Plan and Draft Amendment 41—Red Snapper Management for Federally Permitted Charter Vessels. The committee will receive a summary report from the Ad Hoc Red Snapper Charter For-Hire Advisory Panel (AP) meeting; review of Draft Amendment 42—Federal Reef Fish Headboat Management, Public Hearing Draft Amendment 43—Hogfish Stock Definition, Status Determination Criteria (SDC), Annual Catch Limits (ACL) and Size Limit; review Draft Amendment 45—Extend or Eliminate the Red Snapper Sector Separation Sunset Provision; and review preliminary options for Mechanism to Allow Recreational Red Snapper Season to Re-open if ACL is not exceeded.

Wednesday, April 6, 2016; 8:30 a.m.–5 p.m.

The Reef Fish Management Committee will discuss Final Action on Framework Action to Modify Commercial Gear Requirements and Recreational/Commercial Fishing Year for Yellowtail Snapper; and any other business. The Gulf SEDAR Committee will review and provide updates on SEDAR Schedule Progress and deliverables; and receive a SEDAR Steering Committee update.

The Full Council will convene approximately mid-morning (10:30 a.m.) with a Call to Order, Announcements and Introductions; Adoption of Agenda and Approval of Minutes; and will review Exempt Fishing Permit (EFPs) Applications, if any. The Council will receive presentations on Proposed Rule Standardized Bycatch Reporting Methodology, Science Update: How the Oil Spill Impacted the Fish Species We Care About, Mid-Atlantic Fishery Management Council's Ecosystem Approach to Fisheries Management, and NMFS–SERO Landing Summaries.

After lunch, the Council will receive public testimony from 1:45 p.m. until 5 p.m. on Agenda Testimony Items: Final Action—Coastal Migratory Pelagics Amendment 26: Changes in Allocations, Stock Boundaries and Sale Provisions for Gulf of Mexico and Atlantic Migratory Groups of King Mackerel; Final Action—Framework Action to Modify Red Grouper Annual Catch Limits; Final Action—Framework Action to Modify Commercial Gear Requirements and Recreational/Commercial Fishing Year for Yellowtail Snapper; Final Action—South Atlantic Amendment: Modifications to Charter Vessel and Headboat Reporting Requirements and hold an open public testimony period regarding any other fishery issues or concern. Anyone wishing to speak during public comment should sign in at the registration station located at the entrance to the meeting room.

Thursday, April 7, 2016; 8:30 a.m.–3:30 p.m.

The Council will review and discuss committee reports as follows: Joint Administrative Policy/Budget, Law Enforcement, Data Collection, Shrimp, Mackerel, Gulf SEDAR, and Reef Fish Management Committees; and, vote on Exempted Fishing Permits (EFP) applications, if any. Lastly, the Council will discuss other business items, if any.

Meeting Adjourns

The timing and order in which agenda items are addressed may change as required to effectively address the issue. The latest version will be posted on the Council's file server, which can be accessed by going to the Council's Web site at *http://www.gulfcouncil.org* and clicking on FTP Server under Quick Links. For meeting materials, select the ''Briefing Books/Briefing Book 2016–04'' folder on Gulf Council file server. The username and password are both ''gulfguest''. The meetings will be webcast over the internet. A link to the webcast will be available on the Council's Web site, *http://www.gulfcouncil.org.*

Although other non-emergency issues not contained in this agenda may come before this Council for discussion, those issues may not be the subjects of formal action during this meeting. Council action will be restricted to those issues specifically listed in this notice and any issues arising after publication of this notice that require emergency action under section 305(c) of the Magnuson-Stevens Act, provided that the public has been notified of the Council's intent to take final action to address the emergency.

Special Accommodations

This meeting is physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Kathy Pereira (see **ADDRESSES**) at least 5 days prior to the meeting date.

Dated: March 15, 2016.

Jeffrey N. Lonergan,

Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2016–06218 Filed 3–18–16; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XE395

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Port of Kalama Expansion Project on the Lower Columbia River

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NOAA Fisheries has received an application from the Port of Kalama (POK) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to Port of Kalama Expansion Project. Pursuant to the Marine Mammal Protection Act (MMPA), NOAA Fisheries is requesting comments on its proposal to issue an IHA to the POK to incidentally take, by Level B Harassment only, marine mammals during the in-water construction of Kalama Marine Manufacturing and Export Facility during the 2016–2017. Work is anticipated to occur between September 1, 2016 and January 31, 2017. The authorization for this proposed project would be 120 days of in-water work between September 1, 2016 through August 31, 2017 to account for the possible need to vary the schedule due to logistics and weather. Per the Marine Mammal Protection Act, we are requesting comments on our proposal to issue and Incidental Harassment Authorization to the Port of Kalama to incidentally take, by Level B harassment only, 3 species of marine mammals during the specified activity. NOAA Fisheries does not expect, and is not proposing to authorize, Level A harassment (injury), serious injury, or mortality as a result of the proposed activity.

DATES: Comments and information must be received no later than April 20, 2016.

ADDRESSES: Comments on the application should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. The mailbox address for providing email comments is *itp.youngkin@noaa.gov.* Comments sent via email, including all attachments, must not exceed a 25-

megabyte file size. NOAA Fisheries is not responsible for comments sent to addresses other than those provided here.

Instructions: All comments received are a part of the public record and will generally be posted to *http://www.NOAAFisheries.noaa.gov/pr/permits/incidental.htm* without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

An electronic copy of the application may be obtained by writing to the address specified above, telephoning the contact listed below (see **FOR FURTHER INFORMATION CONTACT**), or visiting the internet at: *http://www.NOAAFisheries.noaa.gov/pr/permits/incidental.htm.* Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Zachary Hughes, Office of Protected Resources, NOAA Fisheries, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NOAA Fisheries finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NOAA Fisheries has defined ''negligible impact'' in 50 CFR 216.103 as ''an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.''

Except with respect to certain activities not pertinent here, the MMPA defines ''harassment'' as: Any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) 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 [Level B harassment].

Summary of Request

On September 28, 2015, NOAA Fisheries received an application from the Port of Kalama (POK) for the taking of marine mammals incidental to the construction of a new pier. On December 10, 2015, a final revised version of the application was submitted and NOAA Fisheries determined that the application was adequate and complete.

The POK proposes to construct the Kalama Marine Manufacturing and Export Facility, including a new marine terminal, for the export of methanol. The proposed action also includes the installation of engineered log jams, restoration of riparian wetlands, and the removal of existing wood piles in a side channel as mitigation activities. The proposed activity is expected to occur during the 2016–2017 in-water work season for ESA listed fish species (September 1 through January 31). This proposed IHA covers from September 1, 2016 to August 31, 2017 to allow for adjustments to the schedule in-water work based on logistics, weather, and contractor needs. It is possible that the work would require a second season, at which time the applicant will seek another IHA covering the second season. The following specific aspects of the proposed activities are likely to result in the take of marine mammals: Impact pile driving, vibratory pile driving, and vibratory pile extraction. Take, by Level B Harassment only, of individuals of harbor seals (*Phoca vitulina*), Steller sea lions (*Eumetopias jubatus*), and California sea lions (*Zalophus californianus*) is anticipated to result from the specified activity.

Description of the Specified Activity

Overview

The Port of Kalama proposes to construct the Kalama Manufacturing and Marine Export Facility to manufacture and export methanol. This project consists of the upland facility for the manufacture of methanol (see application for more detail on the upland components of the proposed action), the construction of a marine terminal for the export of methanol, and associated compensatory mitigation activities for the purpose of offsetting habitat effects from the proposed action. The marine terminal will be approximately 45,000 square feet in size, supported by 320 concrete piles (24 inch precast octagonal piles) and 16 steel pipe piles (12 x 12 inch and 4 x 18-inch). In order to provide full access to the marine terminal, the adjacent waters of the Columbia River will be dredged to −48 MLLW, with an estimated 126,000 cubic yards of sediment needing to be removed.

The compensatory mitigation includes installation of eight engineered log jams (ELJs), which will be anchored by untreated wooden piles driven in by impact pile driving at low tides and not in-water. The proposed compensatory mitigation also includes the removal of approximately 320 untreated wooden piles from and abandoned U.S. Army Corps of Engineers dike in a nearby backwater area. These piles will be removed either by direct pull or vibratory extraction. Finally, the compensatory mitigation includes wetland restoration and enhancement by removal of invasive species and replacement with native wetland species.

According to the application, the proposed action is important to meet the growing global demand for methanol as a lower greenhouse gas emitting feedstock (as compared to coal) used for the production of olefins, and important for the economic development of the local community.

Dates and Duration

The proposed action will result in increased sound energy throughout the work window (September 1 through August 31) during the 2016–2017 season, and work may possibly extend into the next season and require the issuance of a separate IHA for an additional year for the 2017–2018 work season. The proposed IHA would cover the period beginning September 1, 2016 through August 31, 2017. Construction of the pier and associated compensatory mitigation will require both impact and vibratory pile driving. Pile driving may occur every day during the approved work window and throughout daylight hours. The zone of potential harassment will be centered at the port facility, approximately at river mile 72, and may affect all waters within direct line of site from the project, ensonifying approximately 7.3 km^2 acres of tidally influenced riverine habitat above the Level B harassment threshold. This IHA, which would authorize take incidental to the first year of work for this project would be valid for a period of one year from the date of issuance.

Specified Geographic Region

The proposed action will take place on approximately 100 acres (including uplands) at the northern end of the Port of Kalama's North Port site (Lat. 46.049, Long. −122.874), located at approximately river mile 72 along the lower Columbia River along the east bank in Cowlitz County, Washington (Figure 1). The area of potential impact will extend by line of sight from the proposed action location to the nearest shoreline, and includes approximately 1800 acres of tidally influenced river habitat (see application, Figure 15).

Figure 1. Project Region

Detailed Description of Activities

The proposed upland project is designed to produce up to 10,000 metric tons per day of methanol from natural gas. The proposed manufacturing facility will have two production lines, each with a production capacity of 5,000 metric tons per day. The project site and infrastructure will be developed initially to accommodate both production lines. The anticipated yearly production at full capacity is approximately 3.6 million metric tons of methanol. The methanol will be stored in non-pressurized aboveground storage tanks with a total capacity of approximately 200,000 tons and will be surround by a containment area. Methanol will be transferred by pipeline from the storage area to a deep draft marine terminal to be constructed by the Port on the Columbia River. The facility will receive natural gas via pipeline that will undergo a separate permitting process under the jurisdiction of the Federal Energy Regulatory Commission.

In order to provide electric service to the proposed project, it is expected that the Cowlitz Public Utility District (PUD) will upgrade an existing transmission line from its existing Kalama Industrial Substation to the project site by installing new lines on existing towers within the existing transmission line corridor. Any new equipment (such as breakers and switches), would be installed at the Kalama Industrial

Substation within the existing footprint. Cowlitz PUD may also provide redundant electrical supply by constructing a new short transmission line of approximately 750 feet crossing the adjacent I–5 and railroad.

The propose project includes both upland and marine components. This document focuses on the riverine components, as those are most relevant in determining the potential for effects to marine mammals. The major upland components are briefly summarized here for reference:

—Methanol production components
 ○ Two methanol production lines;
 ○ Interconnecting facilities, including piping, product pipelines, electrical, and control systems;
 ○ Eight finished product storage tanks within a containment area and additional tanks (rework tanks and shift tanks) for storing raw methanol during the manufacturing process;
 ○ Cooling towers for industrial process water cooling;
 ○ Steam boilers;
 ○ Two air separation units;
 ○ Flare system for the disposable flammable gases during startup, shutdown, and malfunctions;
—Power generation facility;
—Fire suppression infrastructure and risk management;
—Water supply and treatment components;
 ○ Process water supply wells, treatment system, storage tanks, and distribution network;
 ○ Industrial process water treatment and disposal system;
 ○ Stormwater treatment, infiltration pond and disposal system;
—Support buildings and accessory facilities;
 ○ Security gate houses, laboratory, control rooms, warehouses, and other buildings and enclosures;
 ○ Lay-down areas for construction activities, plant maintenance, and spare part storage;
 ○ Electrical substation;
 ○ Natural gas meter station and transfer equipment;
 ○ Emergency generators;
—Site access ways and public recreation access.

This document will review in depth the construction activities that may impact marine mammals, listed as follows:

—Construction of the marine terminal including a single berth and dock with methanol loading equipment;
—Berth dredging;
—Compensatory mitigation activities.

Proposed in-water work will be conducted only during the in-water work window that is ultimately approved for this project. The currently published in-water work window for this reach of the Columbia River is 1 November–28 February. However, regulatory agencies, including the USACE, Washington Department of Fish and Wildlife (WDFW), US Fish and Wildlife Service (USFWS), and NOAA Fisheries, have recently suggested making modifications to the window to take into account the best available science and to address newly listed species. The following work windows are proposed for this project, as explained further below:

—Pile installation will be conducted between 1 September and 31 January;
—Dredging will be conducted between 1 August and 31 December;
—ELJ installation will be conducted between 1 August and 31 December;
—Compensatory mitigation pile removal may be conducted year-round;
—Work conducted below the OHWM, but outside the wetted perimeter of the river (in the dry) may be conducted year-round.

The proposed project may be built out in either one or two phases. The construction duration would be 26 to 48 months in total, with construction scheduled to begin in 2016 and completed between 2018 and 2020. In water construction activities are expected to take 120 days (not necessarily consecutive) during the 2016–2017 and/or 2017–2018 in-water work windows. Any in-water work that may result in the harassment of marine mammals will be conducted during daylight hours.

Marine Terminal Construction

The proposed marine terminal will be located along the shoreline and will consist of a single berth to accommodate oceangoing tankers arriving from the Pacific Ocean via the Columbia River navigation channel and designed for methanol storage that will transport methanol to destination ports. The marine terminal will include a dock, a berth, loading equipment, utilities, and a stormwater system. The components are designed to support the necessary product transfer equipment and safely moor the vessels that may call at the proposed terminal. The marine terminal will provide sufficient clearances from the existing North Port dock and space that will be required for vessel maneuvering during berthing and departure. The proposed terminal will accommodate vessels ranging in size from 45,000 to 127,000 DWT, which would include vessels measuring from approximately 600 to 900 feet in length and 106 to 152 feet in width. The Port expects to receive between 3 and 6 vessels per month at the new terminal for the purposes of exporting methanol. The berth may also be used for loading and unloading other types of cargo, vessel supply operations, as a lay berth, vessel moorage, and for topside vessel maintenance activities.

The dock structure will consist of an access trestle extending from the shoreline to provide vehicle, equipment, and emergency access to the dock. The trestle will be 34 feet wide by 365 feet long. From the access trestle, the berth face of the dock will extend approximately 530 feet downstream, and will consist of an 100 by 54-foot transition platform, a 370 by 36-foot berth trestle, and a 100 by 112-foot turning platform. The dock will be supported by precast 24-inch precast octagonal concrete piles supporting cast-in-place concrete pile caps, and precast, pre-stressed, haunched concrete deck panels. The dock will total approximately 45,000 square feet and includes 320 concrete piles and 16 steel pipe piles in total. The bottom of the superstructure will be located above the ordinary high water mark.

For vessel mooring, two 15-foot by 15-foot breasting dolphins will be constructed near the center of the berth trestle. Steel plates will bridge the short distance between the dock and dolphins. Each breasting dolphin will consist of seven, 24-inch precast, pre-stressed concrete battered 3 piles supporting a cast-in-place concrete pile cap with mooring bollards.

Four 15-foot by 15-foot mooring dolphins will be constructed (2 upstream and 2 downstream of the platforms) for securing bow and/or stern lines. Each mooring dolphin will consist of twelve 24-inch octagonal diameter concrete piles supporting a cast-in-place concrete pile cap. The dolphins will be equipped with mooring bollards and electric capstans. Access to the mooring dolphins will be provided from the platform by trussed walkways with open grating surfaces. The walkways will be 3 feet wide with a combined length of 375 feet and will be supported by four 18-inch diameter steel pipe piles.

The fender system will consist of 9-foot by 9-foot ultra-high molecular weight polyethylene face panels with a super cone fender unit and two 12-inch diameter steel pipe fender piles. Below the fender panels, the fender piles will have 18-inch-diameter high-density polyethylene sleeves. Fender units will be placed on the dock face, two upstream and two downstream, and on the two breasting dolphins.

A small building will be constructed on a corner of the turning platform. The building will function as a shelter from the weather and a small lunch area for the dockworkers and as a place to store tools and supplies. A second small building will be constructed at the center of the dock, adjacent to the loading arms. The building will be used as an operations shack for the loading arms. Electricity and communications services will be provided to the pier buildings, but no water or sewer services would be provided.

