

Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice of public meeting.

**SUMMARY:** The Pacific Fishery Management Council's (Pacific Council) Groundfish Subcommittee of the Scientific and Statistical Committee (SSC) will hold a meeting to review rebuilding analyses for quillback rockfish in California and any remaining 2023 stock assessment review requests from the September 2023 Council meeting. This meeting is open to the public.

**DATES:** The meeting will be held Monday, September 25, 2023 from 1 p.m. until business for the day has been completed, and will continue through Friday, September 29, 2023, from 8:30 a.m. until 5:30 p.m. (Pacific Daylight Time) or when business for the day has been completed.

**ADDRESSES:** The SSC Groundfish Subcommittee meeting is tentatively scheduled to be held in person with a web broadcast at the Pacific Fishery Management Council office, Large Conference Room, 7700 NE Ambassador Place, Suite 101, Portland, OR 97220. The meeting may be held online only based on the complexity of the agenda and in the event of Federal travel restrictions. An opportunity for remote public comment will be provided under either meeting format.

Specific meeting information, materials, and instructions for how to connect to the meeting remotely will be provided in the meeting announcement on the Pacific Council's website (see [www.pcouncil.org](http://www.pcouncil.org)). Please contact Kris Kleinschmidt ([kris.kleinschmidt@noaa.gov](mailto:kris.kleinschmidt@noaa.gov)) or (503) 820-2412 for technical assistance.

*Council address:* Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, OR 97220.

**FOR FURTHER INFORMATION CONTACT:** Marlene A. Bellman, Staff Officer, Pacific Council; telephone: (503) 820-2414, email: [marlene.bellman@noaa.gov](mailto:marlene.bellman@noaa.gov).

**SUPPLEMENTARY INFORMATION:** The SSC's Groundfish Subcommittee will review any further analyses for 2023 stock assessments as requested by the Pacific Council at their September 2023 meeting. The SSC's Groundfish Subcommittee will also review new rebuilding analyses for quillback rockfish in California. This process follows the procedures outlined in the Pacific Council's Terms of Reference for the Groundfish Stock Assessment Review Process for 2023-2024 (which can be found at <https://>

[www.pcouncil.org/documents/2022/06/terms-of-reference-for-the-groundfish-stock-assessment-review-process-for-2023-2024-june-2022.pdf/](http://www.pcouncil.org/documents/2022/06/terms-of-reference-for-the-groundfish-stock-assessment-review-process-for-2023-2024-june-2022.pdf/)). The Groundfish Subcommittee will prepare their recommendations for SSC and Pacific Council consideration at their November 2023 meetings.

Although non-emergency issues not contained in the meeting agendas may be discussed, those issues may not be the subject of formal action during these meetings. Action will be restricted to those issues specifically listed in this document and any issues arising after publication of this document that require emergency action under section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act, provided the public has been notified of the intent to take final action to address the emergency.

#### Special Accommodations

Requests for sign language interpretation or other auxiliary aids should be directed to Kris Kleinschmidt ([kris.kleinschmidt@noaa.gov](mailto:kris.kleinschmidt@noaa.gov); (503) 820-2412) at least 10 days prior to the meeting date.

*Authority:* 16 U.S.C. 1801 *et seq.*

Dated: September 1, 2023.

**Rey Israel Marquez,**

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

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## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[RTID 0648-XD106]

#### Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Pier Maintenance and Bank Stabilization at U.S. Coast Guard Air Station Port Angeles, Port Angeles, Washington

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

**ACTION:** Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

**SUMMARY:** NMFS has received a request from the U.S. Coast Guard (Coast Guard or USCG) for authorization to take marine mammals incidental to pier maintenance and bank stabilization construction activities at USCG Air Station Port Angeles, Port Angeles, Washington. Pursuant to the Marine

Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in Request for Public Comments at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorization and agency responses will be summarized in the final notice of our decision.

**DATES:** Comments and information must be received no later than October 10, 2023.

**ADDRESSES:** Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources (OPR), NMFS, and should be submitted via email to [ITP.hotchkin@noaa.gov](mailto:ITP.hotchkin@noaa.gov).

*Instructions:* NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at [www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act](http://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act) without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities>. In case of problems accessing these documents, please call the contact listed below.

**FOR FURTHER INFORMATION CONTACT:** Cara Hotchkin, OPR, NMFS, (301) 427-8401.

**SUPPLEMENTARY INFORMATION:**

#### Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) 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 proposed or, if the taking is limited to harassment, a notice of a proposed IHA is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

#### **National Environmental Policy Act**

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216–6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA

Administrative Order 216–6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

#### **Summary of Request**

On August 9, 2022, NMFS received a request from Coast Guard for an IHA to take marine mammals incidental to construction during pier maintenance activities at USCG Air Station Port Angeles in Port Angeles, Washington. Following NMFS’ review of the application, Coast Guard submitted revised versions on May 11, 2023 and July 14, 2023. The application was deemed adequate and complete on July 18, 2023. Coast Guard’s request is for take of five species of marine mammals by Level B harassment only. Neither Coast Guard nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

#### **Description of Proposed Activity**

##### *Overview*

The Coast Guard proposes to conduct pier maintenance and bank stabilization on a portion of the shoreline at USCG Air Station Port Angeles in Port Angeles, Washington. The proposed work may result in the incidental take

of marine mammals by Level B harassment due to exposure to underwater sound produced during impact and vibratory pile driving.

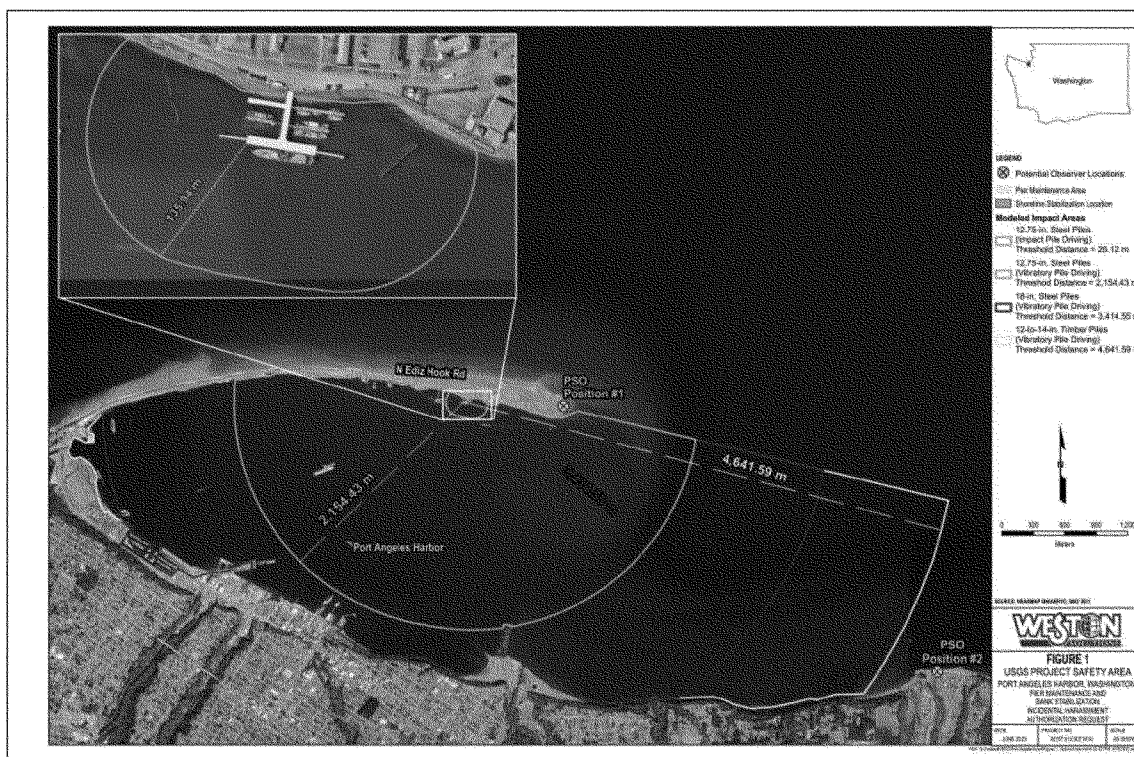
The purpose of this project is to repair existing facilities and to protect vital mission support infrastructure from continued tidal action erosion and storm events. This project will repair up to 372 feet (ft) (113.4 meters (m)) of eroded riprap shoreline, replace 37 degraded timber piles with steel piles, repair up to 98 timber piles, permanently remove 11 abandoned timber piles and 3 steel camel barrier piles, and demolish 2 camels.

##### *Dates and Duration*

The proposed IHA would be effective from November 15, 2023 to November 14, 2024. In-water work is expected to take approximately 15 days and will occur during daylight hours during the lowest possible tide conditions. The U.S. Army Corps of Engineers has designated an in-water work window between July 16 and February 15 to protect anadromous fishes. Work on this project may occur between November 15, 2023 and February 15, 2024 and from July 16, 2024 to November 14, 2024. In-water pile driving work would occur during daylight hours only at the lowest possible tide conditions.

##### *Specific Geographic Region*

This project is located at USCG Air Station Port Angeles, in Port Angeles, Washington. USCG Air Station Port Angeles is located on the south-facing side of Ediz Hook, a peninsula that extends into the Strait of Juan de Fuca, encompassing approximately 8.73 square kilometers (km<sup>2</sup>) (3.37 square miles (mi<sup>2</sup>)), opening to the east (Figure 1).



**Figure 1. Map of Proposed Project Area in Port Angeles, Washington.**

*Detailed Description of the Specified Activity*

The Coast Guard proposes to conduct construction activities related to pier maintenance and bank stabilization to protect critical infrastructure from tidal and storm erosion using methods including impact and vibratory pile installation and vibratory pile extraction. Activity details for the work under this proposed IHA are provided in Table 1. Pile driving activities would be barge-based. Impact and vibratory driving activities would occur on the same days. Simultaneous use of multiple hammers would not occur, and

is therefore not discussed further in this notice. In-water pile driving work is expected to take approximately 15 days to complete, and would occur during daylight hours only, at the lowest possible tide conditions.

