

# U.S. Coast Guard FRC Homeport – Astoria ETP Project Request for Marine Mammal Protection Act Incidental Harassment Authorization

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## LIST OF ACRONYMS

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Annual M/SI	Annual Mortality and Serious Injury
BMPs	Best Management Practices
CFR	Code of Federal Regulations
cy	Cubic Yard
dB	Decibels
DMMU	Dredge Material Management Unit
DPS	Distinct Population Segment
ESA	Endangered Species Act
ETP	East Tongue Point
FR	Federal Register
FRC	Fast Response Cutter
GRLWEAP	GRL Engineers, Inc. Wave Equation Analysis of Pile Driving
HF	High Frequency
IHA	Incidental Harassment Authorization
LF	Low Frequency
$L_{max}$	Maximum Sound Pressure Level
$L_{pk}$	Peak Sound Pressure Level
MCR	Mouth of the Columbia River
MF	Medium Frequency
MLLW	Mean Lower Low Water

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MMPA	Marine Mammal Protection Act
MWD	Maintenance and Weapons Division
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	NOAA National Marine Fisheries Service
ODFW	Oregon Department of Fish and Wildlife
ODMDS	Ocean Dredge Material Disposal Sites
OHWM	Ordinary High Water Mark
PBR	Potential Biological Removal
PGIS	Pollution Generating Impervious Surface
PSO	Protected Species Observer
PTS	Permanent Threshold Shift
SAR	Stock Assessment Report
SEL <sub>cum</sub>	Accumulated Sound Energy
SPCC	Spill Prevention, Containment, and Countermeasure
SPL RMS	Sound Pressure Level Root Mean Square
TESC	Temporary Erosion and Sediment Control
TSHD	Trailing Suction Hopper Dredge
TTS	Temporary Threshold Shift
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
ZOI	Zone of Influence

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## 1.0 INTRODUCTION & DESCRIPTION OF ACTIVITIES

### 1.1 INTRODUCTION

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Pursuant to the Marine Mammal Protection Act (MMPA) Section 101(a)(5)(D), this document constitutes a request for an Incidental Harassment Authorization (IHA) for the take of marine mammals incidental to a U.S. Coast Guard (USCG) project to homeport multiple new Fast Response Cutters (FRCs) to support USCG District 13 at East Tongue Point (ETP) in Astoria, Oregon. The project entails both onshore and in-water construction activities to construct and improve facilities necessary for the long-term support of the FRCs and USCG mission. This application addresses the potential effects of the project's proposed activities on marine mammals and their habitat in the region. It also describes mitigation measures to minimize the project's potential effects and monitoring protocols to ensure the proposed activities do not result in takes that exceed the numbers and levels of those requested.

This application is intended to cover in-water demolition and construction activities that may result in takes of marine mammals for one year beginning on November 1, 2023. If project activities do not occur within the year anticipated, a request for renewal will be submitted and received by National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) no later than 60 days prior to the expiration of this IHA. The renewal request will include an explanation that the activities to be conducted under the requested Renewal are identical to the activities previously analyzed, are a subset of the previously analyzed activities, or include changes so minor that they do not affect previous analyses, mitigation and monitoring requirements, or take estimates. The renewal request will also include a preliminary monitoring report that includes the results of any required monitoring to date.

### 1.2 DESCRIPTION OF ACTIVITIES

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In 2015, the USCG completed a feasibility study that evaluated three sites as possible homeporting locations: NOAA's Marine Operations Center, located in Newport, OR; Astoria City Pier, located in Astoria, OR; and Astoria East Tongue Point, also located in Astoria (USCG 2015). Evaluation criteria included risks associated with bar crossings, average channel dimensions, tidal range, and location central to District 13's operating area. The study also evaluated the extent of construction or modification that would be needed at each facility as well as the overall facility capabilities and estimated long-term operations costs. A corresponding Environmental Assessment (USCG 2018) evaluated the plans for each of the alternative locations on a programmatic basis and found that significant environmental impacts were not likely to occur from construction and use of any of the three sites.

The study ultimately identified ETP as the most suitable of the three sites, citing favorable currents and low exposure to wave action as two of the deciding factors. The USCG is currently preparing the necessary plans and permit applications for work at this location to ensure optimum readiness and enable the USCG District 13 to perform its mission within its area of responsibility. The proposed work is needed to improve or construct waterside and landside facilities that will meet homeporting requirements of the FRCs, including, but not limited to, 1) the availability of logistical and support amenities for personnel, 2) the ability of the new pier and floats to accommodate the FRCs with all

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necessary operations on the boat while it is stationary at the dock, and 3) the ability to provide for a USCG presence for the economic life of its assets.

As described in the 2015 feasibility study, facilities at ETP are aged, outdated, and will require improvements to meet these homeporting requirements. Landside improvements are needed to accommodate support facilities and infrastructure including housing, parking, storage, maintenance, and offices. Waterside improvements including dredging and pier expansion are needed to allow mooring under all tidal conditions, and structural improvements are needed to ensure the piers provide the minimum vertical and horizontal support as well as mooring and deck fittings required for the FRCs.

### **1.2.1 Landside Improvements**

Landside improvements include demolition of several small buildings along the waterfront near Pier 6, removal of the hardscape surface along the shoreline, and removal of a derelict wooden wharf along the south end of the project area. Based on recent geotechnical exploration at the proposed project location revealing the presence of liquefiable soil, soil conditions will need to be improved to facilitate ground conditions suitable for a future building foundation (Shannon and Wilson 2018). Temporary buildings will provide facilities for equipment and hazardous materials storage, maintenance, and offices. Temporary structures will include a pre-manufactured steel boat bay building, two modular buildings, and two Conex containers that together make up the same footprint as a future permanent Maintenance and Weapons Division (MWD) building which will be constructed at a later date.

Utility infrastructure for power, communications, potable water, and sanitary sewer will be upgraded or replaced entirely within the project area as necessary. A parking area will accommodate up to 88 parking stalls on previously constructed hardscape, including four boat trailer stalls and five ADA-compliant parking stalls, for use by FRC crews and shore support staff. New hardscape will allow for up to 2,000 square feet of designated lay-down area. Stormwater collection and conveyance infrastructure will be upgraded to include a series of new catch basins, new conveyance piping along the eastern side of the project area, and a water quality catch basin and water quality vault connected to the existing storm outfalls. Existing outfalls will not be replaced, improved, or disturbed. Overall, there will be a net reduction in pollution generating impervious surface (PGIS) and project stormwater management will be improved as compared to the baseline condition at the site.

### **1.2.2 Waterside Improvements**

Waterside improvements include both in-water and over-water elements. Over-water construction actions are those which will be performed waterward of the ordinary high water mark (OHWM) and above the elevation of the OHWM. The entire 1,500-foot by 30-foot existing Pier 6 structure, including approximately 45,000 square feet of existing decking, bracing, and fendering, will be removed, in addition to approximately 396 steel H piles and creosote or salt treated pier pilings. The removed materials will be disposed at an approved landfill or hazardous waste facility.

Up to 137,500 cubic yards (cy) of sediments in the vicinity of the current Pier 6 alignment must be dredged to achieve design depths of -17.0 feet mean lower low water (MLLW) at the proposed FRC berths and -16.0 feet (MLLW) at the navigation channel to accommodate the vessels. A new 250-foot by 40-foot precast concrete panel pier with a cast-in-place concrete topping slab will be constructed. It is anticipated that the new pier will be supported by 60 30-inch diameter hollow steel pipe piles. Up to four 200-foot by 15-foot floating docks will be constructed and installed adjacent to the newly



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constructed pier on ten 24-inch steel pipe guide piles (40 total 24-inch piles). Only two floating docks will be installed if only two FRCs are homeported at ETP. The dredging volume would decrease to approximately 79,000 cubic yards if only two FRCs are homeported. Utilities would be upgraded for FRC shore power, water, and communications.

Wave action, currents, tidal fluctuations, and possibly stormwater runoff have resulted in the gradual deterioration of the rock revetment at the project location due to the erosion of fine material at several locations along the shoreline. Proposed work includes the removal of the damaged revetment and reinstallation of riprap in addition to more protective erosion controls.

### **1.2.3 Construction Equipment and Methods**

Equipment and most materials needed to perform pier demo and disposal, dredging, pile driving, pier, and floating dock construction will be mobilized via barges. It is anticipated that multiple barges may be present in the project or project staging areas at any time. The selected design-build contractor will mobilize equipment and materials based on the project phasing and task schedule to be determined once the project has been contracted. At this time, the USCG anticipates a 3-phase construction approach. Project dates and activity durations are further detailed in Section 2.0.

#### **Demolition and Pile Removal**

Prior to beginning demolition operations, the selected design-build contractor will be required to submit a demolition plan which includes procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress, a disconnection schedule of utility services, a detailed description of methods and equipment to be used for each operation, and of the sequence of demolition operations. An in-water debris boom and turbidity curtain will be deployed around all active work areas and equipment during demolition to control debris and meet water quality requirements.

Piling removal, proposed to begin in June 2023, is expected to be accomplished with a vibratory pile driver/extractor mounted to a crawler crane operated from an appropriately sized spud barge. Vibratory removal of each pile is estimated to take 20 minutes, totaling up to 132 hours or 17 workdays, for the removal of all 396 piles. Removal activities are expected to occur intermittently throughout the demolition of the existing Pier 6 structure. Removal of existing piles may occur concurrently with other in-water activities including dredging and shoreline revetment improvements.

The contractor will be required to adhere to the timber pile removal and disposal best management practices (BMPs) listed in the project plans and specifications. Removed piles will be staged on a second demolition debris barge for transportation. All pier pilings and timbers to be demolished are either creosote or salt treated. The contractor will be required to ensure that these timbers are handled and disposed of in accordance with applicable local, state, and federal regulations. The contractor will also be required to perform all required sampling and analysis and provide any required shipping and disposal paperwork. In addition, if any unidentified or unexpected hazardous materials are discovered during demolition work, the contractor will be required to immediately notify the Contracting Officer prior to commencing any further cleanup of the discovered materials so that appropriate safety measures and disposal methods are taken.

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## Dredging

Dredging may occur concurrently with the demolition and removal of the existing Pier 6. The sound source level for dredging is variable based on the equipment used and the sediment type. The acoustic analysis for this application initially incorporated the sound source levels of a trailing suction hopper dredge. However, subsequent sediment evaluation results have indicated that the selected contractor will be required to use a close-lipped (environmental) clamshell to remove sediments from the deeper dredging units. Since suction dredger sound source levels are louder than those produced by a clamshell dredger, the acoustic analysis resulted in a conservative estimate of acoustic impacts that may result from proposed activities (PSET 2022; Appendix A). Though there is potential for impacts to fish, no takes of marine mammals incidental to dredging activities are anticipated for this project based on sound source levels derived from the modelling of noise produced by the trailing suction hopper dredge, which would be inclusive of any noise produced by the clamshell dredger (Appendix A).

