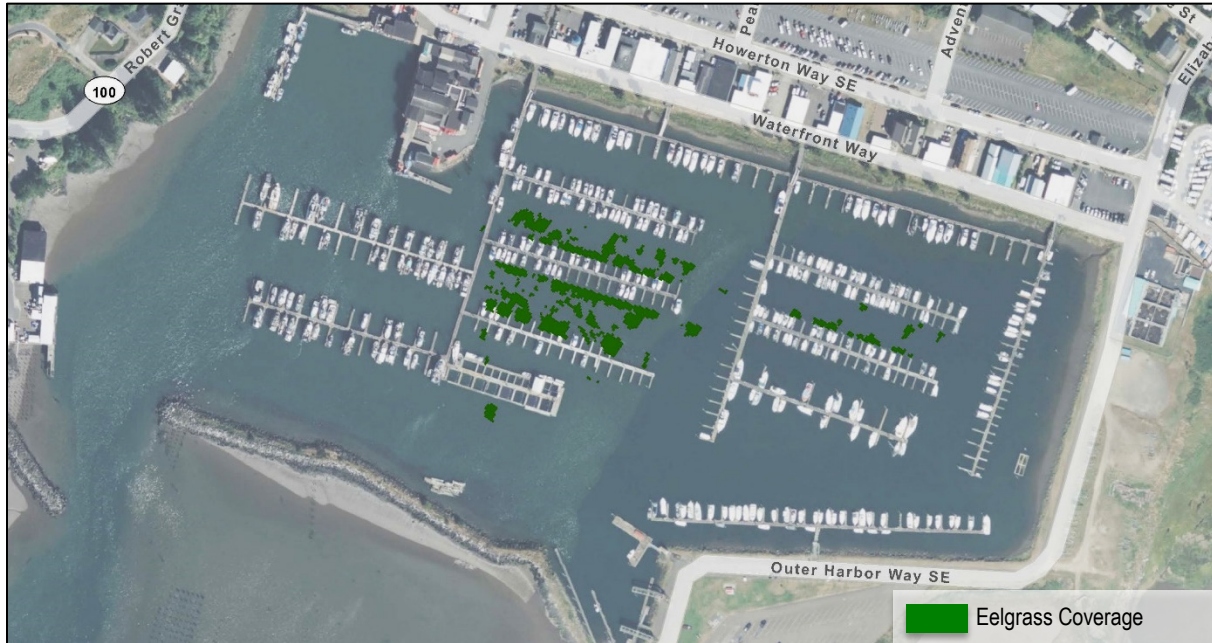


**Figure 5. Retaining Wall to the North of the Bulkhead**



### 4.3 Aquatic Habitat

An eelgrass and macroalgae survey and wetland and stream delineation was conducted within the marina for a separate dredging project (Geoengineers 2022). The survey included the entire Project area. The survey results identified one main bed of eelgrass within the marina with smaller adjacent patches (Figure 6). No wetlands or streams were identified within the marina.



Source: GeoEngineers 2022

**Figure 6. Eelgrass Identified during 2022 eelgrass survey (GeoEngineers 2022)**

## 5. Protected Species

### 5.1 Federal-Level Protected Species

The Endangered Species Act (ESA) is the primary federal law that serves to conserve critically imperiled species and the ecosystems they depend on. Both the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) National Oceanic and Atmospheric Administration (NOAA) are responsible for implementing the ESA to protect, conserve, and recover endangered and threatened species. This section details the ESA-listed species and critical habitat that could occur within approximately 1 mile of the Project (herein referred to as 'Project Area'). A total of 13 ESA-listed species could occur in the Project Area (Table 1). It was determined that the Project may affect, but is not likely to adversely affect (NLAA) the ESA-listed species listed in Table 1. The Biological Evaluation for the project (Moffatt & Nichol [M&N] 2023) provides additional information on the ESA-listed species with potential to occur in the Project Area as well as the potential project impacts on these listed species.

Several other protected species 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 2). The Project would have no effect on the species listed in Table 2. Any species and critical habitat not discussed in this

Memorandum and the Biological Evaluation were determined to not be present and/or it was determined that the proposed action will have no effect on these species and critical habitat.

**Table 1. 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 ESU	<i>Oncorhynchus tshawytscha</i>	NMFS	Threatened	Occurs in Project 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	<i>O. keta</i>	NMFS	Threatened	Occurs in Project Area
Coho Salmon	Lower Columbia River ESU	<i>O. kisutch</i>	NMFS	Threatened	Occurs in Project Area
Sockeye Salmon	SNAKE RIVER ESU	<i>O. nerka</i>	NMFS	Endangered	Occurs in Project Area
Steelhead	Lower Columbia River DPS	<i>O. mykiss</i>	NMFS	Threatened	Occurs in Project 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	<i>Acipenser medirostris</i>	NMFS	Threatened	Occurs in Project Area
Eulachon	Southern DPS	<i>Thaleichthys pacificus</i>	NMFS	Threatened	Occurs in Project Area
Leatherback Sea turtle	N/A	<i>Dermochelys coriacea</i>	NMFS	Endangered	None in Project Area
Killer Whale	Southern Resident	<i>Orcinus orca</i>	NMFS	Endangered	None in Project Area
Humpback Whale	Central America DPS	<i>Megaptera novaeangliae</i>	NMFS	Endangered	None in Project Area
	Mexico DPS			Threatened	None in Project Area
Streaked Horned Lark	N/A	<i>Eremophila alpestris strigata</i>	USFWS	Threatened	None in Project Area
Bull Trout	N/A	<i>Salvelinus confluentus</i>	USFWS	Threatened	None in Project Area
Western Snowy Plover	N/A	<i>Charadrius nivosus nivosus</i>	USFWS	Threatened	None in Project Area
Marbled Murrelet	N/A	<i>Brachyramphus marmoratus</i>	USFWS	Threatened	None in Project Area

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



**Table 2. 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	<i>Coccyzus americanus</i>	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	<i>Danaus plexippus</i>	USFWS	Candidate	Proposed activities would not destroy vegetation that could provide habitat. Impacts would not occur.

Source: USFWS Information for Planning and Consultation (IPaC) database (USFWS 2022) and the NOAA Fisheries West Coast Region website (NOAA 2022).

Multiple seabirds, protected under a number of other federal laws, could be present in the area, including the bald eagle (*Haliaeetus leucocephalus*), brown pelican (*pelecanus occidentalis*), california gull (*larus californicus*), common loon (*gavia immer*), common murre (*uria aalge*), red-throated loon (*gavia stellata*), ring-billed gull (*larus delawarensis*), surf scoter (*melanitta perspicillata*), western grebe (*aechmophorus occidentalis*), white-winged scoter (*melanitta fusca*).

## 5.2 State-Level Protected Species

The Washington Department of Fish and Wildlife (WDFW) guides recovery efforts for many at-risk species. Additionally, the WDFW's Priority Habitats and Species (PHS) database shares information about species and their habitats to inform local governments, landowners, and others. This section details the WDFW state-listed at-risk species, as well as priority habitats and species, that could occur within the Project Area (Tables 3 and 4).

### 5.2.1 WDFW At-Risk Species

The WDFW manages conservation efforts for at-risk species. The WDFW has classified 46 species as endangered, threatened, or sensitive (WDFW 2022a). These species were evaluated for their potential to occur in the Project Area. Out of the 46 state-listed species, only marbled murrelets were identified as having potential to occur within the Project Area according to the WDFW PHS database (WDFW 2022b). Several other state-listed species were included as having potential to occur in the Project Area based on USFWS IPAC results. Species with potential to occur in the Project Area are summarized in Table 4. In some cases, the federal status of a species listed under the ESA differs from state status.

**Table 3. WDFW State-Listed At-Risk Species with Potential to Occur Within the Project Action Area**

Species	Scientific Name	Federal Status	State Status	Additional Information
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threatened	Endangered	Breeding survey area located directly west of Marina, approximately 0.2 miles from Project
Streaked Horned Lark	<i>Eremophila alpestris strigata</i>	Threatened	Endangered	No WDFW mapped occurrences within Project Area. Determined to potentially occur in Project Area based on IPAC results.
Snowy Plover	<i>Charadrius nivosus nivosus</i>	Threatened	Endangered	No WDFW mapped occurrences within Project Area. Determined to potentially occur in Project Area based on IPAC results.

Species	Scientific Name	Federal Status	State Status	Additional Information
<i>Humpback Whale- Central America DPS</i>	<i>Megaptera novaeangliae</i>	Endangered	Endangered	No WDFW mapped occurrences within Project Area. Determined to potentially occur in Project Area based on IPAC results.
<i>Humpback Whale- Mexico DPS</i>		Threatened		
<i>Southern Resident Killer Whale</i>	<i>Orcinus orca</i>	Endangered	Endangered	No WDFW mapped occurrences within Project Area. Determined to potentially occur in Project Area based on IPAC results.
<i>Bull Trout</i>	<i>Salvelinus confluentus</i>	Threatened	Candidate Species	No WDFW mapped occurrences within Project Area. Determined to potentially occur in Project Area based on IPAC results.

Source: Washington Department of Fish and Wildlife (WDFW) State Listed Species (Revised March 2022) (WDFW 2022a).

## 5.2.2 WDFW Priority Habitats and Species

WDFW identified priority habitat and species that require protective measures to ensure survival due to the species' population status, sensitivity to habitat alteration, and recreational, commercial, or tribal importance. The priority habitats and species, provided in Table 5, were identified within the Project Area using WDFW'S PHS database.

**Table 4. WDFW Priority Habitats with Potential to Occur Within the Project Action Area**

Habitat/Species Name	Priority Area
<i>Coho Salmon (Oncorhynchus kisutch)</i>	Occurrence/migration
<i>Winter Steelhead (Oncorhynchus mykiss)</i>	Occurrence/migration
<i>Fall Chum (Oncorhynchus keta)</i>	Breeding area
<i>Fall Chinook (Oncorhynchus tshawytscha)</i>	Occurrence/migration
<i>Marbled Murrelet (Brachyramphus marmoratus)</i>	Breeding Survey
<i>Shorebird concentrations</i>	Regular concentration
<i>Waterfowl concentrations</i>	Regular concentration
<i>Wetlands</i>	Aquatic habitat
<i>Estuarine and Marine Wetland</i>	Aquatic habitat
<i>Freshwater Emergent Wetland</i>	Aquatic habitat
<i>Purple martin (Progne subis)</i>	Breeding area

Source: Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species Program (PHS) (WDFW 2022b)

## 6. Avoidance, Minimization, and Best Management Practices (BMPs)

The project will take place in the water and along the shoreline in the west portion of the Port of Ilwaco Marina which is located along the northeast shore of Baker Bay in Ilwaco, Washington. The paving and regrading portions of the project will all occur at the top of the shoreline in the dry. The bulkhead sheetpile wall caps will be cast in place and uncured concrete will not be allowed to come into contact with surface waters. The shoreline rip rap replacement will be placed in the dry to the extent practicable. The bulkhead demolition, placement of the new bulkhead, fenders and appurtenances will be accomplished using equipment operated from a barge(s).