Pile removal will be by direct-pull or by vibratory extraction. Vibratory extraction of timber piles may occur for up to 8 hours per day, at an estimated rate of 16 piles per day (estimated 30 minutes required to extract each timber or steel pile). Vibratory extraction of timber piles is expected to take no more than seven days. Vibratory extraction of steel piles is expected to take

approximately two hours over the course of two days.

Pile installation will be by vibratory driving until refusal is encountered, with the potential for impact proofing of each installed pile depending on substrate conditions. Vibratory installation is expected to take approximately 30 minutes per pile, at an estimated average rate of approximately 10 piles per day. Impact proofing of installed steel piles could occur on the same day as vibratory installation, and would involve approximately 100 strikes per pile and a maximum of 5 piles per day.

**TABLE 1—PILE INFORMATION**

Pile type	Install or extract	Method	Total piles	Piles per day	Hours or strikes per day	Total days <sup>1</sup>
12-inch (in) steel .....	Install .....	Vibratory .....	37	10	5 hours .....	7
18-in steel .....	Extract .....	Vibratory .....	3	2	1 hour .....	2
12–14-in timber .....	Extract .....	Vibratory .....	48	16	8 hours .....	6
12-in steel .....	Install .....	Impact .....	37	5	100 strikes .....	8

<sup>1</sup> Approximately 14 days of in-water pile driving would be required for this project. Some activities would occur on the same day (i.e., vibratory and impact installation of steel piles, vibratory extraction of steel and timber piles).

Other components of this project include both in-water and upland activities, which are not expected to result in take of marine mammals. Pile repair (i.e., power washing, jacketing,

and anti-fouling coating), deck repair and replacement, utility installation, and shoreline stabilization (i.e., removal and replacement of riprap shoreline) are

therefore not discussed further in this document.

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see

Proposed Mitigation and Proposed Monitoring and Reporting).

**Description of Marine Mammals in the Area of Specified Activities**

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. NMFS fully considered all of this information, and we refer the reader to these descriptions, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments)) and more general information about these species (e.g., physical and behavioral descriptions) may be found on NMFS'

website (<https://www.fisheries.noaa.gov/find-species>).

Table 2 lists all species or stocks for which take is expected and proposed to be authorized for this activity, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no serious injury or mortality is anticipated or proposed to be authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the

status of the species or stocks and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. Pacific SARs. All values presented in Table 2 are the most recent available at the time of publication (including from the final 2022 SARs) and are available online at: [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments).

TABLE 2—SPECIES LIKELY IMPACTED BY THE SPECIFIED ACTIVITIES <sup>1</sup>

Common name	Scientific name	Stock	ESA/ MMPA status; strategic (Y/N) <sup>2</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>3</sup>	PBR	Annual M/SI <sup>4</sup>
<b>Order Artiodactyla—Infraorder Cetacea—Mysticeti (baleen whales)</b>						
<i>Family Balaenopteridae (rorquals):</i>						
Humpback whale .....	<i>Megaptera novaeangliae</i> .....	Hawai'i .....	- , - , N	11,278 (0.56, 7,265, 2020) ....	127	27.09
		Mainland Mexico-CA/OR/WA	T, D, Y	3,477 (0.101, 3,185, 2022) ....	43	22
		Central America/Southern Mexico-CA/OR/WA.	E, D, Y	1,496 (0.171, 1,284, 2022) ....	5.2	14.9
<b>Odontoceti (toothed whales, dolphins, and porpoises)</b>						
<i>Family Delphinidae:</i>						
Killer whale .....	<i>Orcinus orca</i> .....	Eastern North Pacific Southern Resident.	E, D, Y	74 (N/A, 74, 2021) .....	0.13	≥0.4
		West Coast Transient .....	- , - , N	349 (N/A, 349, 2018) .....	3.5	0.4
<i>Family Phocoenidae (porpoises):</i>						
Harbor porpoise .....	<i>Phocoena phocoena</i> .....	Washington Inland Waters .....	- , - , N	11,233 (0.37, 8,308, 2015) ....	66	≥7.2
<b>Order Carnivora—Pinnipedia</b>						
<i>Family Otariidae (eared seals and sea lions):</i>						
Steller sea lion .....	<i>Eumetopias jubatus</i> .....	Eastern .....	- , - , N	43,201 (N/A, 43,201, 2017) ...	2,592	112
California sea lion .....	<i>Zalophus californianus</i> .....	U.S. ....	- , - , N	257,606 (N/A, 233,515, 2014)	14,011	>321
<i>Family Phocidae (earless seals):</i>						
Harbor seal .....	<i>Phoca vitulina</i> .....	Washington Northern Inland Waters.	- , - , N	UNK (UNK, UNK, 1999) .....	UND	9.8
Northern elephant seal .....	<i>Mirounga angustirostris</i> .....	CA Breeding .....	- , - , N	187,386 (N/A, 85,369, 2013)	5,122	13.7

<sup>1</sup> Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy's Committee on Taxonomy (<https://marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies/>; Committee on Taxonomy (2022)).

<sup>2</sup> Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

<sup>3</sup> NMFS marine mammal stock assessment reports online at: [www.nmfs.noaa.gov/pr/sars/](http://www.nmfs.noaa.gov/pr/sars/). CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.

<sup>4</sup> These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, vessel strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

As indicated above, all 7 species (with 6 managed stocks) in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably

likely to occur. While gray whales (*Eschrichtius robustus*) and minke whales (*Balaenoptera acutorostrata*) have been documented in the project

area, the temporal and/or spatial occurrence of these species is such that take is not expected to occur, and they are not discussed further beyond the

explanation provided here. The project area (Port Angeles Harbor) is a relatively small embayment along the coast of the Strait of Juan de Fuca. While gray whales occasionally visit this area during their seasonal migrations, and approximately a dozen identified individuals are known to regularly return to Puget Sound (Calambokidis *et al.*, 2018). However, it would be unusual for one to enter the enclosed harbor area. Minke whales have been reported in Washington inland waters year-round, although few are reported in the winter (*i.e.*, during the anticipated in-water work window for this project; Calambokidis and Baird 1994). Given the limited timeframe of the project and the low likelihood of a gray or minke whale approaching the enclosed and highly-trafficked Port Angeles Harbor, no takes of these species are proposed for authorization. Additionally, the Coast Guard proposes to shut down pile driving work when any large whale for which take is not authorized approaches the Level B harassment isopleth.

### Humpback Whale

Humpback whales are found in coastal waters of Washington as they migrate from feeding grounds in Alaska to California to winter breeding grounds in Mexico. Humpbacks used to be considered rare visitors to Puget Sound. In 1976 and 1978, two sightings were reported in Puget Sound and one sighting was reported in 1986 (Osborne *et al.*, 1988; Calambokidis and Steiger 1990; Calambokidis and Baird 1994). Humpback whale occurrence in Puget Sound has been steadily increasing since 2000, with some individuals remaining in the area through the winter (Calambokidis *et al.*, 2018). Between 1988 and 2015, 154 unique individual humpback whales were identified within Washington-British Columbia inside waters, with 500 or more sighting reports of humpback whales in the Salish Sea in both 2014 and 2015 (Calambokidis *et al.* 2017).

The 2022 Alaska and Pacific SARs described a revised stock structure for humpback whales which modifies the previous stocks designated under the MMPA to align more closely with the ESA-designated DPSs (Caretta *et al.*, 2023; Young *et al.*, 2023). Specifically, the three previous North Pacific humpback whale stocks (Central and Western North Pacific stocks and a CA/OR/WA stock) were replaced by five stocks, largely corresponding with the ESA-designated DPSs. These include Western North Pacific and Hawai'i stocks and a Central America/Southern Mexico-CA/OR/WA stock (which corresponds with the Central America

DPS). The remaining two stocks, corresponding with the Mexico DPS, are the Mainland Mexico-CA/OR/WA and Mexico-North Pacific stocks (Caretta *et al.*, 2023; Young *et al.*, 2023). The former stock is expected to occur along the west coast from California to southern British Columbia, while the latter stock may occur along the Pacific, from northern British Columbia through the Gulf of Alaska and Aleutian Islands/Bering Sea region to Russia. The stocks that may occur in the proposed project area are: Hawai'i, Mainland Mexico-CA/OR/WA, and Central America/Southern Mexico-CA/OR/WA.

The Hawai'i stock consists of one demographically independent population (DIP)—Hawai'i—Southeast Alaska/Northern British Columbia DIP and one unit—Hawai'i—North Pacific unit, which may or may not be composed of multiple DIPs (Wade *et al.*, 2021). The DIP and unit are managed as a single stock at this time, due to the lack of data available to separately assess them and lack of compelling conservation benefit to managing them separately (NMFS, 2023; NMFS, 2019; NMFS, 2022). The DIP is delineated based on two strong lines of evidence: genetics and movement data (Wade *et al.*, 2021). Whales in the Hawai'i—Southeast Alaska/Northern British Columbia DIP winter off Hawai'i and largely summer in Southeast Alaska and Northern British Columbia (Wade *et al.*, 2021). The group of whales that migrate from Russia, western Alaska (Bering Sea and Aleutian Islands), and central Alaska (Gulf of Alaska excluding Southeast Alaska) to Hawai'i have been delineated as the Hawai'i-North Pacific unit (Wade *et al.*, 2021). There are a small number of whales that migrate between Hawai'i and southern British Columbia/Washington, but current data and analyses do not provide a clear understanding of which unit these whales belong to (Wade *et al.*, 2021) (Caretta *et al.*, 2023; Young *et al.*, 2023).