Stormwater from the dock will be collected and conveyed to upland treatment and infiltration swale. The stormwater system will also accommodate stormwater from the existing North Port dock, which is currently infiltrated in an upland swale that will be removed for the development.

Since pile layout is conceptual, a 10 percent contingency has been added for the estimated number of concrete piles. This will accommodate potential revisions to the pile layout and configuration as the structural design is finalized. The project may also require the installation of temporary piles during construction. Temporary piles are typically steel pipe or h-piles and will be driven with a vibratory hammer. These are placed and removed as necessary during the pile driving and overwater construction process. With the addition of the contingency, the proposed terminal will require the installation of approximately 320, 24-inch concrete piles; 12, 12-inch steel pipe piles; and 4, 18-inch steel pipe piles. Additional information regarding the specific design elements of the proposed project can be found in the application from the applicant.

Piles will be installed using vibratory and/or impact hammers (depending upon pile type, as described below), most likely operated from a barge. Piles will most likely be transported to the site and stored on site on a work barge. The contractor's water-based equipment will be a barge-mounted crane with pile-driving equipment and a materials barge with piles. At times, a second barge-mounted crane may be on site with an additional materials barge.

Concrete piles will be installed with an impact hammer. A bubble curtain will not be used during impact driving of concrete piles, as impact installation of concrete piles does not generate underwater sound pressure levels that are injurious to marine mammals. A conservative estimate is that up to a maximum of 6 to 8 piles will be impact-driven per day, with an estimated maximum of approximately 1,025 strikes per pile. Based on these estimates, it is assumed that up to approximately 8,200 strikes per day might be necessary to impact-drive concrete piles to their final tip elevation. Actual pile driving rates will vary, and a typical day will involve fewer piles and fewer strikes.

It is anticipated that all steel piles will be driven with a vibratory hammer, and that it will not be necessary to impact drive or impact proof any of the steel piles. If it does become necessary to impact-drive steel piles, a bubble curtain or similarly effective noise attenuation device will be employed to reduce the potential for effects from temporarily elevated underwater noise levels. In addition, the project may require the installation of temporary piles during construction. Temporary piles are typically steel pipe or h-piles and will be driven with a vibratory hammer. These are placed and removed as necessary during the pile driving and overwater construction process.

All pile installation will be conducted during the in-water work window (September 1 through January 31).

Berth Dredging

The existing berth serving the Port's North Port Terminal will be extended downstream to accommodate vessel activities at the new dock. The extended berth area will be deepened to -48 feet Columbia River datum (CRD) with a 2-foot overdredge allowance consistent with the existing berth. The berth will extend at an angle from the edge of the Columbia River navigation channel to the berthing line at the face of the proposed dock. The footprint of the expanded berth will be approximately 18 acres, of which approximately 16 acres will require dredging to achieve the berth depth. Existing water depths in the proposed berth area vary from -50 feet CRD to -39 feet CRD. The total volume to be dredged the first year is approximately 126,000 cubic yards (cy).

Sediment characterization for dredged material placement suitability was conducted in February 2015 in accordance with the regional Sediment Evaluation Framework, and the sediments to be dredged were found to be suitable for any beneficial reuse. Dredged material will be placed upland at the project site to provide material for construction or for other uses, or it may be placed at existing authorized in-water and upland placement sites. The existing authorized (NWP–1994–462–1) in-water placement locations include: (1) Flow lane placement to restore sediment at a deep scour hole associated with a pile dike at RM 77.48 located on the Oregon side of the river; (2) flow lane placement to restore sediment at a deep scour hole associated with a pile dike at RM 75.63 located on the Washington side of the river; (3) beach nourishment at the Port's shoreline park (Louis Rasmussen Park) at RM 76; and (4) the Ross Island Sand and Gravel disposal site in Portland, Oregon. The anticipated upland placement sites include the South Port site located north of the CHS/TEMCO grain terminal at approximately RM 77 and the project site. Additional in-water and upland sites may be identified and permitted for dredge material placement for general Port maintenance dredging needs in the future.

Dredged material will be placed upland at the project site to provide material for construction or for other uses, or it may be placed at existing authorized in-water and upland placement sites. The existing authorized (NWP–1994–462–1) in-water placement locations include: (1) Flow lane placement to restore sediment at a deep scour hole associated with a pile dike at RM 77.48 located on the Oregon side of the river; (2) flow lane placement to restore sediment at a deep scour hole associated with a pile dike at RM 75.63 located on the Washington side of the river; (3) beach nourishment at the Port's shoreline park (Louis Rasmussen Park) at RM 76; and (4) the Ross Island Sand and Gravel disposal site in Portland, Oregon. The anticipated upland placement sites include the South Port site located north of the CHS/TEMCO grain terminal at approximately RM 77 and the project site. Additional in-water and upland sites may be identified and permitted for dredge material placement for general Port maintenance dredging needs in the future.

Dredging is a temporary construction activity, conducted in deep water, which would be expected to have only minor, localized, and temporary effects. No dredging would be conducted in shallow water habitats, and no shallow water habitat would be converted to deep water. Dredging operations maybe completed using either hydraulic or mechanical (clamshell) dredging methods. A hydraulic dredge uses a cutter head on the end of an arm that is buried typically 3 to 6 feet deep in the river bottom and swings in a 250- to 300-foot arc in front of the dredge. Dredge material is sucked up through the cutter head and the pipes, and deposited via pipeline to the placement areas. The hydraulic dredge will also be used for placement of dredge material in the flow-lane, as beach nourishment, or at approved upland sites.

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

Upland placement will likely be completed through the use of a hydraulic pipeline. In this method, dredged material is pumped as slurry through a pipeline that floats on the water using pontoons, is submerged, or runs across dry land. Dredged material transported by hydraulic pipeline to an upland management site must be dewatered prior to final placement or rehandling. In this case, dewatering generally will be accomplished using settling ponds or overland flow. Settling ponds are sized based on the settling characteristics of the dredged material and the rate of dredging. Water from the sediments will be either infiltrated to the ground or will be discharged to the river through weirs already constructed at the disposal sites.

Several BMPs and conservation measures will be implemented to minimize environmental impacts during dredging, and these are described in the application.

Compensatory Mitigation Activities

The applicant has incorporated mitigation activities as part of the proposed action. The applicant proposes three categories of activity: (1) Pile removal; (2) construction of engineered log jams (ELJ); and (3) riparian and wetland buffer habitat restoration.

The Applicant will remove a portion of a row of existing timber piles now located in the freshwater intertidal backwater channel portion of the project site on Port property. The structure is a former trestle, and these piles may be treated with creosote. Piles are estimated to range between 12 and 14 inches in diameter at the mudline. A total of approximately 157 piles will be removed from the structure. There is a second timber pile structure in the backwater, which was previously proposed for removal. This structure is a USACE-owned pile dike, and will not be removed.

The proposed pile removal will restore a minimum of 123 square feet of benthic habitat, within an area approximately 2.05 acres in size. These piles, in their current configuration, affect the movement of water and sediment into and out of approximately 13 acres of this backwater area (CHE 2015). The removal of the piles will facilitate sediment transport and seasonal flushing of this backwater area, which will help improve water quality and maintain this area as an off-channel refuge for juvenile salmonids in the long term. The piles most likely will be removed by direct pulling. A vibratory hammer may also be used if necessary, and this request assumes that either method could be used.

In addition to the proposed pile removals, the applicant will install eight ELJs within the nearshore habitat along the Columbia River shoreline adjacent to the site. ELJs are a restoration and mitigation method that helps build high quality fish habitat, develops scour pools, and provides complex cover.

Each ELJ will measure approximately 20 x 20 feet and be composed of large-diameter untreated logs, logs with root wads attached, small wood debris, and boulders. Logs generally will have a minimum diameter of 20-inches and be 20 feet long. They will be anchored to untreated wood piles driven a minimum of 20 feet into the river stream bed and will be fastened to the piles by drilling holes in the wood and inserting 1-inch through-bolts for attaching chains to secure the wood to the piles. The structures will be installed at or near the mean lower low water mark using vibratory pile driving at low tides, so that the structures are regularly inundated. The logs that comprise the structure will be further bolted together to create a complex crib structure with 2- to 3-inch interstitial spaces. These spaces may be filled with smaller wood debris and/or boulders to enhance structural complexity and capture free-floating wood from the Columbia River.

Small equipment operated from a barge will be used to construct the ELJs. Anchor piling will be installed either by a vibratory hammer, or will be pushed directly into the substrate with crane-mounted equipment. This request assumes that either method could be used. Logs and debris will be placed using crane-mounted equipment, or similar. Aquatic mitigation construction activities, including vibratory timber pile removal and installation of timber anchor piling outside of the wetted perimeter of the river, and would not generate levels of noise that would harass of marine mammals.

The Applicant also proposes to conduct riparian enhancement and invasive species management within an area approximately 1.41 acres in size along approximately 700 linear feet of the Columbia River shoreline at the site to further enhance riparian and shoreline habitat at the site. The applicant also proposes to enhance approximately 0.58 acres of wetland buffer at the north end of the site to offset unavoidable wetland buffer impacts. The riparian and wetland buffer habitats will be enhanced by removing invasive species and installing native trees and shrubs that are common to this reach of the Columbia River shoreline and adjacent wetlands. Native plantings proposed for the riparian restoration include black cottonwood and a mix of native willow species including Columbia River willow (*Salix fluviatilis*), Pacific willow (*Salix lasiandra*), and Sitka willow (*Salix sitchensis*). Portions of the wetland buffer will be planted with black cottonwood. Invasive species management at the site will target locally common and aggressive invasive weed species, primarily Scotch broom and Himalayan blackberry (*Rubus armeniacus*). The restoration sites will be monitored and maintained for 5 years to document proper site establishment.

Aquatic habitat mitigation construction activities will most likely be conducted using cranes and similar equipment operated from one or more barges temporarily located within the backwater area. Because water depths are relatively shallow in the backwater area where pile removal will be conducted, equipment access to this area may be limited. A small barge will most likely be floated in on a high tide, grounding out if necessary as waters recede. Benthic habitats and native plant communities are not expected to be affected by the barge, as substrates are silt-dominated, and vegetation consists primarily of reed canary grass. If necessary, disturbed areas will be restored to their original or an improved condition after pile removal is complete.

Description of Marine Mammals in the Area of the Specified Activity

Marine mammal species that have been observed within the region of activity consist of the harbor seal, California sea lion, and Steller sea lion. Pinnipeds follow prey species into freshwater up to, primarily, the Bonneville Dam (RM 146) in the Columbia River, but also to Willamette Falls in the Willamette River (RM 26). None of the species of marine mammal that occur in the project area are listed under the ESA or is considered depleted or strategic under the MMPA.

TABLE 1—MARINE MAMMAL SPECIES ADDRESSED IN THIS IHA REQUEST

Species		ESA Listing status	Stock
Common name	Scientific name		
Harbor Seal	*Phoca vitulina;* ssp. *richardsi*	Not Listed	OR/WA Coast Stock.
California Sea Lion	*Zalophus californianus*	Not Listed	U.S. Stock.
Steller Sea Lion	*Eumatopius jubatus*	Not Listed	Eastern DPS.

The sea lion species use this portion of the river primarily for transiting to and from Bonneville Dam, which concentrates adult salmonids and sturgeon returning to natal streams, providing for increased foraging efficiency. The U.S. Army Corps of Engineers (USACE) has conducted surface observations to evaluate the seasonal presence, abundance, and predation activities of pinnipeds in the Bonneville Dam tailrace each year since 2002. This monitoring program was initiated in response to concerns over the potential impact of pinniped predation on adult salmonids passing Bonneville Dam in the spring. An active sea lion hazing, trapping, and permanent removal program was in place below the dam from 2008 through 2013.

Pinnipeds remain in upstream locations for a couple of days or longer, feeding heavily on salmon, steelhead, and sturgeon, although the occurrence of harbor seals near Bonneville Dam is much lower than sea lions (Stansell et al. 2013). Sea lions congregate at Bonneville Dam during the peaks of salmon return, from March through May each year, and a few California sea lions have been observed feeding on salmonids in the area below Willamette Falls during the spring adult fish migration.

There are no pinniped haul-out sites in the area of potential effects from the proposed project. The nearest haul-out sites, shared by harbor seals and California sea lions, are near the Cowlitz River/Carroll Slough confluence with the Columbia River, approximately 3.5 miles downriver from the proposed project (Jeffries et al. 2000). The nearest known haul-out for Steller sea lions is a rock formation (Phoca Rock) near RM 132 and the jetty (RM 0) near the mouth of the Columbia River. There are no pinniped rookeries located in or near the region of activity.

Harbor Seal

Species Description

Harbor seals, which are members of the Phocid family (true seals), inhabit coastal and estuarine waters and shoreline areas from Baja California, Mexico to western Alaska. For management purposes, differences in mean pupping date (*i.e.* birthing), movement patterns, pollutant loads, and fishery interactions have led to the recognition of three separate harbor seal stocks along the west coast of the continental U.S. (Boveng 1988). The three distinct stocks are: (1) Inland waters of Washington (including Hood Canal, Puget Sound, and the Strait of Juan de Fuca out to Cape Flattery), (2) outer coast of Oregon and Washington, and (3) California (Carretta et al. 2014). The seals in the region of activity are from the outer coast of Oregon and Washington stock.

The average weight for adult seals is about 180 lb (82 kg) and males are slightly larger than females. Male harbor seals weigh up to 245 lb (111 kg) and measure approximately 5 ft (1.5 m) in length. The basic color of harbor seals' coat is gray and mottled but highly variable, from dark with light color rings or spots to light with dark markings.

Status

In 1999, the population of the Oregon/Washington coastal stock of harbor seals was estimated at 24,732 animals (Carretta et al. 2014). Although this abundance estimate represents the best scientific information available, per NOAA Fisheries stock assessment policy it is not considered current because it is more than 8 years old. This harbor seal stock includes coastal estuaries (Columbia River) and bays (Willapa Bay and Grays Harbor). Both the Washington and Oregon portions of this stock are believed to have reached carrying capacity and the stock is within its optimum sustainable population level (Jeffries et al. 2003; Brown et al. 2005). Because there is no current estimate of minimum abundance, potential biological removal (PBR) cannot be calculated for this stock. However, the level of human-caused mortality and serious injury is less than ten percent of the previous PBR of 1,343 harbor seals per year (Carretta et al. 2014), and human-caused mortality is considered to be small relative to the stock size. Therefore, the Oregon and Washington outer coast stock of harbor seals are not classified as a strategic stock under the MMPA.

Behavior and Ecology

Harbor seals are generally non-migratory with local movements associated with such factors as tides, weather, season, food availability, and reproduction (Bigg 1981). They are not known to make extensive pelagic migrations, although some long distance movement of tagged animals in Alaska (174 km), and along the U.S. west coast (up to 550 km), have been recorded. Harbor seals are coastal species, rarely found more than 12 mi (20 km) from shore, and frequently occupy bays, estuaries, and inlets (Baird 2001). Individual seals have been observed several miles upstream in coastal rivers. Ideal harbor seal habitat includes haul-out sites, shelter during the breeding periods, and sufficient food (Bigg 1981).

Harbor seals haul out on rocks, reefs, beaches, and ice and feed in marine, estuarine, and occasionally fresh waters. Harbor seals display strong fidelity for haul-out sites (Pitcher and Calkins 1979; Pitcher and McAllister1981), although human disturbance can affect haul-out choice (Harris et al. 2003). Group sizes range from small numbers of animals on intertidal rocks to several thousand animals found seasonally in coastal estuaries. The harbor seal is the most commonly observed and widely distributed pinniped found in Oregon and Washington. Harbor seals use hundreds of sites to rest or haul out along the coast and inland waters of Oregon and Washington, including tidal sand bars and mudflats in estuaries, intertidal rocks and reefs, beaches, log booms, docks, and floats in all marine areas of the two states. Numerous harbor seal haul-out sites are found on intertidal mudflats and sand bars from the mouth of the lower Columbia River to Carroll Slough at the confluence of the Cowlitz and Columbia Rivers.

Harbor seals mate at sea and females give birth during the spring and summer, although the pupping season varies by latitude. Pupping seasons vary by geographic region with pups born in coastal estuaries (Columbia River, Willapa Bay, and Grays Harbor) from mid-April through June and in other areas along the Olympic Peninsula and Puget Sound from May through September (Jeffries et al. 2000). Suckling harbor seal pups spend as much as forty percent of their time in the water (Bowen et al. 1999).

Adult harbor seals can be found throughout the year at the mouth of the Columbia River. Peak harbor seal abundances in the Columbia River occur during the winter and spring when a number of upriver haul-out sites are used. Peak abundances and upriver movements in the winter and spring months are correlated with spawning runs of eulachon (*Thaleichthys pacificus*) smelt and out-migration of salmonid smolts.