Through coordination with the Portland District U.S. Army Corps of Engineers (USACE) Section 408 program manager and navigation technical manager, an area has been tentatively selected for flow lane disposal in the Columbia River located in a deepened area of the river just north of the Tongue Point peninsula and approximately just under one mile from the proposed dredging area at Pier 6. Final authorization for use of the riverine site is contingent upon further coordination necessary for future planned USACE dredging in the Cathlamet Bay Federal Navigation Channel. A dredged sediment volume of approximately 56,000 cubic yards from the shallow dredge material management units (DMMU; DMMU 1 and 3) was approved for unconfined in-water disposal in the Columbia River. The deeper DMMUs were found unsuitable for riverine placement but suitable for ocean disposal (PSET 2022). The USCG proposes to dredge and transport approximately 68,000 cubic yards of dredged sediments from deep DMMUs 2 and 4 to the Mouth of the Columbia River Ocean Dredge Material Disposal Sites (MCR ODMDS) for disposal between June 1 and August 31, 2023.

The selected contractor will minimize interference with the use of channels and passages as a requirement of the USACE Section 408 “No Alteration” permission for the project. The Contracting Officer or designated site representative will direct, if necessary, the shifting or moving of dredges or the interruption of dredging operations to accommodate the movement of vessels and floating equipment. Safe transportation and disposal of dredged materials to the approved disposal area will be required of the contractor, and the deposit of dredged materials in unauthorized places will be strictly forbidden. Compliance with the rules and regulations of federal, state, and local regulators and also any local port and harbor governing authorities/entities will be required for the duration of dredging and disposal operations.

## Impact Pile Driving

Piles will be installed during the in-water work window from November 1, 2023, through February 29, 2024, using impact hammers, per Table 1-1 and Table 1-2, to an approximate embedment (tip) elevation of -44 feet (MLLW). It is reasonable to assume three piles will be driven each 8-hour workday, and the actual driving time for each pile could be as high as approximately 30 minutes. An estimated 52 total days of pile driving (not all consecutive) will occur during the in-water work window from November through February. All guide piles will be capped with cone pile caps to reduce predation effects on fish.

Impact pile driving will be the loudest activity associated with the project. Underwater noise generated during pile driving is dependent upon the impact energy produced by the pile driving hammer, the type and size of pile, water depth, and the substrate into which the pile is being driven. Modeled pile driving

scenarios accounted for the energy needed to drive the piles and utilized the two largest diameter pile sizes for the model as determined from engineering plans. A water depth of three meters was used, which is representative of the project area depths (Table 1-2).

Table 1-1. Summary of Piles and Estimated Installation Requirements

Pile Diameter x thickness (inches) <sup>1</sup>	Supporting/Guiding	Total Number	Driver/Hammer	Estimated Strikes/Pile <sup>2</sup>	Estimated Minutes/Pile <sup>2</sup>	Estimated Blows/Minute <sup>2</sup>
<b>30 x 0.75</b>	Pier	122	D80-12	401	9	45
			D46	975	24	40
<b>24 x 0.5</b>	Concrete Floats	20	D46	975	24	40
<b>18 x 0.5</b>	Gangway Platforms	8	D46	975	24	40
<b>36 x 0.5</b>	Donut Fenders	2	D80-12	401	9	45
			D46	975	24	40

<sup>1</sup> All pile thicknesses provided are estimates as the selected design-build contractor will complete the actual design.

<sup>2</sup> Based on the GRL Engineers, Inc. Wave Equation Analysis of Pile Driving (GRLWEAP) model. The GRLWEAP model was used to calculate the estimated strikes, estimated minutes, and estimated blows. The GRLWEAP model was not used for sound source level or acoustic propagation modeling (see Appendix A for further details on acoustic modeling)

Table 1-2. Pile Driving Analysis Results for Energy Needed to Drive Piles into Aquatic Substrate

Hammer Model	Estimated Energy Transmitted to Ground <sup>1</sup>		Hammer Maximum Rated Energy
	kilopound-feet (kip-ft)	kiloJoule (kJ)	
<b>D46</b>	42.8	58	107.1 kip-feet (145.2kJ)
<b>D80-12</b>	87.1	118	186.24 kip-feet (252.5kJ)

<sup>1</sup> Required energy estimates based on GRLWEAP analyses. If the Astoria Formation (mudstone considered to be hard clay) is harder than the GRLWEAP model predicts, more energy could be transmitted.

## Over-water Construction

Over-water structures necessary to berth and support the two new FRCs, designed to current code requirements for current, wind, wave, and berthing impact force combinations, will include the following to be constructed or installed in the vicinity of the existing Pier 6 (Appendix B):

- A new, 30-inch, steel-pipe-pile-supported, 250-foot by 36-foot, pretensioned, precast, concrete panel pier with a cast-in-place concrete topping slab with bents spaced at 20 feet and precast concrete caps
- Four new, 200-foot by 14-foot, post-tensioned, monolithic concrete floating dock structures, each placed on ten 24-inch steel pipe guide piles
- Fender system including foam-filled fenders for ship hull protection and one 6-foot donut fender guided by a one 36-inch steel pipe guide pile at the outboard corner of each float
- Two 10-foot by 18-foot open-grated steel gangway structures with aluminum railing each supported by four 18-inch-diameter steel pipe piles
- Two 65-foot by six-foot aluminum gangways to allow crews, materials, and hand carts access down to floating docks

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## Upland Construction

Following in-water demolition, dredging, and over-water construction, landside improvements which are not dependent upon approved in-water work windows can commence. Demolition of the small, abandoned buildings, appurtenant structures, and surfaces will follow installation of temporary erosion and sediment control (TESC) runoff and sediment control BMPs including but not limited to outlet protection, inlet protection, biofilter bags, a stabilized construction entrance and tire wash facility, sediment fencing, and straw wattles. The contractor is likely to utilize tracked-hydraulic excavators, excavators with hoe rams for breaking, front-end loaders, bulldozers, and on-road dump trucks for hauling demolition debris to permitted waste disposal facilities as required.

Mass soil mixing is being recommended to address the seismic hazards of the project site. The shallow foundation and concrete slab for the MWD support building will be supported directly on soil improvement mass. Techniques used for mass soiling mixing include shallow soil mixing or mass stabilization applied using a wet or dry method. The 2020 geotechnical evaluation indicated that since the soils above the water table (between 7 and 23 feet below the ground surface) need improvement to support the building loads, the wet mass soil mixing method will be the preferred ground improvement option for the site. A cement slurry mixed with the native in-situ soils is used for the wet method.

Blending will be performed using an excavator boom-mounted horizontal-axis rotating drum. The boom is advanced into the native soils while the excavator operator moves the rotating drum vertically and horizontally through the soil to the target depth (approximately 20 feet to the Astoria Formation) and extents (10 feet beyond the edge of the entire building) while a cement slurry is pumped through the mixing drum. Specialized equipment may be required for soil improvements in the vicinity of existing utilities. Since they have a high pH, spoils generated by the mass soil mixing ground improvements will require on-site repurposing as structural fill or be hauled off-site to a permitted landfill facility.

New site work and improvements will follow implementation of the selected ground improvement techniques by the design-build contractor. Heavy equipment utilized by the design-build contractor will likely include tracked-hydraulic excavators, wheeled and/or tracked front-end loaders, bulldozers, rolling and/or vibratory compactors, on-road dump trucks, and concrete trucks and pumps as required.

Drawings of the temporary building layout are provided in Appendix B. These temporary structures will have the same footprint as the permanent MWD building to be designed and constructed upon funding. Building construction, consisting of steel framing systems, will utilize boom and scissor lifts, a mobile crane, a telescopic all-terrain forklift, air compressors, welding equipment, and various power tools.

Support for the new FRCs includes extending utilities to the pier and/or floating dock systems (Appendix B). Up to eight pier utility connection stations will be provided, or two connection stations per floating dock in the boat fore and aft locations. In addition, a new pier sanitary sewer pump station is anticipated, and one 6-inch fire water service line extended from the underground water main currently serving the site with two 2-1/2-inch-diameter shore hose connections. Power will be extended from the underground power distribution system for the MWD building to the pier and floats so that each FRC has its own shore power tie connection. For communications, shore ties will be provided for each FRC to have data and telephone connections extended underground from the MWD building, and the site PA system will extend to cover the pier. Pole-mounted pier lights on photocells will also be provided at certain locations.

The recommended option for repairing the erosion damage to the existing riprap revetment is restoring the existing structure through the installation of a free-draining retention system under open-graded

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crushed rock under replaced riprap for the full length of the existing riprap extents. The existing riprap would need to be removed, salvaged to the extent practicable, to install the free-draining retention system (or geotextile) and open-graded crushed rock. New and salvaged riprap would then be reinstalled over the crushed rock; this work would also include filling existing voids at the walls. At the top of the revetment, geocells (depth unknown) infilled with topsoil and native vegetation would be installed for protection. It is anticipated this work would occur using a tracked-hydraulic excavator with rock and muck buckets from upland locations along the shoreline. Additional quantities of riprap required are not known at this time but will be sourced from a local, permitted rock quarry.

The design-build contractor will construct permanent stormwater conveyance and management systems that meet the requirements of the Oregon Department of Environmental Quality. Site planning, final design, construction, and management strategies will maintain, to the maximum extent technically feasible, the predevelopment hydrology of the property regarding the temperature, rate, volume, and duration of flow. This will include developing BMPs that utilize low impact development criteria. Open areas, including parking areas, will use sheet flow and concrete curbing to divert runoff into storm collection inlets which then is conveyed to water quality vaults and then existing storm water outfall structures. Project implementation will result in a net reduction of PGIS and improved stormwater management. The future MWD building, or the portable buildings (non-PGIS), will replace some existing PGIS.

## 2.0 DATES, DURATION, AND SPECIFIED GEOGRAPHIC REGION

The following sections provide information related to the dates and duration of the proposed construction activities, as well as the regional information regarding the Lower Columbia River.

### 2.1 DATES AND DURATIONS OF ACTIVITIES

Construction of the proposed landside and waterside improvements necessary to homeport the new FRCs at ETP is anticipated to occur over a 30- to 36-month construction schedule, depending on environmental and regulatory requirements, timing for the various work types, and options awarded to the design-build contractor. The USCG's proposed 3-phased construction approach is outlined in Table 2-1.

The activities in Phases 1 and 2 will include in-water work, while Phase 3 work will be limited to landside or over-water improvements that do not require marine-based equipment. While work in all three phases has the potential to result in acoustic disturbance within the project area, takes of marine mammals are only anticipated in relation to in-water construction activities. Takes are not anticipated from dredging, pile removal, over-water construction based on noise analysis and the USCG's implementation of shutdown zones and other mitigation measures. Based on the current schedule, the USCG is applying for the authorization of incidental takes for one year, beginning November 1, 2023. If the proposed activities analyzed in this application are not completed with the designated IHA timeline, the USCG will submit a renewal request to NOAA Fisheries no less than 60 days prior to the expiration of the original IHA.

The USCG has requested an extension of the in-water work window from Oregon Department of Fish and Wildlife (ODFW) to accommodate disposal requirements for the deeper dredged materials at an offshore location. It is anticipated that any work below the OHWM elevation will occur between June 1,

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2023, and February 29, 2024 (249 days excluding weekends and public holidays). Impact pile driving, the only activity the USCG anticipates may result in take of marine mammals, will occur within the typical ODFW-approved in-water work window from November 1, 2023, through February 29, 2024. The remainder of the extended in-water work window will allow for demolition of existing infrastructure, dredging of the existing Pier 6 vicinity, and construction of over-water facilities. Over-water construction actions include placement of the prefabricated pier decking and concrete floats as well as structures appurtenant to these features. Onshore construction activities associated with Phase 3 are not dependent on the in-water work window but will occur within the 36-month full project duration.