The Mainland Mexico-CA/OR/WA stock consists of one DIP. Delineation of the Mainland Mexico-California/Oregon/Washington DIP is based on two strong lines of evidence indicating demographic independence: genetics and movement data (Martien *et al.* 2021). Whales in this stock winter off the mainland Mexico states of Nayarit and Jalisco, with some animals seen as far south as Colima and Michoacán. Summer destinations for whales in the Mainland Mexico DPS include U.S. West Coast waters of California, Oregon, Washington (including the Salish Sea, Martien *et al.* 2021), Southern British Columbia, Alaska, and the Bering Sea.

The Central America/Southern Mexico-CA/OR/WA stock consists of one DIP, for which delineation is based on two strong lines of evidence indicating demographic independence: genetics and movement data (Taylor *et al.* 2021). Whales in this stock winter off the Pacific coast of Nicaragua, Honduras, El Salvador, Guatemala, Panama, Costa Rica and likely southern coastal Mexico (Taylor *et al.* 2021). Summer destinations for whales in this DIP include the U.S. West Coast waters of California, Oregon, and Washington (including the Salish Sea, Calambokidis *et al.* 2017).

According to Wade *et al.* (2021), the probability that humpback whales encountered in Washington and Southern British Columbia waters belong to various DPSs are as follows: Hawai'i DPS, 69 percent; Mexico DPS, 25 percent; and Central America DPS, 6 percent. We therefore assume that the numbers of humpback whales taken incidental to the Coast Guard's proposed activities would fall under the same relative proportions. Critical habitat for Mexico and Central America DPS humpback whales has been established on the outer coast of Washington (86 FR 21082; April 21, 2021) but does not overlap the project area.

Humpback whales are most often spotted in the Port Angeles area from May to June and from September to October, during their migration (Patry, 2022). During a 2016–2017 U.S. Navy Department of the Navy (U.S. Navy) Pier and Support Facilities for Transit Protection System (TPS) project in Port Angeles (U.S. Navy TPS Port Angeles Project), three “possible” whale sightings were recorded; however, species and confirmation could not be obtained (Northwest Environmental Consulting, LLC., 2018).

### Killer Whale

There are three distinct ecotypes, or forms, of killer whales recognized in the north Pacific Ocean: resident, transient, and offshore. The three ecotypes differ morphologically, ecologically, behaviorally, and genetically. Resident killer whales exclusively prey upon fish, with a clear preference for salmon (Ford and Ellis 2006; Hanson *et al.*, 2010; Ford *et al.*, 2016), while transient killer whales exclusively prey upon marine mammals (Caretta *et al.*, 2023). Less is known about offshore killer whales, but they are believed to consume primarily fish, including several species of shark (Dahlheim *et al.*, 2008). Currently, there are eight killer whale stocks recognized in the U.S. Pacific Ocean (Caretta *et al.*, 2023;

Young *et al.* 2023). Of those, individuals from the Southern Resident stock and West Coast Transient stocks could occur in the Port Angeles area and be taken incidental to the Coast Guard's proposed activities.

The Southern Resident killer whale (SRKW) population is comprised of three pods, J, K, and L pods, which typically travel independently of each other. The stock occurs for part of the year in the inland waterways of the Salish Sea, including Puget Sound, the Strait of Juan de Fuca, and the southern Strait of Georgia mostly during the spring, summer, and fall. Their movement patterns appear related to the seasonal availability of prey, especially Chinook salmon (*Oncorhynchus tshawytscha*). They also move to coastal waters, primarily off Washington and British Columbia, and have been observed as far as central California and southeast Alaska (Caretta *et al.*, 2023). During the fall, SRKW, especially J pod, expand their movements into Puget Sound (Hanson *et al.*, 2021).

The SRKW DPS was listed as endangered under the ESA in 2005 after a nearly 20 percent decline in abundance between 1996 and 2001 (70 FR 69903; November 18, 2005). As compared to stable or growing populations, the DPS reflects lower fecundity and has demonstrated little to no growth in recent decades, and in fact has declined further since the date of listing (NMFS 2022b). The population abundance listed in the final 2022 SARs is 74 individuals, from the July 1, 2021 annual census conducted by the Center for Whale Research (Carretta *et al.*, 2023).

The West Coast Transient stock of killer whales occurs from California through southeast Alaska (Young *et al.* 2023). The seasonal movements of transients are largely unpredictable, although there is a tendency to investigate harbor seal haulouts off Vancouver Island more frequently during the pupping season in August and September (Baird 1994; Ford 2014). Transient killer whales have been observed in the Strait of Juan de Fuca in all months and sightings in the Salish Sea have increased since 2000 (Houghton *et al.*, 2015).

A previous construction monitoring project in Port Angeles Harbor documented no sightings of either SRKW or transient killer whales over 38 days of monitoring, though two "possible" whale sightings were recorded (Northwest Environmental Consulting, LLC., 2018).

#### Harbor Porpoise

In the eastern North Pacific Ocean, harbor porpoise are found in coastal and inland waters from Point Barrow, along the Alaskan coast, and down the west coast of North America to Point Conception, California (Gaskin 1984). Harbor porpoise are known to occur year-round in the inland trans-boundary waters of Washington and British Columbia, Canada (Osborne *et al.*, 1988), and along the Oregon/Washington coast (Barlow 1988, Barlow *et al.*, 1988, Green *et al.*, 1992). There was a significant decline in harbor porpoise sightings within southern Puget Sound between the 1940s and 1990s but sightings have increased seasonally in the last 10 years (Carretta *et al.*, 2023). Annual winter aerial surveys conducted by the Washington Department of Fish and Wildlife from 1995 to 2015 revealed an increasing trend in harbor porpoise in Washington inland waters, including the return of harbor porpoise to Puget Sound. The data suggest that harbor porpoise were already present in Juan de Fuca, Georgia Straits, and the San Juan Islands from the mid-1990s to mid-2000s, and then expanded into Puget Sound and Hood Canal from the mid-2000s to 2015, areas they had used historically but abandoned. Changes in fishery-related entanglement was suspected as the cause of their previous decline and more recent recovery, including a return to Puget Sound (Evenson *et al.*, 2016). Seasonal surveys conducted in spring, summer, and fall 2013–2015 in Puget Sound and Hood Canal documented substantial numbers of harbor porpoise in Puget Sound. Observed porpoise numbers were twice as high in spring as in fall or summer, indicating a seasonal shift in distribution of harbor porpoise (Smultea 2015). The reasons for the seasonal shift and for the increase in sightings is unknown. Monitoring from a previous construction project in Port Angeles Harbor sighted six harbor porpoise over 38 days of monitoring (Northwest Environmental Consulting, LLC., 2018).

#### Steller Sea Lion

Steller sea lions range along the North Pacific Rim from northern Japan to California (Loughlin *et al.*, 1984). There are two separate stocks of Steller sea lions, the eastern U.S. stock, which occurs east of Cape Suckling, Alaska (144° W), and the western U.S. stock, which occurs west of that point. Only the western stock of Steller sea lions, which is designated as the western DPS of Steller sea lions, is listed as endangered under the ESA (78 FR

66139; November 4, 2013). Unlike the western U.S. stock of Steller sea lions, there has been a sustained and robust increase in abundance of the eastern U.S. stock throughout its breeding range. The eastern stock of Steller sea lions has historically bred on rookeries located in Southeast Alaska, British Columbia, Oregon, and California. However, within the last several years a new rookery has become established on the outer Washington coast (at the Carroll Island and Sea Lion Rock complex), with more than 100 pups born there in 2015 (Young *et al.*, 2023).

Steller sea lions use haulout locations in Puget Sound, and may occur at the same haulouts as California sea lions. The closest known haulout for Steller sea lions is approximately 15 mi (24.14 km) away from Port Angeles on the Canadian side of the Strait of Juan de Fuca (Jefferies *et al.* 2000, Edgell & Demarchi, 2012). Thus, although Steller sea lions may occasionally use the waters around Port Angeles to pursue local prey, their presence in Port Angeles harbor is likely limited due to the long transit involved in returning to their haulout site. Observers reported sightings of two Steller sea lions during pile driving activities associated with the Navy TPS Port Angeles Project in 2016–2017 over 38 days of monitoring (Northwest Environmental Consulting, LLC., 2018).

#### California Sea Lion

The California sea lion is the most frequently sighted pinniped found in Washington waters and uses haulout sites along the outer coast, Strait of Juan de Fuca, and in Puget Sound. Haulout sites are located on jetties, offshore rocks and islands, log booms, marina docks, and navigation buoys. This species also may be frequently seen resting in the water, rafted together in groups in Puget Sound. Only male California sea lions migrate into Pacific Northwest waters, with females remaining in waters near their breeding rookeries off the coast of California and Mexico. The California sea lion was considered rare in Washington waters prior to the 1950s, but prevalence has increased regularly since the passing of the MMPA. In the 1990s, Jeffries *et al.* (2000) documented peak numbers of 3,000 to 5,000 animals moving into the Salish Sea during the fall and remaining until late spring, when most returned to breeding rookeries in California and Mexico (Jeffries *et al.*, 2000). More recent research has indicated that California sea lions continue to use the Salish Sea and Strait of Juan de Fuca regularly, with a mean estimated abundance of 2,489 (95% confidence

interval of 253–24,491) animals in these regions in the spring (Jefferson *et al.* 2023), and up to 836 individuals counted during the month of October at a nearby Canadian haulout (Edgell & Demarchi, 2012). Additionally, satellite tagging data has tracked individual animals tagged at U.S. Navy facilities in southern Puget Sound passing close to remaining near Port Angeles Harbor for multiple days in 2015 and 2016 (DeLong *et al.* 2017).

California sea lions are often observed in the area of potential effects and are known to be comfortable and seemingly curious around human activities. They regularly haul out on structures such as buoys, floats, and docks. In Port Angeles Harbor there are no known California sea lion haulouts; the nearest known haulout is across the Strait of Juan de Fuca at Race Rocks in British Columbia, Canada, approximately 19.5 km (12.1 mi) from the proposed project site (Edgell & Demarchi, 2012). The nearest known haulout in U.S. waters is at Sombio Point, which is approximately 45 mi (72.4 km) from Port Angeles (Jefferies *et al.* 2000). As a result, their use of Port Angeles Harbor is likely to be limited. However, occasional foraging forays may bring them into the area as surveys at Navy facilities indicate a few individuals are present in the area through mid-June to July with some arrivals in August (U.S. Navy 2019). Observers reported sightings of 21 California sea lions during pile driving activities associated with the Navy TPS Port Angeles Project in 2016 and 2017 (Northwest Environmental Consulting, LLC 2018).