Within the region of activity, there are no known harbor seal haul-out sites. The nearest known haul-out sites to the region of activity are located at Carroll Slough at the confluence of the Cowlitz and Columbia Rivers approximately 3.5 mi (72 km) downriver of the region of activity. The low number of observations of harbor seals at Bonneville Dam over the years, combined with the fact that no pupping or haul-out locations are within or upstream from the region of activity, suggest that very few harbor seals transit through the region of activity (Stansell et al. 2013).

Acoustics

In air, harbor seal males produce a variety of low-frequency (less than 4 kHz) vocalizations, including snorts, grunts, and growls. Male harbor seals produce communication sounds in the frequency range of 100–1,000 Hz (Richardson et al. 1995). Pups make individually unique calls for mother recognition that contain multiple harmonics with main energy below 0.35 kHz (Bigg 1981). Harbor seals hear nearly as well in air as underwater and have lower thresholds than California sea lions (Kastak and Schusterman 1998). Kastak and Schusterman (1998) reported airborne low frequency (100 Hz) sound detection thresholds at 65 dB for harbor seals. In air, they hear frequencies from 0.25–30 kHz and are most sensitive from 6–16 kHz (Wolski et al. 2003).

Adult males also produce underwater sounds during the breeding season that typically range from 0.25–4 kHz (duration range: 0.1 s to multiple seconds; Hanggi and Schusterman 1994). Hanggi and Schusterman (1994) found that there is individual variation in the dominant frequency range of sounds between different males, and Van Parijs et al. (2003) reported oceanic, regional, population, and site-specific variation that could be vocal dialects. In water, they hear frequencies from 1–75 kHz (Southall et al. 2007) and can detect sound levels as weak as 60–85 dB within that band. They are most sensitive at frequencies below 50 kHz; above 60 kHz sensitivity rapidly decreases.

California Sea Lions

Species Description

California sea lions are members of the Otariid family (eared seals). The breeding areas of the California sea lion are on islands located in southern California, western Baja California, and the Gulf of California (Carretta et al. 2014). These three geographic regions are used to separate this subspecies into three stocks: (1) The U.S. stock begins at the U.S./Mexico border and extends northward into Canada, (2) the Western Baja California stock extends from the U.S./Mexico border to the southern tip of the Baja California peninsula, and (3) the Gulf of California stock which includes the Gulf of California from the southern tip of the Baja California peninsula and across to the mainland and extends to southern.

The California sea lion is sexually dimorphic. Males may reach 1,000 lb (454 kg) and 8 ft (2.4 m) in length; females grow to 300 lb (136 kg) and 6 ft (1.8 m) in length. Their color ranges from chocolate brown in males to a lighter, golden brown in females. At around 5 years of age, males develop a bony bump on top of the skull called a sagittal crest. The crest is visible in the dog-like profile of male sea lion heads, and hair around the crest gets lighter with age. Status—The U.S. stock of California sea lions is estimated at 296,750 and the minimum population size of this stock is 153,337 individuals (Carretta et al. 2014). The current estimate of human induced mortality for California sea lions is on average 431 animals per year (Carretta et al. 2014). California sea lions are not considered a strategic stock under the MMPA because total human-caused mortality is still very likely to be less than the PBR of 9200 animals per year (Carretta et al. 2014).

Behavior and Ecology

During the summer, the U.S. stock of California sea lions breed on the primary rookeries on the Channel Islands, and seldom travel more than about 31 mi (50 km) from the islands (Carretta et al. 2014). Their distribution shifts to the northwest in fall and to the southeast during winter and spring, probably in response to changes in prey availability (Bonnell and Ford 1987). The non-breeding distribution extends from Baja California north to Alaska for males, and encompasses the waters of California and Baja California for females (Carretta et al. 2014). In the non-breeding season, an estimated 3,000 to 5,000 adult and sub-adult males migrate northward along the coast to central and northern California, Oregon, Washington, and Vancouver Island from September to May (Jeffries et al. 2000) and return south the following spring.

California sea lions do not breed in the Columbia River. Though a few young animals may remain in Oregon during summer months, most return south for the breeding season (ODFW, 2015). Male California sea lions are commonly seen in Oregon from September through May. During this time period California sea lions can be found in many bays, estuaries and on offshore sites along the coast, often hauled-out in the same locations as Steller sea lions. Some pass through Oregon to feed along coastal waters to the north during fall and winter months.

California sea lions feed on a wide variety of prey, including many species of fish and squid. In some locations where salmon runs exist, California sea lions also feed on returning adult and out-migrating juvenile salmonids. Sexual maturity occurs at around 4–5 years of age for California sea lions. California sea lions are gregarious during the breeding season and social on land during other times.

California sea lions are known to occur in several areas of the Columbia River during much of the year, except the summer breeding months of June through August. Approximately 1,000 California sea lions have been observed at haul-out sites at the mouth of the Columbia River, while approximately 100 individuals have been observed in past years at the Bonneville Dam between January and May prior to returning to their breeding rookeries in California at the end of May (Stansell et al. 2013). The nearest known haul-out sites to the region of activity are near the Cowlitz River/Carroll Slough confluence with the Columbia River, approximately 3.5 miles downriver of the proposed action (Jeffries et al. 2000).

The USACE's intensive sea lion monitoring program began as a result of the 2000 Federal Columbia River Power System (FCRPS) biological opinion, which required an evaluation of pinniped predation in the tailrace of Bonneville Dam. The objective of the study was to determine the timing and duration of pinniped predation activity, estimate the number of fish caught, record the number of pinnipeds present, identify and track individual California sea lions, and evaluate various pinniped deterrents used at the dam (Tackley et al. 2008). The study period for monitoring was January 1 through May 31, beginning in 2002. During the study period, pinniped observations began after consistent sightings of at least one animal occurred. Tackley et al. (2008) note that sightings began earlier each year from 2002 to 2004. Although some sightings were reported earlier in the season, full-time observations began March 21 in 2002, March 3 in 2003, and February 24 in 2004 (Tackley et al. 2008). In 2005 observations began in April, but in 2006 through 2012 observations began in January or early February (Tackley et al. 2008; Stansell et al. 2013). In 2012, 39 California sea lions were observed at Bonneville Dam, the fewest since 2002 (Stansell et al. 2013). However, in 2010, 89 California sea lion individuals were observed at Bonneville Dam (Stansell et al. 2013).

California sea lion daily abundance estimates at Bonneville Dam are compiled in Stansell et al. (2013, Figure 1) from the reports listed in the preceding paragraph. If arrival and departure dates were not available, the timing of surface observations within the January through May study period were recorded. Because regular observations in the study period generally began as California sea lions were observed below Bonneville Dam, and sometimes reports stated that observations stopped as sea lion numbers dropped, the observation dates only give a general idea of first arrival and departure. Because tracking data indicate that sea lions travel at fast rates between hydrophone locations above and below the POK project area, dates of first arrival at Bonneville Dam and departure from the dam are assumed to coincide closely with potential passage timing through the POK project area.

Based on the information presented in Stansell et al. (2013), California sea lions have generally been observed at Bonneville Dam between early January and early June, although beginning in 2008, a few individuals have been noted at the dam as early as September and as late as August. Therefore, the majority of California sea lions are expected to pass the project site beginning in early January through early June. Stansell et al. (2013) shows that California sea lion abundance below Bonneville Dam peaks in April, when it drops through about the end of May. Wright et al. (2010) reported a median start date for the southbound migration from the Columbia River to the breeding grounds of May 20 (range: May 7 to May 27; n = 8 sea lions).

The highest number of California sea lions observed in the Bonneville Dam tailrace over the last 9 years was 104 in 2003 (Stansell et al. 2013). However, Tackley et al. (2008) noted that numbers of sea lions estimated from early study years were likely underestimated, because the observers' ability to uniquely identify individuals increased over the years. In addition, the high number of 104 individuals present below the dam in 2003 occurred prior to hazing (2005) or permanent removal (2008) activities began. The high after both hazing and removal programs were implemented has been 89 individuals in a year in 2010 (Stansell et al. 2013).

Acoustics

On land, California sea lions make incessant, raucous barking sounds; these have most of their energy at less than 2 kHz (Schusterman and Balliet 1969). Males vary both the number and rhythm of their barks depending on the social context; the barks appear to control the movements and other behavior patterns of nearby conspecifics (Schusterman, 1977). Females produce barks, squeals, belches, and growls in the frequency range of 0.25–5 kHz, while pups make bleating sounds at 0.25–6 kHz. California sea lions produce two types of underwater sounds: Clicks (or short-duration sound pulses) and barks (Schusterman and Balliet 1969). All of these underwater sounds have most of their energy below 4 kHz (Schusterman and Balliet 1969).

The range of maximal hearing sensitivity for California sea lions underwater is between 1–28 kHz (Schusterman et al. 1972). Functional underwater high frequency hearing limits are between 35–40 kHz, with peak sensitivities from 15–30 kHz (Schusterman et al. 1972). The California sea lion shows relatively poor hearing at frequencies below 1 kHz (Kastak and Schusterman 1998). Peak hearing sensitivities in air are shifted to lower frequencies; the effective upper hearing limit is approximately 36 kHz (Schusterman, 1974). The best range of sound detection is from 2–16 kHz (Schusterman, 1974). Kastak and Schusterman (2002) determined that hearing sensitivity generally worsens with depth—hearing thresholds were lower in shallow water, except at the highest frequency tested (35 kHz), where this trend was reversed. Octave band sound levels of 65–70 dB above the animal's threshold produced an average temporary threshold shift (TTS; discussed later in Potential Effects of the Specified Activity on Marine Mammals) of 4.9 dB in the California sea lion (Kastak et al. 1999).

Steller Sea Lions

Species Description

Steller sea lions are the largest members of the Otariid (eared seal) family. Steller sea lions show marked sexual dimorphism, in which adult males are noticeably larger and have distinct coloration patterns from females. Males average approximately 1,500 lb (680 kg) and 10 ft (3 m) in length; females average about 700 lb (318 kg) and 8 ft (2.4 m) in length. Adult females have a tawny to silver-colored pelt. Males are characterized by dark, dense fur around their necks, giving a mane-like appearance, and light tawny coloring over the rest of their body. Steller sea lions are distributed mainly around the coasts to the outer continental shelf along the North Pacific Ocean rim from northern Hokkaido, Japan through the Kuril Islands and Okhotsk Sea, Aleutian Islands and central Bering Sea, southern coast of Alaska and south to California. The population is divided into the Western and the Eastern Distinct Population Segments (DPSs) at 144° W (Cape Suckling, Alaska). The Western DPS includes Steller sea lions that reside in the central and western Gulf of Alaska, Aleutian Islands, as well as those that inhabit coastal waters and breed in Asia (*e.g.* Japan and Russia). The Eastern DPS extends from California to Alaska, including the Gulf of Alaska.

Status

Steller sea lions were listed as threatened range-wide under the ESA in 1990. After genetics work identified strong genetic separation between two distinct populations (Allen and Angliss 2015), the species was divided into two stocks, with the western stock listed as endangered under the ESA in 1997 with the eastern stock remaining listed as threatened. After receiving a petition for delisting, NOAA Fisheries evaluated the eastern stock and found it suitable for delisting, which was completed in 2013. However, the eastern stock of Steller sea lions is still considered depleted under the MMPA. Animals found in the region of activity are from the eastern stock. The eastern stock breeds in rookeries located in southeast Alaska, British Columbia, Oregon, and California; there are no rookeries located in Washington or in the Columbia River (Allen and Angliss 2015).

The abundance of the Eastern DPS of Steller sea lions is increasing throughout the northern portion of its range (Southeast Alaska and British Columbia), and stable or increasing slowly in the central portion (Oregon through central California). In the southern end of its range (Channel Islands in southern California), it has declined significantly since the late 1930s, and several rookeries and haul-outs have been abandoned (Allen and Angliss 2015). The most recent stock assessment report estimated the population for Steller sea lions to be between 60,131 and 74,448 animals (Allen and Angliss 2015). This stock has been increasing approximately four percent per year over the entire range since the late 1970s (Allen and Angliss 2015). The most recent minimum population estimate for the eastern stock is 59,968 individuals, with actual population estimated to be within the range 58,334 to 72,223 (Allen and Angliss 2015).

Behavior and Ecology

Steller sea lions forage near shore and in pelagic waters. They are capable of traveling long distances in a season and can dive to approximately 1,300 ft (400 m) in depth. They also use terrestrial habitat as haul-out sites for periods of rest, molting, and as rookeries for mating and pupping during the breeding season. At sea, they are often seen alone or in small groups, but may gather in large rafts at the surface near rookeries and haul-outs. Steller sea lions prefer the colder temperate to sub-arctic waters of the North Pacific Ocean. Haul-outs and rookeries usually consist of beaches (gravel, rocky or sand), ledges, and rocky reefs. In the Bering and Okhotsk Seas, sea lions may also haul-out on sea ice, but this is considered atypical behavior.

Steller sea lions are gregarious animals that often travel or haul out in large groups of up to 45 individuals (Keple 2002). At sea, groups usually consist of female and subadult males; adult males are usually solitary while at sea (Loughlin 2002). In the Pacific Northwest, breeding rookeries are located in British Columbia, Oregon, and northern California. Steller sea lions form large rookeries during late spring when adult males arrive and establish territories (Pitcher and Calkins 1979). Large males aggressively defend territories while non-breeding males remain at peripheral sites or haul-outs. Females arrive soon after and give birth. Most births occur from mid-May through mid-July, and breeding takes place shortly thereafter. Most pups are weaned within a year. Non-breeding individuals may not return to rookeries during the breeding season but remain at other coastal haul-outs (Scordino 2006).

Steller sea lions are opportunistic predators, feeding primarily on fish and cephalopods, and their diet varies geographically and seasonally. Foraging habitat is primarily shallow, nearshore and continental shelf waters; freshwater rivers; and also deep waters (Scordino, 2010).

In Oregon, Steller sea lions are found on offshore rocks and islands. Most of these haul-out sites are part of the Oregon Islands National Wildlife Refuge and are closed to the public. Oregon is home to the largest breeding site in U.S. waters south of Alaska, with breeding areas at Three Arch Rocks (Oceanside), Orford Reef (Port Orford), and Rogue Reef (Gold Beach). Steller sea lions are also found year-round in smaller numbers at Sea Lion Caves and at Cape Arago State Park.

Although Steller sea lions occur primarily in coastal habitat in Oregon and Washington, they are present year-round in the lower Columbia River, usually downstream of the confluence of the Cowlitz River. However, adult and subadult male Steller sea lions have been observed at Bonneville Dam, where they prey primarily on sturgeon and salmon that congregate below the dam. In 2002, the USACE began monitoring seasonal presence, abundance, and predation activities of marine mammals in the Bonneville Dam tailrace (Stansell et al. 2013). Steller sea lions have been documented every year since 2003; observations have steadily increased to maximum of 89 Steller sea lions in 2011 (Stansell et al. 2013).

Steller sea lions use the Columbia River for travel, foraging, and resting as they move between haul-out sites and the dam. There are no known haul-out sites within the portions of the region of activity occurring in the Columbia River. The nearest known haul-out in the Columbia River is a rock formation (Phoca Rock) approximately 8 miles downstream of Bonneville Dam (approximately 66 miles upstream from the project site). Steller sea lions are also known to haul out on the south jetty at the mouth of the Columbia River, near Astoria, Oregon. There are no rookeries located in or near the region of activity. The nearest Steller sea lion rookery is on the northern Oregon coast at Oceanside (ODFW, 2015), approximately 70 miles south of Astoria, *i.e.* more than 150 milies from the region of activity.

Steller sea lions arrive at the dam in late fall (Tackley et al. 2008), although occasionally individuals are sighted near Bonneville Dam in the months of September, October, and November (Stansell et al. 2013). Steller sea lions are present at the dam through May, and can travel between the dam and the mouth of the Columbia River several times during these months (Tackley et al. 2008). Stansell et al. (2013) shows the average abundance of pinnipeds at the Bonneville Dam, showing peak abundance during April. Because tracking data indicate that sea lions travel at fast rates between hydrophone locations above and below the POK project area (Brown et al. 2010), dates of first arrival at Bonneville Dam and departure from the dam are assumed to coincide closely with potential passage timing through the project area.

Steller sea lions are expected to pass the project site beginning with a few individuals as early as September and most individuals in January through early June. Stansell et al. (2013) show that Steller sea lion abundance below Bonneville Dam increases through approximately mid-April, and then drops through about the end of May.