Table 2-1. Proposed Phased Construction Approach

Phase	Proposed Dates	Duration <sup>/b</sup>	Project Actions	Rationale for Proposed Dates
1 <sup>a</sup>	June 1 – September 30, 2023	148	<ul style="list-style-type: none"> <li>• Pier 6 demolition and piling removal</li> <li>• Dredge shallow dredge units eligible for flow path disposal</li> <li>• Dredge deep dredge units eligible for offshore disposal</li> <li>• Shoreline rock revetment improvements</li> </ul>	The upper dredge units were found suitable for flow path disposal and must be removed prior to dredging deep dredge units found to be only suitable for offshore or upland disposal (PSET 2022). Due to geographical constraints and the lack of suitable confined upland disposal locations, the USCG preference is to pursue ocean disposal which can only be safely accomplished in the summer months due to hazards associated with the Columbia River bar crossing. Demolition and dredging will commence once USCG receives all necessary permits.
2 <sup>a</sup>	October 1, 2023 – February 29, 2024	101	<ul style="list-style-type: none"> <li>• Mobilize pile driving equipment and stage piles</li> <li>• Percussion hammer pile driving beginning November 1, 2023</li> <li>• Concrete pier and floats construction (overwater structure and any potential associated in-water work)</li> </ul>	Noise modeling scenarios for potential effects to protected species from elevated underwater sound pressures due to percussion pile driving were completed for ODFW’s regular in-water work window (Nov – Feb). The requested issuance date for the IHA coincides with the start of impact pile driving activities. Due to seasonal temperatures and conditions, the results align with the most conservative estimate of impacts to aquatic species.
3	March 1, 2024 – September 30, 2025	578	<ul style="list-style-type: none"> <li>• Complete overwater structures above the OHW elevation as needed</li> <li>• Landside improvements</li> </ul>	N/A

<sup>/a</sup> Phase includes in-water work.

<sup>/b</sup> Days; Excludes weekends and public holidays.

## 2.2 DESCRIPTION OF THE PROJECT AREA

### 2.2.1 Geographic Region

The project location is on the east side of the Tongue Point peninsula, which protrudes into the Columbia River at approximately river mile 18. The project area is bound by the mainstem of the Columbia River to the north and west and by Cathlamet Bay to the south and east. Mott Island is



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located approximately 0.5 miles east of the project area. Further south and east, Lois Island lies across from the John Day River mouth near a protected deep-water anchorage area. Moss and Lois Islands are part of the Lewis and Clark National Wildlife Refuge, which encompasses all islands approximately 27 miles upstream from the mouth of the Columbia River (USFWS 2020).

The project area is located in the most saline stretch of the Columbia River's estuarine environment. The Lower Columbia River estuary, primarily a tidal freshwater ecosystem, extends 146 miles from the mouth of the river to the Bonneville Dam (LCEP 2022). The opposite bank of the Columbia River is approximately 4 miles north of the peninsula. This reach of river contains numerous islands, buoys, and sandbars that provide suitable haul-out locations for marine mammals. Water levels at ETP are driven by mixed semidiurnal tides and are also influenced by river flow. Tides near ETP in Astoria have a diurnal range of 8.61 feet and a mean range of 6.76 feet (NOAA Station ID 9439040).

USACE maintains federal navigation channels near the project area. The Tongue Point Federal Navigation Channel extends north from the eastern edge of the project area to the Columbia River Federal Navigation Channel (Figure 2-1). The channels provide access between the facilities at ETP, the Port of Astoria, and other ports along the Columbia River for a variety of commercial, recreational, and government watercraft. Based on the most recent (June 4, 2020) bathymetric survey in the project area, depths (referenced to MLLW) in the vicinity of Pier 6 range from approximately -5 feet near the riprap shoreline to approximately -20 feet near the end of Pier 6. Average depth in this area is approximately -10 feet. Depths in the north-south approach channel between north Tongue Point and Mott Island range from -15 feet to -70 feet, while observed maximum wave heights generally range from 2 to 3 feet.

Geotechnical investigations of the project found the substrate primarily consists of alluvium and Astoria Formation (Shannon and Wilson 2020). Recent alluvium consisting of organic soil and silt was encountered at mudline and varied in thickness from 13 to 14 feet. Below the alluvium layer, the Astoria Formation consists of weak to very weak mudstone and sandstone.

The project location is in the northern portion of an industrial concrete pier area, formerly associated with a World War II-era U.S. Navy installation, just north of Highway 30 and approximately 3 miles east of Astoria (Table 2-2; Figure 2-1). The onshore footprint is located within the Tongue Point Department of Labor Jobs Corps Center, which falls inside the urban growth boundary for Astoria. Various industrial and commercial uses, mostly for the marine industry, occur on the southern portion of the ETP site and Pier 6 is zoned for waterside development. To the north-northeast of the developed industrial area, the forested Tongue Point peninsula remains a designated natural area.



Table 2-2. Project Location Attributes

Attribute	Description
Township, Range, Section	T08N, R09W, S02
Latitude, Longitude (decimal degrees)	46.202161, -123.764576
Nearest City	Astoria, OR
County	Clatsop
HUC – 6 <sup>TH</sup> Field	Big Creek – 170800060202
Columbia River Mile	18
Current Land Ownership	Department of Labor

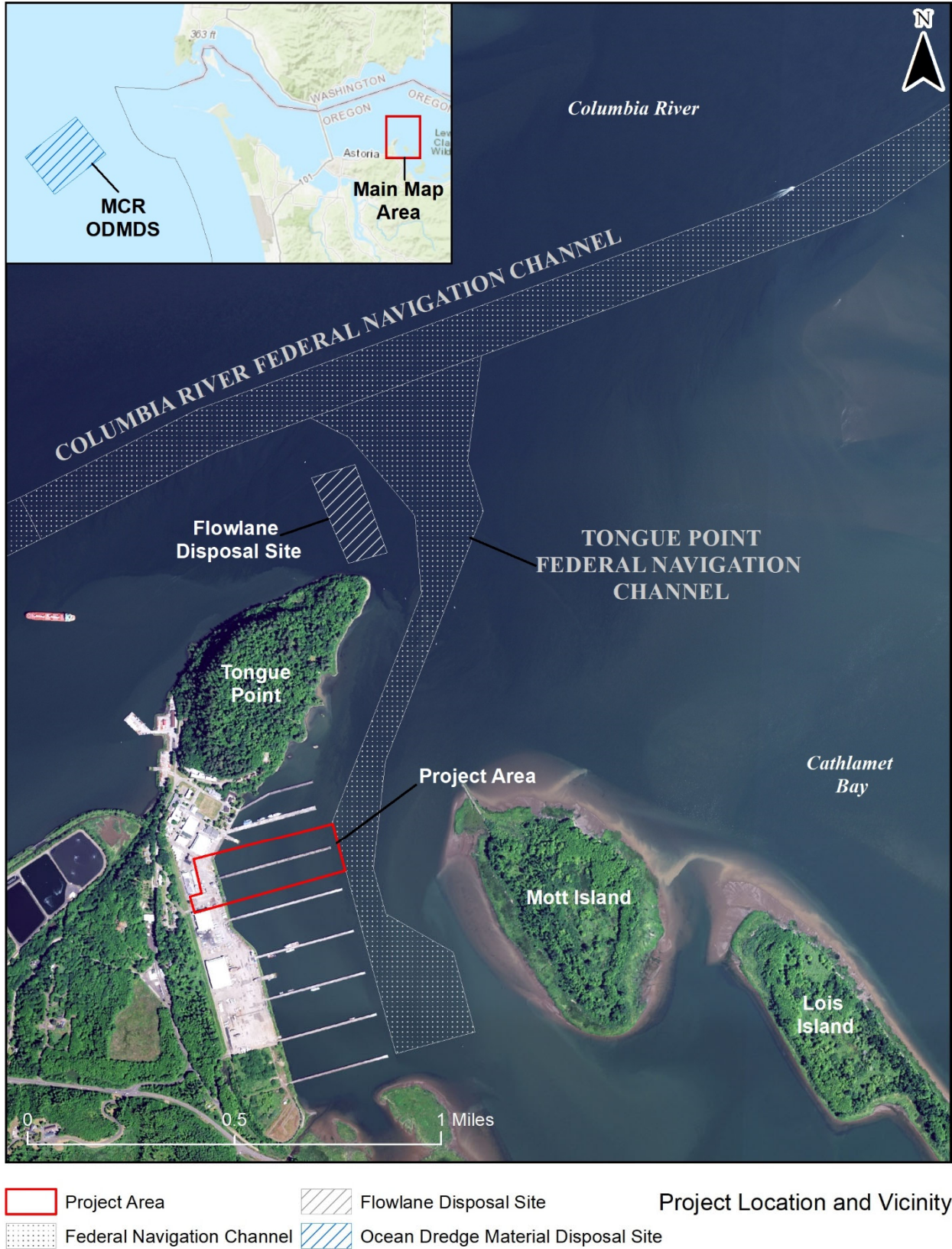


Figure 2-1. Project Location and Vicinity

### 3.0 SPECIES AND NUMBERS OF MARINE MAMMALS

Marine mammals that have the potential to occur near the project area at ETP include the California sea lion (*Zalophus californianus*), Steller sea lions (*Eumetopias jubatus*), Pacific harbor seals (*Phoca vitulina*), and harbor porpoises (*Phocoena phocoena*). These species frequent the lower Columbia River and adjacent nearshore marine areas (LCEP 2022; Carretta et al 2021a; Carretta et al 2021b). A summary of each species' abundance, special status listings, potential biological removal (PBR), annual mortality and serious injury (Annual M/SI) totals, and year of last stock assessment report (SAR) update is provided in Table 3-1.

Table 3-1. Summary of Marine Mammals Observed in the Project Vicinity

Common name	Stock	ESA/MMPA Status	Stock Abundance	PBR	Annual M/SI	SAR Last Revised
California sea lion <sup>a</sup>	United States	Not listed / Protected	257,606	14,011	≥321	2018
Steller sea lion <sup>b</sup>	Eastern U.S.	Not listed / Protected	43,201	2,592	112	2019
Pacific harbor seal <sup>a</sup>	Oregon/Washington Coast	Not listed / Protected	24,732	undetermined	10.6	2013
Harbor porpoise <sup>a</sup>	Northern OR/WA	Not listed / Protected	21,487	151	≥3	2013

Notes: /a Carretta et al 2021a, /b Muto et al 2020

California sea lions and harbor seals are the species most likely to occur within the immediate project vicinity near ETP. The nearest haul-out for both species is approximately 3 miles from Pier 6 (Wright 2014, Jeffries et al 2000). California sea lions are predominantly present seasonally during the winter months numbering in the hundreds and harbor seals are present year-round numbering in the thousands. Harbor porpoises may also transit the area year-round, though in very small numbers as compared to California sea lions or harbor seals. Steller sea lions have been observed in the lower Columbia River primarily in the winter, but their nearest known haul-out is approximately 15 miles away at the south jetty off the western shoreline of Fort Stevens State Park and any occurrences would likely be incidental transients. Additional information regarding species abundance, range, status and management is provided in Section 4. Takes incidental to construction activities at ETP are anticipated for each of these species depending on the type of activity and distance from sound sources. Types and estimates of anticipated incidental takes for each species are described in greater detail in Sections 5 and 6.