#### Harbor Seal

Harbor seals inhabit coastal and estuarine waters off Baja California, north along the western coasts of the continental United States, British Columbia, and Southeast Alaska, west through the Gulf of Alaska and Aleutian Islands, and in the Bering Sea north to Cape Newenham and the Pribilof Islands (Carretta *et al.*, 2023). They haul out on rocks, reefs, beaches, and drifting glacial ice and feed in marine, estuarine, and occasionally fresh waters. Harbor seals generally are non-migratory, with local movements associated with such factors as tides, weather, season, food availability, and reproduction (Scheffer and Slipp 1944; Fisher 1952; Bigg 1969, 1981). Within U.S. west coast waters,

five stocks of harbor seals are recognized: (1) Southern Puget Sound (south of the Tacoma Narrows Bridge); (2) Washington Northern Inland Waters (including Puget Sound north of the Tacoma Narrows Bridge, the San Juan Islands, and the Strait of Juan de Fuca); (3) Hood Canal; (4) Oregon/Washington Coast; and (5) California. Harbor seals in the project areas would be from the Washington Northern Inland Waters stock.

Harbor seals are the only pinniped species that occurs year-round and breeds in Washington waters (Jeffries *et al.*, 2000). Popping seasons vary by geographic region, with pups born in coastal estuaries (Columbia River, Willapa Bay, and Grays Harbor) from mid-April through June; Olympic Peninsula coast from May through July; San Juan Islands and eastern bays of Puget Sound from June through August; southern Puget Sound from mid-July through September; and Hood Canal from August through January (Jeffries *et al.*, 2000). Harbor seals have haulouts throughout Puget Sound and the Strait of Juan de Fuca and some of their haulouts are in close proximity to Air Station Port Angeles. They haul out year-round on log booms and beach areas. Known haulout locations are indicated in Figure 2 of the IHA Application. One is approximately 11,572 ft (3,527 m) west and the other is approximately 7,877 ft (2,401 m) south of the project area. Haulout locations may change, and harbor seals may also use other undocumented haulout sites within or around Port Angeles harbor.

Harbor seals are commonly sighted in and are expected to forage within Port Angeles Harbor year round. Observers reported sightings of 1,009 harbor seals during 38 days of pile driving associated with the Navy TPS Port Angeles Project in 2016–2017 (Northwest Environmental Consulting, LLC., 2018).

#### Northern Elephant Seal

Northern elephant seals breed and give birth in California (U.S.) and Baja California (Mexico), primarily on offshore islands (Stewart *et al.* 1994), from December to March. Males migrate to the Gulf of Alaska and western Aleutian Islands along the continental shelf to feed on benthic prey, while females migrate to pelagic areas in the Gulf of Alaska and the central North

Pacific Ocean to feed on pelagic prey (Le Boeuf *et al.*, 2000). Adults return to land between March and August to molt, with males returning later than females. Adults return to their feeding areas again between their spring/summer molting and their winter breeding seasons (Carretta *et al.*, 2023).

Seasonal abundance estimates for northern elephant seals in the inland waters of Washington (Strait of Juan de Fuca) range from 3 animals in winter to 12 animals in fall (U.S. Navy 2019). Haulouts for Northern elephant seals are located on offshore islands or islands and spits in the Strait of Juan de Fuca (Jefferies *et al.* 2000). Observers reported no sightings of northern elephant seals during pile driving activities associated with the Navy TPS Port Angeles Project in 2016 through 2017 (Northwest Environmental Consulting, LLC., 2018).

#### Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, etc.). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

TABLE 3—MARINE MAMMAL HEARING GROUPS  
[NMFS, 2018]

Hearing group	Generalized hearing range *
Low-frequency (LF) cetaceans (baleen whales) .....	7 Hz to 35 kHz.
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales) .....	150 Hz to 160 kHz.
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, Cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i> ).	275 Hz to 160 kHz.
Phocid pinnipeds (PW) (underwater) (true seals) .....	50 Hz to 86 kHz.
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals) .....	60 Hz to 39 kHz.

\* Represents the generalized hearing range for the entire group as a composite (i.e., all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009; Reichmuth *et al.*, 2013). This division between phocid and otariid pinnipeds is now reflected in the updated hearing groups proposed in Southall *et al.* (2019).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information.

**Potential Effects of Specified Activities on Marine Mammals and Their Habitat**

This section provides a discussion of the ways in which components of the specified activity may impact marine mammals and their habitat. The Estimated Take of Marine Mammals section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The Negligible Impact Analysis and Determination section considers the content of this section, the Estimated Take of Marine Mammals section, and the Proposed Mitigation section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and whether those impacts are reasonably expected to, or reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

Acoustic effects on marine mammals during the specified activity are expected to potentially occur from impact and vibratory pile installation and removal. The effects of underwater noise from Coast Guard's proposed activities have the potential to result in Level B harassment of marine mammals in Port Angeles Harbor.

*Background on Sound*

This section contains a brief technical background on sound, on the characteristics of certain sound types, and on metrics used relevant to the specified activity and to a discussion of the potential effects of the specified activity on marine mammals found later in this document. For general information on sound and its interaction with the marine environment, please see, Erbe and Thomas (2022); Au and Hastings (2008); Richardson *et al.* (1995); Urick (1983); as well as the Discovery of Sound in the Sea (DOSITS) website at <https://dosits.org/>.

Sound is a vibration that travels as an acoustic wave through a medium such as a gas, liquid or solid. Sound waves alternately compress and decompress the medium as the wave travels. In water, sound waves radiate in a manner similar to ripples on the surface of a pond and may be either directed in a beam (narrow beam or directional sources) or sound may radiate in all directions (omnidirectional sources), as is the case for sound produced by the construction activities considered here. The compressions and decompressions associated with sound waves are detected as changes in pressure by marine mammals and human-made sound receptors such as hydrophones.

Sound travels more efficiently in water than almost any other form of energy, making the use of sound as a primary sensory modality ideal for inhabitants of the aquatic environment. In seawater, sound travels at roughly 1,500 meters per second (m/s). In air, sound waves travel much more slowly, at about 340 m/s. However, the speed of sound in water can vary by a small amount based on characteristics of the transmission medium such as temperature and salinity.

The basic characteristics of a sound wave 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 with distance, except in certain cases in shallower water. The amplitude of a sound pressure wave is related to the subjective "loudness" of a sound and is typically expressed in dB, which are a relative unit of measurement that is used to express the ratio of one value of a power or pressure to another. A sound pressure level (SPL) in dB is described as the ratio between a measured pressure and a reference pressure, 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. For example, a 10-dB increase is a ten-fold increase in acoustic power. A 20-dB increase is then a 100-fold increase in power and a 30-dB increase is a 1,000-fold increase in power. However, a 10-fold increase in acoustic power does not mean that the sound is perceived as being 10 times louder. The dB is a relative unit comparing two pressures; therefore, a reference pressure must always be indicated. For underwater sound, this is 1 microPascal (µPa). For in-air sound, the reference pressure is 20 microPascal (µPa). The amplitude of a sound can be presented in various ways; however, NMFS typically considers three metrics: sound exposure level (SEL), root-mean-square (RMS) SPL, and peak SPL (defined below). The source level represents the SPL referenced at a standard distance from the source (Richardson *et al.*, 1995; American National Standards Institute (ANSI), 2013)(typically 1 m) (Richardson *et al.*, 1995; American National Standards Institute (ANSI), 2013), while the received level is the SPL at the receiver's position. For pile



driving activities, the SPL is typically referenced at 10 m.

SEL (represented as dB referenced to 1 micropascal squared second (re 1  $\mu\text{Pa}^2\text{-s}$ )) represents the total energy in a stated frequency band over a stated time interval or event, and considers both intensity and duration of exposure. The per-pulse SEL (e.g., single strike or single shot SEL) is calculated over the time window containing the entire pulse (i.e., 100 percent of the acoustic energy). SEL can also be a cumulative metric; it can be accumulated over a single pulse (for pile driving this is the same as single-strike SEL, above;  $\text{SEL}_{\text{ss}}$ ), or calculated over periods containing multiple pulses ( $\text{SEL}_{\text{cum}}$ ). Cumulative SEL ( $\text{SEL}_{\text{cum}}$ ) represents the total energy accumulated by a receiver over a defined time window or during an event. The SEL metric is useful because it allows sound exposures of different durations to be related to one another in terms of total acoustic energy. The duration of a sound event and the number of pulses, however, should be specified as there is no accepted standard duration over which the summation of energy is measured.

RMS SPL is equal to ten times the logarithm (base 10) of the ratio of the mean-square sound pressure to the specified reference value, and given in units of dB (International Organization for Standardization (ISO), 2017). RMS is calculated by squaring all of the sound amplitudes, averaging the squares, and then taking the square root of the average (Urlick, 1983). 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 SPL. For impulsive sounds, RMS is calculated by the portion of the waveform containing 90 percent of the sound energy from the impulsive event (Madsen, 2005).

Peak SPL (also referred to as zero-to-peak sound pressure or 0-pk) is the maximum instantaneous sound pressure measurable in the water, which can arise from a positive or negative sound pressure, during a specified time, for a specific frequency range at a specified distance from the source, and is represented in the same units as the RMS sound pressure (ISO, 2017). Along with SEL, this metric is used in evaluating the potential for permanent threshold shift (PTS) and temporary

threshold shift (TTS) associated with impulsive sound sources.

Sounds may be either impulsive or non-impulsive (defined below). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to noise-induced hearing loss (e.g., Ward, 1997 in Southall *et al.*, 2007). Please see NMFS (2018) and Southall *et al.* (2007; 2019) for an in-depth discussion of these concepts.