Acoustics

Like all pinnipeds, the Steller sea lion is amphibious; while all foraging activity takes place in the water, breeding behavior is carried out on land in coastal rookeries. On land, territorial male Steller sea lions regularly use loud, relatively low-frequency calls/roars to establish breeding territories (Loughlin et al. 1987). The calls of females range from 0.03 to 3 kHz, with peak frequencies from 0.15 to 1 kHz; typical duration is 1.0 to 1.5 sec (Campbell et al. 2002). Pups also produce bleating sounds. Individually distinct vocalizations exchanged between mothers and pups are thought to be the main modality by which reunion occurs when mothers return to crowded rookeries following foraging at sea (Campbell et al. 2002).

Mulsow and Reichmuth (2010) measured the unmasked airborne hearing sensitivity of one male Steller sea lion. The range of best hearing sensitivity was between 5 and 14 kHz. Maximum sensitivity was found at 10 kHz, where the subject had a mean threshold of 7 dB. The underwater hearing threshold of a male Steller sea lion was significantly different from that of a female. The peak sensitivity range for the male was from 1 to 16 kHz, with maximum sensitivity (77 dB re: 1μPa-m) at 1 kHz. The range of best hearing for the female was from 16 to above 25 kHz, with maximum sensitivity (73 dB re: 1μPa-m) at 25 kHz. However, because of the small number of animals tested, the findings could not be attributed to either individual differences in sensitivity or sexual dimorphism (Kastelein et al. 2005).

Sound Primer

Sound travels in waves, the basic components of which are frequency, wavelength, velocity, and amplitude. Frequency is the number of pressure waves that pass by a reference point per unit of time and is measured in hertz (Hz) or cycles per second. Wavelength is the distance between two peaks or corresponding points of a sound wave (length of one cycle). Higher frequency sounds have shorter wavelengths than lower frequency sounds, and typically attenuate (decrease) more rapidly, except in certain cases in shallower water. Amplitude is the height of the sound pressure wave or the ''loudness'' of a sound and is typically described using the relative unit of the decibel (dB). A sound pressure level (SPL) in dB is described as the ratio between a measured pressure and a reference pressure (for underwater sound, this is 1 microPascal [μPa]), and is a logarithmic unit that accounts for large variations in amplitude; therefore, a relatively small change in dB corresponds to large changes in sound pressure. The source level (SL) represents the SPL referenced at a distance of 1 m from the source (referenced to 1 μPa), while the received level is the SPL at the listener's position (referenced to 1 μPa).

Root mean square (rms) is the quadratic mean sound pressure over the duration of an impulse. Rms is calculated by squaring all of the sound amplitudes, averaging the squares, and then taking the square root of the average. Rms accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels (Hastings and Popper 2005). This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units than by peak pressures.

Sound exposure level (SEL; represented as dB re 1 μPa2-s) represents the total energy contained within a pulse, and considers both intensity and duration of exposure. For a single pulse, the numerical value of the SEL measurement is usually 5–15 dB lower than the rms sound pressure in dB re 1 μPa, with the comparative difference between measurements of rms and SEL measurements often tending to decrease with increasing range (Greene 1997). Peak sound pressure is the maximum instantaneous sound pressure measurable in the water at a specified distance from the source, and is represented in the same units as the rms sound pressure. Another common metric is peak-to-peak sound pressure (p-p), which is the algebraic difference between the peak positive and peak negative sound pressures. Peak-to-peak pressure is typically approximately 6 dB higher than peak pressure (Southall et al. 2007).

When underwater objects vibrate or activity occurs, sound-pressure waves are created. These waves alternately compress and decompress the water as the sound wave travels. Underwater sound waves radiate in a manner similar to ripples on the surface of a pond and may be either directed in a beam or beams (as for the sources considered here) or may radiate in all directions (omnidirectional sources). The compressions and decompressions associated with sound waves are detected as changes in pressure by aquatic life and man-made sound receptors such as hydrophones.

Even in the absence of sound from the specified activity, the underwater environment is typically loud due to ambient sound. Ambient sound is defined as environmental background sound levels lacking a single source or point (Richardson et al. 1995), and the sound level of a region is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.* waves, earthquakes, ice, atmospheric sound), biological (*e.g.* sounds produced by marine mammals, fish, and invertebrates), and anthropogenic (*e.g.* vessels, dredging, construction) sound. A number of sources contribute to ambient sound, including the following (Richardson et al. 1995):

—Wind and waves: The complex interactions between wind and water surface, including processes such as breaking waves and wave-induced bubble oscillations and cavitation, are a main source of naturally occurring ambient sound for frequencies between 200 Hz and 50 kHz (Mitson1995). In general, ambient sound levels tend to increase with increasing wind speed and wave height. Surf sound becomes important near shore, with measurements collected at a distance of 8.5 km from shore showing an increase of 10 dB in the 100 to 700 Hz band during heavy surf conditions.

—Precipitation: Sound from rain and hail impacting the water surface can become an important component of total sound at frequencies above 500 Hz, and possibly down to 100 Hz during quiet times.

—Biological: Marine mammals can contribute significantly to ambient sound levels, as can some fish and shrimp. The frequency band for biological contributions is from approximately 12 Hz to over 100 kHz.

—Anthropogenic: Sources of ambient sound related to human activity include transportation (surface vessels), dredging and construction, oil and gas drilling and production, seismic surveys, sonar, explosions, and ocean acoustic studies. Vessel noise typically dominates the total ambient sound for frequencies between 20 and 300 Hz. In general, the frequencies of anthropogenic sounds are below 1 kHz and, if higher frequency sound levels are created, they attenuate rapidly. Sound from identifiable anthropogenic sources other than the activity of interest (*e.g.* a passing vessel) is sometimes termed background sound, as opposed to ambient sound.

The sum of the various natural and anthropogenic sound sources at any given location and time—which comprise ''ambient'' or ''background'' sound—depends not only on the source levels (as determined by current weather conditions and levels of biological and human activity) but also on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10–20 dB from day to day (Richardson et al. 1995). The result is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals. Details of source types are described in the following text.

Sounds are often considered to fall into one of two general types: Pulsed and non-pulsed (defined in the following). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.* Ward 1997 in Southall et al. 2007). Please see Southall et al. (2007) for an in-depth discussion of these concepts.

Pulsed sound sources (*e.g.* explosions, gunshots, sonic booms, impact pile driving) produce signals that are brief (typically considered to be less than one second), broadband, atonal transients and occur either as isolated events or repeated in some succession. Pulsed sounds are all characterized by a relatively rapid rise from ambient pressure to a maximal pressure value followed by a rapid decay period that may include a period of diminishing, oscillating maximal and minimal pressures, and generally have an increased capacity to induce physical injury as compared with sounds that lack these features.

Non-pulsed sounds can be tonal, narrowband, or broadband, brief or prolonged, and may be either continuous or non-continuous. Some of these non-pulsed sounds can be transient signals of short duration but without the essential properties of pulses (*e.g.* rapid rise time). Examples of non-pulsed sounds include those produced by vessels, aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems (such as those used by the U.S. Navy). The duration of such sounds, as received at a distance, can be greatly extended in a highly reverberant environment.

When considering the influence of various kinds of sound on the marine environment, it is necessary to understand that different kinds of marine life are sensitive to different frequencies of sound. Based on available behavioral data, audiograms have been derived using auditory evoked potentials, anatomical modeling, and other data, Southall et al. (2007) designate ''functional hearing groups'' for marine mammals and estimate the lower and upper frequencies of functional hearing of the groups. The functional groups and the associated frequencies are indicated below (though animals are less sensitive to sounds at the outer edge of their functional range and most sensitive to sounds of frequencies within a smaller range somewhere in the middle of their functional hearing range):

—Phocid pinnipeds in-water: Functional hearing is estimated to occur between approximately 75 Hz and 100 kHz; and
—Otariid pinnipeds in-water: Functional hearing is estimated to occur between approximately 100 Hz and 40 kHz.

As mentioned previously in this document, 3 marine mammal pinniped species are likely to occur in the proposed project area. The affected pinniped species will be considered as a functional group using the greatest range of hearing characteristics (75Hz to 100kHz) for the purpose of analyzing the effects of exposure to sound on marine mammals.

Potential Effects of the Specified Activity on Marine Mammals and Their Habitat

This section includes a summary and discussion of the ways that pile driving and dredging components of the specified activity, including mitigation may impact marine mammals and their habitat. The ''Estimated Take by Incidental Harassment'' section later in this document will include a quantitative analysis of the number of individuals that are expected to be taken by this activity. The ''Negligible Impact Analysis'' section will include the analysis of how this specific activity will impact marine mammals and will consider the content of this section, the ''Estimated Take by Incidental Harassment'' section and the ''Monitoring and Mitigation'' section to draw conclusions regarding the likely impacts of this activity on the reproductive success or survivorship of individuals and from that on the affected marine mammal populations or stocks.

Acoustic Impacts

Marine mammals transiting the project location when construction activities are occurring may be exposed to increased sound energy levels that could result in take by Level B harassment. No take by Level A harassment, injury, or mortality is expected from the project. POK's in-water construction and demolition activities (*e.g.* pile driving and removal) introduce sound into the marine environment, and have the potential to have adverse impacts on marine mammals. The potential effects of sound from the proposed activities associated with the POK project may include one or more of the following: Tolerance; masking of natural sounds; behavioral disturbance; non-auditory physical effects; and temporary or permanent hearing impairment (Richardson et al. 1995). However, for reasons discussed later in this document, it is unlikely that there would be any cases of temporary or permanent hearing impairment resulting from these activities. As outlined in previous NOAA Fisheries documents, the effects of sound on marine mammals are highly variable, and can be categorized as follows (based on Richardson et al. 1995):

—The sound may be too weak to be heard at the location of the animal (*i.e.* lower than the prevailing ambient sound level, the hearing threshold of the animal at relevant frequencies, or both);
—The sound may be audible but not strong enough to elicit any overt behavioral response;
—The sound may elicit reactions of varying degrees and variable relevance to the well-being of the marine mammal; these can range from temporary alert responses to active avoidance reactions such as vacating an area until the stimulus ceases, but potentially for longer periods of time;
—Upon repeated exposure, a marine mammal may exhibit diminishing responsiveness (habituation), or disturbance effects may persist; the latter is most likely with sounds that are highly variable in characteristics and unpredictable in occurrence, and associated with situations that a marine mammal perceives as a threat;
—Any anthropogenic sound that is strong enough to be heard has the potential to result in masking, or reduce the ability of a marine mammal to hear biological sounds at similar frequencies, including calls from conspecifics and underwater environmental sounds such as surf sound;
—If mammals remain in an area because it is important for feeding, breeding, or some other biologically important purpose even though there is chronic exposure to sound, it is possible that there could be sound-induced physiological stress; this might in turn have negative effects on the well-being or reproduction of the animals involved; and
—Very strong sounds have the potential to cause a temporary or permanent reduction in hearing sensitivity, also referred to as threshold shift. In terrestrial mammals, and presumably marine mammals, received sound levels must far exceed the animal's hearing threshold for there to be any temporary threshold shift (TTS). For transient sounds, the sound level necessary to cause TTS is inversely related to the duration of the sound. Received sound levels must be even higher for there to be risk of permanent hearing impairment (PTS). In addition, intense acoustic or explosive events may cause trauma to tissues associated with organs vital for hearing, sound production, respiration and other functions. This trauma may include minor to severe hemorrhage.

Tolerance

Numerous studies have shown that underwater sounds from industrial activities are often readily detectable by marine mammals in the water at distances of many kilometers. However, other studies have shown that marine mammals at distances more than a few kilometers away often show no apparent response to industrial activities of various types (Miller et al. 2005). This is often true even in cases when the sounds must be readily audible to the animals based on measured received levels and the hearing sensitivity of that mammal group. Although various baleen whales, toothed whales, and (less frequently) pinnipeds have been shown to react behaviorally to underwater sound from sources such as airgun pulses or vessels under some conditions, at other times, mammals of all three types have shown no overt reactions. In general, pinnipeds seem to be more tolerant of exposure to some types of underwater sound than are baleen whales. Richardson et al. (1995) found that vessel sound does not seem to strongly affect pinnipeds that are already in the water. Richardson et al. (1995) went on to explain that seals on haul-outs sometimes respond strongly to the presence of vessels and at other times appear to show considerable tolerance of vessels.

Masking

Masking is the obscuring of sounds of interest to an animal by other sounds, typically at similar frequencies. Marine mammals are highly dependent on sound, and their ability to recognize sound signals amid other sound is important in communication and detection of both predators and prey. Background ambient sound may interfere with or mask the ability of an animal to detect a sound signal even when that signal is above its absolute hearing threshold. Even in the absence of anthropogenic sound, the marine environment is often loud. Natural ambient sound includes contributions from wind, waves, precipitation, other animals, and (at frequencies above 30 kHz) thermal sound resulting from molecular agitation (Richardson et al. 1995).

Background sound may also include anthropogenic sound, and masking of natural sounds can result when human activities produce high levels of background sound. Conversely, if the background level of underwater sound is high (*e.g.* on a day with strong wind and high waves), an anthropogenic sound source would not be detectable as far away as would be possible under quieter conditions and would itself be masked. Ambient sound is highly variable on continental shelves. This results in a high degree of variability in the range at which marine mammals can detect anthropogenic sounds.

Although masking is a phenomenon which may occur naturally, the introduction of loud anthropogenic sounds into the marine environment at frequencies important to marine mammals increases the severity and frequency of occurrence of masking. For example, if a baleen whale is exposed to continuous low-frequency sound from an industrial source, this would reduce the size of the area around that whale within which it can hear the calls of another whale. The components of background noise that are similar in frequency to the signal in question primarily determine the degree of masking of that signal. In general, little is known about the degree to which marine mammals rely upon detection of sounds from conspecifics, predators, prey, or other natural sources. In the absence of specific information about the importance of detecting these natural sounds, it is not possible to predict the impact of masking on marine mammals (Richardson et al. 1995). In general, masking effects are expected to be less severe when sounds are transient than when they are continuous. Masking is typically of greater concern for those marine mammals that utilize low frequency communications, such as baleen whales and, as such, is not likely to occur for pinnipeds in the region of activity.

Disturbance

Behavioral disturbance is one of the primary potential impacts of anthropogenic sound on marine mammals. Disturbance can result in a variety of effects, such as subtle or dramatic changes in behavior or displacement, but the degree to which disturbance causes such effects may be highly dependent upon the context in which the stimulus occurs. For example, an animal that is feeding may be less prone to disturbance from a given stimulus than one that is not. For many species and situations, there is no detailed information about reactions to sound.

Behavioral reactions of marine mammals to sound are difficult to predict because they are dependent on numerous factors, including species, maturity, experience, activity, reproductive state, time of day, and weather. If a marine mammal does react to an underwater sound by changing its behavior or moving a small distance, the impacts of that change may not be important to the individual, the stock, or the species as a whole. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on the animals could be important. In general, pinnipeds seem more tolerant of, or at least habituate more quickly to, potentially disturbing underwater sound than do cetaceans, and generally seem to be less responsive to exposure to industrial sound than most cetaceans. Pinniped responses to underwater sound from some types of industrial activities such as seismic exploration appear to be temporary and localized (Harris et al. 2001; Reiser et al. 2009).

Because the few available studies show wide variation in response to underwater and airborne sound, it is difficult to quantify exactly how pile driving sound would affect pinnipeds. The literature shows that elevated underwater sound levels could prompt a range of effects, including no obvious visible response, or behavioral responses that may include annoyance and increased alertness, visual orientation towards the sound, investigation of the sound, change in movement pattern or direction, habituation, alteration of feeding and social interaction, or temporary or permanent avoidance of the area affected by sound. Minor behavioral responses do not necessarily cause long-term effects to the individuals involved. Severe responses include panic, immediate movement away from the sound, and stampeding, which could potentially lead to injury or mortality (Southall et al. 2007). Stampeding is not expected to occur because there are no haulouts that will be affected by the proposed action.

Southall et al. (2007) reviewed literature describing responses of pinnipeds to non-pulsed sound in water and reported that the limited data suggest exposures between approximately 90 and 140 dB generally do not appear to induce strong behavioral responses in pinnipeds, while higher levels of pulsed sound, ranging between 150 and 180 dB, will prompt avoidance of an area. It is important to note that among these studies, there are some apparent differences in responses between field and laboratory conditions. In contrast to the mid-frequency odontocetes, captive pinnipeds responded more strongly at lower levels than did animals in the field. Again, contextual issues are the likely cause of this difference. For airborne sound, Southall et al. (2007) note there are extremely limited data suggesting very minor, if any, observable behavioral responses by pinnipeds exposed to airborne pulses of 60 to 80 dB; however, given the paucity of data on the subject, we cannot rule out the possibility that avoidance of sound in the region of activity could occur.