Southern Resident killer whales (*Orcinus orca*), humpback whales (*Megaptera novaeangliae*), and gray whales (*Eschrichtius robustus*) can be observed along the Oregon coast at different times of the year. While there have been rare sightings of these whales in the Columbia River near its mouth, they are more likely to be found further offshore, potentially near the selected offshore disposal site for dredged materials. The MCR ODMDS occurs within designated critical habitat for Southern Resident killer whales and humpback whales. Use of the MCR ODMDS for approved disposals and its impacts on biological resources has been previously evaluated (USACE & EPA 2003) and ongoing operations occur in accordance with its Final Site Management/Monitoring Plan (USACE & EPA 2005). The contractor will minimize the number of trips to the MCR ODMDS necessary for deeper dredged

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materials and travel to the disposal area using established federal navigation channels (Figure 2-1). Disposal is scheduled to occur during the summer months, outside of peak migration periods for these species. For these reasons, takes of these species during project activities are not anticipated, and this application does not further evaluate impacts to these cetacean species.

## 4.0 AFFECTED SPECIES STATUS AND DISTRIBUTION

The following sections provide additional information on the species that have the greatest potential to be affected by project activities.

### 4.1 CALIFORNIA SEA LIONS

#### 4.1.1 General Biology

California sea lions have broad front flippers, visible ear flaps, and long, narrow snouts. Adult males are typically larger and darker brown than females, which are more slender and can be blonder to tan in color. They are members of the “eared seal” family, *Otariidae*, and they are among the most recognized of the pinniped species. Their breeding season lasts from May to August, while most pups are born from May through July. Pups are weaned at 10 months old, reaching their sexual maturity at four to five years old, and they have a lifespan of 20 to 30 years. They feed on squid, anchovies, mackerel, rockfish, and sardines and their movement often follows food supply patterns (NOAA 2022a). Male California sea lions bark to communicate with other males and females and are typically social animals (NOAA 2022a).

#### 4.1.2 Distribution and Range

California sea lions are distributed along the west coast of North America from central Mexico to southeast Alaska. NOAA Fisheries divides the California sea lion population into three stocks based on rookeries and the international border. The U.S. stock waters range from the U.S. border with Mexico to the border with Canada. California sea lions do not breed in Oregon; their primary breeding areas range from the Channel Islands in southern California to central Mexico. Males migrate in the winter to feeding areas along the Oregon coast, while most females remain in southern waters closer to the rookeries. Males then return south for the breeding season from late June to early August, so their population in Oregon is highest during the winter months from September through May. California sea lions haul out on sandy beaches and rocky coves in addition to man-made marine structures such as docks, jetties, and buoys (NOAA 2022a).

California sea lions, particularly adult males (DeRango et al. 2019), are most commonly present in Astoria in late summer through the fall during the post breeding season, though also may occur in smaller numbers in winter and early spring (Wright et al. 2010). They may be transiting through the project area during the in-water work window from November through February during their migrations. They have also been known to haul-out along jetties, buoys, and river islands near ETP (ODFW 2022). The project area is located within close proximity to three known haul-out sites for California sea lions and harbor seals: Tongue Point Sands, Taylor Sands, and Green Island/Sanborn Slough (Jeffries et al 2000, Wright 2014). Tongue Point Sands is the closest, approximately 3 miles northeast of the proposed project area. They could also be present during dredging and disposal activities slated for



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early spring and summer, though not in as great abundance as in the fall months. Takes from activities related to dredging and disposal are not anticipated due to their low presence in the summer months.

### 4.1.3 Status, Population Trends, and Threats

California sea lions are not listed under the Endangered Species Act (ESA) and the U.S. stock is not considered strategic or depleted under the MMPA (Carretta et al 2021a). The population size in 2014 was estimated at 257,606 animals, with an estimated net productivity rate of 7% each year, but NOAA Fisheries notes that the population is capable of faster growth rates (Carretta et al 2021a). Threats to this species include incidental catch and entanglement in fishing gear, biotoxins as a result of harmful algal blooms, and human-caused injuries and mortalities, as California sea lions are sometimes viewed as a nuisance by commercial fishermen (NOAA 2022a). Exposure to anthropogenic sound has also been found to incite a variety of behavioral responses in California sea lions (Carretta et al 2021a).

## 4.2 STELLER SEA LIONS

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### 4.2.1 General Biology

The Steller sea lion is the largest member of the *Otariid* family. Steller sea lions are light blonde to reddish brown in appearance and slightly darker on the chest and abdomen. Males can grow to approximately nine feet and 2,000 pounds, while females grow to approximately six feet and 700 pounds (ODFW 2020). They have a lifespan of 20-30 years, and are opportunistic predators, foraging and feeding primarily at night on a wide variety of fishes such as herring, mackerel, rockfish, and salmon, bivalves, squid, octopus, and gastropods (NOAA 2022b). Their diet may vary seasonally depending on the abundance and distribution of prey. They may disperse and range far distances to find prey but are not known to migrate.

Steller sea lions breed in off the coast of central and southern Oregon during the months of June and July, and pregnancy lasts about 11.5 months. Males reach sexual maturity between three and eight years of age and can live to be 20 years old, while females reproduce for the first time at four to six years and can live to be 30 (NOAA 2022b).

### 4.2.2 Distribution and Range

The Steller sea lion range extends along the Pacific Rim, from northern Japan to central California. Those inhabiting US waters have been divided into two distinct population segments (DPS): the Western US DPS and the Eastern US DPS (Muto et al 2020). The population known to occur within the Lower Columbia River is the Eastern DPS (ODFW 2020).

Steller sea lions haul out on offshore rocks and islands along the Oregon coast. Most of these haul-out sites are part of the Oregon National Wildlife Refuge and are closed to the public, including large breeding areas at Three Arch Rocks (Oceanside), Orford Reef (Port Orford), and Rogue Reef (Gold Beach) (ODFW 2020). During the breeding season, regulations exist to prohibit boaters from approaching within 500 feet of the rookeries. The closest known haul-out to the project vicinity for Steller sea lions is approximately fifteen miles west at the USACE-maintained south jetty at the mouth of the Columbia River off Fort Stevens State Park. No Steller sea lions were observed hauling out or transiting during the monitoring of a bridge replacement project in nearby downtown Astoria from 2018

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through 2020 (OBEC & AKS 2019a, Dowl 2021). It is possible they could be transiting through the project vicinity during impact pile driving during their peak abundance in Northern Oregon in the winter, though fall occurrences are possible, with their presence less likely during dredging, disposal, and over-water construction in the spring and summer months.

### 4.2.3 Status, Population Trends, and Threats

The current minimum population estimate for the Eastern DPS is approximately 53,600 individuals (Muto et al 2020). The Eastern DPS population is now considered stable and slightly increasing in size (ODFW 2020). NOAA Fisheries estimated the eastern stock increased at a rate of 4.25% per year between 1987 and 2017, driven by growth in pup counts in all regions. Because of this steady population growth, the Eastern DPS was delisted under the ESA in 2013 and is not considered depleted or strategic under the MMPA (Muto et al 2020, NOAA 2022b).

Threats to Steller sea lions include vessel strikes, contaminants/pollutants, habitat degradation, illegal hunting or shooting, and interactions with fisheries including entanglement and changes in availability of prey. Critical habitat associated with breeding and haul-out sites in Alaska, California, and Oregon was designated on August 27, 1993 (58 FR 45269) but does not overlap the project impact area.

## 4.3 PACIFIC HARBOR SEALS

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### 4.3.1 General Biology

The Pacific harbor seal is the most widespread and abundant resident pinniped in Oregon. Their bodies are gray with light and dark speckling and adults can be up to six feet in length and 300 pounds in weight. The Pacific harbor seals are part of the "true seal" family, *Phocidae*, lack external ear flaps, and have short forelimbs (ODFW 2020). They are fast, agile swimmers, and as social animals, they form groups of several hundred individuals onshore. They eat mostly fish, shellfish and crustaceans, and are considered non-migratory but have been documented traveling up to 450 miles seasonally to forage or give birth (NOAA 2022c).

Harbor seals mate at sea generally in the warmer months, and pupping season within the Columbia River is from mid-April to July (NOAA 2022c). Males reach sexual maturity at five to six years of age, females sexually mature at two to five years, and they have a lifespan of about 25-30 years. Females can give birth to one pup each year, which weigh about 10 pounds and can swim at birth. Females leave their pups at haul-outs or along sandy beaches while searching for food. In Oregon, pups are born in late March through April (ODFW 2020).

### 4.3.2 Distribution and Range

Five stocks of harbor seals are found along the west coast of North America from Baja California, Mexico to the Bering Sea. Individuals found along the Oregon coast belong to the Oregon/Washington Coastal stock. In 2014, the population of Pacific harbor seals along the Oregon coast was estimated at 11,565 individuals (Wright 2014). In 1999, it was estimated that the entire Oregon/Washington Coastal stock of Pacific harbor seals consisted of about 24,732 animals, but no more recent estimates are available (Carretta et al 2021a).

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Harbor seals haul-out at low tide on sand bars in most bays and estuaries along the Oregon coast, including at the mouth of the Columbia River near the project vicinity. Harbor seals tend to haul out in groups and females sometimes raise their pups in nurseries for protection from predators (ODFW 2020). There are three known harbor seal haul-out sites within 3 miles of ETP (Wright 2014, Jeffries et al 2000). It is likely that they will be transiting near the project area throughout the project, including during impact pile driving during the winter months. Mid-April to July is the pupping period for harbor seals, during which disturbances would be limited to dredging or over-water activities.

### **4.3.3 Status, Population Trends, and Threats**

The Oregon/Washington stock of Pacific harbor seals is not listed under the ESA, nor is it considered depleted or strategic under the MMPA. The most recent estimate for the population growth rate of the northern Oregon coast stock of harbor seals was approximately 10.1 percent annually (Carretta et al 2021a). Threats to this species include incidental capture in fishing gear, weirs, vessel strikes, pollutants/contaminants, and harassment by humans while hauled-out on land (NOAA 2022c).

## **4.4 HARBOR PORPOISE**

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### **4.4.1 General Biology**

Harbor porpoises are dark gray to black with lighter undersides and are the smallest of the Northern Pacific cetaceans, growing up to five feet and weighing up to 165 pounds. They prefer estuaries, bays, nearshore waters typically less than 650 feet deep (ODFW 2022). They transit near the surface of the water, coming up to breathe about every 30 seconds, and forage small fish such as sardines and herring. Harbor porpoises are shy animals and typically avoid boats and wakes unlike other porpoise species. Mating most often occurs in the summer and most births occur from May to July following a ten- to eleven-month gestation period (NOAA 2022d).