Impulsive sound sources (e.g., explosions, gunshots, sonic booms, seismic airgun shots, impact pile driving) produce signals that are brief (typically considered to be less than one second), broadband, atonal transients (ANSI, 1986; NIOSH, 1998; ANSI, 2005) and occur either as isolated events or are repeated in some succession. Impulsive 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. Impulsive sounds are intermittent in nature. The duration of such sounds, as received at a distance, can be greatly extended in a highly reverberant environment.

Non-impulsive sounds can be tonal, narrowband, or broadband, brief or prolonged, and may be either continuous or non-continuous (ANSI, 1995; NIOSH, 1998). Some of these non-impulsive sounds can be transient signals of short duration but without the essential properties of impulses (e.g., rapid rise time). Examples of non-impulsive sounds include those produced by vessels, aircraft, machinery operations such as drilling (including DTH systems) or dredging, vibratory pile driving, and active sonar systems.

Even in the absence of sound from the specified activity, the underwater environment is characterized by sounds from both natural and anthropogenic sound sources. Ambient sound is defined as a composite of naturally-occurring (i.e., non-anthropogenic) sound from many sources both near and far (ANSI, 1995). Background sound is similar, but includes all sounds, including anthropogenic sounds, minus the sound produced by the proposed (NMFS, 2012; 2016). 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., wind and 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 background and ambient sound, including wind and waves, which are a main source of naturally occurring ambient sound for frequencies between 200 Hz and 50 kilohertz (kHz) (Mitson, 1995). In general, background and ambient sound levels tend to increase with increasing wind speed and wave height.

Precipitation can become an important component of total sound at frequencies above 500 Hz, and possibly down to 100 Hz during quiet times. Marine mammals can contribute significantly to background and ambient sound levels, as can some fish and snapping shrimp. The frequency band for biological contributions is from approximately 12 Hz to over 100 kHz. Sources of background sound related to human activity include transportation (surface vessels), dredging and construction, oil and gas drilling and production, geophysical surveys, sonar, and explosions. Vessel noise typically dominates the total background sound for frequencies between 20 and 300 Hz. In general, the frequencies of many anthropogenic sounds, particularly those produced by construction activities, are below 1 kHz (Richardson *et al.*, 1995). When sounds at frequencies greater than 1 kHz are produced, they generally attenuate relatively rapidly (Richardson *et al.*, 1995), particularly above 20 kHz due to propagation losses and absorption (Urlick, 1983).

Transmission loss (TL) defines the degree to which underwater sound has spread in space and lost energy after having moved through the environment and reached a receiver. It is defined by the ISO as the reduction in a specified level between two specified points that are within an underwater acoustic field (ISO, 2017). Careful consideration of transmission loss and appropriate propagation modeling is a crucial step in determining the impacts of underwater sound, as it helps to define the ranges (isopleths) to which impacts are expected and depends significantly on local environmental parameters such as seabed type, water depth (bathymetry), and the local speed of sound. Geometric spreading laws are powerful tools which provide a simple means of estimating TL, based on the shape of the sound wave front in the water column. For a sound source that is equally loud in all directions and in deep water, the sound field takes the form of a sphere, as the sound extends

in every direction uniformly. In this case, the intensity of the sound is spread across the surface of the sphere, and thus we can relate intensity loss to the square of the range (as  $\text{area} = 4 \cdot \pi \cdot r^2$ ). When expressed logarithmically in dB as TL, we find that  $\text{TL} = 20 \cdot \text{Log}_{10}(\text{range})$ , this situation is known as spherical spreading. In shallow water, the sea surface and seafloor will bound the shape of the sound, leading to a more cylindrical shape, as the top and bottom of the sphere is truncated by the largely reflective boundaries. This situation is termed cylindrical spreading, and is given by  $\text{TL} = 10 \cdot \text{Log}_{10}(\text{range})$  (Urlick, 1983). An intermediate scenario may be defined by the equation  $\text{TL} = 15 \cdot \text{Log}_{10}(\text{range})$ , and is referred to as practical spreading. Though these geometric spreading laws do not capture many often important details (scattering, absorption, etc.), they offer a reasonable and simple approximation of how sound decreases in intensity as it is transmitted. In the absence of measured data indicating the level of transmission loss at a given site for a specific activity, NMFS recommends practical spreading (*i.e.*,  $15 \cdot \text{Log}_{10}(\text{range})$ ) to model acoustic propagation for construction activities in most nearshore environments.

The sum of the various natural and anthropogenic sound sources at any given location and time depends not only on the source levels, but also on the propagation of sound through the environment. 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, background and 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.

USCG Air Station Port Angeles is located at the end of Ediz Hook, close to the entrance to Port Angeles Harbor, a relatively active and industrialized deepwater port with high levels of commercial and recreational vessel traffic. The Port of Port Angeles is the first full-service port available to ships entering the Strait of Juan de Fuca from the Pacific Ocean. It includes three deepwater marine terminals used for commercial shipping, as well as ferry

terminals and recreational boat launches. Within the larger harbor area, pilot boat services, yacht clubs, and a naval facility also contribute to background noise. Although no ambient noise recordings are available from Port Angeles Harbor, it is reasonable to assume that background noise conditions are similar to other industrialized ports with daily operations of many sizes of vessels. Vessel traffic contributes significant amounts of noise to the marine environment throughout the Salish Sea, with most sound coming from commercial vessels (Burnham *et al.* 2021).

#### *Description of Sound Sources for the Specified Activities*

In-water construction activities associated with the project would include impact pile installation and vibratory pile installation and removal. Impact hammers operate by repeatedly dropping and/or pushing a heavy piston onto a pile to drive the pile into the substrate. Sound generated by impact hammers is impulsive, characterized by rapid rise times and high peak levels, a potentially injurious combination (Hastings and Popper, 2005). Vibratory hammers install piles by vibrating them and allowing the weight of the hammer to push them into the sediment. Vibratory hammers typically produce less sound (*i.e.*, lower levels) than impact hammers. Peak SPLs may be 180 dB or greater, but are generally 10 to 20 dB lower than SPLs generated during impact pile driving of the same-sized pile (Oestman *et al.*, 2009; CALTRANS, 2015; 2020). Sounds produced by vibratory hammers are non-impulsive; the rise time is slower, reducing the probability and severity of injury, and the sound energy is distributed over a greater amount of time (Nedwell and Edwards, 2002; Carlson *et al.*, 2005).

The likely or possible impacts of the Coast Guard's proposed activities on marine mammals could involve both non-acoustic and acoustic stressors. Potential non-acoustic stressors could result from the physical presence of the equipment and personnel; however, given that the closest pinniped haulout is approximately 2.5 mi or km from the site and located within the generalized area of a highly industrialized port area, the animals are likely to have habituated to the sight of construction personnel and activities. Therefore, visual and other non-acoustic stressors would be limited, and any impacts to marine mammals are expected to primarily be acoustic in nature.

#### *Acoustic Impacts*

The introduction of anthropogenic noise into the aquatic environment from pile driving or drilling is the primary means by which marine mammals may be harassed from the Coast Guard's specified activity. In general, animals exposed to natural or anthropogenic sound may experience physical and psychological effects, ranging in magnitude from none to severe (Southall *et al.*, 2007; 2019). Exposure to pile driving noise has the potential to result in auditory threshold shifts and behavioral reactions (*e.g.*, avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). Exposure to anthropogenic noise can also lead to non-observable physiological responses, such as an increase in stress hormones. Additional noise in a marine mammal's habitat can mask acoustic cues used by marine mammals to carry out daily functions, such as communication and predator and prey detection. The effects of pile driving noise on marine mammals are dependent on several factors, including, but not limited to, sound type (*e.g.*, impulsive vs. non-impulsive), the species, age and sex class (*e.g.*, adult male vs. mom with calf), duration of exposure, the distance between the pile and the animal, received levels, behavior at time of exposure, and previous history with exposure (Wartzok *et al.*, 2004; Southall *et al.*, 2007). Here we discuss physical auditory effects (threshold shifts) followed by behavioral effects and potential impacts on habitat.

NMFS defines a noise-induced threshold shift (TS) as a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). The amount of threshold shift is customarily expressed in dB. A TS can be permanent or temporary. As described in NMFS, 2018, there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.*, impulsive or non-impulsive), likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.*, spectral content), the hearing frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.*, how animal uses sound within the frequency band of the signal; *e.g.*, Kastelein *et al.* (2014)), and the

overlap between the animal and the source (e.g., spatial, temporal, and spectral). When considering auditory effects for the Coast Guard's proposed activities, vibratory pile driving is considered a non-impulsive source, while impact pile driving is treated as an impulsive source.

**Permanent Threshold Shift (PTS)**—NMFS defines PTS as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). PTS does not generally affect more than a limited frequency range, and an animal that has incurred PTS has incurred some level of hearing loss at the relevant frequencies; typically animals with PTS are not functionally deaf (Au and Hastings, 2008; Finneran, 2016). Available data from humans and other terrestrial mammals indicate that a 40 dB threshold shift approximates PTS onset (see Ward *et al.* (1958; 1959); Ward, 1960; Kryter *et al.*, 1966; Miller, 1974; Ahroon *et al.*, 1996; Henderson *et al.*, 2008). PTS levels for marine mammals are estimates, as with the exception of a single study unintentionally inducing PTS in a harbor seal (Kastak *et al.*, 2008), there are no empirical data measuring PTS in marine mammals largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing PTS are not typically pursued or authorized (NMFS, 2018).

**Temporary Threshold Shift (TTS)**—A temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). Based on data from marine mammal TTS measurements (see Southall *et al.* (2007; 2019)), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Finneran *et al.*, 2000; Schlundt *et al.*, 2000; Finneran *et al.*, 2002). As described in Finneran (2015), marine mammal studies have shown the amount of TTS increases with SELcum in an accelerating fashion: at low exposures with lower SELcum, the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher SELcum, the growth curves become steeper and approach linear relationships with the noise SEL.