In their comprehensive review of available literature, Southall et al. (2007) noted that quantitative studies on behavioral reactions of pinnipeds to underwater sound are rare. A subset of only three studies observed the response of pinnipeds to multiple pulses of underwater sound (a category of sound types that includes impact pile driving), and were also deemed by the authors as having results that are both measurable and representative. However, a number of studies not used by Southall et al. (2007) provide additional information, both quantitative and anecdotal, regarding the reactions of pinnipeds to multiple pulses of underwater sound.

—Harris et al. (2001) observed the response of ringed, bearded (*Erignathus barbatus*), and spotted seals (*Phoca largha*) to underwater operation of a single air gun and an eleven-gun array. Received exposure levels were 160 to 200 dB. Results fit into two categories. In some instances, seals exhibited no response to sound. However, the study noted significantly fewer seals during operation of the full array in some instances. Additionally, the study noted some avoidance of the area within 150 m of the source during full array operations.

—Blackwell et al. (2004) is the only cited study directly related to pile driving. The study observed ringed seals during impact installation of steel pipe pile. Received underwater SPLs were measured at 151 dB at 63 m. The seals exhibited either no response or only brief orientation response (defined as ''investigation or visual orientation''). It should be noted that the observations were made after pile driving was already in progress. Therefore, it is possible that the low-level response was due to prior habituation.

—Miller et al. (2005) observed responses of ringed and bearded seals to a seismic air gun array. Received underwater sound levels were estimated at 160 to 200 dB. There were fewer seals present close to the sound source during air gun operations in the first year, but in the second year the seals showed no avoidance. In some instances, seals were present in very close range of the sound. The authors concluded that there was ''no observable behavioral response'' to seismic air gun operations.

—During a Caltrans installation demonstration project for retrofit work on the East Span of the San Francisco Oakland Bay Bridge, California, sea lions responded to pile driving by swimming rapidly out of the area, regardless of the size of the pile-driving hammer or the presence of sound attenuation devices (74 FR 63724; December 4, 2009).

—Jacobs and Terhune (2002) observed harbor seal reactions to acoustic harassment devices (AHDs) with source level of 172 dB deployed around aquaculture sites. Seals were generally unresponsive to sounds from the AHDs. During two specific events, individuals came within 141 and 144 ft (43 and 44 m) of active AHDs and failed to demonstrate any measurable behavioral response; estimated received levels based on the measures given were approximately 120 to 130 dB.

—Costa et al. (2003) measured received sound levels from an Acoustic Thermometry of Ocean Climate (ATOC) program sound source off northern California using acoustic data loggers placed on translocated elephant seals. Subjects were captured on land, transported to sea, instrumented with archival acoustic tags, and released such that their transit would lead them near an active ATOC source (at 0.6 mi depth [939 m]; 75-Hz signal with 37.5-Hz bandwidth; 195 dB maximum source level, ramped up from 165 dB over 20 min) on their return to a haul-out site. Received exposure levels of the ATOC source for experimental subjects averaged 128 dB (range 118 to 137) in the 60- to 90-Hz band. None of the instrumented animals terminated dives or radically altered behavior upon exposure, but some statistically significant changes in diving parameters were documented in nine individuals. Translocated northern elephant seals exposed to this particular non-pulse source began to demonstrate subtle behavioral changes at exposure to received levels of approximately 120 to 140 dB.

Several available studies provide information on the reactions of pinnipeds to non-pulsed underwater sound. Kastelein et al. (2006) exposed nine captive harbor seals in an approximately 82 x 98 ft (25 x 30 m) enclosure to non-pulse sounds used in underwater data communication systems (similar to acoustic modems). Test signals were frequency modulated tones, sweeps, and bands of sound with fundamental frequencies between 8 and 16 kHz; 128 to 130 ±3 dB source levels; 1- to 2-s duration (60–80 percent duty cycle); or 100 percent duty cycle. They recorded seal positions and the mean number of individual surfacing behaviors during control periods (no exposure), before exposure, and in 15-min experimental sessions (n = 7 exposures for each sound type). Seals generally swam away from each source at received levels of approximately 107 dB, avoiding it by approximately 16 ft (5 m), although they did not haul out of the water or change surfacing behavior. Seal reactions did not appear to wane over repeated exposure (*i.e.* there was no obvious habituation), and the colony of seals generally returned to baseline conditions following exposure. The seals were not reinforced with food for remaining in the sound field.

Ship and boat sound do not seem to have strong effects on seals in the water, but the data are limited. When in the water, seals appear to be much less apprehensive about approaching vessels. Gray seals (*Halichoerus grypus*) have been known to approach and follow fishing vessels in an effort to steal catch or the bait from traps. In contrast, seals hauled out on land often are quite responsive to nearby vessels. Terhune (1985) reported that northwest Atlantic harbor seals were extremely vigilant when hauled out and were wary of approaching (but less so passing) boats. Suryan and Harvey (1999) reported that Pacific harbor seals commonly left the shore when powerboat operators approached to observe the seals. Those seals detected a powerboat at a mean distance of 866 ft (264 m), and seals left the haul-out site when boats approached to within 472 ft (144 m).

Southall et al. (2007) also compiled known studies of behavioral responses of marine mammals to airborne sound, noting that studies of pinniped response to airborne pulsed sounds are exceedingly rare. The authors deemed only one study as having quantifiable results.

Blackwell et al. (2004) studied the response of ringed seals within 500 m of impact driving of steel pipe pile. Received levels of airborne sound were measured at 93 dB at a distance of 63 m. Seals had either no response or limited response to pile driving. Reactions were described as ''indifferent'' or ''curious.''

Efforts to deter pinniped predation on salmonids below Bonneville Dam began in 2005, and have used Acoustic Deterrent Devices (ADDs), boat chasing, above-water pyrotechnics (cracker shells, screamer shells or rockets), rubber bullets, rubber buckshot, and beanbags (Stansell et al. 2013). Review of deterrence activities by the West Coast Pinniped Program noted ''USACE observations from 2002 to 2008 indicated that increasing numbers of California sea lions were foraging on salmon at Bonneville Dam each year, salmon predation rates increased, and the deterrence efforts were having little effect on preventing predation'' (Scordino 2010). In the USACE status report through May 28, 2010, boat hazing was reported to have limited, local, short term impact in reducing predation in the tailrace, primarily from Steller sea lions. ODFW and the WDFW reported that sea lion presence did not appear to be significantly influenced by boat-based activities and several 'new' sea lions (initially unbranded or unknown from natural markings) continued to forage in the observation area in spite of shore- and boat-based hazing. They suggested that hazing was not effective at deterring naive sea lions if there were large numbers of experienced sea lions foraging in the area (Brown et al. 2010). Observations on the effect of ADDs, which were installed at main fishway entrances in 2007, noted that pinnipeds were observed swimming and eating fish within 20 ft (6 m) of some of the devices with no deterrent effect observed (Tackley et al. 2008; Stansell et al. 2013). Many of the animals returned to the area below the dam despite hazing efforts (Stansell et al. 2013). Relocation efforts to Astoria and the Oregon coast were implemented in 2007; however, all but one of fourteen relocated animals returned to Bonneville Dam within days (Scordino 2010).

No information on in-water sound levels of hazing activities at Bonneville Dam has been published other than that ADDs produce underwater sound levels of 205 dB in the 15 kHz range (Stansell et al. 2013). Durations of boat-based hazing events were reported at less than 30 minutes for most of the 521 boat-based events in 2009, but ranged up to 90 minutes (Brown et al. 2009). Durations of boat-based hazing events were not reported for 2010. However, 280 events occurred over 44 days during a five-month period using a total of 4,921 cracker shells, 777 seal bombs, and 97 rubber buckshot rounds (Brown et al. 2010). Based on knowledge of in-water sound from construction activities, the POK project believes that sound levels from in-water construction and demolition activities that pinnipeds would be potentially exposed to are not as high as those produced by hazing techniques.

In addition, sea lions are expected to quickly traverse through and not remain in the project area. Tagging studies of California sea lions indicate that they pass hydrophones upriver and downriver of the POK project site quickly. Wright et al. (2010) reported minimum upstream and downstream transit times between the Astoria haul-out and Bonneville Dam (river distance approximately 20 km) were 1.9 and 1 day, respectively, based on fourteen trips by eleven sea lions. The transit speed was calculated to be 4.6 km/hr in the upstream direction and 8.8 km/hr in the downstream direction. Data from the six individuals acoustically tagged in 2009 show that they made a combined total of eleven upriver or downriver trips quickly through the POK project site to or from Bonneville Dam and Astoria (Brown et al. 2009). Data from four acoustically tagged California sea lions in 2010 also indicate that the animals move though the area below Bonneville Dam down to the receivers located below the POK project site rapidly both in the upriver or downriver directions (Wright et al. 2010). Although the data apply to California sea lions, Steller sea lions and harbor seals similarly have no incentive to stay near the POK project area, in contrast with a strong incentive to quickly reach optimal foraging grounds at the Bonneville Dam, and are thus expected to also pass the project area quickly. Therefore, pinnipeds are not expected to be exposed to significant duration of construction sound.

It is possible that deterrence of passage through the project area could be a concern. However, given the 750-m width of the Columbia, with no activity occurring on the opposite bank in the project area, passage should not be hindered. Vibratory installation of steel casings, pipe piles, and sheet piles are calculated to exceed behavioral disturbance thresholds at large distances; thus, the entire width of the channel would be affected by sound above the disturbance threshold. However, because these sound levels are lower than those produced by ADDs at Bonneville Dam—which have shown only limited efficacy in deterring pinnipeds—and because pinnipeds transiting the region of activity will be highly motivated to complete transit, deterrence of passage is not anticipated to occur.

Vessel Operations

Various types of vessels, including barges, tug boats, and small craft, would be present in the region of activity at various times. Vessel traffic would continually traverse the in-water POK project area in transit to port facilities upstream of the project location. Such vessels already use the region of activity in moderately high numbers; therefore, the vessels to be used in the region of activity do not represent a new sound source, only a potential increase in the frequency and duration of these sound source types.

There are very few controlled tests or repeatable observations related to the reactions of pinnipeds to vessel noise. However, Richardson et al. (1995) reviewed the literature on reactions of pinnipeds to vessels, concluding overall that pinnipeds showed high tolerance to vessel noise. One study showed that, in water, sea lions tolerated frequent approach of vessels at close range. Because the region of activity is heavily traveled by commercial and recreational craft, it seems likely that pinnipeds that transit the region of activity are already habituated to vessel noise, thus the additional vessels that would occur as a result of POK project activities would likely not have an additional effect on these pinnipeds. Therefore, POK project vessel noise in the region of activity is unlikely to rise to the level of Level B harassment.

Dredging

The proposed project includes up to 126,000 CY of dredging to provide adequate berth depth for the new marine terminal. Noise measurements of dredging activities are rare in the literature, but dredging is considered to be a low-impact activity for marine mammals, producing non-pulsed sound and being substantially quieter in terms of acoustic energy output than sources such as seismic airguns and impact pile driving. Noise produced by dredging operations has been compared to that produced by a commercial vessel travelling at modest speed (Robinson et al., 2011), of which there is high volume in the lower Columbia River (see Vessel Operations, above). Further discussion of dredging sound production may be found in the literature (*e.g.,* Richardson et al., 1995, Nedwell et al., 2008, Parvin et al., 2008, Ainslie et al., 2009). Generally, the effects of dredging on marine mammals are not expected to rise to the level of a take. Therefore, this project component will not be discussed further.

Physical Disturbance

Vessels, in-water structures, and over-water structures have the potential to cause physical disturbance to pinnipeds, although in-water and over-water structures would cover no more than 20 percent of the entire channel width at one time. As previously mentioned, various types of vessels already use the region of activity in high numbers. Tug boats and barges are slow moving and follow a predictable course. Pinnipeds would be able to easily avoid these vessels while transiting through the region of activity, and are likely already habituated to the presence of numerous vessels, as the lower Columbia River receives high levels of commercial and recreational vessel traffic. Therefore, vessel strikes are extremely unlikely and, thus, discountable. Potential encounters would likely be limited to brief, sporadic behavioral disturbance, if any at all. Such disturbances are not likely to result in a risk of Level B harassment of pinnipeds transiting the region of activity.

Hearing Impairment and Other Physiological Effects

Temporary or permanent hearing impairment is a possibility when marine mammals are exposed to very strong sounds. Non-auditory physiological effects might also occur in marine mammals exposed to strong underwater sound. Possible types of non-auditory physiological effects or injuries that may occur in mammals close to a strong sound source include stress, neurological effects, bubble formation, and other types of organ or tissue damage. It is possible that some marine mammal species (*i.e.* beaked whales) may be especially susceptible to injury and/or stranding when exposed to strong pulsed sounds, particularly at higher frequencies. Non-auditory physiological effects are not anticipated to occur as a result of POK activities. The following subsections discuss the possibilities of TTS and PTS.

TTS

TTS, reversible hearing loss caused by fatigue of hair cells and supporting structures in the inner ear, is the mildest form of hearing impairment that can occur during exposure to a strong sound (Kryter 1985). While experiencing TTS, the hearing threshold rises and a sound must be stronger in order to be heard. TTS can last from minutes or hours to (in cases of strong TTS) days. For sound exposures at or somewhat above the TTS threshold, hearing sensitivity in both terrestrial and marine mammals recovers rapidly after exposure to the sound ends.

NOAA Fisheries considers TTS to be a form of Level B harassment rather than injury, as it consists of fatigue to auditory structures rather than damage to them. Pinnipeds have demonstrated complete recovery from TTS after multiple exposures to intense sound, as described in the studies below (Kastak et al. 1999, 2005). The NOAA Fisheries-established 190-dB rms SPLcriterion is not considered to be the level above which TTS might occur. Rather, it is the received level above which, in the view of a panel of bioacoustics specialists convened by NOAA Fisheries before TTS measurements for marine mammals became available, one could not be certain that there would be no injurious effects (*e.g.,* PTS), auditory or otherwise, to pinnipeds. Therefore, exposure to sound levels above 190 dB rms does not necessarily mean that an animal has been injured, but rather that it may have occurred and we cannot rule it out.

Human non-impulsive sound exposure guidelines are based on exposures of equal energy (the same sound exposure level [SEL]; SEL is reported here in dB re: 1 μPa^2-s/re: 20 μPa^2-s for in-water and in-air sound, respectively) producing equal amounts of hearing impairment regardless of how the sound energy is distributed in time (NIOSH, 1998). Until recently, previous marine mammal TTS studies have also generally supported this equal energy relationship (Southall et al. 2007). Two newer studies, two by Mooney et al. (2009a,b) on a single bottlenose dolphin (*Tursiops truncatus*) either exposed to playbacks of U.S. Navy mid-frequency active sonar or octave-band sound (4–8 kHz) and one by Kastak et al. (2007) on a single California sea lion exposed to airborne octave-band sound (centered at 2.5 kHz), concluded that for all sound exposure situations, the equal energy relationship may not be the best indicator to predict TTS onset levels. Generally, with sound exposures of equal energy, those that were quieter (lower SPL) with longer duration were found to induce TTS onset more than those of louder (higher SPL) and shorter duration. Given the available data, the received level of a single seismic pulse (with no frequency weighting) might need to be approximately 186 dB SEL in order to produce brief, mild TTS.

In free-ranging pinnipeds, TTS thresholds associated with exposure to brief pulses (single or multiple) of underwater sound have not been measured. However, systematic TTS studies on captive pinnipeds have been conducted (*e.g.* Kastak et al. 1999, 2005, 2007; Schusterman et al. 2000; Finneran et al. 2003; Southall et al. 2007). Specific studies are detailed here:

—Finneran et al. (2003) studied responses of two individual California sea lions. The sea lions were exposed to single pulses of underwater sound, and experienced no detectable TTS at received sound level of 183 dB peak (163 dB SEL).

There were three studies conducted on pinniped TTS responses to non-pulsed underwater sound. All of these studies were performed in the same lab and on the same test subjects, and, therefore, the results may not be applicable to all pinnipeds or in field settings.

—Kastak and Schusterman (1996) studied the response of harbor seals to non-pulsed construction sound, reporting TTS of about 8 dB. The seal was exposed to broadband construction sound for 6 days, averaging 6 to 7 hours of intermittent exposure per day, with SPLs from just approximately 90 to 105 dB.

—Kastak et al. (1999) reported TTS of approximately 4–5 dB in three species of pinnipeds (harbor seal, California sea lion, and northern elephant seal) after underwater exposure for approximately 20 minutes to sound with frequencies ranging from 100–2,000 Hz at received levels 60–75 dB above hearing threshold. This approach allowed similar effective exposure conditions to each of the subjects, but resulted in variable absolute exposure values depending on subject and test frequency. Recovery to near baseline levels was reported within 24 hours of sound exposure.