The following AMMs (AMMs) will be used for this project:

## 6.1 General AMMs

- Containment booms will be used to surround in-water work areas or separate embankment work from surface water. The booms will serve to contain and collect any oily material and/or floating debris potentially released during construction. Oil-absorbent materials will be employed immediately if visible product is observed. Accumulated debris will be collected daily and disposed of at a permitted upland site approved by the owner.
- Hydraulic water jets will not be used to install piles.
- Water quality standards and procedures that limit the impact of pollutants will be observed.
- Land-based staging areas for activities, such as storage of machinery, equipment, materials, and stockpiled soils will be established landward of the top of bank. A silt fence will be installed around the perimeter of the upland work areas and locations where machinery, materials, and stockpiled soils are situated. Any temporary stockpiles will be covered and bermed when not in use.
- All permit requirements will be followed during demolition and construction activities.

## 6.2 In, Over, and Near Water AMMs

- In-water construction activities will comply with the in-water construction window (anticipated to be November 1 through February 28)
- Typical construction BMPs for working in, over, and near water will be applied, including activities such as the following:
  - Checking equipment for leaks and other problems that could result in the discharge of petroleum-based products or other material into waters of Baker Bay.
  - Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including:
    - Containment and cleanup efforts will begin immediately upon discovery of the spill and will be completed in an expeditious manner in accordance with all local, state, and federal regulations. Cleanup will include proper disposal of any spilled material and used cleanup material.
    - The cause of the spill will be ascertained, and appropriate actions taken to prevent further incidents or environmental damage.
    - Spills will be reported to Ecology Southwest Regional Spill Response Office pursuant to WAC 173-303-145 and WAC 173-182-260.
- Work barges will not be allowed to ground out.
- Excess or waste materials will not be disposed of or abandoned waterward of ordinary high water or allowed to enter waters of the state. Waste materials will be disposed of in an appropriate manner consistent with applicable local, state, and federal regulations.
- Demolition and construction materials will not be stored where wave action or upland runoff can cause materials to enter surface waters.

- Oil-absorbent materials will be present on site for use in the event of a spill or if any oil product is observed in the water.

### 6.3 Pile Removal and Installation AMMs

Pile removal BMPs will be applied, including activities such as the following:

- Removal of creosote-treated piles will be conducted consistent with the BMPs established in EPA Region 10, Best Management Practices for Piling Removal and Placement in Washington State, dated February 18, 2016 (EPA 2016).
- While creosote-treated piles are being removed, a containment boom will surround the work area to contain and collect any floating debris and sheen. Debris will be retrieved and disposed of properly.
- The piles will be dislodged with a vibratory hammer when possible and will not be intentionally broken by twisting or bending.
- The piles will be removed in a single, slow, and continuous motion in order to minimize sediment disturbance and turbidity in the water column.
- If a pile breaks above or below the mudline, it will be cut or pushed in the sediment consistent with agency-approved BMPs (USACE, DNR, Ecology and EPA).
- Removed piles, stubs, and associated sediments (if any) will be contained on a barge. If piles are placed directly on the barge and not in a container, the storage area will consist of a row of hay or straw bales, filter fabric, or similar material placed around the perimeter of the barge.
- All creosote-treated material, pile stubs, and associated sediments (if any) will be disposed of by the contractor in a landfill approved to accept those types of materials.
- Steel piling will be installed with a vibratory hammer when possible. Impact hammering will start with light tapping, then increase to full force gradually.
- A bubble curtain and one or more other noise attenuation methods will be used during impact installation or proofing of all steel piling.
- Pile-driving will commence with a soft start procedure (ramping up) in order to alert nearby wildlife, allowing them to move out of the area prior to construction activities. For impact pile driving, contractors will be required to provide an initial set of strikes from the hammer at reduced percent energy, each strike followed by no less than a 30-second waiting period. This procedure will be conducted a total of two times before impact pile driving begins.
- Use of a wood cushion block or other sound-reducing method shall be implemented if impact pile driving is to be employed. The use of wood cushion blocks during construction will result in a reduction in underwater noise.
- To avoid impacts to marine mammals, an exclusion zone will be monitored during and immediately before pile driving activities. The exclusion zone will include the entire marina area shoreward of the breakwaters. Although Endangered Species Act (ESA)-listed species, including Southern Resident killer whales and

humpback whales are not anticipated to occur within the marina where noise impacts could occur, this avoidance measure would provide further protections against potential noise impacts to these species.

- During pile driving activities a qualified observer will monitor the exclusion zone, if any marine mammals are observed within the exclusion zone, all in-water Project activities shall cease. Project activities shall not commence or continue until the marine mammal has either been observed having left the exclusion zone, or at least 15 minutes have passed since the last sighting whereby it is assumed the marine mammal has voluntarily left the exclusion zone.

#### **6.4 Overwater Concrete Placement Minimization and Concrete Placement AMMs**

The project has been designed to minimize the placement of concrete overwater. Where possible, pre-cast concrete elements will be used. On-site concrete placement, where needed, will follow appropriate AMMs, including the following:

- Wet concrete will not contact surface waters.
- Forms for any concrete structure will be constructed to prevent leaching of wet concrete.
- Concrete process water will not be allowed to enter the water. Any process water/contact water will be routed to a contained area for treatment and will be disposed of at an upland location.

## 7. References

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

National Oceanic and Atmospheric Administration (NOAA). 2022. Protected Resources App. Accessed on 8/18/2022 at: <https://www.fisheries.noaa.gov/resource/map/protected-resources-app>

U.S Fish and Wildlife (USFWS). 2022. Information for Planning and Consulting (IPAC). Accessed on 8/18/2022 at: <https://ipac.ecosphere.fws.gov/location/index>

Washington Department of Fish and Wildlife (WDFW). 2022a. State Listed Species. March 2022. Available at: <https://wdfw.wa.gov/sites/default/files/2022-04/StateListed%26amp%3BCandidateSpecies28Mar2022.pdf>

\_\_\_\_\_. 2022b. Priority Habitat and Species on the Web. Accessed on August 18, 2022 at: <https://geodataservices.wdfw.wa.gov/hp/phs/>



## **Appendix G: Threatened and Endangered Species and Critical Habitat**



## NMFS Concurrence



**From:** [Tom Hausmann - NOAA Federal](#)  
**To:** [Gilson, Kristine \(MARAD\)](#); [Schwertner, Margaret](#); [Bonnie Shorin - NOAA Federal](#); [Consultationupdates WCR - NOAA Service Account](#)  
**Subject:** WCRO-2022-03087 Ilwaco East Bulkhead Resilience Project, Port of Ilwaco, Pacific County, Washington  
**Date:** Thursday, October 5, 2023 8:34:34 AM

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**CAUTION:** This email originated from outside of the organization.

On August 16, 2023, we concurred with your conclusion that the Ilwaco East Bulkhead Resilience Project (WCRO-2022-03087) is not likely to adversely affect CR chum salmon, LCR coho salmon, SR sockeye salmon, LCR Chinook salmon, UCR spring Chinook salmon, SR spring/summer Chinook salmon, SR fall Chinook salmon, UWR Chinook salmon, LCR steelhead, MCR steelhead, UCR steelhead, UWR steelhead, Southern DPS green sturgeon or Southern DPS eulachon or their designated critical habitat in the Columbia River estuary. On August 30, 2023 you informed us of 4 changes to the proposed action

1. You will not install 10 fiberglass fender piles
2. You will place 6 inch thick layer of fish mix gravel over the north shoreline riprap
3. You will remove floating timber debris from the south portion of the marina
4. These changes result in minor changes to your fill calculations

You determined that these changes do not change your determination that the proposed action is not likely to adversely affect the salmon, steelhead, green sturgeon or eulachon listed above or critical habitat for these species.

We've reviewed these changes to the proposed action and agree that they do not change our concurrence with your NLAA determinations and reinitiation of this consultation is not necessary. We will add Margaret Schwertner's August 30, 2023 email with the description of the proposed action changes and a copy of this email to the administrative record for this consultation.

Thank you,

Tom Hausmann

Biologist, Washington Coast, Lower Columbia River Branch

Oregon Washington Coastal Office

--

Tom Hausmann

## Schwertner, Margaret

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**From:** Schwertner, Margaret  
**Sent:** Wednesday, August 30, 2023 8:24 AM  
**To:** Jennifer Carlson - NOAA Federal; Tom Hausmann - NOAA Federal; Bonnie Shorin - NOAA Federal  
**Cc:** Gilson, Kristine (MARAD); England, Victoria  
**Subject:** RE: Ilwaco East Bulkhead Resilience Project letter of concurrence  
**Attachments:** rev2023June\_213282 ILWACO-BH\_JARPA figs.pdf

Hi Tom, Jennifer, and Bonnie,

Thank you very much for the LOC.

We have a short project update for the Port of Ilwaco East Bulkhead Resilience Project. There have been a few changes to the project description (removal of pile fender system due to cost) and some additional mitigation elements required as a result of ongoing coordination with the City of Ilwaco and Washington State Department of Fish and Wildlife (WDFW). This email provides a detailed summary of those recent project changes. The changes are minor in nature and do not impact the species Effect Determinations made for the project nor are they anticipated to warrant changes to the LOCs received (NMFS WCRO-2022-03087, FWS 2023-0025807). All proposed avoidance, minimization, and mitigation measures will still be implemented as described in the permit documents.

The project modifications are described below and are reflected in the attached revised design drawings.

### **Fender Pile System**

The installation of 10, 12-inch fiberglass fender piles external to the bulkhead to support temporary berthing is no longer proposed.

### **Fish Mix Placement**

A 6-inch layer (approximately 34 cy) of fish mix gravel will be placed over the north shoreline riprap below the high tide line (HTL) to provide beach nourishment and improved habitat for fish passing through the marina.

### **Debris Removal**

Floating timber debris will be removed from the south portion of the marina. This will remove approximately 2,510 sf of overwater coverage currently present in that portion of the marina.