### **4.4.2 Distribution and Range**

The Harbor porpoise is found throughout the temperate coastal waters of the Northern Hemisphere. Seasonal movement of harbor porpoises appears to be tied to prey availability and ice-free waters. (NOAA 2022d). Harbor porpoises along the Oregon coast are considered to be composed of two stocks. Individuals near the project vicinity are part of the Northern Oregon/Washington coast stock of harbor, which includes animals from Lincoln City, Oregon to Cape Flattery, Washington. The Northern Oregon/Washington Coast stock of harbor porpoises consists of about 21,487 individuals as of 2013 (Carretta et al 2021a). The highest numbers of harbor porpoises along the coast of Oregon have been documented between the mouth of the Columbia River and Newport. They may occur in small numbers in the project area (Hodder 2005).

### **4.4.3 Status, Population Trends, and Threats**

Harbor porpoises are not listed under the ESA, nor are they considered depleted or strategic under the MMPA. The primary threats to harbor porpoises are entanglement, pollution, and ocean noise (NOAA 2022d). They are preyed upon by killer whales in the Pacific Northwest (ODFW 2022). Harbor porpoises may transit through the project area throughout the proposed construction activities.

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## 4.5 SUMMARY

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California sea lions, Steller sea lions, Pacific harbor seals, and harbor porpoises are the marine mammals with the highest potential to be present within the project vicinity during construction activities. None of these marine mammals are ESA-listed as threatened or endangered or considered depleted or strategic under the MMPA. Two of these species (California sea lions and Pacific harbor seals) have documented haul-out locations or breeding areas near the project area, and all of them may transit the area during the construction period. It is possible that all four species may be impacted by noise generated during in-water pile driving from November 1 to February 29, as well as during demolition activities and over-water construction during the rest of the application request period.

## 5.0 TYPE OF INCIDENTAL TAKE AUTHORIZATION REQUESTED

Under Section 101(a)(5)(D) of the MMPA, the USCG requests an IHA for the take of small numbers of marine mammals, by both Level A and Level B harassment, incidental to waterside constructions activities related to the improvement of homeporting facilities at ETP. The USCG requests an IHA for incidental take of marine mammals during construction activities as described in this application for one year commencing November 1, 2023 (or the issuance date, whichever is later). In-water impact pile driving is expected to produce sound levels that exceed the acoustic tolerance thresholds of marine mammals that have the potential to occur within the project vicinity.

The MMPA (50 CFR 216.3) defines harassment as any act of pursuit, torment, or annoyance that:

1. has the potential to injure a marine mammal or marine mammal stock in the wild (Level A Harassment); or,
2. has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering, but which does not have the potential to injure a marine mammal or marine mammal stock in the wild (Level B Harassment).

Level A harassment may result in injury or death, whereas Level B harassment causes only disturbance. No takes resulting in mortality are anticipated from project activities. Modeling of both in-air and underwater acoustic impacts was performed to analyze the effects of the proposed activities on marine and terrestrial biota. The full acoustic analysis, which includes detailed descriptions of the modeling calculations approach, modeled scenarios, and model input values, can be found in Appendix A.

## 5.1 IN-AIR NOISE

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Current NOAA Fisheries thresholds for Level B harassment due to high-level in-air sounds are 90 decibels (dB) rms for harbor seals and 100 dB rms for all other pinniped species. Noise-generating activities at or above these sound levels have the potential to disturb marine mammals by causing disruption of behavioral patterns, including migration, breathing, breeding, and feeding.

Table 5-1 presents the types of construction equipment anticipated for the project and corresponding maximum sound levels ( $L_{max}$ ) used for modeling potential in-air noise impacts.



Table 5-1. Construction Equipment Source Levels,  $L_{max}$  dBA

Phase	Construction Equipment	Quantity	Equipment Noise Level at 50 ft., $L_{max}$	Usage Factor (%)
<b>Demolition</b>	Excavator	2	89 dB / 85 dBA	100
	Hoe Ram	2	97 dB / 90 dBA	100
	Front-end Loader	2	93 dB / 80 dBA	100
	Bulldozer	2	90 dB / 85 dBA	100
	Dump Truck	2	93 dB / 84 dBA	100
<b>Ground Improvements</b>	Cement Truck	2	92 dB / 85 dBA	100
	Excavator	1	89 dB / 85 dBA	100
	Dump Truck	2	93 dB / 84 dBA	100
	Front-end Loader	2	93 dB / 80 dBA	100
	Grader	2	92 dB / 87 dBA	100
<b>New Site Works</b>	Excavator	2	89 dB / 85 dBA	100
	Front-end Loader	2	93 dB / 80 dBA	100
	Bulldozer	2	90 dB / 85 dBA	100
	Compactor	2	88 dB / 82 dBA	100
	Dump Truck	2	93 dB / 84 dBA	100
	Cement Truck	2	92 dB / 85 dBA	100
	Cement Pump	2	90 dB / 82 dBA	100
<b>MWD Building</b>	Lift	2	91 dB / 85 dBA	100
	Crane	1	97 dB / 85 dBA	100
	Forklift	1	72 dB / 68 dBA	100
	Air Compressor	2	99 dB / 80 dBA	100
	Welding Equipment	2	76 dB / 73 dBA	100
<b>Pile Driving</b>	Impact Hammer	1	118 dB / 103 dBA	100

## 5.2 UNDERWATER NOISE

NOAA Fisheries provided guidance for assessing the impacts of anthropogenic sound on marine mammals under their regulatory jurisdiction, which includes whales, dolphins, porpoises, seals, and sea lions, which was updated in 2018 (NOAA 2018). The guidance specifically defines marine mammal hearing groups, develops auditory weighting functions, and identifies the received levels, or acoustic threshold levels, above which individual marine mammals are predicted to experience changes in their hearing sensitivity (permanent threshold shift [PTS] or temporary threshold shift [TTS]) for acute, incidental exposure to underwater sound. Under this guidance, any occurrence of PTS constitutes a Level A, or injury, take. The sound emitted by man-made sources may induce TTS or PTS in an animal in two ways: (1) peak sound pressure levels ( $L_{p,pk}$ ) may cause damage to the inner ear, and (2) the accumulated sound energy the animal is exposed to ( $L_E$ ) over the entire duration of a discrete or

repeated noise exposure has the potential to induce auditory damage if it exceeds the relevant threshold levels. For underwater noise, NOAA Fisheries defines the threshold level for Level B harassment at 160 dB for impulsive sound, averaged over the duration of the signal and at 120 dB for non-impulsive sound.

Under the 2018 guidance, NOAA categorized marine mammals into five hearing groups to account for differences in hearing capabilities amongst species broken out into 3 categories of low-, medium-, and high- frequency hearing animals (LF, MF, and HF respectively). NOAA Fisheries then defined acoustic threshold levels at which PTS and TTS are predicted to occur for each hearing group for impulsive and non-impulsive signals (Table 5-2), which are presented in terms of dual metrics;  $L_E$  and  $L_{p,pk}$ . The Level B harassment thresholds are also provided in Table 5-2.

Table 5-2. Underwater Acoustic Threshold Levels for Marine Mammals

Hearing Groups	Impulsive Sounds			Continuous Sounds		
	PTS Onset	TTS Onset	Behavior	PTS Onset	TTS Onset	Behavior
<b>Low-frequency cetaceans</b>	219 dB ( $L_{p,pk}$ ) 183 dB ( $L_E$ , LF, 24h)	213 dB ( $L_{p,pk}$ ) 168 dB ( $L_E$ , LF, 24h)	160 dB ( $L_p$ )	199 dB ( $L_E$ , LF, 24h)	179 dB ( $L_E$ , LF, 24h)	120 dB ( $L_p$ )
<b>Mid-frequency cetaceans</b>	230 dB ( $L_{p,pk}$ ) 185 dB ( $L_E$ , MF, 24h)	224 dB ( $L_{p,pk}$ ) 170 dB ( $L_E$ , MF, 24h)		198 dB ( $L_E$ , MF, 24h)	178 dB ( $L_E$ , MF, 24h)	
<b>High-frequency cetaceans</b>	202 dB ( $L_{p,pk}$ ) 155 dB ( $L_E$ , HF, 24h)	196 dB ( $L_{p,pk}$ ) 140 dB ( $L_E$ , HF, 24h)		173 dB ( $L_E$ , HF, 24h)	153 dB ( $L_E$ , HF, 24h)	
<b>Phocid pinnipeds underwater</b>	218 dB ( $L_{p,pk}$ ) 185 dB ( $L_E$ , PW, 24h)	212 dB ( $L_{p,pk}$ ) 170 dB ( $L_E$ , PW, 24h)		201 dB ( $L_E$ , PW, 24h)	181 dB ( $L_E$ , PW, 24h)	
<b>Otariid pinnipeds underwater</b>	232 dB ( $L_{p,pk}$ ) 203 dB ( $L_E$ , OW, 24h)	226 dB ( $L_{p,pk}$ ) 188 dB ( $L_E$ , OW, 24h)		219 dB ( $L_E$ , OW, 24h)	199 dB ( $L_E$ , OW, 24h)	

Sources: Southall et al. 2019; NOAA 2018

$L_{E, 24h}$  = cumulative sound exposure over a 24-hour period (dB re 1  $\mu Pa^2 \cdot s$ );

$L_{p,pk}$  = peak sound pressure (dB re 1  $\mu Pa$ );

$L_p$  = root mean square sound pressure (dB re 1  $\mu Pa$ )

Table 5-3 presents a summary of construction and operational scenarios that were analyzed as part of the proposed project activities.

Table 5-3. Underwater Acoustic Modeling Scenarios

Scenario	Description	Location (UTM Coordinates)	Hammer Energy (kilojoule)	Activity Duration	Apparent Source Level (at 1 meter)
1	Impact pile driving, Diameter: 36-inch	441340 m, 5116945 m	118	45 blows per minute for 9 minutes (1,203 total blows) <sup>1</sup>	208 dB L <sub>p,pk</sub> 180 dB L <sub>E,ss</sub> 190 SPL RMS
2	Impact pile driving, Diameter: 30-inch	441340 m, 5116945 m	118	45 blows per minute for 9 minutes (1,203 total blows) <sup>1</sup>	210 dB L <sub>p,pk</sub> 177 dB L <sub>E,ss</sub> 190 SPL RMS
3	Vibratory pile removal	441340 m, 5116945 m	--	20 minutes per pile 396 piles	152 dB L <sub>E,1sec</sub>

Notes:

<sup>1</sup>The total number of blows and duration represents the installation of three piles per day. The duration provided in minutes has been rounded to the nearest whole number.

<sup>2</sup>Source levels were based on similar pile installations published by CALTRANS (CALTRANS 2020).

<sup>3</sup>The apparent source level is at 1 m.

<sup>4</sup>A maximum of 20 piles per day with a vibratory duration of 1 minute each.

Abbreviations:

L<sub>PK</sub>: Peak Sound Pressure

SEL<sub>ss</sub>: Sound Exposure Level – Single Strike

SPL RMS: Sound Pressure Level Root-Mean-Square

db RMS: Estimated 1 second Sound Exposure Level

db SEL: Estimated Full Duration Sound Exposure Level

Impact pile driving involves weighted hammers that drive piles into the river floor. The underwater noise generated by a pile-driving strike depends primarily on the impact energy and type of hammer used, the size and type of the pile, water depth, and subsurface hardness into which the pile is being driven. A vibratory hammer is a large mechanical device suspended from a crane by a cable that loosens pilings by vibrating as the piling is pulled upwards and out of the substrate. Removal time depends on the length of the piles and sediment condition. The scenarios presented in Table 5-3 assume a water depth of 3 meters, which is representative of the proposed project area.