—Kastak et al. (2005) followed up on their previous work, exposing the same test subjects to higher levels of sound for longer durations. The animals were exposed to octave-band sound for up to 50 minutes of net exposure. The study reported that the harbor seal experienced TTS of 6 dB after a 25-minute exposure to 2.5 kHz of octave-band sound at 152 dB (183 dB SEL). The California sea lion demonstrated onset of TTS after exposure to 174 dB and 206 dB SEL.

Southall et al. (2007) reported one study on TTS in pinnipeds resulting from airborne pulsed sound, while two studies examined TTS in pinnipeds resulting from airborne non-pulsed sound:

—Kastak et al. (2004) used the same test subjects as in Kastak et al. 2005, exposing the animals to non-pulsed sound (2.5 kHz octave-band sound) for 25 minutes. The harbor seal demonstrated 6 dB of TTS after exposure to 99 dB (131 dB SEL). The California sea lion demonstrated onset of TTS at 122 dB and 154 dB SEL.

—Kastak et al. (2007) studied the same California sea lion as in Kastak et al. 2004 above, exposing this individual to 192 exposures of 2.5 kHz octave-band sound at levels ranging from 94 to 133 dB for 1.5 to 50 min of net exposure duration. The test subject experienced up to 30 dB of TTS. TTS onset occurred at 159 dB SEL. Recovery times ranged from several minutes to 3 days.

The sound level necessary to cause TTS in pinnipeds depends on exposure duration; with longer exposure, the level necessary to elicit TTS is reduced (Schusterman et al. 2000; Kastak et al. 2005, 2007). For very short exposures (*e.g.* to a single sound pulse), the level necessary to cause TTS is very high (Finneran et al. 2003). Impact pile driving associated with POK would produce maximum estimated underwater pulsed sound levels estimated at 185 dB peak and 163 dB SEL (24-inch octagonal concrete piles, Illinworth and Rodkin 2007). Summarizing existing data, Southall et al. (2007) assume that pulses of underwater sound result in the onset of TTS in pinnipeds when received levels reach 212 dB peak or 171 dB SEL, and interim NOAA Fisheries guidance indicates the potential for Level A harassment of pinnipeds at received levels of 190dB rms. TTS is not likely to occur based on estimated source levels from the POK project.

Impact pile driving would produce initial airborne sound levels of approximately 110 dB peak at the source (WSDOT 2014), as compared to the level suggested by Southall et al. (2007) of 143 dB peak for onset of TTS in pinnipeds from multiple pulses of airborne sound. It is not expected that airborne sound levels would induce TTS in individual pinnipeds.

Although underwater sound levels produced by the POK project may exceed levels produced in studies that have induced TTS in pinnipeds up to 4 feet from pile driving activities, this extremely small radius of potential effects combined with marine mammal monitoring and a 15m shut down zone make the likelihood of pinnipeds in the area experience hearing loss extremely unlikely.

PTS

When PTS occurs, there is physical damage to the sound receptors in the ear. In some cases, there can be total or partial deafness, whereas in other cases, the animal has an impaired ability to hear sounds in specific frequency ranges.

There is no specific evidence that exposure to underwater industrial sounds can cause PTS in any marine mammal (Southall et al. 2007). However, given the possibility that marine mammals might incur TTS, there has been further speculation about the possibility that some individuals occurring very close to industrial activities might incur PTS. Richardson et al. (1995) hypothesized that PTS caused by prolonged exposure to continuous anthropogenic sound is unlikely to occur in marine mammals, at least for sounds with source levels up to approximately 200 dB. Single or occasional occurrences of mild TTS are not indicative of permanent auditory damage in terrestrial mammals. Studies of relationships between TTS and PTS thresholds in marine mammals are limited; however, existing data appear to show similarity to those found for humans and other terrestrial mammals, for which there is a large body of data. PTS might occur at a received sound level at least several decibels above that inducing mild TTS.

Southall et al. (2007) propose that sound levels inducing 40 dB of TTS may result in onset of PTS in marine mammals. The authors present this threshold with precaution, as there are no specific studies to support it. Because direct studies on marine mammals are lacking, the authors base these recommendations on studies performed on other mammals. Additionally, the authors assume that multiple pulses of underwater sound result in the onset of PTS in pinnipeds when levels reach 218 dB peak or 186 dB SEL. In air, sound levels are assumed to cause PTS in pinnipeds at 149 dB peak or 144 dB SEL (Southall et al. 2007). Sound levels this high are not expected to occur as a result of the proposed activities.

The potential effects to marine mammals described in this section of the document do not take into consideration the proposed monitoring and mitigation measures described later in this document (see the Monitoring and Mitigation and Proposed Monitoring and Reporting sections). It is highly unlikely that marine mammals would receive sounds strong enough (and over a sufficient duration) to cause PTS (or even TTS) during the proposed POK activities. When taking the mitigation measures proposed for inclusion in the regulations into consideration, it is highly unlikely that any type of hearing impairment would occur as a result of POK's proposed activities.

Anticipated Effects on Marine Mammal Habitat

The action are for the proposed project does not contain any important habitat for the three marine mammal species that may occur there; there are no rookeries, haulouts, or breeding grounds that will be affected by the proposed action. Construction activities would likely impact pinniped habitat in the Columbia River used primarily as a migration corridor and opportunistic feeding activity by producing temporary disturbances, primarily through elevated levels of underwater sound, reduced water quality, and physical habitat alteration associated with the structural footprint of the new marine terminal. Other potential temporary changes are passage obstruction and changes in prey species distribution during construction. Permanent changes to habitat would be produced primarily through the presence of the new marine terminal in Columbia River.

The underwater sounds would occur as short-term pulses (*i.e.* minutes to hours), separated by virtually instantaneous and complete recovery periods. These disturbances are likely to occur up to 120 days during the available in-water work window throughout daylight hours. Water quality impairment would also occur during construction, most likely due to dredging. Physical habitat alteration due to the addition of in-water and over-water structures would also occur intermittently during construction, and would remain as the final, as-built project footprint for the design life of POK.

Elevated levels of sound may be considered to affect the in-water habitat of pinnipeds via impacts to prey species or through passage obstruction (discussed later). However, due to the timing of the in-water work, these effects on pinniped habitat would be temporary and limited in duration. Very few harbor seals are likely to be present in any case, and any pinnipeds that do encounter increased sound levels would primarily be transiting the action area in route to or from foraging below Bonneville Dam where fish concentrate or at the confluence of the Cowlitz River, and thus unlikely to forage in the action area in anything other than an opportunistic manner. The direct loss of habitat available during construction due to sound impacts is expected to be minimal.

Impacts to Prey Species

Fish are the primary dietary component of pinnipeds in the region of activity. The Columbia River provides migration and foraging habitat for sturgeon and lamprey, migration and spawning habitat for eulachon, and migration habitat for juvenile and adult salmon and steelhead, as well as some limited rearing habitat for juvenile salmon and steelhead.

Impact pile driving would produce a variety of underwater sound levels. Underwater sound caused by vibratory installation would be less than impact driving (Illinworth and Rodkin 2007). Literature relating to the impacts of sound on marine fish species can be divided into categories which describe the following: (1) Pathological effects; (2) physiological effects; and (3) behavioral effects. Pathological effects include lethal and sub-lethal physical damage to fish; physiological effects include primary and secondary stress responses; and behavioral effects include changes in exhibited behaviors of fish. Behavioral changes might be a direct reaction to a detected sound or a result of anthropogenic sound masking natural sounds that the fish normally detect and to which they respond. The three types of effects are often interrelated in complex ways. For example, some physiological and behavioral effects could potentially lead ultimately to the pathological effect of mortality. Hastings and Popper (2005) reviewed what is known about the effects of sound on fish and identified studies needed to address areas of uncertainty relative to measurement of sound and the responses of fish.

Underwater sound pressure waves can injure or kill fish. Fish with swim bladders, including salmon, steelhead, and sturgeon, are particularly sensitive to underwater impulsive sounds with a sharp sound pressure peak occurring in a short interval of time (Hastings and Popper 2005). As the pressure wave passes through a fish, the swim bladder is rapidly squeezed due to the high pressure, and then rapidly expanded as the underpressure component of the wave passes through the fish. The pneumatic pounding may rupture capillaries in the internal organs. Although eulachon lack a swim bladder, they are also susceptible to general pressure wave injuries including hemorrhage and rupture of internal organs, as described above, and damage to the auditory system. Direct take can cause instantaneous death, latent death within minutes after exposure, or can occur several days later. Indirect take can occur because of reduced fitness of a fish, making it susceptible to predation, disease, starvation, or inability to complete its life cycle. Effects to prey species are summarized here and are outlined in more detail in NOAA Fisheries' biological opinion.

There are no physical barriers to fish passage within the region of activity, nor are there fish passage barriers between the region of activity and the Pacific Ocean. The proposed project would not involve the creation of permanent physical barriers; thus, long-term changes in pinniped prey species distribution are not expected to occur.

Nevertheless, impact pile-driving would likely create a temporary migration barrier to all life stages of fish using the Columbia River, although this would be localized and mitigated by the in-water work window designed to minimize impacts to fish species. Impacts to fish species distribution would be temporary during in-water work and hydroacoustic impacts from impact pile driving would only occur during the day and only during the in-water work window established for this activity in conjunction with ODFW, WDFW, and NOAA Fisheries. The overall effect to the prey base for pinnipeds is anticipated to be insignificant.

Prey may also be affected by turbidity, contaminated sediments, or other contaminants in the water column. The POK project involves several activities that could potentially generate turbidity in the Columbia River, including pile installation, pile removal, and dredging. Any measurable increase in turbidity is not anticipated to measurably exceed levels caused by normal increases associated with normal high flow events. Turbidity is not expected to cause mortality to fish species in the region of activity, and effects would probably be limited to temporary avoidance of the discrete areas of elevated turbidity (anticipated to be no more than 300 ft [91 m] from the source) for approximately 8–10 hours at a time, or effects such as abrasion to gills and alteration in feeding and migration behavior for fish close to the activity. Therefore, turbidity would likely have only insignificant effects to fish and, thus, insignificant effects on pinnipeds.

The POK project has already determined that the project location does not have elevated concentrations of contaminants and is fully suited to any beneficial reuse (as described above), and therefore effects to water quality from resuspended contaminants are not anticipated from the proposed action.

Physical Loss of Prey Species Habitat

The project would lead to approximately 44,943 ft^2 of additional new, permanent, overwater coverage, and the loss of 1,079 ft^2 of benthic habitat from new piles in the Columbia River. Removal of the existing Columbia River piles would permanently restore about 123 ft^2 (557 m^2) of shallow-water habitat Physical loss of shallow-water habitat is of particular concern for rearing of subyearling migrant salmonids. In theory, in-water structures that completely block the nearshore may force these juveniles to swim into deeper-water habitats to circumvent them. Deep-water areas represent lower quality habitat because predation rates are higher there. Studies show that predators such as walleye (*Stizostedion vitreum*), northern pike-minnow (*Ptychocheilus oregonensis*), and other predatory fish occur in deepwater habitat for at least part of the year (Pribyl et al. 2004). In the case of the POK project, in-water portions of the structures would not pose a complete blockage to nearshore movement anywhere in the region of activity. Although these structures would cover potential rearing and nearshore migration areas, the habitat is not rare and is not of particularly high quality. Juveniles would still be able to use the abundant shallow-water habitat available for miles in either direction. Neither the permanent nor the temporary structures would necessarily force juveniles into deeper water, and therefore pose no definite added risk of predation.

To the limited extent that the proposed actions do increase risk of predation, pinnipeds may accrue minor benefits. Alterations to adult eulachon and salmon behavior may make them more vulnerable to predation. Changes in cover that congregate fish or cause them to slow or pause migration would likely attract pinnipeds, which may then forage opportunistically. While individual pinnipeds are likely to take advantage of such conditions, it is not expected to increase overall predation rates across the run. Aggregating features would be small in comparison to the channel, and ample similar opportunities exist throughout the lower Columbia River.

Physical loss of shallow-water habitat would have only negligible effects on foraging, migration, and holding of salmonids that are of the yearling age class or older. These life functions are not dependent on shallow-water habitat for these age classes. Furthermore, the lost habitat is not of particularly high quality. There is abundant similar habitat immediately adjacent along the shorelines of the Columbia River. The lost habitat represents only a small fraction of the remaining habitat available for miles in either direction. There would still be many acres of habitat for yearling or older age-classes of salmonids foraging, migrating, and holding in the region of activity. Physical loss of shallow-water habitat would have only negligible effects on eulachon and green sturgeon for the same reason. Thus, the effects to these elements of pinniped habitat would be minimal.

In addition, compensatory mitigation for direct permanent habitat loss to jurisdictional waters from permanent pier placement would occur in accordance with requirements set by USACE, Washington Department of Ecology, and WDFW. To meet these requirements, POK is proposing to restore habitat in the 1.41 acres of riparian habitat near the project location through native plantings and invasive species control. Additionally, POK will install eight ELJs that will improve habitat for salmonids and eulachon. Therefore, permanent habitat loss is expected to have a negligible impact to habitat for pinniped prey species due to offsetting mitigation.

Due to the small size of the impact relative to the remaining habitat available, and the permanent benefits from habitat restoration, permanent physical habitat loss is likely to be insignificant to fish and, thus, to the habitat and foraging opportunities of pinnipeds.

Mitigation

Mitigation Monitoring Protocols

Initial monitoring zones are based on a practical spreading loss model and data found in Illinworth and Rodkin (2007). A minimum distance of 10 m is used for all shutdown zones, even if actual or initial calculated distances are less. A maximum distance of in-water line of sight is used for all disturbance zones for vibratory pile driving, even if actual or calculated values are greater. To provide the best estimate of transmission loss at a specific range, the data were estimated using a practical spreading loss model.

TABLE 2—DISTANCE TO INITIAL SHUTDOWN AND DISTURBANCE MONITORING ZONES FOR IN-WATER SOUND IN THE COLUMBIA RIVER

Pile type	Hammer type	Distance to monitoring zones (m) [1]		
		190 dB [2]	160 dB [2]	120 dB [2]
24-in Concrete pile	Impact	10	117	N/A.
18-in Steel pipe pile	Vibratory	10	N/A	Line of Sight, (max 5.7km).
18-in Steel pipe pile	Impact	18	736	NA.

[1] Monitoring zones based on a practical spreading loss model and data from Illinworth and Rodkin (2007). A minimum distance of 10 m is used for all shutdown zones, even if actual or initial calculated distances are less.
[2] All values unweighted and relative to 1 μPa.

In order to accomplish appropriate monitoring for mitigation purposes, POK would have an observer stationed on each active pile driving location to closely monitor the shutdown zone as well as the surrounding area. In addition, POK would post two shore-based observers (one upstream of the project, and another downstream of the project area; see application), whose primary responsibility would be to record pinnipeds in the disturbance zone and to alert barge-based observers to the presence of pinnipeds in the disturbance zone, thus creating a redundant alert system for prevention of injurious interaction as well as increasing the probability of detecting pinnipeds in the disturbance zone. POK estimates that shore-based observers would be able to scan approximately 800 m (upstream and downstream) from the available observation posts; therefore, shore-based observers would be capable of monitoring the agreed-upon disturbance zone.

As described, at least three observers would be on duty during all pile vibratory driving/removal activity. The first observer would be positioned on a work platform or barge where the entire 10 m shutdown zone is clearly visible, with the shore-based observers positioned to observe the disturbance zone from the bank of the river. Protocols would be implemented to ensure that coordinated communication of sightings occurs between observers in a timely manner.

In summary:

—POK would implement a minimum shutdown zone of 10 m radius around all pile driving activity (or 18m in the case that impact pile driving is required for steel piles). The 10-m shutdown zone provides a buffer for the 190-dB threshold but is also intended to further avoid the risk of direct interaction between marine mammals and the equipment.

—POK would have a redundant monitoring system, in which one observer would be stationed at the area of active pile driving, while two observers would be shore-based, as required to provide complete observational coverage of the reduced disturbance zone for each pile driving/removal site. The former would be capable of providing comprehensive monitoring of the proposed shutdown zones. This observer's first priority would be shutdown zone monitoring in prevention of injurious interaction, with a secondary priority of counting takes by Level B harassment in the disturbance zone. The additional shore-based observers would be able to monitor the same distances, but their primary responsibility would be counting of takes in the disturbance zone and communication with barge-based observers to alert them to pinniped presence in the action area.

—The shutdown and disturbance zones would be monitored throughout the time required to drive a pile. If a marine mammal is observed within the disturbance zone, a take would be recorded and behaviors documented. However, that pile segment would be completed without cessation, unless the animal approaches or enters the shutdown zone, at which point all pile driving activities would be halted.