Depending on the degree (elevation of threshold in dB), duration (i.e., recovery time), and frequency range of TTS, and the context in which it is experienced,

TTS can have effects on marine mammals ranging from discountable to serious (similar to those discussed in auditory masking, below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animal is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present.

Alternatively, a larger amount and longer duration of TTS sustained during time when communication is critical for successful mother/calf interactions could have more serious impacts. We note that reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall *et al.*, 2007), so we can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

Many studies have examined noise-induced hearing loss in marine mammals (see Finneran (2015) and Southall *et al.* (2019) for summaries). TTS is the mildest form of hearing impairment that can occur during exposure to sound (Kryter, 2013). While experiencing TTS, the hearing threshold rises, and a sound must be at a higher level in order to be heard. In terrestrial and marine mammals, TTS can last from minutes or hours to days (in cases of strong TTS). In many cases, hearing sensitivity recovers rapidly after exposure to the sound ends. For cetaceans, published data on the onset of TTS are limited to captive bottlenose dolphin (*Tursiops truncatus*), beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiakororientalis*) (Southall *et al.*, 2019). For pinnipeds in water, measurements of TTS are limited to harbor seals, elephant seals, bearded seals (*Erignathus barbatus*) and California sea lions (Kastak *et al.*, 1999; 2007; Kastelein *et al.*, 2019b; 2019c; Reichmuth *et al.*, 2019; Sills *et al.*, 2020; Kastelein *et al.*, 2021; 2022a; 2022b). TTS was not observed in spotted (*Phoca largha*) and ringed (*Pusa hispida*) seals exposed to single airgun impulse sounds at levels matching previous predictions of TTS onset (Reichmuth *et al.*, 2016). These studies examine hearing thresholds measured in marine mammals before and after exposure to intense or long-duration sound exposures. The difference between the pre-exposure and post-exposure thresholds can be used to determine the amount of threshold shift at various post-exposure times.

The amount and onset of TTS depends on the exposure frequency. Sounds at low frequencies, well below the region of best sensitivity for a species or hearing group, are less hazardous than those at higher frequencies, near the region of best sensitivity (Finneran and Schlundt, 2013). At low frequencies, onset-TTS exposure levels are higher compared to those in the region of best sensitivity (i.e., a low frequency noise would need to be louder to cause TTS onset when TTS exposure level is higher), as shown for harbor porpoises and harbor seals (Kastelein *et al.*, 2019a; 2019c). Note that in general, harbor seals and harbor porpoises have a lower TTS onset than other measured pinniped or cetacean species (Finneran, 2015). In addition, TTS can accumulate across multiple exposures, but the resulting TTS will be less than the TTS from a single, continuous exposure with the same SEL (Mooney *et al.*, 2009; Finneran *et al.*, 2010; Kastelein *et al.*, 2014; 2015). This means that TTS predictions based on the total, cumulative SEL will overestimate the amount of TTS from intermittent exposures, such as sonars and impulsive sources. Nachtigall *et al.* (2018) describe measurements of hearing sensitivity of multiple odontocete species (bottlenose dolphin, harbor porpoise, beluga, and false killer whale (*Pseudorca crassidens*)) when a relatively loud sound was preceded by a warning sound. These captive animals were shown to reduce hearing sensitivity when warned of an impending intense sound. Based on these experimental observations of captive animals, the authors suggest that wild animals may dampen their hearing during prolonged exposures or if conditioned to anticipate intense sounds. Another study showed that echolocating animals (including odontocetes) might have anatomical specializations that might allow for conditioned hearing reduction and filtering of low-frequency ambient noise, including increased stiffness and control of middle ear structures and placement of inner ear structures (Ketten *et al.*, 2021). Data available on noise-induced hearing loss for mysticetes are currently lacking (NMFS, 2018). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species.

Relationships between TTS and PTS thresholds have not been studied in marine mammals, and there is no PTS data for cetaceans, but such relationships are assumed to be similar to those in humans and other terrestrial

mammals. PTS typically occurs at exposure levels at least several dB above that inducing mild TTS (e.g., a 40-dB threshold shift approximates PTS onset (Kryter *et al.*, 1966; Miller, 1974), while a 6-dB threshold shift approximates TTS onset (Southall *et al.*, 2007; 2019). Based on data from terrestrial mammals, a precautionary assumption is that the PTS thresholds for impulsive sounds (such as impact pile driving pulses as received close to the source) are at least 6 dB higher than the TTS threshold on a peak-pressure basis and PTS cumulative sound exposure level thresholds are 15 to 20 dB higher than TTS cumulative sound exposure level thresholds (Southall *et al.*, 2007; 2019). Given the higher level of sound or longer exposure duration necessary to cause PTS as compared with TTS, it is considerably less likely that PTS could occur.

**Behavioral Harassment**—Exposure to noise also has the potential to behaviorally disturb marine mammals to a level that rises to the definition of harassment under the MMPA. Generally speaking, NMFS considers a behavioral disturbance that rises to the level of harassment under the MMPA a non-minor response—in other words, not every response qualifies as behavioral disturbance, and for responses that do, those of a higher level, or accrued across a longer duration, have the potential to affect foraging, reproduction, or survival. Behavioral disturbance may include a variety of effects, including subtle changes in behavior (e.g., minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses may include changing durations of surfacing and dives, changing direction and/or speed; reducing/increasing vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); eliciting a visible startle response or aggressive behavior (such as tail/fin slapping or jaw clapping); avoidance of areas where sound sources are located. Pinnipeds may increase their haul out time, possibly to avoid in-water disturbance (Thorson and Reyff, 2006). Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (e.g., species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors (e.g., Richardson *et al.*, 1995; Wartzok

*et al.*, 2004; Southall *et al.*, 2007; Weilgart, 2007; Archer *et al.*, 2010; Southall *et al.*, 2019). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.*, 2012), and can vary depending on characteristics associated with the sound source (e.g., whether it is moving or stationary, number of sources, distance from the source). Please see Appendices B and C of Southall *et al.* (2007) and Gomez *et al.* (2016) for reviews of studies involving marine mammal behavioral responses to sound.

Habituation can occur when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok *et al.*, 2004). Animals are most likely to habituate to sounds that are predictable and unvarying. It is important to note that habituation is appropriately considered as a “progressive reduction in response to stimuli that are perceived as neither aversive nor beneficial,” rather than as, more generally, moderation in response to human disturbance (Bejder *et al.*, 2009). The opposite process is sensitization, when an unpleasant experience leads to subsequent responses, often in the form of avoidance, at a lower level of exposure.

As noted above, behavioral state may affect the type of response. For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson *et al.*, 1995; Wartzok *et al.*, 2004; National Research Council (NRC), 2005). Controlled experiments with captive marine mammals have showed pronounced behavioral reactions, including avoidance of loud sound sources (Ridgway *et al.*, 1997; Finneran *et al.*, 2003). Observed responses of wild marine mammals to loud pulsed sound sources (typically seismic airguns or acoustic harassment devices) have been varied but often consist of avoidance behavior or other behavioral changes suggesting discomfort (Richardson *et al.*, 1995; Morton and Symonds, 2002; Nowacek *et al.*, 2007).

Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be

significant to the individual, let alone the stock or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (e.g., Lusseau and Bejder, 2007; Weilgart, 2007; NRC, 2005). However, there are broad categories of potential response, which we describe in greater detail here, that include alteration of dive behavior, alteration of foraging behavior, effects to breathing, interference with or alteration of vocalization, avoidance, and flight.

Changes in dive behavior can vary widely and may consist of increased or decreased dive times and surface intervals as well as changes in the rates of ascent and descent during a dive (e.g., Frankel and Clark, 2000; Costa *et al.*, 2003; Ng and Leung, 2003; Nowacek *et al.*, 2004; Goldbogen *et al.*, 2013a, 2013b). Variations in dive behavior may reflect interruptions in biologically significant activities (e.g., foraging) or they may be of little biological significance. The impact of an alteration to dive behavior resulting from an acoustic exposure depends on what the animal is doing at the time of the exposure and the type and magnitude of the response.

Disruption of feeding behavior can be difficult to correlate with anthropogenic sound exposure, so it is usually inferred by observed displacement from known foraging areas, the appearance of secondary indicators (e.g., bubble nets or sediment plumes), or changes in dive behavior. As for other types of behavioral response, the frequency, duration, and temporal pattern of signal presentation, as well as differences in species sensitivity, are likely contributing factors to differences in response in any given circumstance (e.g., Croll *et al.*, 2001; Nowacek *et al.*, 2004; Madsen *et al.*, 2006; Yazvenko *et al.*, 2007). A determination of whether foraging disruptions incur fitness consequences would require information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal.

Respiration rates vary naturally with different behaviors and alterations to breathing rate as a function of acoustic exposure can be expected to co-occur with other behavioral reactions, such as a flight response or an alteration in diving. However, respiration rates in and of themselves may be representative of annoyance or an acute stress response. Various studies have shown that respiration rates may either be

unaffected or could increase, depending on the species and signal characteristics, again highlighting the importance in understanding species differences in the tolerance of underwater noise when determining the potential for impacts resulting from anthropogenic sound exposure (e.g., Kastelein *et al.*, 2001; 2005; 2006; Gailey *et al.*, 2007).

Marine mammals vocalize for different purposes and across multiple modes, such as whistling, echolocation click production, calling, and singing. Changes in vocalization behavior in response to anthropogenic noise can occur for any of these modes and may result from a need to compete with an increase in background noise or may reflect increased vigilance or a startle response. For example, in the presence of potentially masking signals, humpback whales and killer whales have been observed to increase the length of their songs (Miller *et al.*, 2000; Frstrup *et al.*, 2003) or vocalizations (Foote *et al.*, 2004), respectively, while North Atlantic right whales (*Eubalaena glacialis*) have been observed to shift the frequency content of their calls upward while reducing the rate of calling in areas of increased anthropogenic noise (Parks *et al.*, 2007). In some cases, animals may cease sound production during production of aversive signals (Bowles *et al.*, 1994).