The source level of the dredging activity is variable and can be affected by the type of dredger used and the sediment type. The type of dredger proposed to be used for the project had not been determined at the time of the acoustic analysis. Therefore, a conservative assumption was made to evaluate a Trailing Suction Hopper Dredger (TSHD). TSHDs tend to generate higher sound levels than backhoe or bucket/clamshell dredgers and have been monitored more than any other type of dredger. Noise produced by the trailing suction hopper dredge is inclusive of any noise produced by the clamshell dredger which is planned for the project. The assumed sound source level for dredging in the acoustic analysis corresponds to a 191 dB SPL RMS. Dredging will likely during the summer months.

## 6.0 TAKE ESTIMATES FOR MARINE MAMMALS

### 6.1 IN-AIR ACOUSTIC RESULTS

**Error! Reference source not found.** presents the predicted distances to the relevant 90 dB rms in-air acoustic threshold for harbor seals and 100 dB rms in-air acoustic threshold for other pinnipeds. The in-air noise model assumed normal construction equipment (Table 5-1) for each phase (Table 2-1) was operating simultaneously, so the distances calculated account for the maximum construction noise distribution over the surrounding area. The tabulated results are independent of the existing acoustic environment and are representative of project activity sound levels only.

Sound above the acoustic disturbance threshold for harbor seals may travel as far as 6,560 feet during pile driving, while the acoustic threshold for all other pinnipeds will be exceeded up to 2,560 feet from the project area. This may result in avoidance of nearby waters by various marine mammals.

Sound levels due to nearshore and over-water construction activities may disturb marine mammals within 100 feet of the project footprint. Since seals and sea lions are not known to haul out in the immediate vicinity of the project area, no takes from in-air acoustic disturbance for hauled out seals or sea lions are anticipated due to over-water or nearshore construction activities. It is also unlikely that any species would transit the area at a close enough distance to behaviorally harass those species during over-water and nearshore activities.

Table 6-1. In-air Acoustic Modeling Results - Distances of Maximum Disturbance, dB

Construction Phase	Harbor Seals 90 dB	Other Pinnipeds 100 dB
Demolition	942 ft (287 m)	115 ft (35 m)
Ground Improvements	837 ft (255 m)	82 ft (25 m)
New Site Works	900 ft (275 m)	100 ft (30 m)
MWD Building	315 ft (95 m)	0 ft (0 m)
Pile Driving (Closest to shore)	6,560 ft (2000 m)	2,560 ft (780 m)
Pile Driving (Furthest from shore)	6,560 ft (2000 m)	2,560 ft (780 m)

### 6.2 UNDERWATER ACOUSTIC RESULTS

Underwater acoustic modeling was completed to assess distances to the various acoustic threshold levels for marine mammals identified in Section 5 for each scenario summarized in Table 5-3. The distances to each hearing groups' respective PTS hearing thresholds resulting from impact pile driving (36-inch and 30-inch piles) are shown in Table Table 6-2. Table Table 6-3 summarizes the distances to behavioral thresholds from impact pile driving. The distances to each hearing groups' respective PTS hearing thresholds resulting from vibratory pile removal are shown in Table 6-4. Table 6-5 summarizes the distances to behavioral thresholds from vibratory pile removal. Results in all tables are presented without mitigation and with two different levels of mitigation: a 6-dB reduction and a 10-dB reduction. While mitigation measures and methods have not been finalized at this stage in project planning this

information is provided for informational purpose where take calculation will be based on unmitigated results. It is assumed that some form of noise mitigation, such as a bubble curtain, will be required for the duration of pile removal and installation operations in accordance with federal regulations, including requirements of ESA consultation for coverage of listed fish species. The two levels of reduction applied in Tables Table 6-2 and Table 6-3 are intended to mimic the use of potential noise mitigation options. California sea lions and Steller sea lions fall within the otariid pinniped hearing group, harbor seals fall within the phocid hearing group, and harbor porpoise are part of the HF cetacean hearing group.

Noise modelling established the project Zones of Influence (ZOIs). A ZOI is the in-water area in which animals are exposed to sound levels emanating from a sound source that fall within acoustic thresholds for impacts. The Level A ZOI is known as the shutdown zone or exclusion zone and is the spatial area in which physiological acoustic take can occur. The Level B ZOI is known as the Harassment Zone and is the spatial area in which marine mammals can have behavioral impacts or takes. As expected, the models predict the Level B ZOI as the largest spatial extent, while Level A ZOIs are smaller and vary amongst hearing groups. Implementing noise mitigation techniques drastically decreases the radius of all ZOIs. A summary of the Level A onset distances for both impact pile driving and vibratory pile removal are provided in Table 6-2 and Table 6-4. Table 6-3 and Table 6-5 contain the onset distances for Level B harassment.

Table 6-2. Marine Mammal PTS Onset Criteria Threshold Distances (meters) for Impact Pile Driving

Pile Type	Scenario	Hearing Group <sup>a/</sup>									
		LF cetaceans		MF cetaceans		HF cetaceans		Phocid pinnipeds		Otariid pinnipeds	
		219 dB L <sub>p,pk</sub> <sup>1,2</sup>	183 dB L <sub>E,24h</sub> <sup>1,2</sup>	230 dB L <sub>p,pk</sub> <sup>1,2</sup>	185 dB L <sub>E,24h</sub> <sup>1,2</sup>	202 dB L <sub>p,pk</sub> <sup>1,2</sup>	155 dB L <sub>E,24h</sub> <sup>1,2</sup>	218 dB L <sub>p,pk</sub> <sup>1,2</sup>	185 dB L <sub>E,24h</sub> <sup>1,2</sup>	232 dB L <sub>p,pk</sub> <sup>1,2</sup>	203 dB L <sub>E,24h</sub> <sup>1,2</sup>
36-inch Pile	Unmitigated	--	485	--	--	75	287	--	197	--	--
	Mitigation (-6 dB)	--	374	--	--	17	160	--	101	--	--
	Mitigation (-10 dB)	--	271	--	--	--	101	--	72	--	--
30-inch Pile	Unmitigated	--	427	--	--	86	213	--	130	--	--
	Mitigation (-6 dB)	--	319	--	--	57	111	--	79	--	--
	Mitigation (-10 dB)	--	179	--	--	--	80	--	56	--	--

<sup>1</sup>NOAA Fisheries 2018

<sup>2</sup>Level A Injury PTS

It is anticipated that all four marine mammal species identified in this application could transit the Level B ZOI during pile driving activities (Table 6-3). Underwater noise levels exceeding the stated disturbance thresholds could disrupt pinniped behavior by causing them to alter their activities or to avoid the area entirely. However, seals and sea lions in the region that may be found within the Level B ZOI are likely habituated to vessel traffic and elevated marine acoustic noise due to their coexistence with marine traffic throughout the Columbia River and proximity to active harbors.

Table 6-3. Marine Mammals Behavioral Response Criteria Threshold Distances for Impact Pile Driving

Pile Type	Scenario	Marine Mammals Behavioral Threshold (meters)
		160 dB L <sub>p</sub> <sup>1</sup>
36-inch Pile	Unmitigated	602
	Mitigation (-6 dB)	444
	Mitigation (-10 dB)	367
30-inch Pile	Unmitigated	602
	Mitigation (-6 dB)	444
	Mitigation (-10 dB)	367

<sup>1</sup>GARFO 2016

Table 6-4. Marine Mammal PTS Onset Criteria Threshold Distances (meters) for Vibratory Pile Removal

Pile Type	Scenario	Hearing Group <sup>a/</sup>				
		LF cetaceans	MF cetaceans	HF cetaceans	Phocid pinnipeds	Otariid pinnipeds
		199 L <sub>E</sub> , 24hr	198 L <sub>E</sub> , 24 hr	173 L <sub>E</sub> , 24 hr	201 L <sub>E</sub> , 24 hr	219 L <sub>E</sub> , 24 hr
Vibratory Pile Removal	Unmitigated	0.8	0.1	1.2	0.5	--
	Mitigation (-6 dB)	0.3	--	0.5	0.2	--
	Mitigation (-10 dB)	0.2	--	0.3	0.1	--

Note: a/ Level A Injury

Table 6-5. Marine Mammals Behavioral Response Criteria Threshold Distances for Vibratory Pile Removal

Activity	Scenario	Marine Mammals Behavioral Threshold (meters)
		120 dB L <sub>p</sub> (non-impulsive noise)
Vibratory Pile Removal	Unmitigated	1359
	Mitigation (-6 dB)	541
	Mitigation (-10 dB)	293

## 6.3 IMPACT SUMMARY

During construction, underwater and in-air noise will be generated by operation of construction equipment and related activities. Temporary and localized incidental take would result from

disturbance caused by elevated sound levels and visual stimulus from proximity of construction equipment.

Species density data was sourced from the Pacific Navy Marine Species Density Database to estimate take for marine mammals (U.S. Navy 2019). The Marine Species Density Database incorporates analyzed literature and research for marine mammal density estimates per season for regions throughout the U.S. Take estimates for this application are based on regionally available population density estimates and site-specific knowledge. Incidental take for each activity is estimated by the following equation, unless otherwise specified:

$$\text{Incidental take estimate} = \text{species density} * \text{zone of influence area} * \text{duration of activity}$$

This equation accounts for the acoustic thresholds above which NOAA Fisheries indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment, the area where sound is anticipated to exceed those thresholds, the density of occurrence of marine mammals within the threshold exceedance areas, and the duration of activity. This equation is assumed to be a reasonable extrapolation for estimating takes, which relies on analytical calculation of the likelihood that a species is present in the area on a day activity is occurring. For each species, the Marine Species Density Database density estimate is listed along with any pertinent local monitoring or occurrence information.

For the purposes of this analysis, the Level A exclusion ZOI and Level B Harassment ZOI assumed the threshold distances for unmitigated 36-inch pile driving and unmitigated pile removal to account for most conservative take estimates for all species. Calculated areas for Level A and Level B ZOIs are provided in Table 6-6 and Table 6-7.

Table 6-6. Summary of Level A Exclusion Areas and Level B Harassment Zones for Impact Pile Driving

Hearing Group	Level A Exclusion Zone (meters)	Level A Exclusion Zone Area (km <sup>2</sup> )	Level B Harassment Zone (meters)	Level B Harassment Zone Area (km <sup>2</sup> )
<b>HF Cetaceans</b>	287	.49	602	1.1
<b>Phocid Pinnipeds</b>	197	.36	602	1.1
<b>Otariid Pinnipeds</b>	--	--	602	1.1

Table 6-7. Summary of Level A Exclusion Areas and Level B Harassment Zones for Vibratory Pile Removal

Hearing Group	Level A Exclusion Zone (meters)	Level A Exclusion Zone Area (km <sup>2</sup> )	Level B Harassment Zone (meters)	Level B Harassment Zone Area (km <sup>2</sup> )
<b>HF Cetaceans</b>	1.2	.09	1359	2.3
<b>Phocid Pinnipeds</b>	0.5	.09	1359	2.3
<b>Otariid Pinnipeds</b>	--	--	1359	2.3

A summary of estimated takes from impact pile driving are provided in **Error! Not a valid bookmark self-reference..** ZOIs for impact pile driving are displayed in Figure 6-1.