The following measures would apply to visual monitoring:

—If the shutdown zone is obscured by fog or poor lighting conditions, pile driving would not be initiated until the entire shutdown zone is visible. Work that has been initiated appropriately in conditions of good visibility may continue during poor visibility.

—The shutdown zone would be monitored for the presence of pinnipeds before, during, and after any pile driving activity. The shutdown zone would be monitored for 30 minutes prior to initiating the start of pile driving. If pinnipeds are present within the shutdown zone prior to pile driving, the start of pile driving would be delayed until the animals leave the shutdown zone of their own volition, or until 15 minutes elapse without re-sighting the animal(s).

—Monitoring would be conducted using binoculars. When possible, digital video or still cameras would also be used to document the behavior and response of pinnipeds to construction activities or other disturbances.

—Each observer would have a radio or cell phone for contact with other monitors or work crews. Observers would implement shut-down or delay procedures when applicable by

calling for the shut-down to the hammer operator.
—A GPS unit or electric range finder would be used for determining the observation location and distance to pinnipeds, boats, and construction equipment.

Monitoring would be conducted by qualified observers. In order to be considered qualified, observers must meet the following criteria:

—Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target.Advanced education in biological science, wildlife management, mammalogy, or related fields (bachelor's degree or higher is required).
—Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
—Experience or training in the field identification of pinnipeds, including the identification of behaviors.
—Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
—Writing skills sufficient to prepare a report of observations including but not limited to the number and species of pinnipeds observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of pinnipeds observed within a defined shutdown zone; and pinniped behavior.
—Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on pinnipeds observed in the area as necessary.

Disturbance Zones

For all pile driving and removal activities, a disturbance zone would be established. Disturbance zones are typically defined as the area in which SPLs equal or exceed 160 or 120 dB rms (for impact and vibratory pile driving, respectively). However, when the size of a disturbance zone is sufficiently large as to make monitoring of the entire area impracticable (as in the case of the 120-dB zone here), the disturbance zone may be defined as some area that may reasonably be monitored. Here, the disturbance zone is defined for monitoring purposes as an area are the waters within line of sight of project activities, with a maximum line of sight distance based on local geography of approximately 5.7 km. Disturbance zones provide utility for monitoring conducted for mitigation purposes (*i.e.* shutdown zone monitoring) by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring of disturbance zones enables PSOs to be aware of and communicate the presence of marine mammals in the project area but outside the shutdown zone and thus prepare for potential shutdowns of activity. However, the primary purpose of disturbance zone monitoring is for documenting incidents of Level B harassment; disturbance zone monitoring is discussed in greater detail later (see Proposed Monitoring and Reporting).

Shutdown Zones

For all pile driving, a shutdown zone (defined as, at minimum, the area in which SPLs equal or exceed 190 dB rms) of 10 m from impact driving of concrete piles and vibratory pile driving, and 18 m for impact pile driving of steel piles, would be established. The purpose of a shutdown zone is to define an area within which shutdown of activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area), thus preventing injury, serious injury, or death of marine mammals. Although practical spreading loss model indicates that radial distances to the 190-dB threshold would be less than 10m for impact pile driving of concrete piles and vibratory pile driving, shutdown zones would conservatively be set at a minimum 10 m. This precautionary measure is intended to further reduce any possibility of injury to marine mammals by incorporating a buffer to the 190-dB threshold within the shutdown area.

Shutdown

Pile driving would occur from September 1 through January 31. The shutdown zone would also be monitored throughout the time required to drive a pile. If a pinniped is observed approaching or entering the shutdown zone, piling operations would be discontinued until the animal has moved outside of the shutdown zone. Pile driving would resume only after the animal is determined to have moved outside the shutdown zone by a qualified observer or after 15 minutes have elapsed since the last sighting of the animal within the shutdown zone.

Pile Driving Best Management Practices

For pile driving, the applicant will implement the following best management practices:

—If steel piles require impact installation or proofing, a bubble curtain will be used for sound attenuation;
—If steel piles require impact installation or proofing, the contractor will be required to use soft start procedures. Soft start procedures require that the contractor provides an initial set of three strikes at reduced energy, followed by a thirty-second waiting period, then two subsequent reduced energy strike sets;
—Soft start shall be implemented at the start of each day's pile driving and at any time following cessation of impact pile driving for a period of thirty minutes or longer;
—Marine mammal monitoring will be conducted during all pile driving as described in Appendix B of the application.

Other Mitigation and Best Management Practices

In addition, NOAA Fisheries and POK, together with other relevant regulatory agencies, have developed a number of mitigation measures designed to protect fish through prevention or minimization of turbidity and disturbance and introduction of contaminants, among other things. These measures have been prescribed under the authority of statutes other than the MMPA, and are not a part of this proposed rulemaking. However, because these measures minimize impacts to pinniped prey species (either directly or indirectly, by minimizing impacts to prey species' habitat), they are summarized briefly here. Additional detail about these measures may be found in POK's application.

Timing restrictions would be used to avoid in-water work when ESA-listed fish are most likely to be present. Fish entrapment would be minimized by containing and isolating in-water work to the extent possible, through the use of drilled shaft casings and cofferdams. The contractor would provide a qualified fishery biologist to conduct and supervise fish capture and release activity to minimize risk of injury to fish. All pumps must employ fish screen that meet certain specifications in order to avoid entrainment of fish. A qualified biologist would be present during all impact pile driving operations to observe and report any indications of dead, injured, or distressed fishes, including direct observations of these fishes or increases in bird foraging activity.

POK would work to ensure minimum degradation of water quality in the project area, and requires compliance with Surface Water Quality Standards for Washington. In addition, the contractor would prepare a Spill Prevention, Control, and Countermeasures (SPCC) Plan prior to beginning construction. The SPCC Plan would identify the appropriate spill containment materials; as well as the method of implementation. All equipment to be used for construction activities would be cleaned and inspected prior to arriving at the project site, to ensure no potentially hazardous materials are exposed, no leaks are present, and the equipment is functioning properly. Equipment that would be used below OHW would be identified; daily inspection and cleanup procedures would insure that identified equipment is free of all external petroleum-based products. Should a leak be detected on heavy equipment used for the project, the equipment must be immediately removed from the area and not used again until adequately repaired.

The contractor would also be required to prepare and implement a Temporary Erosion and Sediment Control (TESC) Plan and a Source Control Plan for project activities requiring clearing, vegetation removal, grading, ditching, filling, embankment compaction, or excavation. The BMPs in the plans would be used to control sediments from all vegetation removal or ground-disturbing activities.

Conclusions for Effectiveness of Mitigation

NOAA Fisheries has carefully evaluated the applicant's proposed mitigation measures and considered a range of other measures in the context of ensuring that NOAA Fisheries prescribes the means of effecting the least practicable adverse impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another:

—The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals;
—The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and
—The practicability of the measure for applicant implementation.

Based on our evaluation, NOAA Fisheries has preliminarily determined that the mitigation measures proposed from both NOAA Fisheries and POK provide the means of effecting the least practicable adverse impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance. The proposed rule comment period will afford the public an opportunity to submit recommendations, views, and/or concerns regarding this action and the proposed mitigation measures.

Proposed Monitoring and Reporting

In order to issue an incidental take authorization (ITA) for an activity, section 101(a)(5)(A) of the MMPA states that NOAA Fisheries must, where applicable, set forth ''requirements pertaining to the monitoring and reporting of such taking''. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for ITAs must include the suggested means of accomplishing the necessary monitoring and reporting that would result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area.

POK proposed a marine mammal monitoring plan in their application (see Appendix B of POK's application). The plan may be modified or supplemented based on comments or new information received from the public during the public comment period. All methods identified herein have been developed through coordination between NOAA Fisheries and the design and environmental teams at POK. The methods are based on the parties' professional judgment supported by their collective knowledge of pinniped behavior, site conditions, and proposed project activities. Because pinniped monitoring has not previously been conducted at this site, aspects of these methods may warrant modification. Any modifications to this protocol would be coordinated with NOAA Fisheries. A summary of the plan, as well as the proposed reporting requirements, is contained here.

The intent of the monitoring plan is to:

—Comply with the requirements of the MMPA as well as the ESA section 7 consultation;
—Avoid injury to pinnipeds through visual monitoring of identified shutdown zones and shut-down of activities when animals enter or approach those zones; and
—To the extent possible, record the number, species, and behavior of pinnipeds in disturbance zones for pile driving and removal activities.

As described previously, monitoring for pinnipeds would be conducted in specific zones established to avoid or minimize effects of elevated levels of sound created by the specified activities. Shutdown zones would not be less than 10 m, while initial disturbance zones would be based on site-specific data.

Visual Monitoring

The established shutdown and disturbance zones would be monitored by qualified marine mammal observers for mitigation purposes, as well as to document marine mammal behavior and incidents of Level B harassment, as described here. POK's marine mammal monitoring plan (see Appendix B of POK's application) would be implemented, requiring collection of sighting data for each pinniped observed during the proposed activities for which monitoring is required, including impact installation of concrete pile or vibratory installation of steel pipe. A qualified biologist(s) would be present on site at all times during impact pile driving or vibratory installation or removal piles.

Disturbance Zone Monitoring

Disturbance zones, described previously in Monitoring and Mitigation section, are defined in Table 2 for underwater sound. Monitoring zones for Level B harassment from airborne sound would be 96m for harbor seals and 38m for sea lions (corresponding to the anticipated extent of airborne sound reaching 90 and 100 dB, respectively) during impact pile driving, and 83m and 17m (respectively) during vibratory pile driving.

The size of the disturbance zone for in-water monitoring for vibratory pile installation or extraction would be the full line of sight from pile driving activities in both the upstream and downstream directions. Monitoring for impact pile driving of concrete piles will extend 117m from the pile driving, and will require only a single monitor at the project location.

The monitoring biologists would document all pinnipeds observed in the monitoring area. Data collection would include a count of all pinnipeds observed by species, sex, age class, their location within the zone, and their reaction (if any) to construction activities, including direction of movement, and type of construction that is occurring, time that pile driving begins and ends, any acoustic or visual disturbance, and time of the observation. Environmental conditions such as wind speed, wind direction, visibility, and temperature would also be recorded. No monitoring would be conducted during inclement weather that creates potentially hazardous conditions, as determined by the biologist, nor would monitoring be conducted when visibility is significantly limited, such as during heavy rain or fog. During these times of inclement weather, in-water work that may produce sound levels in excess of 190 dB rms would be halted; these activities would not commence until monitoring has started for the day.

All monitoring personnel must have appropriate qualifications as identified previously; with qualifications to be certified by POK (see Monitoring and Mitigation). These qualifications include education and experience identifying pinnipeds in the Columbia River and the ability to understand and document pinniped behavior. All monitoring personnel would meet at least once for a training session sponsored by POK. Topics would include: Implementation of the protocol, identifying marine mammals, and reporting requirements.

All monitoring personnel would be provided a copy of the LOA and final biological opinion for the project. Monitoring personnel must read and understand the contents of the LOA and biological opinion as they relate to coordination, communication, and identifying and reporting incidental harassment of pinnipeds.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines ''harassment'' as: Any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) 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 [Level B harassment]. Take by Level B harassment only is anticipated as a result of POK's proposed project. Take of marine mammals is anticipated to be associated with the installation and removal of piles via impact and vibratory methods. Dredging is not anticipated to result in take of marine mammals. No take by injury, serious injury, or death is anticipated.

TABLE 3—CURRENT ACOUSTIC EXPOSURE CRITERIA

Non-explosive sound		
Criterion	Criterion definition	Threshold
Level A Harassment (Injury)	Permanent Threshold Shift (PTS) (Any level above that which is known to cause TTS).	180 dB re 1 microPa-m (cetaceans)/190 dB re 1 microPa-m (pinnipeds) root mean square (rms).
Level B Harassment	Behavioral Disruption (for impulse noises)	160 dB re 1 microPa-m (rms).
Level B Harassment	Behavioral Disruption (for continuous, noise)	120 dB re 1 microPa-m (rms).

The area of potential Level B harassment varies with the activity being conducted. For impact pile driving that will be used for the concrete piles, the area of potential harassment extends 117m from the pile driving activity. For vibratory pile driving associated with the installation of steel pipe piles, the zone of potential harassment extends in a line of sight from the pile driving activities to the nearest shoreline, covering an area of approximately 1800 acres of riverine habitat (Figure 1). Because there are no haul outs, feeding areas, or other important habitat areas for marine mammals in the action area, it is anticipated that take exposures will result primarily from animals transiting from downstream areas to upstream feeding areas.

Assumptions regarding numbers of pinnipeds and number of round trips per individual per year in the Region of Activity are based on information from ongoing pinniped research and management activities conducted in response to concern over California sea lion predation on fish populations concentrated below Bonneville Dam. An intensive monitoring program has been conducted in the Bonneville Dam tailrace since 2002, using surface observations to evaluate seasonal presence, abundance, and predation activities of pinnipeds. Minimum estimates of the number of pinnipeds present in the tailrace from 2002 through 2014 are presented in Table 4.

TABLE 4—MINIMUM ESTIMATED TOTAL NUMBERS OF PINNIPEDS PRESENT AT BONNEVILLE DAM ON AN ANNUAL BASIS FROM 2002 THROUGH 2013 (STANSELL ET AL., 2013)

Species	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Harbor seals	1	2	2	1	3	2	2	2	2	1	0	0
California sea lions	30	104	99	81	72	71	82	54	89	54	39	56
Steller sea lions	0	3	3	4	11	9	39	26	75	89	73	80

Harbor Seals

There is no documented breeding or pupping activity in the action area (Jeffries 1985), and only adult males and females are anticipated to be present in the action area. There is no current data estimating abundance of harbor seals either locally or for the Oregon-Washington coastal stock (Carretta et al. 2014). In this case, we must rely on estimates provided in the application that are believed to provide a conservative estimate of the number of harbor seals potentially affected by the proposed action. The conservative estimate of harbor seals likely to be present in the action area when construction activities are occurring is up to 10 animals per day based on local anecdotal reports (lacking local observational data), with the animals primarily transiting between the mouth of the Columbia River and the Cowlitz or Kalama Rivers. Because harbor seals occur in the action area throughout the year, and in-water construction activities are expected to take up to 120 days, it is possible that harbor seals could be exposed above the Level B harassment threshold up to 1200 times, although some of these exposures would likely be exposures of the same individual across multiple days so the number of individual harbor seals taken is likely lower. We believe that this estimate is doubly conservative, because the majority of pile driving work will be impact pile driving of concrete piles. Impact pile driving of concrete piles has a much smaller area of potential harassment (a radius of 117m from pile driving) than vibratory pile driving, and this area covers only approximately 1/6th of the channel width of the Columbia River, indicating a large portion of the river will be passable by pinnipeds without experiencing take in the form of harassment during most pile driving activities.

California Sea Lions

California sea lions are the most frequently observed pinnipeds upstream of the project site. California sea lions do not breed or bear their young near the Columbia River watershed, with the nearest breeding grounds off the coast of southern California (Caretta et al. 2014). There are no documented haulouts within the action area, so the only California sea lions expected to be present in the action area are adult males and females traveling to and from dams upstream of the project location.

For California sea lions, we use the maximum observed abundance at the Bonneville Dam since monitoring began in 2002 (Table 4) as our starting point. With a maximum observed number of California sea lions being 104 in 2003, we assume that each sea lion would transit the action area twice, once on the way to the dam on once returning from the dam, resulting in 208 transits per year. With the project in-water activities occurring for up to 120 days, we then assume that no more than ⅓ of the sea lion run would be exposed for the duration of the project, resulting in up to an estimated 70 take exposures. This provides a conservative estimate because sea lion abundance upstream of the project area occurs March through April (Stansell et al. 2013), which the in-water work window of September 1 through January 31 avoid. Additionally, the majority of pile driving work will be impact pile driving of concrete piles. Impact pile driving of concrete piles has a much smaller area of potential harassment (a radius of 117m from pile driving) than vibratory pile driving, and this area covers only approximately 1/6th of the channel width of the Columbia River, indicating a large portion of the river will be passable by pinnipeds without experiencing take in the form of harassment during most pile driving activities. Thus we would expect that less than ⅓ of the transits would occur during the project's in-water work window based on avoiding peak transit periods, and that some proportion of those transits would occur in unaffected areas of the Columbia River during impact pile driving activities.

Steller Sea Lions

Steller sea lions do not breed or bear their young near the Columbia River watershed, with the nearest breeding grounds on the marine coast of Oregon (Stansell et al. 2013). There are no documented haulouts within the action area, so the only Steller sea lions expected to be present in the action area are adult males and females traveling to and from dams upstream of the project location.