### **Fill Impacts**

Minor fill impact changes have occurred due the removal of the fender pile system from the project, the addition of fish mix on the north shoreline, and changes to the way in which fill quantities are calculated including an update to the High Tide Line elevation used to calculate fill impacts. Fill impact changes are summarized in Table 1 and Table 2 below.

**Table 1. Fill Impacts Provided in Biological Evaluation Dated December 12, 2022 and Submitted for ESA Consultations**

Activity	Fill below HTL (sf)	Fill below HTL (cy)	Fill above HTL (sf)	Fill above HTL (cy)
<i>Bulkhead wall and shoreline protection installation</i>				
Sheetpile and fender pile installation	500 sf	40 cy	0 sf	0 cy
Bulkhead drainage rock placement	1,000 sf	400 cy	0 sf	0 cy
Rip-rap placement (north shoreline)	1,850 sf	140 cy	350 sf	25 cy
Rubble/ rip-rap removal (south shoreline)	-350 sf	-14 cy	-50 sf	-2 cy
Rip-rap replacement (south shoreline)	350 sf	30 cy	50 sf	5 cy
<i>Structure removal</i>				
Pile removal adjacent to existing bulkhead	-12 sf	-6 cy	0 sf	0 cy

North shoreline- creosote-treated timber retaining wall removal	-85 sf	-12 cy	0 sf	0 cy
Derelict pile/timber removal	-68 sf	-12 cy	0 sf	0 cy

**Table 2. Revised Fill Impacts**

Activity	Fill below HTL (sf)	Fill below HTL (cy)	Fill above HTL (sf)	Fill above HTL (cy)
<i>Bulkhead wall and shoreline protection installation</i>				
Sheetpile installation	400 sf	80 cy	0 sf	0 cy
Bulkhead drainage rock placement	1,000 sf	450 cy	0 sf	0 cy
Rip-rap shore protection and Fish Mix placement (north shoreline)	1,850 sf	172 cy	350 sf	26 cy
Concrete rubble removal (south shoreline)	-350 sf	-14 cy	-50 sf	-2 cy
Rip-rap replacement (south shoreline)	350 sf	30 cy	50 sf	5 cy
<i>Subtotal</i>	<i>3,250 sf</i>	<i>718 cy</i>	<i>350 sf</i>	<i>29 cy</i>
<i>Structure removal</i>				
Pile removal adjacent to existing bulkhead	-12 sf	-6 cy	0 sf	0 cy
North shoreline- retaining wall removal	-85 sf	-12 cy	0 sf	0 cy
Derelict pile/timber removal	-68 sf	-12 cy	0 sf	0 cy
Derelict Timber Structure/Debris Removal -South Marina	-2,510 sf	-350 cy	0 sf	0 cy
<i>Subtotal</i>	<i>-2,675 sf</i>	<i>-380 cy</i>	<i>0 sf</i>	<i>0 cy</i>
<i>Creosote removal from the Environment</i>	<i>34 tons</i>			

We do not anticipate that these minor modifications will change the overall assessment of potential impacts but would like to confirm that the LOCs do not need to be updated nor consultation reinitiated based on these minor revisions. Please reach out if you require any additional information or have any questions or concerns.

Thank you.

Regards,  
Margaret

Margaret Schwertner  
Senior Environmental Scientist  
505 S. 336<sup>th</sup> St. | Federal Way, WA 98422  
P 253.237.5928 | M 206.818.2600



**From:** Jennifer Carlson - NOAA Federal <jennifer.carlson@noaa.gov>

**Sent:** Wednesday, August 16, 2023 8:00 AM

**To:** kristine.gilson@dot.gov

**Cc:** Schwertner, Margaret <mschwertner@moffattnichol.com>; Tom Hausmann - NOAA Federal

<Tom.Hausmann@noaa.gov>; Bonnie Shorin - NOAA Federal <bonnie.shorin@noaa.gov>; Consultationupdates WCR -

NOAA Service Account <consultationupdates.wcr@noaa.gov>

**Subject:** Ilwaco East Bulkhead Resilience Project letter of concurrence

**CAUTION:** This email originated from outside of the organization.

Please find the letter of concurrence attached. This electronic copy is for your records and files. This email is part of a consultation response for WCRO-2022-03087.

Thank you.

Jennifer McDonald Carlson (she/her)

*Oregon Washington Coastal Office  
NOAA Fisheries West Coast Region  
U.S. Department of Commerce*

[jennifer.carlson@noaa.gov](mailto:jennifer.carlson@noaa.gov)

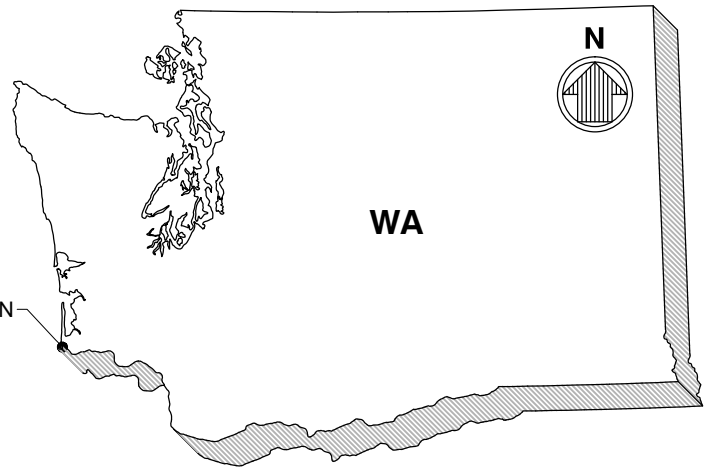
[www.westcoast.fisheries.noaa.gov](http://www.westcoast.fisheries.noaa.gov)





TIDAL DATUM:  
 BASED ON NOAA TIDAL STATION NO.  
 9440581, IN US FEET. HTL/OHW DELINEATED  
 BY GEOENGINEERS DECEMBER, 2022.

LEVELS:  
 MHHW: +8.07' MHW: +7.37'  
 MLW: 1.35' MLLW: +0.00'  
 OHW (DELINEATED): APPROX. +11.50'



PROJECT LOCATION

DIRECTIONS TO SITE FROM SEATTLE:

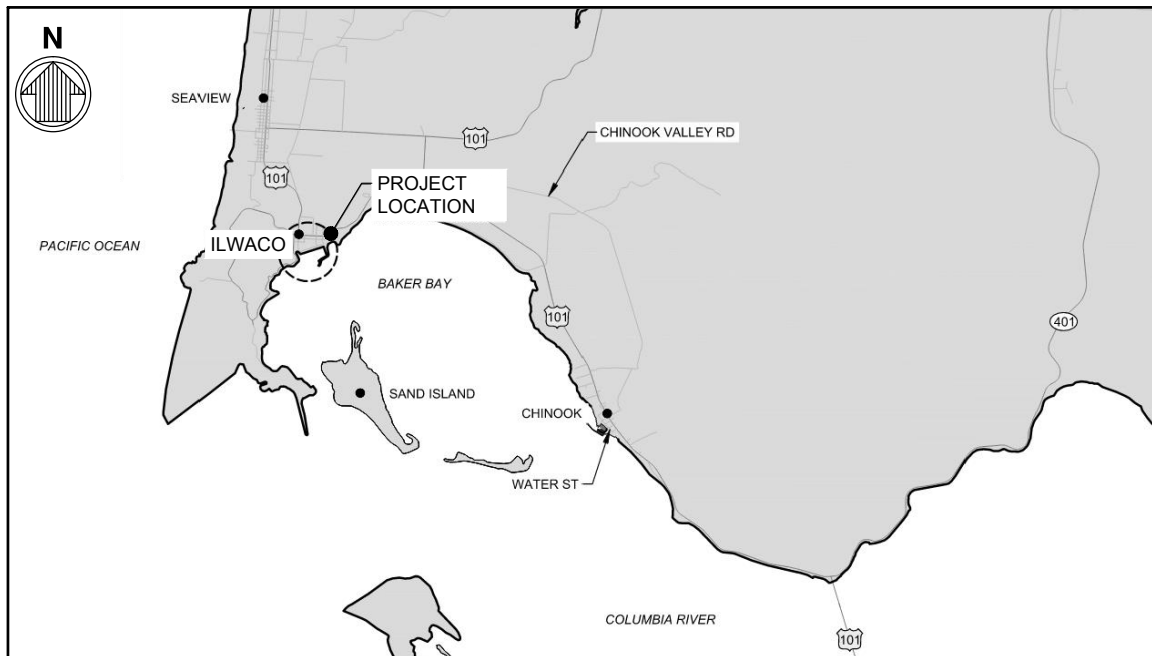
1. I-5 S, US-101, WA-8 AND US-12 TO 98 MILES  
 WA-107 S/S MAIN ST IN MONTESANO
2. TAKE US-101 TO ILWACO 72 MILES
3. ARRIVE AT PROJECT SITE

PROJECT ADDRESS:

PORT OF ILWACO  
 117 HOWERTON AVE SE  
 ILWACO, WA 98624

VICINITY MAP

SCALE: NTS



LOCATION MAP

SCALE: NTS

APPLICANT:  
 PORT OF ILWACO

ADJACENT PROPERTY OWNERS:  
 1) PORT OF ILWACO

LOCATION: PORT OF ILWACO  
 117 HOWERTON AVE SE  
 ILWACO, WA 98624

LAT/LONG: 46.30442 N, -124.03852 W

DATUM: MLLW  
SHEET: 1 OF 9 DATE: JUNE 2023

PROPOSED PROJECT: PORT OF ILWACO  
 EAST BULKHEAD RESILIENCE PROJECT

IN: BAKER BAY  
NEAR/AT: ILWACO  
COUNTY: PACIFIC STATE: WA  
SEC: 33/34 T: 10 N R: 11 W



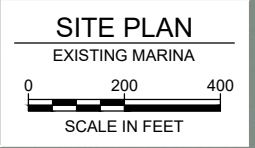
S33 T10N R11W



LEGEND	
POI	PORT OF ILWACO OWNED PARCEL
---	TAX PARCEL
—OHWM—	ORDINARY HIGH WATER MARK

EBB  
FLOOD

BAKER BAY



PURPOSE: PORT OF ILWACO BULKHEAD REPLACEMENT  
AND SEA LEVEL RISE RESILIENCE.