Table 6-8. Summary of Take Estimates for Marine Mammals During Impact Pile Driving

Species	Density (per km <sup>2</sup> )	Level B ZOI Area (km <sup>2</sup> )	Duration (days)	Level B Take Estimate	Level A Zone Area (km <sup>2</sup> )	Level A Take Estimate	Stock Abundance	% of Stock
California sea lion	.649	1.1	52	38	0	0	257,606	.014
Steller sea lion	.282	1.1	52	17	0	0	43,201	.039
Pacific harbor seal	.342	1.1	52	20	.36	7	24,732	.11
Harbor porpoise	.467	1.1	52	27	.49	12	21,487	.18

The estimates provided in A summary of estimated takes from impact pile driving are provided in **Error! Not a valid bookmark self-reference.** ZOIs for impact pile driving are displayed in Figure 6-1.

Table 6-8 are conservative, assuming the greatest number of days that impact hammers may be used. While both Level A and Level B takes were estimated for conservation coverage of this project, Level A take estimates assume that marine mammals would enter the Level A ZOI without detection. It is anticipated that nearly all takes incidental to project work will be behavioral harassment in avoidance of the project area before getting close enough to sound sources to induce injury, especially for the tight Level A injury zones for vibratory pile removal. The USCG estimates very few, if any, of the estimate Level A takes would be realized since individuals will likely avoid the project area and biological monitors would implement work stops should marine mammals enter the species-specific Level A ZOIs.

The USCG is not requesting authorization of any takes related vibratory pile removal for the project due to implementation of mitigation measures during demolition activities. The USCG will employ Protected Species Observers (PSOs) and position them to adequately monitor the calculated Level B harassment zone for vibratory hammer use during demolition. The USCG will shut down all project operations should any marine mammals enter this ZOI, which is depicted in Figure 6-2. By implementing full shutdowns and utilizing PSOs, the USCG does not anticipate any takes during demolition and existing pile removal.

Monitoring for a recent nearby project in the City of Astoria did not report any observations of either animal during construction activities related to bridge replacements (Dowl 2021, OBEC & AKS 2019a). That project is closer to the mouth of the Columbia River than the FRC Homeporting project—where both harbor porpoises and Steller sea lions are more common—and is closer to the nearest Steller sea lion haul-out.

The Level A and B take estimates for harbor porpoises reflect the estimated density for harbor porpoises distributed from the shore out to roughly 200 meters (U.S. Navy 2019). Harbor porpoises prefer shelf waters and avoid vessels, so this estimate is likely much higher than their observed occurrence near the project area, which is over 15 miles from the river’s confluence with the Pacific Ocean. For this reason, the USCG does not anticipate takes of harbor porpoises to approach or exceed those calculated.

The Level A and B take estimates for California sea lions and Steller sea lions both consider seasonal population trends using regionally available estimates from the Pacific Navy Marine Species Density Database (U.S. Navy 2019). Though it is possible for individuals of both species to come within the



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Level A ZOI, that likelihood is extremely low considering there are no known haul-out sites or high-quality feeding areas within that distance of the project area and the injury zones are almost equivalent to the project boundaries which will be closely monitored. In addition, recent monitoring data did not include any sightings of Steller sea lions downstream from the project area. For these reasons, the Level A take calculation for all marine mammals and the Level A and B take calculations for Steller sea lions are likely overestimations.



Figure 6-1. Underwater Acoustic Threshold Limits for Impact Pile Driving



Underwater Acoustic Threshold Distances  
 Vibratory Pile Removal  
 Sources: NAIP 2016, Tetra Tech 2023

Figure 6-2. Underwater Acoustic Threshold Limits for Vibratory Pile Removal



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## 7.0 ANTICIPATED IMPACT OF THE ACTIVITY

Impact pile driving resulting in increased underwater noise is anticipated to have the greatest effects on marine mammals in the project vicinity. Take estimates are provided in Section 6. Level A injury and Level B harassment may occur for pinnipeds transiting, foraging, or hauling out within the respective ZOLs during pile driving activities. The take estimates are conservative calculations and represent a very small fraction of the overall population size for each species. None of the species identified in this analysis are considered strategic stocks under the MMPA or listed under the ESA, and the level of incidental takes requested is not anticipated to increase the vulnerability of those stocks in the future. Each species has seen regular growth regionally in recent years, and no impacts to species abundance or population levels are anticipated as a result of the proposed project. In addition, the only activities expected to cause take will occur during the winter, which is when populations are less abundant and prior to pupping season in the region.

Repetitive, short-term displacement is likely to cause short-term disruptions in the normal behavioral patterns of animals in the vicinity of ETP during active construction. However, disruption would be limited to working hours and impact pile driving will be limited to the designated seasonal work window. Though all project-related activities and associated increased disturbances to marine mammals will be temporary, they will likely result in animals dispersing or avoiding the immediate project vicinity during periods of project noise-producing activities. However, seals and sea lions in the lower Columbia River are considered to be habituated to disturbances related to marine traffic, boaters, and other human activities regularly occurring and aside from the proposed action. The implementation of mitigation measures described in Section 11 will ensure the impacts on stock abundance and behavioral patterns of all species are temporary and minor.

## 8.0 ANTICIPATED IMPACTS ON SUBSISTENCE USES

The proposed project area does not overlap with any areas with authorized subsistence uses or hunts. Impacts to overall stock abundances are considered to be negligible. For these reasons, the proposed activities described in this application will have no impacts of the availability of the species or stocks of California sea lions, Steller sea lions, Pacific harbor seals, or harbor porpoises for subsistence uses

## 9.0 ANTICIPATED IMPACTS ON HABITAT

As previously discussed, California sea lions, Steller sea lions, Pacific harbor seals, and harbor porpoises may be found transiting through the area during construction activities. For these marine mammals, habitat is defined as the locality or environment that is essential for an animal's survival (feeding areas, resting areas, transit routes, socializing, and breeding areas), and consists of in-water areas, haul-out sites, or rookeries.

As a result of in-water construction activities, some degree of localized reduction in water quality would occur. This effect would occur during the installation and removal of piles from the substrate when bottom sediments are disturbed, and during disposal of dredged materials at approved locations. Any turbidity effects are expected to be short-term and minimal, and turbidity is expected to return to normal levels shortly following completion of the proposed actions. No direct effects to marine mammals are expected from turbidity impacts.

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There are no designated critical habitats within this area of the Columbia River for the species addressed in this application. The proposed activities will not result in permanent impacts to habitats used by marine mammals. While it will result in temporary changes in the acoustic environment, marine mammals in the lower Columbia River are considered to be habituated to marine vessels and active harbor activities (Myrberg 1990). Some animals may experience a temporary loss of habitat as they avoid the immediate project area due to temporarily elevated noise levels; however, there is an abundance of similar or better-quality habitat adjacent to the project area which animals that are locally displaced can move to and continue with normal feeding or transiting activities.

The most likely impact to marine mammal habitat would be from impact hammer pile-driving effects on marine mammal prey fish species and minor impacts to the immediate substrate during installation of piles that may affect water quality in the short term. Long-term effects of any prey displacements are not expected to affect the overall fitness of the pinnipeds present since similar numbers and types of prey species are available in proximity to the project area; thus, effects on habitat will be minor and will terminate at the end of the proposed construction actions.

Fish populations in the Columbia River that serve as pinniped prey could be affected by noise from in-water pile driving. The project may also have temporary effects on salmonids and other fish species due to changes in turbidity and the potential resuspension of contaminants. Additional analysis of impacts to ESA-listed fish is included in the Biological Assessment prepared for the project's Section 7 ESA consultation with NOAA Fisheries and U.S. Fish and Wildlife Service.

The project is not anticipated to have measurable effects on the distribution or abundance of potential marine mammal prey species because any adverse effects will be temporary, there are other quality foraging habitats in lower the Columbia River, and mitigation measures will be incorporated to ensure protection of fish and other prey species during active construction.

Impacts to seal and sea lion habitat and prey species availability are expected to be minor and temporary. The area likely impacted by construction is relatively small compared to the available habitat in this river, and there are no haul-outs or rookeries within the acoustic zones that could be directly affected by noise disturbance. The most likely impact is to fish and prey species from the construction actions and these will be temporary, such as minor behavioral avoidance of the immediate area. Affected fish would represent only a small portion of food available to marine mammals in the area. Shortly following construction activities, a return to normal prey species behavior is anticipated, and any behavioral avoidance by fish of the disturbed area will still leave significantly large areas of fish and marine mammal foraging habitat in the Columbia River. Therefore, the impacts on pinniped habitat and prey availability during construction are expected to be negligible.

## **10.0 ANTICIPATED EFFECTS OF HABITAT IMPACTS ON MARINE MAMMALS**

The proposed project is not anticipated to result in significant loss or adverse modification of habitat for marine mammals or their food sources. The greatest impact on marine mammals due to the proposed actions will be a temporary avoidance of habitat within the project area and displacement of prey species because of elevated noise levels. Any impacts on marine mammal habitat are expected to be short-term and minor, so negligible effects on marine mammals from habitat impacts are anticipated. The project will have an overall net benefit effect on prey species as it will decrease the area shaded by over-water facilities by almost 35,000 square feet and remove outdated in-water infrastructure,

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including over 350 creosote piles. The proposed project is not expected to have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations, since pile driving and removal activities will be temporary, short-term, and intermittent, and mitigation measures will be in place to reduce effects.

## **11.0 MITIGATION MEASURES TO PROTECT MARINE MAMMALS AND THEIR HABITAT**

The following mitigation measures (adapted from OBEC & AKS 2019b) will be employed by the selected construction contractor during all construction activities to avoid and minimize impacts to species protected under the MMPA and their habitats to the maximum extent practicable. Any additional measures required by other federal regulatory processes, including those resulting from Section 7 ESA consultation, will be implemented and incorporated as necessary.

### **11.1 GENERAL CONSTRUCTION MEASURES**

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All construction activities will be performed in accordance with approved plans and specifications developed by the selected design-build contractor. In addition, the following general construction measures will be adhered to:

- All work will be performed according to the requirements and conditions of the regulatory permits issued by federal, state, and local governments. Restrictions will be applied to the project to avoid or minimize potential impacts to listed or proposed species based on necessary regulatory permits acquired by the USCG. For example, all impact pile driving will occur within the ODFW-approved in-water work window from November through February.
- All equipment to be used for construction activities will be cleaned and inspected prior to arriving at the project site to confirm that no potentially hazardous materials are exposed, no leaks are present, and the equipment is functioning properly.
- Mobile heavy equipment will be stored, fueled, and maintained in a staging area at least 150 feet from the water. It will be inspected daily for fluid leaks before leaving the vehicle staging area and steam-cleaned before operation on the barge or adjacent to the harbor.
- Any other stationary equipment, including generators, operated within 150 feet of the river will be maintained and protected as necessary to prevent leaks and spills from entering the water.
- Erosion and sediment control BMPs will be installed prior to initiating any construction activities.
- All work will occur during daylight hours to ensure proper monitoring for marine mammals.
- Placement of floating silt curtains or similar in-water turbidity barriers around the in-water dredge area to prevent migration of disturbed fine sediments away from the area of in-water work.
- Implementation of a turbidity monitoring framework consistent with the Oregon Department of Environmental Quality 401 water quality certification permit terms and conditions and ESA consultation conservation measures.
- Implementation of a Stormwater Pollution Prevention Plan.
- Implementation of a Spill Prevention, Containment, and Countermeasure (SPCC) plan. Maintain a current copy of approved SPCC plan on-site for the duration of the project and ensure that no work or staging occurs prior to implementing the plan. The approved plan will provide site- and project-specific details identifying potential sources of pollutants, exposure pathways, spill

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response protocols, protocols for routine inspection fueling and maintenance of equipment, preventative and protective equipment and materials, and emergency notification and reporting protocols. Ensure that all workers understand the plan and response and reporting standards.