For Steller sea lions, we use the maximum observed abundance at the Bonneville Dam since monitoring began in 2002 (Table 4) as our starting point. With a maximum observed number of Steller sea lions being 89 in 2011, we assume that each sea lion would transit the action area twice, once on the way to the dam on once returning from the dam. To account for a slight trend of increasing numbers of Steller sea lions being observed each year, we assume up to 100 individuals may pass the project site during the year which this authorization is active, providing an estimate of 200 transits per year. With the project in-water activities occurring for up to 120 days, we then then assume that no more than ⅓ of the sea lion run would be exposed for the duration of the project, resulting in up to an estimated 68 take exposures. This provides a conservative estimate because sea lion abundance upstream of the project area occurs March through April (Stansell et al. 2013), which the in-water work window of September 1 through January 31 avoid. Additionally, the majority of pile driving work will be impact pile driving of concrete piles. Impact pile driving of concrete piles has a much smaller area of potential harassment (a radius of 117m from pile driving) than vibratory pile driving, and this area covers only approximately 1/6th of the channel width of the Columbia River, indicating a large portion of the river will be passable by pinnipeds without experiencing take in the form of harassment during most pile driving activities. Thus we would expect that less than ⅓ of the transits would occur during the project's in-water work window based on avoiding peak transit periods, and that some proportion of those transits would occur in unaffected areas of the Columbia River during impact pile driving activities.

Analysis and Preliminary Determinations

Negligible Impact

Negligible impact is ''an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival'' (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population-level effects). An estimate of the number of takes, alone, is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be ''taken'', NOAA Fisheries must consider other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration, etc.), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and the status of the species. To avoid repetition, the discussion of our analyses applies to all three species of pinnipeds (harbor seals, California sea lions, and Steller sea lions), given that the anticipated effects of this project on these species are expected to be relatively similar in nature. There is no information about the nature or severity of the impacts, or the size, status, or structure of any species or stock that would lead to a different analysis for any species, else species-specific factors would be identified and analyzed.

Incidental take, in the form of Level B harassment only, is likely to occur primarily as a result of pinniped exposure to elevated levels of sound caused by impact and vibratory installation and removal of pipe and sheet pile and steel casings. No take by injury, serious injury, or death is anticipated or would be authorized. By incorporating the proposed mitigation measures, including pinniped monitoring and shut-down procedures described previously, harassment to individual pinnipeds from the proposed activities is expected to be limited to temporary behavioral impacts. POK assumes that all individuals travelling past the project area would be exposed each time they pass the area and that all exposures would cause disturbance. NOAA Fisheries agrees that this represents a worst-case scenario and is therefore sufficiently precautionary.

There are no pinniped haul-outs or rookeries located within or near the Region of Activity.

The shutdown zone monitoring proposed as mitigation, and the small size of the zones in which injury may occur, makes any potential injury of pinnipeds extremely unlikely, and therefore discountable. Because pinniped exposures would be limited to the period they are transiting the disturbance zone, with potential repeat exposures (on return to the mouth of the Columbia River) separated by days to weeks, the probability of experiencing TTS is also considered unlikely.

In addition, it is unlikely that pinnipeds exposed to elevated sound levels would temporarily avoid traveling through the affected area, as they are highly motivated to travel through the action area in pursuit of foraging opportunities upriver. Sea lions have shown increasing habituation in recent years to various hazing techniques used to deter the animals from foraging in the Bonneville tailrace area, including acoustic deterrent devices, boat chasing, and above-water pyrotechnics (Stansell et al. 2013). Many of the individuals that travel to the tailrace area return in subsequent years (Stansell et al. 2013). Therefore, it is likely that pinnipeds would continue to pass through the action area even when sound levels are above disturbance thresholds.

Although pinnipeds are unlikely to be deterred from passing through the area, even temporarily, they may respond to the underwater sound by passing through the area more quickly, or they may experience stress as they pass through the area. Sea lions already move quickly through the lower river on their way to foraging grounds below Bonneville Dam (transit speeds of 4.6 km/hr in the upstream direction and 8.8 km/hr in the downstream direction [Brown et al. 2010]). Any increase in transit speed is therefore likely to be slight. Another possible effect is that the underwater sound would evoke a stress response in the exposed individuals, regardless of transit speed. However, the period of time during which an individual would be exposed to sound levels that might cause stress is short given their likely speed of travel through the affected areas. In addition, there would be few repeat exposures for individual animals. Thus, it is unlikely that the potential increased stress would have a significant effect on individuals or any effect on the population as a whole.

Therefore, NOAA Fisheries finds it unlikely that the amount of anticipated disturbance would significantly change pinnipeds' use of the lower Columbia River or significantly change the amount of time they would otherwise spend in the foraging areas below Bonneville Dam. Pinniped usage of the Bonneville Dam foraging area, which results in transit of the action area, is a relatively recent learned behavior resulting from human modification (*i.e.,* fish accumulation at the base of the dam). Even in the unanticipated event that either change was significant and animals were displaced from foraging areas in the lower Columbia River, there are alternative foraging areas available to the affected individuals. NOAA Fisheries does not anticipate any effects on haul-out behavior because there are no proximate haul-outs within the areas affected by elevated sound levels. All other effects of the proposed action are at most expected to have a discountable or insignificant effect on pinnipeds, including an insignificant reduction in the quantity and quality of prey otherwise available.

Any adverse effects to prey species would occur on a temporary basis during project construction. Given the large numbers of fish in the Columbia River, the short-term nature of effects to fish populations, and extensive BMPs and minimization measures to protect fish during construction, as well as conservation and habitat mitigation measures that would continue into the future, the project is not expected to have significant effects on the distribution or abundance of potential prey species in the long term. All project activities would be conducted using the BMPs and minimization measures, which are described in detail in NOAA Fisheries' biological opinion, pursuant to section 7 of the ESA, on the effects of the POK project on ESA-listed species. Therefore, these temporary impacts are expected to have a negligible impact on habitat for pinniped prey species.

A detailed description of potential impacts to individual pinnipeds was provided previously in this document. The following sections put into context what those effects mean to the respective populations or stocks of each of the pinniped species potentially affected.

Harbor Seal

The Oregon/Washington coastal stock of harbor seals consisted of about 24,732 animals in 1999 (Carretta et al. 2014). As described previously, both the Washington and Oregon portions of this stock have reached carrying capacity and are no longer increasing, and the stock is believed to be within its optimum sustained population level (Jeffries et al. 2003; Brown et al. 2005). The estimated take of up to 1200 individuals (though likely somewhat fewer, as the estimate really indicates instances of take and some individuals are likely taken more than once across the 120-day period) by Level B harassment is small relative to a stable population of approximately 25,000 (4.8 percent), and is not expected to impact annual rates of recruitment or survival of the stock.

California Sea Lion

The U.S. stock of California sea lions had a minimum estimated population of 153,337 in the 2013 Stock Assessment Report and may be at carrying capacity, although more data are needed to verify that determination (Carretta et al. 2014). The estimated take of 70 individuals by Level B harassment is small relative to a population of approximately 153,337 (>0.1 percent), and is not expected to impact annual rates of recruitment or survival of the stock.

Steller Sea Lion

The total population of the eastern DPS of Steller sea lions had a minimum estimated population of 59,968 animals with an overall annual rate of increase of 4 percent throughout most of the range (Oregon to southeastern Alaska) since the 1970s (Allen and Angliss, 2015). In 2006, the NOAA Fisheries Steller sea lion recovery team proposed removal of the eastern stock from listing under the ESA based on its annual rate of increase, and the population was delisted in 2013 (though still considered depleted under the MMPA). The total estimated take of 68 individuals per year is small compared to a population of approximately 59,968 (0.1 percent) and is not expected to impact annual rates of recruitment or survival of the stock.

Summary

The anticipated behavioral harassment is not expected to impact recruitment or survival of the any affected pinniped species. The Level B harassment experienced is expected to be of short duration, with 1–2 exposures per individual separated by days to weeks, with each exposure resulting in minimal behavioral effects (increased transit speed or avoidance). For all species, because the type of incidental harassment is not expected to actually remove individuals from the population or decrease significantly their ability to feed or breed, this amount of incidental harassment is anticipated to have a negligible impact on the stock.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, NOAA Fisheries preliminarily finds that POK's proposed activities would have a negligible impact on the affected species or stocks.

Small Numbers

Using the estimated take described previously, the species with the greatest proportion of affected population is harbor seals (Table 5), with an estimated 4.8% of the population potentially experiencing take from the proposed action. California sea lions population will experience less than 0.1% exposure, and Steller sea lions an approximate exposure rate of 0.1%. Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, NOAA Fisheries preliminarily finds that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

TABLE 5—ESTIMATED TAKE PROPOSED TO BE AUTHORIZED AND PROPORTION OF POPULATION POTENTIALLY AFFECTED

	Estimated take by level B harassment	Abundance of stock	Percentage of stock potentially affected (%)	Population trend
Harbor Seal	1200	24,732	4.8	Stable/Carrying Capacity.
California Sea Lion	70	153,337	>0.1	Stable.
Steller Sea Lion	68	59,968	0.1	Increasing.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action. Therefore, NOAA Fisheries has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

No species of marine mammal listed under the ESA are expected to be affected by these activities. Therefore, NOAA Fisheries has determined that a section 7 consultation under the ESA is not required.

National Environmental Policy Act (NEPA)

NOAA Fisheries is also preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) and will consider comments submitted in response to this notice as part of that process. The EA will be posted at the foregoing internet site once it is finalized.

Proposed Authorization

As a result of these preliminary determinations, NOAA Fisheries proposes to issue an IHA to Port of Kalama for constructing the Kalama Marine Manufacturing and Export Facility on the Columbia River during the 2016–2017 in-water work season, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. The proposed IHA language is provided next.

Draft Proposed Authorization

This section contains a draft of the IHA itself. The wording contained in this section is proposed for inclusion in the IHA (if issued).

Incidental Harassment Authorization

We hereby authorize the Port of Kalama (POK), 110 West Marine Drive, Kalama, WA 98625, under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA) ((16 U.S.C. 1371(a)(5)(D)) and 50 CFR 216.107, to harass small numbers of marine mammals incidental to construction of the Kalama Manufacturing and Marine Export Facility on the Columbia River during the 2016–2017 in-water construction season. A copy of this Authorization must be in the possession of all contractors and protected species observers operating under the authority of this Incidental Harassment Authorization.

1. Effective Dates

This authorization is valid from September 1, 2016 through August 31, 2017.

2. Specified Geographic Region

This Authorization is valid only for specified activities associated with the POK's construction activities as specified in POK's Incidental Harassment Authorization (Authorization) application in the following specified geographic area:

—The Columbia River, approximately river mile 72, from Latitude 46.0482, Longitude −122.8755, to the nearest shore by line of sight from project activities as specified in the application, an area consisting of approximately 1800 acres of tidally influenced riverine habitat.

3. Species Authorized and Level of Take

This authorization limits the incidental taking of marine mammals, by Level B harassment only, to the following species: Harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), and Steller sea lion (*Eumatopius jubatus*). The taking by injury, serious injury, or death of any species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this authorization.

4. Cooperation

We require the holder of this Authorization to cooperate with the Office of Protected Resources, National Marine Fisheries Service, and any other Federal, state, or local agency monitoring the impacts of the proposed activity on marine mammals.

5. Mitigation and Monitoring Requirements

We require the holder of this Authorization to implement the following mitigation and monitoring requirements when conducting the specified activities to achieve the least practicable adverse impact on affected marine mammal species or stocks:

Visual Observers

Utilized one, NOAA Fisheries qualified Protected Species Visual Observer (observer) to watch for and monitor marine mammals near the proposed in-water construction during all in-water pile driving, three observers for any impact pile driving of steel piles, and three observers for the first two days, and thereafter every third day during in-water vibratory pile driving and removal to allow for estimation of the number of take exposures.

Exclusion Zones

Establish and maintain a 190-dB exclusion zone for pinnipeds during all impact and vibratory pile driving activities (10 m for impact of concrete piles and all vibratory pile driving, and 18m in the event that impact pile driving is required for steel piles). The exclusion zone must be monitored and be free of marine mammals for at least 15 minutes before pile driving activities can commence.

Recording Visual Detections

Visual observers must record the following information when they have sighted a marine mammal:

—Species, age/size/sex (if determinable), behavior when first sighted and after initial sighting, heading, distance, and changes in behavior in response to construction activities.

Shutdown Proceedures

Immediately suspend pile driving activities if a visual observer detects a marine mammal within, or entering the exclusion zone (10m exclusion zone for all pile driving activity, and 18m exclusion zone for impact pile driving of steel piles). Pile driving activities will not be resumed until the exclusion zone has been observed as being mammal free for at least 15 minutes.

6. Reporting Requirements

This Authorization requires the holder to submit a draft report on all activities and monitoring results to the Office of Protected Resources, NOAA Fisheries, within 90 day s of completion of in-water construction activities. This report must contain and summarize the following information:

—Dates, times, weather, and visibility conditions during all construction associated in-water work and marine mammal sightings;
—Species, number, location, distance from activity, behavior of any observed marine mammals, and any required shutdowns throughout all monitoring activities;
—An estimate of the number, by species, of marine mammals with exposures to sound energy levels greater than, or equal to, 160 dB for impact pile driving and 120 dB for vibratory pile driving.

Additionally, the Port of Kalama must submit a final report to the Chief, Permits and Conservation Division, Office of Protected Resources, NOAA Fisheries, within 30 days after receiving comments from us on the draft report. If we decide the draft report needs no comments, we will consider the draft report to be the final report.

7. Reporting Prohibited Take

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner not permitted by the authorization (if issued), such as an injury, serious injury, or mortality (*e.g.,* ship-strike, gear interaction, and/or entanglement), the Port of Kalama shall immediately cease the specified activities and immediately report the take to the Chief, Permits and Conservation Division, Office of Protected Resources, NOAA Fisheries, at 301–427–8401 and/or by email. The report must include the following information:

—Time, date, and location (latitude/longitude) of the incident;
—Name and type of vessel involved;
—Vessel's speed during and leading up to the incident;
—Description of the incident;
—Status of all sound source use in the 24 hours preceding the incident;
—Water depth;
—Environmental conditions (*e.g.,* wind speed and direction, Beaufort sea state, cloud cover, and visibility);
—Description of all marine mammal observations in the 24 hours preceding the incident;
—Species identification or description of the animal(s) involved;
—Fate of the animal(s); and
—Photographs or video footage of the animal(s) (if equipment is available).

The Port of Kalama shall not resume its activities until we are able to review the circumstances of the prohibited take. We shall work with the Port of Kalama to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The Port of Kalama may not resume their activities until notified by us via letter, email, or telephone.

8. Reporting an Injured or Dead Marine Mammal With an Unknown Cause of Death

In the event that the Port of Kalama discovers an injured or dead marine mammal, and the lead visual observer determines that the cause of the injury or death is unknown, and the death is relatively recent (*i.e.,* in less than a moderate state of decomposition as we describe in the next paragraph), the Port of Kalama will immediately report the incident to the Chieve, Permits and Conservation Division, Office of Protected Resources, NOAA Fisheries, at 301–427–8401, and/or by email. The report must include the same information identified in the paragraph above this section. Activities may continue while NOAA Fisheries reviews the circumstances of the incident. NOAA Fisheries would work with the Port of Kalama to determine whether modifications in the activities are appropriate.

9. Reporting an Injured or Dead Marine Mammal Unrelated to the Activities

In the event that the Port of Kalama discovers and injured or dead marine mammal, and the lead observer determines that the injury or death is not associated with or related to the authorized activities (*e.g.,* previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the Port of Kalama would report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NOAA Fisheries, at 301–427–8401, and/or by email, within 24 hours of the discovery. The Port of Kalama would provide photographs or video footage or other documentation of the animal sighting to NOAA Fisheries.

Request for Public Comments

NOAA Fisheries requests comment on our analysis, the draft authorization, and any other aspect of the Notice of Proposed IHA for the Port of Kalama's construction of Kalama Marine Manufacturing and Export Facility. Please include with your comments any supporting data or literature citations to help inform our final decision on Port of Kalama's request for an MMPA authorization.

Dated: March 9, 2016.

Perry F. Gayaldo,

Deputy Director, Office of Protected Resources, National Marine Fisheries Service.

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DEPARTMENT OF DEFENSE

Office of the Secretary

[Docket ID: DoD–2016–OS–0022]

Proposed Collection; Comment Request

AGENCY: Defense Security Service, DoD.

ACTION: Notice.

SUMMARY: In compliance with the *Paperwork Reduction Act of 1995*, the Center for Development of Security