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

## Port of Ilwaco East Bulkhead Resilience Project

### Parcel Map

APPLICATION BY:  
Port of Ilwaco

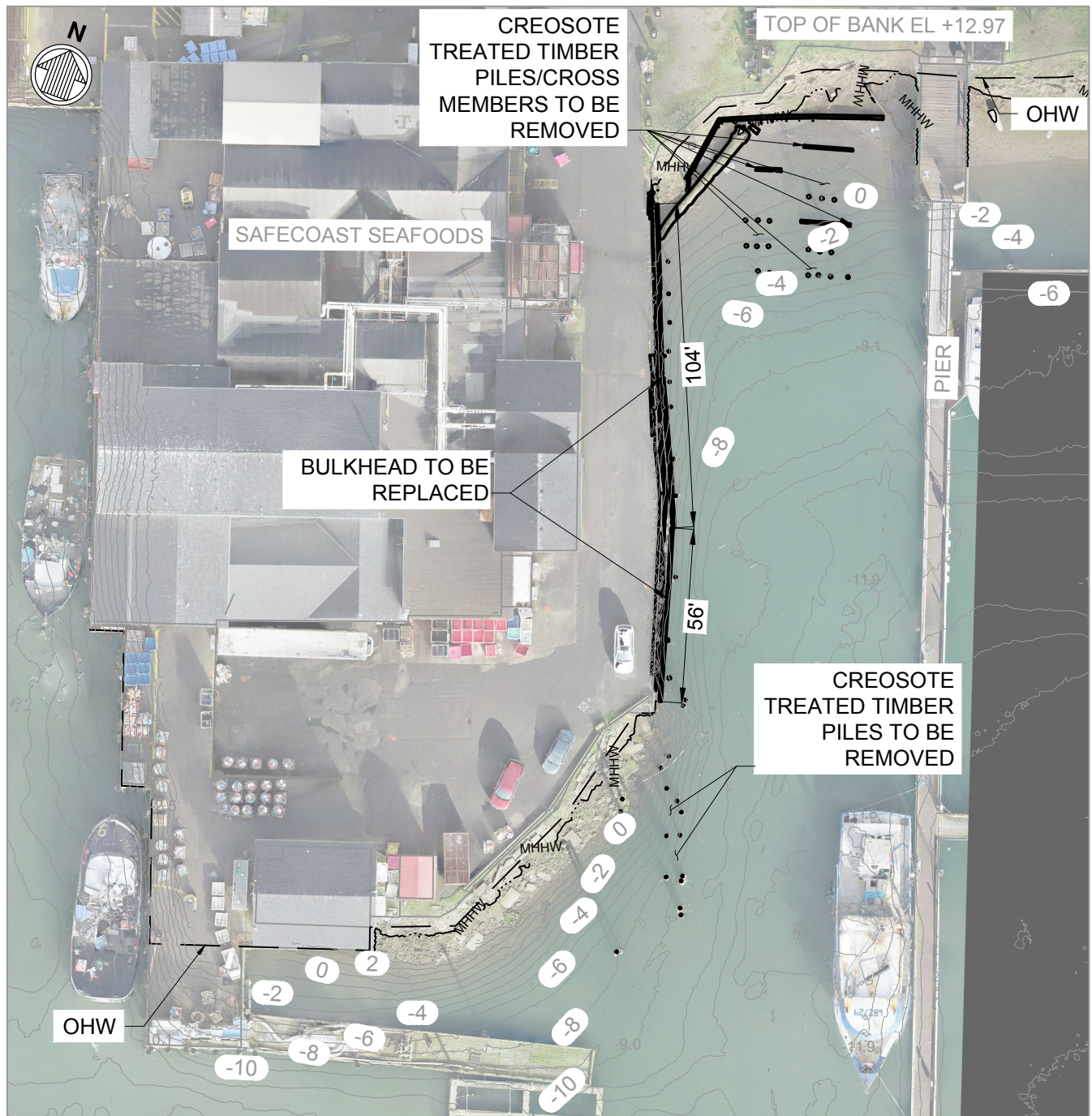
PROPOSED: DERELICT ILWACO E. BULKHEAD REPLACEMENT,  
DRIVEWAY REGRADING/ REPAVING, & SHORE  
PROTECTION REPLACEMENT

IN: BAKER BAY  
AT: ILWACO  
COUNTY: PACIFIC

SHEET 2 OF 9

DATE: JUNE 2023





# LEGEND

- PILES
- CREOSOTE-TREATED REVETMENT (TO BE REMOVED)
- CREOSOTE-TREATED LOG (TO BE REMOVED)
- BULKHEAD (TO BE REMOVED)



PLAN - EXISTING CONDITIONS  
SCALE: 1" = 50'

## LEVELS:

MHHW: +8.07'

MLW: 1.35'

OHW (DELINEATED):

MHW: +7.37'

MLLW: +0.00'

APPROX. +11.50'



SCALE: 1"=50'

APPLICANT:  
PORT OF ILWACO

ADJACENT PROPERTY OWNERS:  
1) PORT OF ILWACO

LOCATION: PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

LAT/LONG: 46.30442 N, -124.03852 W

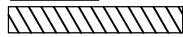
DATUM: MLLW  
SHEET: 3 OF 9 DATE: JUNE 2023

PROPOSED PROJECT: PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

IN: BAKER BAY  
NEAR/AT: ILWACO  
COUNTY: PACIFIC STATE: WA  
SEC: 33/34 T: 10 N R: 11 W



**LEGEND**



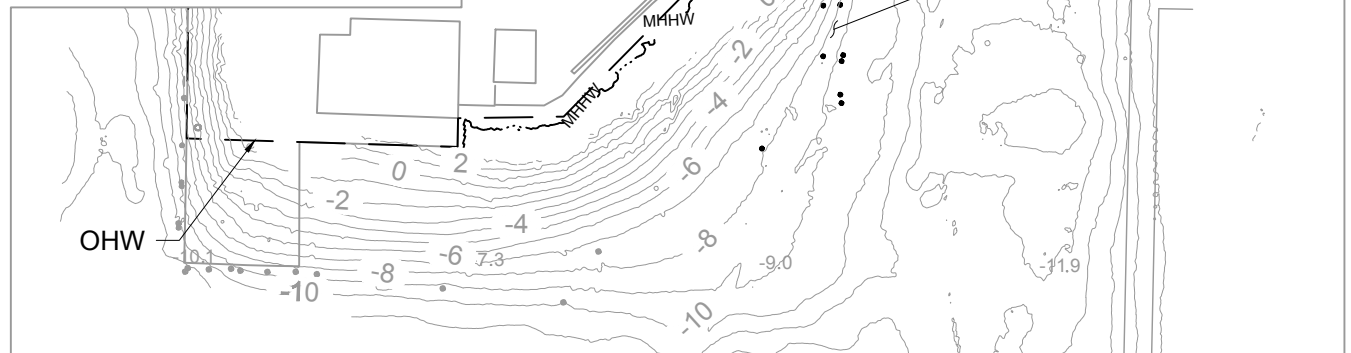
DEMOLITION AREAS



STEEL PILES

**DEMOLITION KEY NOTES**

- 1 REMOVE CREOSOTE-TREATED TIMBER REVETMENT AND LARGE LOG.
- 2 REMOVE TIMBER AND STEEL PILES ALONG TIMBER BULKHEAD
- 3 SELECTIVE DEMOLITION OF CREOSOTE-TREATED TIMBER BULKHEAD.
- 4 REMOVE PAVEMENT.
- 5 REMOVE CONCRETE CURB.
- 6 REMOVE FENCE.
- 7 SELECTIVE REMOVAL OF LARGE RUBBLE ON SHORELINE SLOPE TO ACCOMMODATE BULKHEAD INSTALLATION. SELECT RUBBLE MATERIAL WILL BE REPLACED WITH RIPRAP TO MAINTAIN SLOPE PROTECTION



**PLAN - DEMOLITION**

SCALE: 1" = 50'

**LEVELS:**

MHHW: +8.07'

MLW: 1.35'

OHW (DELINEATED):

MHW: +7.37'

MLLW: +0.00'

APPROX. +11.50'

50' 0' 50' 100'

SCALE: 1"=50'

**APPLICANT:**  
PORT OF ILWACO

**ADJACENT PROPERTY OWNERS:**  
1) PORT OF ILWACO

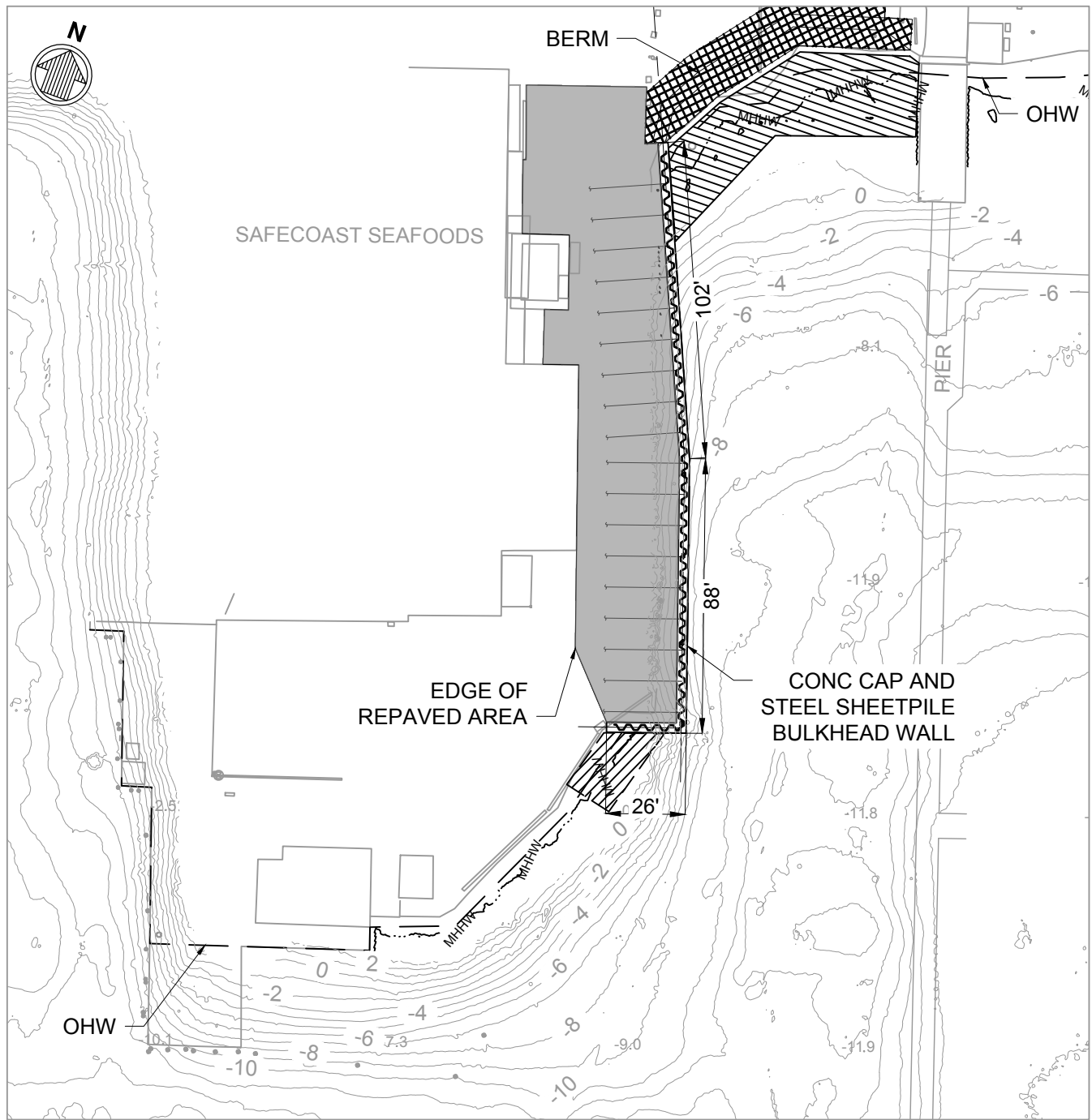
**LOCATION:** PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