- Absorbent materials will be employed if petrochemical sheen is observed and kept in place until sheen dissipates.
- An in-water debris boom and oil adsorbent boom will be deployed around all active work areas and equipment during construction and demolition to ensure containment of materials, wastes, debris, and/or contaminants. Care will be taken to prevent debris from entering the water during demolition and construction, and debris will be removed promptly if it does enter the water. Any contaminated wastes will be disposed of at a properly permitted disposal site.
- Creosote pile removal BMPs will be employed to prevent creosote release into the environment and include vibratory extraction methods, keeping extraction equipment out of the water, and use of a containment basin on the barge where removed piles will be placed and temporarily stored.
- Utilize BMPs for controlling pollution from ship mooring and fueling facilities during FRC operations.
- Implement a site-specific TESC plan to minimize erosion and sedimentation with site appropriate BMPs.
- Install and maintain appropriate TESC measures prior to disturbance to avoid and minimize effects to waterbodies, wetlands, and stormwater treatment facilities resulting from clearing, grading, and management of site drainage. This may include placement of silt fencing, wattles, dewatering sediment basin(s), or other protective barriers to ensure that soils are not introduced into waterways.
- Revegetation and mulching of disturbed land areas to minimize sediment runoff during precipitation events.
- The construction contractor will limit the amount of soil disturbance to that which can be adequately controlled via implementable BMPs.
- Construction entrances will contain either rock pads or tire wash facilities to prevent tracking of soil onto local roadways and to prevent the potential for sedimentation and turbidity of receiving waters as a result of runoff from roadways.
- Stockpile areas will be contained and protected by erosion control measures such as silt fencing and straw bales. Stockpiles shall also be covered if inclement weather is forecast.
- Appropriate stockpile and staging areas will be identified and approved prior to construction.

## 11.2 PILE INSTALLATION BMPS

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The following mitigation measures will be implemented to minimize disturbance during pile installation activities:

- USCG shall conduct briefings and trainings between construction supervisors and crews, marine mammal monitoring team, and USCG staff prior to the start of all construction work, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocols, and operational procedures.
- Implementation of an Aquatic (Underwater) Sound Control and Abatement Plan. Ensure that the necessary workers have been trained to understand the constraints of and measures to be



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implemented during in-water work, especially pile driving activities, to minimize the effects of underwater noise on fish and marine mammals.

- Placement of bubble curtains, properly configured for the water velocity, around 100% of the piling perimeter and full water column when using impact hammers for piling installation.
- Noise and vibration mitigation through use of devices to muffle equipment, use of quieter equipment, and proper maintenance of marine vessels and equipment.
- If at any time during construction, the parameters covered under this IHA are exceeded, project activity will cease and USCG, or their representative, will contact NOAA Fisheries staff immediately to determine what, if any, course of action needs to be taken.
- Monitoring of marine mammals will take place starting 30 minutes before construction begins and continuing until 30 minutes after construction ends. In-water work will only commence once observers have declared the Level A Injury Zones clear of marine mammals.
- Prior to initiating construction activities, USCG will establish Level A Injury Zones and Level B Harassment Zones to monitor for individual activity types based on noise levels.
- USCG and the contractor will implement shutdown measures as follows:
  - If marine mammals enter the Level A Injury Zones;
  - If marine mammals enter the Level B Harassment Zones related to vibratory pile removal;
  - If marine mammals sighted within the Level B Harassment Zones for impact pile driving alter their behaviors, respiration rates, dive times, or otherwise appear disturbed by the work activity; and
  - When the take of any species is approaching the authorized take limits.
- If the Level A and Level B Zones are obscured by fog or poor lighting conditions, pile installation activities will not be initiated until the entire zones are visible.
- If a marine mammal approaches or enters its Level A Injury Zone, work will be halted and delayed until either the animal has voluntarily left, or 15 minutes have passed without redetection of the animal.
- A monitoring plan will be implemented. The monitoring plan will include a definition of the ZOIs, the Level A Injury Zones, Level B Harassment Zones, data collection and reporting requirements, locations for PSO stationing, and specific procedures that must be adhered in the event a mammal is encountered or taken.
- Take of unauthorized species must be avoided by ceasing construction activity before the animal enters the Level B Harassment Zone.

## 12.0 MONITORING AND REPORTING

The following Monitoring and Reporting measures (adapted from OBEC & AKS 2019b) will be implemented to further minimize disturbance to marine mammals, improve understanding of the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities, and increase the general knowledge about these marine mammals and the effectiveness of the mitigation measures.

- Minimum monitoring zones will be established during in-water work at ETP.
- USCG will employ qualified PSOs to monitor project vicinity for marine mammals. Qualifications for PSOs include:

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- Visual acuity sufficient for discerning moving targets at the water's surface with ability to estimate target (species sighted) size and distance. Use of binoculars is necessary to correctly identify the target.
  - Advanced education (at least some college level course work) in biological science, wildlife management, mammalogy or related fields.
  - Experience or training in the field identification of marine mammal species and preferably, age classes and behavioral state.
  - Experience and ability to conduct field observations and collect data according to assigned protocols.
  - Writing skills sufficient to prepare a report of observations that would include the number and type of marine mammals observed, the behavior of marine mammals in the project vicinity during project activities, dates and times when observations were conducted, and descriptions of in-water construction activities including dates, durations, and specific tasks.
  - Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
  - Ability to communicate with project personnel to provide real-time information on marine mammals observed in the monitoring zones as necessary and confidence/authority to call for shutdowns.
  - Marine mammal monitoring during pile driving and removal must be conducted by NOAA Fisheries-approved PSOs and according to applicable federal regulations. In addition, the following may be required:
    - The USCG must submit PSO resumes for approval by NOAA Fisheries prior to the onset of pile driving.
    - PSOs present during pile driving must not be assigned other tasks during the specified monitoring period.
    - If a team of two or more PSOs is required for monitoring activities, a lead observer will be designated who has prior experience working as a marine mammal observer during construction. The responsibilities of the lead observer will include, but are not limited to, scheduling rotations, making shutdown calls, and reporting any incidents to the designated authorities at USCG and NOAA Fisheries.
  - PSOs will be present on-site during in-water work construction activities following a schedule agreed upon by NOAA Fisheries and the USCG.
  - PSOs will use binoculars to monitor marine mammal presence within the Level A and B harassment zones per the following protocols:
    - The limits of the Level A Injury Zones and Level B Harassment Zones will be defined prior to initiating construction activities.
    - A 30-minute pre-construction marine mammal monitoring period will be required before the first pile driving or pile removal of the day. A 30-minute post-construction marine mammal monitoring period will be required after the last pile driving or pile removal of the day. If the contractor's personnel take a break longer than 15 minutes between subsequent pile driving or pile removal for more than 30 minutes, then additional pre-construction marine mammal monitoring will be required before the next start-up of pile driving or pile removal.
    - PSOs will document the following if marine mammals are observed in the project vicinity:
      - Species of observed marine mammals;

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- Number of observed marine mammal individuals;
  - Life stages (age classes) of marine mammals observed;
  - Behavioral activities, including any feeding, of observed marine mammals, in both presence and absence of activities;
  - Location within the project vicinity;
  - Animals' reaction (if any) to pile-driving activities or other construction-related stressors; and
  - Overall effectiveness of mitigation measures.
- The USCG will provide NOAA Fisheries with a draft monitoring report not later than 90 days following the end of construction activities. This report will detail the monitoring protocol, summarize the data recorded during monitoring, and estimate the number of marine mammals that may have been harassed or taken.
  - If comments are received from the NOAA Fisheries West Coast Regional Administrator or NOAA Fisheries Office of Protected Resources on the draft report, a final report will be submitted to NOAA Fisheries within 30 days thereafter. If no comments are received from NOAA Fisheries, the draft report will be considered to be the final report.
  - In the unanticipated event that the construction activities clearly cause the take of a marine mammal in a manner prohibited by the requested authorization, such as an injury, serious injury, or mortality, the USCG will immediately cease all operations and report the incident to the Supervisor of Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, NOAA Fisheries, and the West Coast Regional Stranding Coordinators. The report will include the following information:
    - Time, date, and location (latitude/longitude) of the incident;
    - Description of the incident;
    - Status of all sound sources used in the 24 hours preceding the incident;
    - Environmental conditions (e.g., wind speed and direction, cloud cover, visibility, and water depth);
    - Description of marine mammal observations in the 24 hours preceding the incident;
    - Species identification or description of the animal(s) involved, including life stage; the fate of the animal(s);
    - Photographs or video footage of the animal, if available; and
    - Discussion of all coordination with NOAA Fisheries during construction, as well as any changes or approved modifications implemented during construction.
    - Activities will not resume until NOAA Fisheries is able to review the circumstances of the prohibited take. NOAA Fisheries will work with the USCG to determine what is necessary to minimize the likelihood of further prohibited takes and confirm MMPA compliance. Activities may not be resumed until notified by NOAA Fisheries via letter, email, or telephone.
  - In the event that the USCG discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent, the USCG will immediately report the incident to the Supervisor of the Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, NOAA Fisheries, and the West Coast Regional Stranding Coordinators. The report must include the same information identified above. Activities may continue while NOAA Fisheries reviews the circumstances of the incident, and NOAA Fisheries will work with the USCG to determine whether modifications in the activities are appropriate.

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- In the event that the USCG discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the USCG will report the incident to the Supervisor of the Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, NOAA Fisheries, and the West Coast Regional Stranding Coordinators within 24 hours of the discovery. The USCG will provide photographs or video footage if available or other documentation of the stranded animal sighting to NOAA Fisheries and the Marine Mammal Stranding Network. The USCG can continue its operations under such a case.

## 13.0 SUGGESTED MEANS OF COORDINATION

In-water noise generated by pile installation is the primary issue of concern relative to the marine mammals potentially within the project vicinity. Pinniped monitoring will be conducted to collect information on the presence of marine mammals within the Level A and Level B ZONs for the Project. The monitoring report, which will include a discussion of any behavioral changes in marine mammals resulting from the proposed in-water work, will be submitted to NOAA Fisheries, and subsequently will be available for public review. In this way, future applicants that undertake similar projects can use applicable monitoring data to inform project designs and minimize the take of marine mammals associated with pile driving and removal activities. The monitoring data will inform NOAA Fisheries and future permit applicants about the behavior and adaptability of pinnipeds for future projects of a similar nature.

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## APPENDIX A. ACOUSTIC ANALYSIS

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## APPENDIX B. PROJECT DRAWINGS