Avoidance is the displacement of an individual from an area or migration path as a result of the presence of a sound or other stressors, and is one of the most obvious manifestations of disturbance in marine mammals (Richardson *et al.*, 1995). For example, gray whales are known to change direction—deflecting from customary migratory paths—in order to avoid noise from seismic surveys (Malme *et al.*, 1984). Avoidance may be short-term, with animals returning to the area once the noise has ceased (e.g., Bowles *et al.*, 1994; Goold, 1996; Stone *et al.*, 2000; Morton and Symonds, 2002; Gailey *et al.*, 2007). Longer-term displacement is possible, however, which may lead to changes in abundance or distribution patterns of the affected species in the affected region if habituation to the presence of the sound does not occur (e.g., Blackwell *et al.*, 2004; Bejder *et al.*, 2006; Teilmann *et al.*, 2006).

A flight response is a dramatic change in normal movement to a directed and rapid movement away from the perceived location of a sound source. The flight response differs from other avoidance responses in the intensity of the response (e.g., directed movement, rate of travel). Relatively little information on flight responses of marine mammals to anthropogenic

signals exist, although observations of flight responses to the presence of predators have occurred (Connor and Heithaus, 1996; Bowers *et al.*, 2018). The result of a flight response could range from brief, temporary exertion and displacement from the area where the signal provokes flight to, in extreme cases, marine mammal strandings (England *et al.*, 2001). However, it should be noted that response to a perceived predator does not necessarily invoke flight (Ford and Reeves, 2008), and whether individuals are solitary or in groups may influence the response.

Behavioral disturbance can also impact marine mammals in more subtle ways. Increased vigilance may result in costs related to diversion of focus and attention (*i.e.*, when a response consists of increased vigilance, it may come at the cost of decreased attention to other critical behaviors such as foraging or resting). These effects have generally not been demonstrated for marine mammals, but studies involving fishes and terrestrial animals have shown that increased vigilance may substantially reduce feeding rates (e.g., Beauchamp and Livoreil, 1997; Fritz *et al.*, 2002; Purser and Radford, 2011). In addition, chronic disturbance can cause population declines through reduction of fitness (e.g., decline in body condition) and subsequent reduction in reproductive success, survival, or both (e.g., Harrington and Veitch, 1992; Daan *et al.*, 1996; Bradshaw *et al.*, 1998). However, Ridgway *et al.* (2006) reported that increased vigilance in bottlenose dolphins exposed to sound over a 5-day period did not cause any sleep deprivation or stress effects.

Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (24-hour cycle). Disruption of such functions resulting from reactions to stressors such as sound exposure are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall *et al.*, 2007).

Consequently, a behavioral response lasting less than one day and not recurring on subsequent days is not considered particularly severe unless it could directly affect reproduction or survival (Southall *et al.*, 2007). Note that there is a difference between multi-day substantive behavioral reactions and multi-day anthropogenic activities. For example, just because an activity lasts for multiple days does not necessarily mean that individual animals are either exposed to activity-related stressors for multiple days or, further, exposed in a manner resulting in sustained multi-day substantive behavioral responses.

*Stress responses*—An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses (e.g., Selye, 1950; Moberg, 2000). In many cases, an animal's first and sometimes most economical (in terms of energetic costs) response is behavioral avoidance of the potential stressor. Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity. These responses have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness.

Neuroendocrine stress responses often involve the hypothalamus-pituitary-adrenal system. Virtually all neuroendocrine functions that are affected by stress—including immune competence, reproduction, metabolism, and behavior—are regulated by pituitary hormones. Stress-induced changes in the secretion of pituitary hormones have been implicated in failed reproduction, altered metabolism, reduced immune competence, and behavioral disturbance (e.g., Moberg, 1987; Blecha, 2000). Increases in the circulation of glucocorticoids are also equated with stress (Romano *et al.*, 2004).

The primary distinction between stress (which is adaptive and does not normally place an animal at risk) and “distress” is the cost of the response. During a stress response, an animal uses glycogen stores that can be quickly replenished once the stress is alleviated. In such circumstances, the cost of the stress response would not pose serious fitness consequences. However, when an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other functions. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function.

Relationships between these physiological mechanisms, animal behavior, and the costs of stress responses are well-studied through controlled experiments and for both laboratory and free-ranging animals (e.g., Holberton *et al.*, 1996; Hood *et al.*, 1998; Jessop *et al.*, 2003; Krausman *et al.*, 2004; Lankford *et al.*, 2005). Stress responses due to exposure to anthropogenic sounds or other stressors and their effects on marine mammals have also been reviewed (Fair and Becker, 2000; Romano *et al.*, 2002b) and, more rarely, studied in wild populations (e.g., Romano *et al.*, 2002a).

For example, Rolland *et al.* (2012) found that noise reduction from reduced ship traffic in the Bay of Fundy was associated with decreased stress in North Atlantic right whales. These and other studies lead to a reasonable expectation that some marine mammals will experience physiological stress responses upon exposure to acoustic stressors and that it is possible that some of these would be classified as “distress.” In addition, any animal experiencing TTS would likely also experience stress responses (NRC, 2005), however distress is an unlikely result of this project based on observations of marine mammals during previous, similar construction projects.

**Auditory Masking**—Since many marine mammals rely on sound to find prey, moderate social interactions, and facilitate mating (Tyack, 2008), noise from anthropogenic sound sources can interfere with these functions, but only if the noise spectrum overlaps with the hearing sensitivity of the receiving marine mammal (Southall *et al.*, 2007; Clark *et al.*, 2009; Hatch *et al.*, 2012). Chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions (Clark *et al.*, 2009). Acoustic masking is when other noises such as from human sources interfere with an animal’s ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.*, those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation) (Richardson *et al.*, 1995; Erbe *et al.*, 2016). Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired from maximizing their performance fitness in survival and reproduction. The ability of a noise source to mask biologically important sounds depends on the characteristics of both the noise source and the signal of interest (*e.g.*, signal-to-noise ratio, temporal variability, direction), in relation to each other and to an animal’s hearing abilities (*e.g.*, sensitivity, frequency range, critical ratios, frequency discrimination, directional discrimination, age or TTS hearing loss), and existing ambient noise and propagation conditions (Hotchkinn and Parks, 2013).

Under certain circumstances, marine mammals experiencing significant masking could also be impaired from maximizing their performance fitness in survival and reproduction. Therefore, when the coincident (masking) sound is human-made, it may be considered

harassment when disrupting or altering critical behaviors. It is important to distinguish TTS and PTS, which persist after the sound exposure, from masking, which occurs during the sound exposure. Because masking (without resulting in TS) is not associated with abnormal physiological function, it is not considered a physiological effect, but rather a potential behavioral effect.

The frequency range of the potentially masking sound is important in determining any potential behavioral impacts. For example, low-frequency signals may have less effect on high-frequency echolocation sounds produced by odontocetes but are more likely to affect detection of mysticete communication calls and other potentially important natural sounds such as those produced by surf and some prey species. The masking of communication signals by anthropogenic noise may be considered as a reduction in the communication space of animals (*e.g.*, Clark *et al.*, 2009) and may result in energetic or other costs as animals change their vocalization behavior (*e.g.*, Miller *et al.*, 2000; Foote *et al.*, 2004; Parks *et al.*, 2007; Di Iorio and Clark, 2010; Holt *et al.*, 2009). Masking can be reduced in situations where the signal and noise come from different directions (Richardson *et al.*, 1995), through amplitude modulation of the signal, or through other compensatory behaviors (Hotchkinn and Parks, 2013). Masking can be tested directly in captive species (*e.g.*, Erbe, 2008), but in wild populations it must be either modeled or inferred from evidence of masking compensation. There are few studies addressing real-world masking sounds likely to be experienced by marine mammals in the wild (*e.g.*, Branstetter *et al.*, 2013).

Marine mammals at or near USCG Air Station Port Angeles may be exposed to anthropogenic noise which may lead to some habituation, but is also a source of masking. Vocalization changes may result from a need to compete with an increase in background noise and include increasing the source level, modifying the frequency, increasing the call repetition rate of vocalizations, or ceasing to vocalize in the presence of increased noise (Hotchkinn and Parks, 2013).

Masking is more likely to occur in the presence of broadband, relatively continuous noise sources. Energy distribution of pile driving covers a broad frequency spectrum, and sound from pile driving would be within the audible range of pinnipeds and cetaceans present in the proposed action area. While some construction activities

during the proposed project may mask some acoustic signals that are relevant to the daily behavior of marine mammals, the short-term duration and limited areas affected make it very unlikely that any masking effects would interfere with critical life functions, and therefore masking from construction noise would be unlikely to have any impacts on survival or reproduction of individuals.

**Airborne Acoustic Effects**—Pinnipeds that occur near the project site could be exposed to airborne sounds associated with construction activities that have the potential to cause behavioral harassment, depending on their distance from these activities. Airborne noise would primarily be an issue for pinnipeds that are swimming or hauled out near the project site within the range of noise levels elevated above airborne acoustic criteria. Although pinnipeds are known to haul out regularly on man-made objects, we believe that incidents of take resulting solely from airborne sound are unlikely due to the proximity between the proposed project area and the known haulout sites (*e.g.*, the nearest harbor seal haulouts are 2.4 km and 3.5 km away (2.18 mi)). Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA.

We recognize that pinnipeds in the water could be exposed to airborne sound that may result in behavioral harassment when looking with their heads above water. Most likely, airborne sound would cause behavioral responses similar to those discussed above in relation to underwater sound. For instance, anthropogenic sound could cause hauled-out pinnipeds to exhibit changes in their normal behavior, such as reduction in vocalizations, or cause them to temporarily abandon the area and move further from the source. However, these animals would previously have been ‘taken’ because of exposure to underwater sound above the behavioral harassment thresholds, which are in all cases larger than those associated with airborne sound. Thus, the behavioral harassment of these animals is already accounted for in these estimates of potential take. Therefore, we do not believe that authorization of incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further here.