**LAT/LONG:** 46.30442 N, -124.03852 W

**DATUM:** MLLW  
**SHEET:** 4 OF 9 **DATE:** JUNE 2023

**PROPOSED PROJECT:** PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

**IN:** BAKER BAY  
**NEAR/AT:** ILWACO  
**COUNTY:** PACIFIC **STATE:** WA  
**SEC:** 33/34 **T:** 10 N **R:** 11 W



#### LEGEND



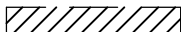
PAVING AREA LIMITS



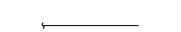
BERM CONSTRUCTION



SLOPE PROTECTION



APPROXIMATE AREA OF SLOPE PROTECTION REPLACEMENT



TIEBACKS



PROPOSED BULKHEAD



PILES



PLAN - PROPOSED

SCALE: 1" = 50'

#### LEVELS:

MHHW: +8.07'

MHW: +7.37'

MLW: 1.35'

MLLW: +0.00'

OHW (DELINEATED):

APPROX. +11.50'

50' 0' 50' 100'

SCALE: 1"=50'

**APPLICANT:**  
PORT OF ILWACO

**ADJACENT PROPERTY OWNERS:**  
1) PORT OF ILWACO

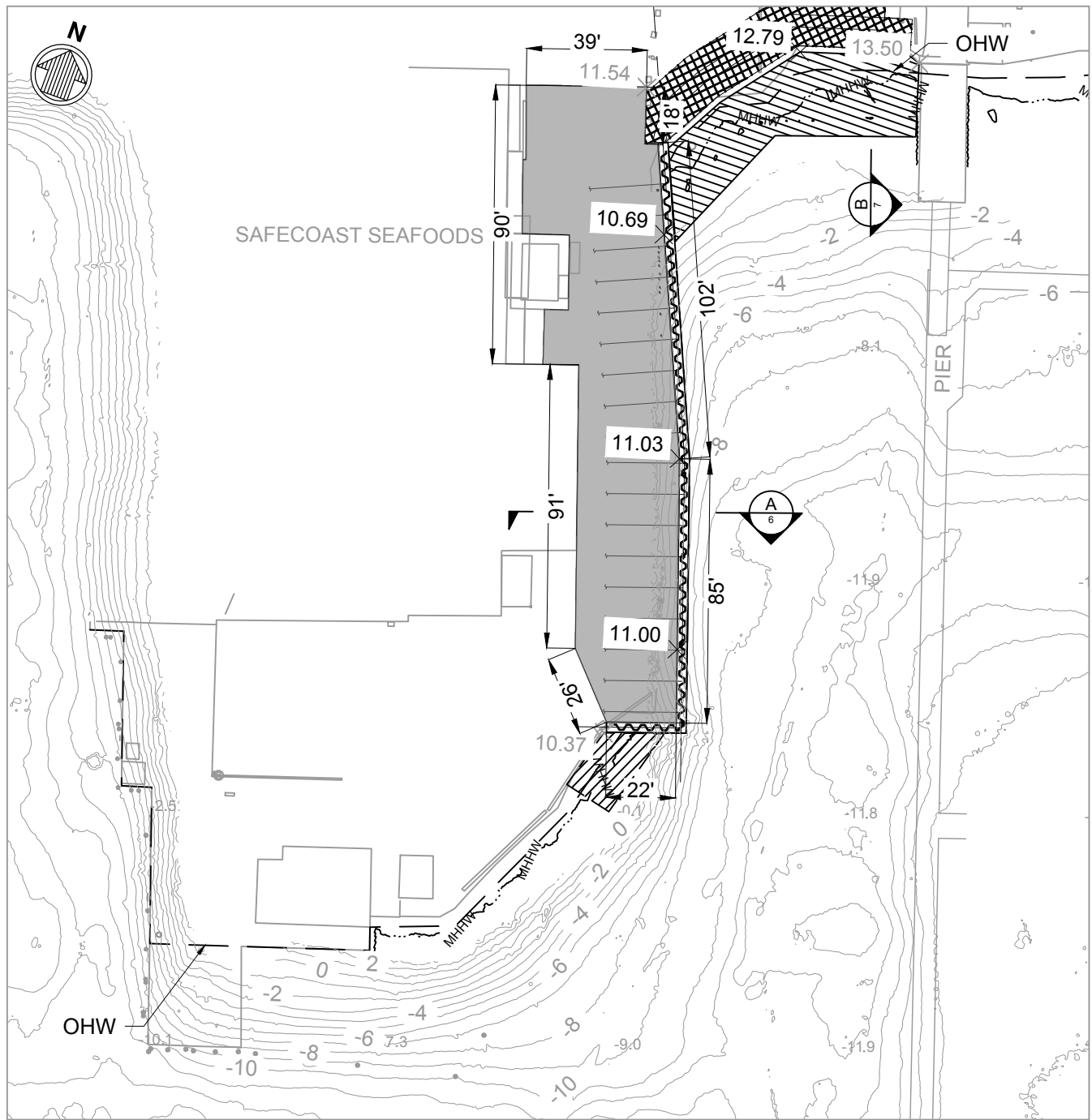
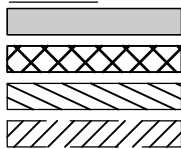
**LOCATION:** PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

**LAT/LONG:** 46.30442 N, -124.03852 W

**DATUM:** MLLW  
**SHEET:** 5 OF 9 **DATE:** JUNE 2023

**PROPOSED PROJECT:** PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

**IN:** BAKER BAY  
**NEAR/AT:** ILWACO  
**COUNTY:** PACIFIC **STATE:** WA  
**SEC:** 33/34 **T:** 10 N **R:** 11 W

**LEGEND**

PAVING AREA LIMITS

BERM CONSTRUCTION

SLOPE PROTECTION

APPROXIMATE AREA OF SLOPE PROTECTION REPLACEMENT



TIEBACKS



PROPOSED BULKHEAD



STEEL PILES

0.00 X

EXISTING ELEVATION

0.00 X

PROPOSED ELEVATION



PLAN - GRADING

SCALE: 1" = 50'

**LEVELS:**

MHHW: +8.07'

MLW: 1.35'

OHW (DELINEATED):

MHW: +7.37'

MLLW: +0.00'

APPROX. +11.50'

50' 0' 50' 100'

SCALE: 1"=50'

**APPLICANT:**  
PORT OF ILWACO

**ADJACENT PROPERTY OWNERS:**  
1) PORT OF ILWACO

**LOCATION:** PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

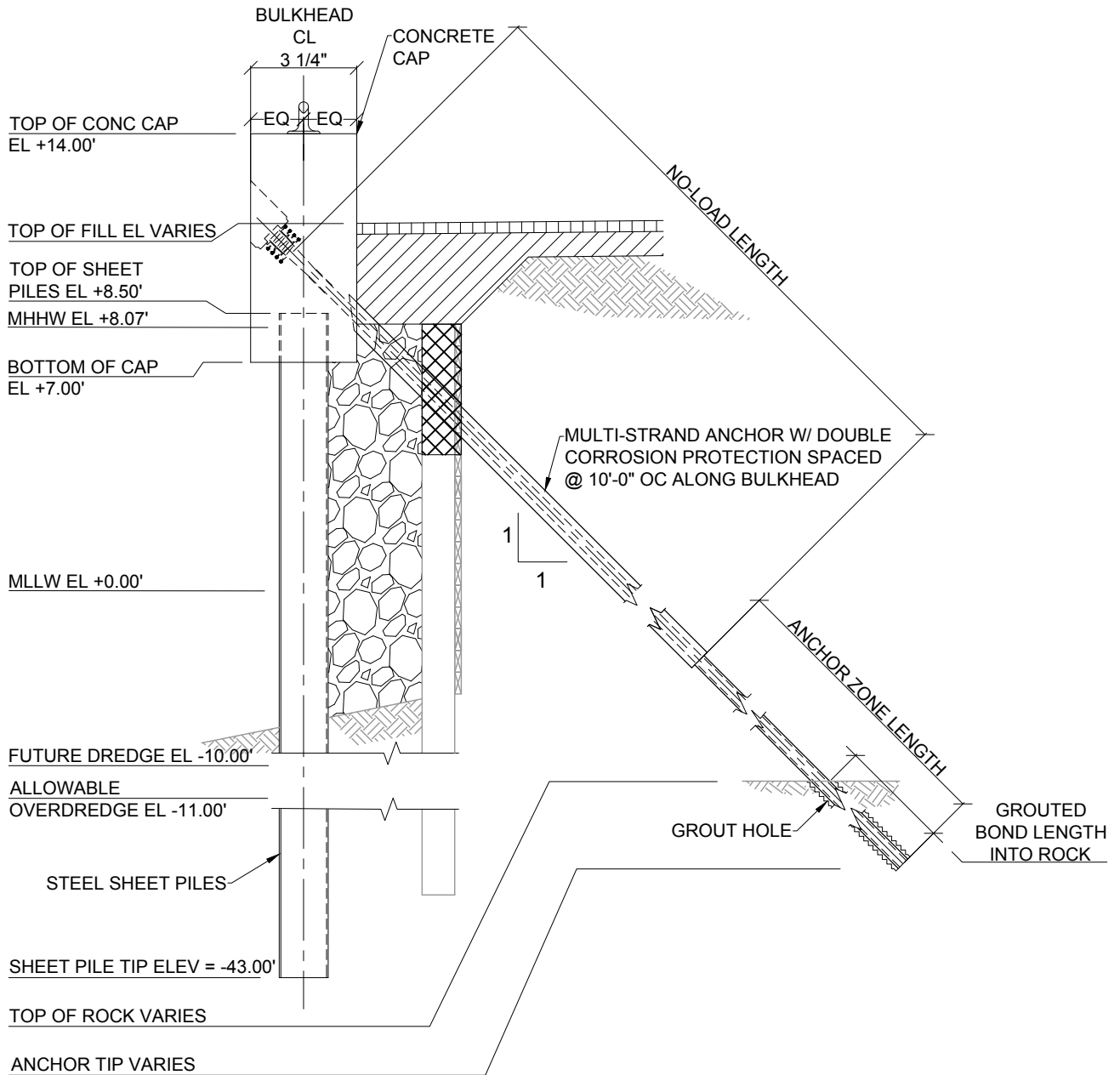
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**DATUM:** MLLW  
**SHEET:** 6 OF 9 **DATE:** JUNE 2023




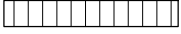
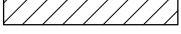

**PROPOSED PROJECT:** PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

**IN:** BAKER BAY  
**NEAR/AT:** ILWACO  
**COUNTY:** PACIFIC **STATE:** WA  
**SEC:** 33/34 **T:** 10 N **R:** 11 W





# LEGEND

	CLEAT
	EXISTING CREOSOTE-TREATED TIMBER BULKHEAD, LAGGING TO REMAIN
	DRAIN ROCK BACKFILL
	ASPHALT PAVING
	STRUCTURAL FILL
	LOCAL DEMOLITION/REMOVAL OF CREOSOTE-TREATED TIMBER BULKHEAD FOR INSTALLATION OF GROUND ANCHORS

## A SECTION - TYP BULKHEAD SCALE: NTS

APPLICANT:  
PORT OF ILWACO

ADJACENT PROPERTY OWNERS:  
1) PORT OF ILWACO

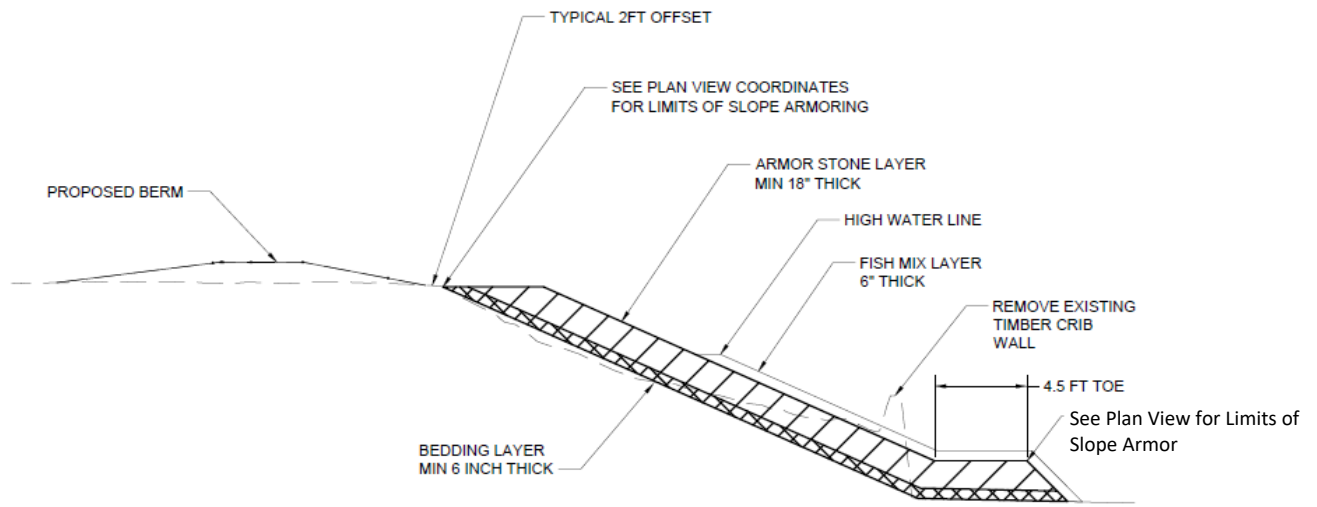
LOCATION: PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

LAT/LONG: 46.30442 N, -124.03852 W

DATUM: MLLW  
SHEET: 7 OF 9 DATE: JUNE 2023

PROPOSED PROJECT: PORT OF ILWACO  
EAST BULKHEAD RESILIENCE PROJECT

IN: BAKER BAY  
NEAR/AT: ILWACO  
COUNTY: PACIFIC STATE: WA  
SEC: 33/34 T: 10 N R: 11 W



**C1 SLOPE ARMOR SECTION 2**  
C-110 SCALE:

**APPLICANT:**  
PORT OF ILWACO

**ADJACENT PROPERTY OWNERS:**  
1) PORT OF ILWACO

**LOCATION:** PORT OF ILWACO  
117 HOWERTON AVE SE  
ILWACO, WA 98624

**LAT/LONG:** 46.30442 N, -124.03852 W

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PROPOSED: PORT OF ILWACO EAST BULKHEAD  
RESILIENCE PROJECT

IN: BAKER BAY  
NEAR/AT: PORT OF ILWACO  
COUNTY: PACIFIC  
SEC: 33/34 T: 10 N

STATE: WA  
R: 11 W





**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE**  
West Coast Region  
1201 NE Lloyd Boulevard, Suite 1100  
PORTLAND, OR 97232-1274

**Refer to NMFS No:**  
**WCRO-2022-03087**

August 16, 2023

Kristine Gilson  
Director, Office of Environmental Compliance  
U.S. Department of Transportation  
Maritime Administration  
1200 Ney Jersey Avenue, SE  
Washington, D.C. 20590

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens  
Fishery Conservation and Management Act Essential Fish Habitat Response for the  
Ilwaco East Bulkhead Resilience Project, Port of Ilwaco, Pacific County, Washington  
HUC 170800060500

Dear Ms. Gilson:

On December 13, 2022, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that U.S. Department of Transportation Maritime Administration (MARAD) funding of the Port of Ilwaco Resilience Project under the Port Infrastructure Development Program is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA and implementing regulations at 50 CFR 402.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order two days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the letter of concurrence would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

Thank you also for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)) for this action.

WCRO-2022-03087



This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available in the Environmental Consultation Organizer [<https://eco.fisheries.noaa.gov/>]. A complete record of this consultation is on file at Lacey, Washington.

### Consultation History

We received the consultation request and biological evaluation on December 15, 2022. We had a conference call to discuss the project with the Port of Ilwaco, MARAD, the USACE and USFWS on May 10, 2023. We initiated consultation on May 10, 2023.

### Proposed Action and Action Area



**Figure 1.** Project area and project elements

MARAD proposes to find modifications to a commercial fishing wharf within the Port of Ilwaco Marina (Figure 1 from BA).

**Replace bulkhead:** The eastern bulkhead of the wharf is creosote timbers supported by creosote piles. This bulkhead is failing and too low to protect the wharf from king tides and storm surges. A Port of Ilwaco contractor will remove 12 of the creosote timber piles and 3 steel pipe piles on the exterior of the bulkhead. The contractor will install a steel sheet pile bulkhead in front of the existing bulkhead. The new bulkhead is 225 feet long and its construction will take up to 8 hours of vibratory pile driver per day and up to 600<sup>1</sup> impact pile driver blows per day for 12 days. The contractor will fill the space between the new bulkhead and the old bulkhead with about 400 cubic yards of drainage rock. The contractor will cast a 7 foot tall by 3.25 foot wide concrete pile cap on top of the sheet pile. The top of the new bulkhead will be 3 feet higher than the existing bulkhead to accommodate storms and sea level rise. The contractor will stabilize the new bulkhead with 22 steel anchor cables from the pile cap to grout filled holes drilled into the bedrock beneath the wharf. The contractor will install twelve 12 inch diameter fiberglass coated concrete fender piles at the southern end of the new bulkhead with a vibratory pile driver and impact pile driver as needed.

**Replace shoreline protection:** The contractor will remove 16 cubic yards of riprap and concrete debris from the shoreline south of the bulkhead and replace it with 36 cubic yards of riprap to maintain slope stability.

**Replace retaining wall:** The contractor will remove 16 creosote treated timber piles and the creosote treated timbers of the retaining wall at the north end of the bulkhead and replace them with 165 cubic yards of riprap to maintain slope stability.

**Mitigation:** The contractor will remove an additional 36 derelict creosote treated piles from the wharf as mitigation for sacrificing 372 square yards of the soft benthic habitat between the old bulkhead and the new bulkhead and beneath the new riprap north and south of the new bulkhead.

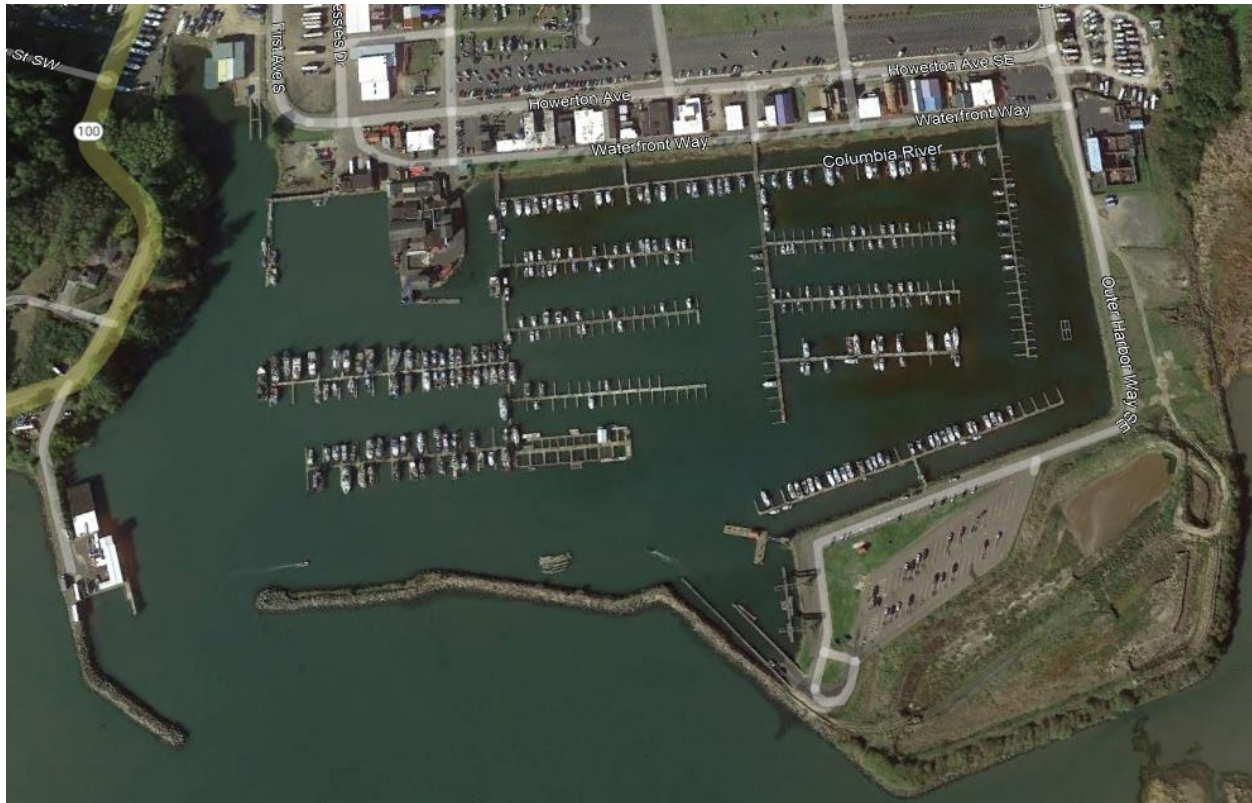
**Action area:** The action area of the proposed action for aquatic species is defined by the point in space where the sound pressure level from pile driving decreases below 150 dB<sub>RMS</sub>. Since the marina is surrounded by a riprap breakwater (

**Figure 2**), all noise from the wharf construction is contained within the marina.

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<sup>1</sup> BA notes that 600 strikes are a worst case estimate.





**Figure 2.** East bulkhead resilience project action area

**Avoidance and Minimization Measures:**

- Containment booms will be used to surround in-water work areas or separate embankment work from surface water. The booms will serve to contain and collect any oily material and or floating debris potentially released during construction. Oil-absorbent materials will be employed immediately if visible sheen is observed. Accumulated debris will be collected daily and disposed of at a permitted upland site approved by the owner.
- Water quality standards and procedures that limit the impact of pollutants will be observed
- Land based staging areas for activities, such as storage of machinery, equipment, materials, and stockpiled soils will be established landward of the top of bank. A silt fence will be installed around the perimeter of the upland work areas and locations where machinery, materials, and stockpiled soils are situated. Any temporary stockpiles will be covered and bermed when not in use.
- All federal, state, and/or local construction permit requirements will be followed during demolition and construction activities.
- In water construction activities will comply with the in water construction window November 1 through February 28.
- Checking equipment for leaks and other problems that could result in the discharge of petroleum-based products or other material into waters of Baker Bay.

- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals in the water including:
  - Containment and cleanup efforts will begin immediately upon discovery of a spill and will be completed in an expeditious manner in accordance with all local, state, and federal regulations. Cleanup will include proper disposal of any spilled material and used cleanup material.
  - The cause of any spill will be ascertained, and appropriate actions taken to prevent further incidents of environmental damage.
  - Spills will be reported to the Washington State Department of Ecology Southwest Regional Spill Response Office pursuant to WAC 173-303-145 and WAC 173-182-260.
  - Work barges will not be allowed to ground out.
  - Excess or waste materials will not be disposed of or abandoned waterward of ordinary high water or allowed to enter waters of the state. Waste materials will be disposed of in an appropriate manner consistent with applicable local, state, and federal regulations.
  - Demolition and construction materials will not be stored where wave action or upland runoff can cause materials to enter surface waters.
  - Oil absorbent materials will be present on site for use in the event of a spill or if any oil product is observed in the water.
  - Removal of creosote treated piles will be conducted consistent with the BMPs established in U.S. Environmental Protection Agency (EPA) Region 10, Best Management Practices for Piling Removal and Placement in Washington State, dated February 18, 2016.
  - While creosote treated piles are being removed, a containment boom will surround the work area to contain and collect any floating debris and sheen. Debris will be retrieved and disposed of properly.
  - The piles will be dislodged with a vibratory hammer when possible and will not be intentionally broken by twisting or bending.
  - The piles will be removed in a single, slow, and continuous motion in order to minimize sediment disturbance and turbidity in the water column.
  - If a pile breaks above or below the mudline, it will be cut or pushed in the sediment consistent with agency approved BMPS (USACE, DNR, Ecology and EPA).
  - Removed piles, stubs, and associated sediments (if any) will be contained on a barge. If piles placed directly on the barge and not in a container, the storage area will consist of a row of hay or straw bales, filter fabric or similar material placed around the perimeter of the barge.
  - All creosote-treated material, pile stubs, and associated sediments (if any) will be disposed of by the contractor in a landfill approved to accept those types of materials.
- Steel piling will be installed with a vibratory hammer when possible. Impact hammering will start with light tapping, then increase to full force gradually.
  - A bubble curtain and one or more other noise attenuation methods such as wood cushion block will be used during impact installation or proofing of all steel piling.

- Pile driving will commence with soft start procedure (ramping up) in order to alert nearby wildlife, allowing them to move out of the area prior to construction activities. For impact pile driving, contractors will be required to provide an initial set of strikes from the hammer at reduced percent energy, each strike followed by no less than a 30 second waiting period. This procedure will be conducted a total of two times before impact pile driving begins.
- To avoid impacts to marine mammals, an exclusion zone will be monitored during and immediately before pile driving activities. The exclusion zone will include the entire marina area shoreward of the breakwaters. Although ESA listed species, including Southern Resident killer whales and humpback whales are not anticipated to occur with the marina where noise impacts could occur, this avoidance measure would provide further protections against potential noise impacts to these species.
- During pile driving activities a qualified observer will monitor the exclusion zone, if any marine mammals are observed within the exclusion zone, all in water Project activities shall cease. Project activities shall not commence or continue until the marine mammal has either been observed having left the exclusion zone, or at least 15 minutes have passed since the last sighting whereby it is assumed the marine mammal has voluntarily left the exclusion zone.
- Wet concrete will not contact surface waters.
- Forms for any concrete structure will be constructed to prevent leaching of wet concrete.
- Concrete process water will not be allowed to enter surface waters. Any process water/contact water will be routed to a contained area for treatment and will be disposed of at an upland location.

## Background and Action Agency's Effects Determination

MARAD concluded that the proposed action is not likely to adversely affect ESA listed species or their critical habitat in Table 1:

**Table 1.** MARAD effects determinations

<b>Species</b>	<b>Listing Classification, Date and Federal Register Notice</b>	<b>Critical Habitat Designation Date and Federal Register Notice</b>	<b>Action Agency Species Determination</b>	<b>Action Agency Critical Habitat Determination</b>
1. Columbia River Chum Salmon	Threatened 6/28/05 70 FR 37160	9/02/05 70 FR 52630	NLAA	NLAA
2. Lower Columbia River Coho Salmon	Threatened 6/28/05 70 FR 37160	2/24/16 81 FR 9252	NLAA	NLAA
3. Snake River Sockeye Salmon	Endangered 6/28/05 70 FR 37160	10/25/99 64 FR 57399	NLAA	NLAA
4. Lower Columbia River Chinook Salmon	Threatened 6/28/05 70 FR 37160	9/02/05 70 FR 52630	NLAA	NLAA
5. Upper Columbia River Spring Chinook	Endangered 6/28/05 70 FR 37160	9/02/05 70 FR 52630	NLAA	NLAA
6. Snake River Spring/Summer run Chinook Salmon	Threatened 6/28/05 70 FR 37160	10/25/99 64 FR 57399	NLAA	NLAA
7. Snake River Fall Run Chinook Salmon	Threatened 6/28/05 70 FR 37160	10/25/99 64 FR 57399	NLAA	NLAA
8. Upper Willamette River Chinook Salmon	Threatened 4/14/14 79 FR 20802	6/28/05 70 FR 37159	NLAA	NLAA
9. Lower Columbia River Steelhead	Threatened 1/05/06 71 FR 834	9/02/05 70 FR 52630	NLAA	NLAA
10. Mid Columbia River Steelhead	Threatened 1/05/06 71 FR 834	9/02/05 70 FR 52630	NLAA	NLAA
11. Upper Columbia River Steelhead	Threatened 1/05/06 71 FR 834	9/02/05 70 FR 52630	NLAA	NLAA
12. Snake River Basin Steelhead	Threatened 3/25/99 64 FR 14517	9/02/05 70 FR 52630	NLAA	NLAA
13. Upper Willamette River Steelhead	Threatened 4/14/14 79 FR 20802	9/02/05 70 FR 37159	NLAA	NLAA
14. Southern DPS of Green Sturgeon	Threatened 4/7/06 71 FR 17757	10/09/09 74 FR 52300	NLAA	NLAA

Species	Listing Classification, Date and Federal Register Notice	Critical Habitat Designation Date and Federal Register Notice	Action Agency Species Determination	Action Agency Critical Habitat Determination
15. Southern DPS of Eulachon	Threatened 3/18/10 75 FR 13012	10/20/11 76 FR 65324	NLAA	NLAA

MARAD determined that based on migration timing windows, adult salmon and steelhead of each species except SR sockeye are likely to migrate past the action area during some part of the in water work window but are unlikely to enter the marina itself to be exposed to project effects. MARAD determined that very low numbers juveniles from each salmon and steelhead species except juvenile sockeye salmon may be migrating through or rearing in the estuary during the in water work window because the in water work window is set to minimize the exposure of juvenile salmon and steelhead to the effects of projects in the estuary.

MARAD determined that the direct effect of the proposed action on juvenile salmon and steelhead is noise from pile installation:

*Noise from pile installation.* MARAD estimated that noise from the maximum vibratory and impact pile driving for steel sheet pile exceeds 183 dB<sub>SEL</sub> and 187 dB<sub>SEL</sub> within 24 meters and 13 meters of the pile driver respectively and exceeds 150 dB<sub>rms</sub> within 215 meters of the pile driver. MARAD concluded that the small noise effects radii, combined with the in water work window, make the likelihood of salmon and steelhead exposure to pile driving noise effects insignificant.

MARAD determined that the effects of the proposed action on salmon and steelhead critical habitat are temporary decrease in water quality during pile driving, permanent loss of benthic habitat covered by riprap and permanent reduction in sediment contaminant concentrations after creosote treated piles are removed.

*Water quality from turbidity during pile installation and removal.* MARAD estimated that suspended sediment concentrations associated with turbidity during pile driving and pile removal would be 5 to 10 milligrams per liter within 300 feet of the pile driver. MARAD concluded that the salmon and steelhead response to these low suspended sediment concentrations is insignificant.

*Habitat disturbance from benthic habitat covered by riprap.* MARAD estimated that 372 square yards of soft bottom benthic habitat would be permanently covered by riprap. MARAD concluded that the loss of this small area of low quality salmon and steelhead forage habitat within the marina and adjacent to the wharf is insignificant.

*Reduced creosote compound contamination in prey species.* MARAD concluded that reduced contaminant concentration in salmon and steelhead prey species following removal of 36 creosote treated piles is beneficial.

MARAD determined that based on life history, adult eulachon are likely to migrate past the action area during the in water work window. Larval eulachon are likely to be carried past the

action area by river currents and may be carried into the action area by tidal currents but eulachon larvae are very unlikely to still be in the estuary during the in water work window so all direct effects are discountable.

MARAD determined that the proposed action direct effects to adult eulachon are:

*Noise from pile installation.* MARAD concluded that the likelihood of migrating adult eulachon exposure to noise from pile driving is insignificant because they are unlikely to enter the marina.

*Water quality from turbidity during pile installation and removal.* MARAD concluded that adult eulachon response to estimated suspended sediment concentrations is insignificant.

*Habitat disturbance from benthic habitat covered by riprap.* MARAD concluded that the loss of low quality benthic habitat to eulachon is discountable.

*Reduced creosote compound contamination in prey species.* MARAD concluded that the decrease in creosote compounds in eulachon prey species is beneficial.

MARAD determined that based on their life history, green sturgeon are likely to be in the action area from June to August but are not likely to be in the action area during the in water work window. MARAD determined that the proposed action indirect effects to green sturgeon is a small decrease in benthic forage.

MARAD determined that the proposed action would affect EFH of groundfish, coastal pelagic species and salmonids.

MARAD determined that the proposed action would affect groundfish, coastal pelagic species and salmonid EFH by adding noise and suspended sediment to the water column and by converting 372 square yards of soft benthic habitat into hard shoreline armoring. MARAD determined that these effects would be minimized by Avoidance and Minimization Measures and offset by removing creosote created piles and timbers from the action area.

## **ENDANGERED SPECIES ACT**

### **Effects of the Action**

Under the ESA, “effects of the action” means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities caused by the proposed action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those that are extremely unlikely to occur.



The effects of the proposed action include:

1. Vibratory and impact pile driving noise (sound pressure waves)
2. Turbidity from pile driving
3. Benthic forage displaced by riprap

#### *Likelihood of exposure*

We concur with MARAD that all of the effects of pile driving to ESA listed species critical habitats are temporary changes to migration and rearing habitat water quality that returns to its baseline state shortly after the pile driver stops for the day and that riprap permanently changes the rearing substrate in a small part of the action area. We used our pile driving noise calculator to estimate that vibratory pile driving 10 24 inch wide steel sheet piles per day (for 12 days) results in noise greater than 150 dB<sub>RMS</sub> within 22 meters of the pile driver. Impact proofing these piles with 60 blows per pile results in a single injurious peak sound pressure wave greater than 212 dB<sub>peak</sub> within 3 meters of the pile driver and injurious cumulative sound pressure energy greater than 183 dB<sub>SEL</sub> within 10 meters of the pile driver. We estimate that pile driving and pile extraction will result in a turbidity plume extending up to 20 feet from the pile driver with a suspended sediment concentration up to 42 milligrams per liter (Weston Solutions, 2006).

#### *Salmon and steelhead*

We concur with MARAD exposure of migrating adult salmon and steelhead to the temporary and permanent effects of the proposed action is discountable because they are extremely unlikely to detour from their migration path to swim into the marina action area.

We concur with MARAD that the exposure of stream type juvenile salmonids (LCR steelhead, LCR coho, UCR chinook, UCR steelhead, UWR steelhead, MCR steelhead, SR sockeye, SR spring/summer Chinook, SR steelhead) to pile driving noise and turbidity is discountable. This is because their downstream migration times do not overlap the IWWW. We concur with MARAD that the permanent change to benthic forage from riprap is insignificant to these species because they migrate and forage in deeper, faster flowing water than is present in the marina action area. Thus the effects of the proposed action are NLAA juveniles from these ten species.

We concur with MARAD that the IWWW minimizes the likelihood that CR chum juveniles will be exposed to the temporary effects of the proposed action because their downstream migration times do not overlap the IWWW. We concur with MARAD that any change in the benthic food web from the conversion of 372 square yards of soft benthic habitat to hard rocky habitat is insignificant to CR chum because they are fry migrants to the ocean (Roegner et al., 2012) and do not search for forage at the channel margins, instead rearing in the lower estuary where available resources are more abundant.

Ocean type juvenile fall Chinook (SR fall chinook, LCR fall Chinook and UWR fall Chinook) are present in the estuary during the work window. However, in the winter their abundance is inversely related to salinity. For example, of 500 juvenile Chinook salmon captured by Roegner et al. (2012) just 25 were captured at the lower estuary sites, while 200 we captured in the middle estuary sites and 275 were captured in the tidal freshwater sites (catch per unit effort equal 1, 8 and 12 respectively). Furthermore, virtually all of the Chinook captured in lower estuary sites were early fry being passively transported to the ocean by the river current and thus they would

be very unlikely to drift through the narrow marina opening into the action area (Morrice et al., 2020). Therefore, we concur with MARAD that the likelihood of juvenile Chinook salmon exposure to pile driving effects is insignificant. We also concur that the effect of a small decrease in forage in the lower estuary is insignificant to juvenile Chinook growth and energy.

We concur with MARAD that adult eulachon are likely to swim past the action area during the IWWE but are unlikely to detour from their migratory path to swim into the marina action area and their exposure to temporary and permanent effects of the proposed action are discountable. Because larval eulachon outmigrate passively by drifting, it is unlikely that they will enter the marina to encounter the structural changes, and if they did, the modified habitat would not modify this migration pattern.

We concur with MARAD that green sturgeon are unlikely to be exposed to the temporary effects of the proposed action because they are not present in the Columbia River estuary during the IWWW. We concur with MARAD that any change to the estuary food web from the conversion of 372 square yards of benthic sandy habitat to rocky habitat inside the marina is discountable to green sturgeon foraging in the large Columbia River estuary.

## **Conclusion**

Based on this analysis, NMFS concurs with MARAD that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

## **Reinitiation of Consultation**

Reinitiation of consultation is required and shall be requested by [*name of action agency*] or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA consultation.

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. The MARAD also has the same responsibilities, and informal consultation offers action agencies an opportunity to address their conservation responsibilities under section 7(a)(1).

## **MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT**

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity",

and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects may result from actions occurring within EFH or outside of it and may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH (50 CFR 600.905(b)).

NMFS determined the proposed action would adversely affect Pacific Coast Salmon, groundfish and coastal pelagic species EFH as follows:

1. Pile driving noise temporarily degrades EFH aquatic habitat conditions.
2. Turbidity during pile driving temporarily degrades EFH water quality.
3. Riprap permanently displaces EFH benthic forage.

NMFS does not identify any additional measures to further reduce effects on EFH. This concludes the MSA consultation.

Please direct questions regarding this letter to Tom Hausmann, Natural Resource Specialist in Portland, Oregon, at [tom.hausmann@noaa.gov](mailto:tom.hausmann@noaa.gov), or 503-231-2315.

Sincerely,



Bonnie Shorin  
Chief, Washington Coast, Lower Columbia  
River Branch  
Oregon Washington Coastal Office

cc: Margaret Schwertner, Non-Federal Representative, Moffatt and Nichol

### **LITERATURE CITED**

- Morrice, K.J., Baptista, A.M., and Burke, B.J. (2020). Environmental and behavioral controls on juvenile Chinook salmon migration pathways in the Columbia River estuary. *Ecol Model* 427.
- Roegner, G.C., McNatt, R., Teel, D.J., and Bottom, D.L. (2012). Distribution, Size, and Origin of Juvenile Chinook Salmon in Shallow-Water Habitats of the Lower Columbia River and Estuary, 2002-2007. *Mar Coast Fish* 4, 450-472.
- Weston Solutions (2006). Jimmycomelately Piling Removal Monitoring Project (Port Gamble, WA: Weston Solutions).

**From:** [Schwertner, Margaret](#)  
**To:** [OWCO ConsultationRequest - NOAA Service Account](#); [kim.kratz@noaa.gov](mailto:kim.kratz@noaa.gov)  
**Cc:** [Gilson, Kristine \(MARAD\)](#); [John Demase](#); [England, Victoria](#); [brad\\_thompson@fws.gov](mailto:brad_thompson@fws.gov); [Frankie Johnson - NOAA Federal](#); [Katharine.A.Mott2@usace.army.mil](mailto:Katharine.A.Mott2@usace.army.mil)  
**Subject:** BE for Section 7 Review - Port of Ilwaco East Bulkhead Resilience Project  
**Date:** Wednesday, December 14, 2022 8:40:00 AM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[20221213 Section 7 Consultation Request to NMFS - POI Bulkhead.pdf](#)  
[20221212 BE for POI Bulkhead - reduced file size.pdf](#)

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Hello Ms. Kratz,

The U.S. Department of Transportation (DOT) Maritime Administration (MARAD) awarded funds to the Port of Ilwaco (Port) under the U.S. Department of Transportation's Port Infrastructure Development Grant Program (PIDP) to support replacement of the deteriorating east bulkhead. The attached letter notifies you that for the purposes of this work, MARAD has authorized Moffatt & Nichol (M&N) to consult with your agency on MARAD's behalf. Please also find the project Biological Evaluation for Section 7 of the Endangered Species Act (ESA) review.

MARAD is the NEPA lead agency for this work and requires that Section 7 review be completed prior to NEPA EA completion and release of federal funds to the Port to support ongoing design and permitting.

On behalf of MARAD and the Port of Ilwaco, we appreciate your support and look forward to working with you. Please do not hesitate to reach out to me to discuss further data needs or any questions.

Regards,  
Margaret

Margaret Schwertner  
Senior Environmental Scientist  
505 S. 336<sup>th</sup> St. | Federal Way, WA 98422  
P 253.237.5928 | M 206.818.2600



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