#### *Potential Effects on Marine Mammal Habitat*

The proposed project will occur within the same footprint as existing marine infrastructure. The nearshore

and intertidal habitat where the proposed project will occur is an area of relatively high marine vessel traffic. Most marine mammals do not generally use the area within the footprint of the project area. Temporary, intermittent, and short-term habitat alteration may result from increased noise levels within the Level A and Level B harassment zones. Effects on marine mammals will be limited to temporary displacement from pile installation and removal noise, and effects on prey species will be similarly limited in time and space.

**Water quality**—Temporary and localized reduction in water quality will occur as a result of in-water construction activities. Most of this effect will occur during the installation and removal of piles when bottom sediments are disturbed. The installation and removal of piles may cause a temporary increase in suspended sediment in the project area. During pile extraction, sediment attached to the pile moves vertically through the water column until gravitational forces cause it to slough off under its own weight. The small resulting sediment plume is expected to settle out of the water column within a few hours. Studies of the effects of turbid water on fish (marine mammal prey) suggest that concentrations of suspended sediment can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton, 1993).

Effects to turbidity and sedimentation are expected to be short-term, minor, and localized. Since the currents are so strong in the area, following the completion of sediment-disturbing activities, suspended sediments in the water column should dissipate and quickly return to background levels in all construction scenarios. Turbidity within the water column has the potential to reduce the level of oxygen in the water and irritate the gills of prey fish species in the proposed project area. However, turbidity plumes associated with the project would be temporary and localized, and fish in the proposed project area would be able to move away from and avoid the areas where plumes may occur. Therefore, it is expected that the impacts on prey fish species from turbidity, and therefore on marine mammals, would be minimal and temporary. In general, the area likely impacted by the proposed construction activities is relatively small compared to the available marine mammal habitat in Port Angeles Harbor and the Strait of Juan de Fuca.

**Potential Effects on Prey**—Sound may affect marine mammals through impacts

on the abundance, behavior, or distribution of prey species (e.g., crustaceans, cephalopods, fishes, zooplankton). Marine mammal prey varies by species, season, and location and, for some, is not well documented. Studies regarding the effects of noise on known marine mammal prey are described here.

Fishes utilize the soundscape and components of sound in their environment to perform important functions such as foraging, predator avoidance, mating, and spawning (e.g., Zelick *et al.*, 1999; Fay, 2009). Depending on their hearing anatomy and peripheral sensory structures, which vary among species, fishes hear sounds using pressure and particle motion sensitivity capabilities and detect the motion of surrounding water (Fay *et al.*, 2008). The potential effects of noise on fishes depends on the overlapping frequency range, distance from the sound source, water depth of exposure, and species-specific hearing sensitivity, anatomy, and physiology. Key impacts to fishes may include behavioral responses, hearing damage, barotrauma (pressure-related injuries), and mortality.

Fish react to sounds that are especially strong and/or intermittent low-frequency sounds. Short duration, sharp sounds can cause overt or subtle changes in fish behavior and local distribution. The reaction of fish to noise depends on the physiological state of the fish, past exposures, motivation (e.g., feeding, spawning, migration), and other environmental factors. (Hastings and Popper, 2005) identified several studies that suggest fish may relocate to avoid certain areas of sound energy. Additional studies have documented effects of pile driving on fishes (e.g. Scholik and Yan, 2001; 2002; Popper and Hastings, 2009). Several studies have demonstrated that impulse sounds might affect the distribution and behavior of some fishes, potentially impacting foraging opportunities or increasing energetic costs (e.g., Fewtrell and McCauley, 2012; Pearson *et al.*, 1992; Skalski *et al.*, 1992; Santulli *et al.*, 1999; Paxton *et al.*, 2017). However, some studies have shown no or slight reaction to impulse sounds (e.g., Peña *et al.*, 2013; Wardle *et al.*, 2001; Jorgenson and Gyselman, 2009; Cott *et al.*, 2012). More commonly, though, the impacts of noise on fishes are temporary.

SPLs of sufficient strength have been known to cause injury to fishes and fish mortality (summarized in Popper *et al.* (2014)). However, in most fish species, hair cells in the ear continuously regenerate and loss of auditory function likely is restored when damaged cells

are replaced with new cells. Halvorsen *et al.* (2012b) showed that a TTS of 4–6 dB was recoverable within 24 hours for one species. Impacts would be most severe when the individual fish is close to the source and when the duration of exposure is long. Injury caused by barotrauma can range from slight to severe and can cause death, and is most likely for fish with swim bladders. Barotrauma injuries have been documented during controlled exposure to impact pile driving (Halvorsen *et al.*, 2012a; Casper *et al.*, 2013; Casper *et al.*, 2017).

Fish populations in the proposed project area that serve as marine mammal prey could be temporarily affected by noise from pile installation and removal. The frequency range in which fishes generally perceive underwater sounds is 50 to 2,000 Hz, with peak sensitivities below 800 Hz (Popper and Hastings, 2009). Fish behavior or distribution may change, especially with strong and/or intermittent sounds that could harm fishes. High underwater SPLs have been documented to alter behavior, cause hearing loss, and injure or kill individual fish by causing serious internal injury (Hastings and Popper, 2005).

The greatest potential impact to fishes during construction would occur during impact pile driving. However, the duration of impact pile driving would be limited to the final stage of installation (“proofing”) after the pile has been driven as close as practicable to the design depth with a vibratory driver. In-water construction activities would only occur during daylight hours, allowing fish to forage and transit the project area in the evening. Vibratory pile driving may elicit behavioral reactions from fishes such as temporary avoidance of the area but is unlikely to cause injuries to fishes or have persistent effects on local fish populations. In addition, it should be noted that the area in question is low-quality habitat since it is already highly developed and experiences a high level of anthropogenic noise from normal port operations and other vessel traffic. In general, impacts on marine mammal prey species are expected to be minor and temporary.

#### *In-Water Construction Effects on Potential Foraging Habitat*

The proposed activities would not result in permanent impacts to habitats used directly by marine mammals. The total seafloor area affected by pile installation and removal is a very small area compared to the vast foraging area available to marine mammals outside

this project area. Construction would have minimal permanent and temporary impacts on benthic invertebrate species, a marine mammal prey source. In addition, although the Strait of Juan de Fuca is valuable habitat for many marine mammal species, the area within Port Angeles Harbor is not particularly high-value foraging habitat due to the high level of anthropogenic activity associated with normal port operations. Therefore, impacts of the project are not likely to have adverse effects on marine mammal foraging habitat in the proposed project area.

The area impacted by the project is relatively small compared to the available habitat just outside the project area, and there are no areas of particular importance that would be impacted by this project. Any behavioral avoidance by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity. As described in the preceding, the potential for the Coast Guard's construction to affect the availability of prey to marine mammals or to meaningfully impact the quality of physical or acoustic habitat is considered to be insignificant.

#### Estimated Take of Marine Mammals

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers," and the negligible impact determinations.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of 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).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns and/or TTS for individual marine mammals resulting from exposure to noise from impact and vibratory pile driving. Based on the nature of the activity and the anticipated effectiveness of the mitigation measures (*i.e.*, shutdown zones implemented at no less than the

distance to the Level A isopleths) discussed in detail below in the Proposed Mitigation section, Level A harassment is neither anticipated nor proposed to be authorized.

As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the proposed take numbers are estimated.

For acoustic impacts, generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

#### Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

*Level B Harassment*—Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (*e.g.*, frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.*, bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.*, Southall *et al.*, 2007, 2021, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic

threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB (referenced to 1 micropascal (re 1  $\mu$ Pa)) for continuous (*e.g.*, vibratory pile driving, drilling) and above RMS SPL 160 dB re 1  $\mu$ Pa for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by TTS as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur.

Coast Guard's proposed activity includes the use of continuous (*e.g.*, vibratory pile installation and extraction) and impulsive (*e.g.*, impact pile installation) sources, and therefore the RMS SPL thresholds of 120 and 160 dB re 1  $\mu$ Pa are applicable.

*Level A Harassment*—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). Coast Guard's proposed construction activity includes the use of non-impulsive (*e.g.*, vibratory pile installation and extraction) and impulsive (*e.g.*, impact pile installation) sources.

These thresholds are provided in Table 4, below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2018 Technical Guidance, which may be accessed at: [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance).



TABLE 4—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing group	PTS onset acoustic thresholds* (received level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans .....	Cell 1: $L_{pk,flat}$ : 219 dB; $L_{E,LF,24h}$ : 183 dB .....	Cell 2: $L_{E,LF,24h}$ : 199 dB.
Mid-Frequency (MF) Cetaceans .....	Cell 3: $L_{pk,flat}$ : 230 dB; $L_{E,MF,24h}$ : 185 dB .....	Cell 4: $L_{E,MF,24h}$ : 198 dB.
High-Frequency (HF) Cetaceans .....	Cell 5: $L_{pk,flat}$ : 202 dB; $L_{E,HF,24h}$ : 155 dB .....	Cell 6: $L_{E,HF,24h}$ : 173 dB.
Phocid Pinnipeds (PW) (Underwater) .....	Cell 7: $L_{pk,flat}$ : 218 dB; $L_{E,PW,24h}$ : 185 dB .....	Cell 8: $L_{E,PW,24h}$ : 201 dB.
Otariid Pinnipeds (OW) (Underwater) .....	Cell 9: $L_{pk,flat}$ : 232 dB; $L_{E,OW,24h}$ : 203 dB .....	Cell 10: $L_{E,OW,24h}$ : 219 dB.

\* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

**Note:** Peak sound pressure ( $L_{pk}$ ) has a reference value of 1  $\mu$ Pa, and cumulative sound exposure level ( $L_E$ ) has a reference value of 1  $\mu$ Pa<sup>2</sup>s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.*, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

*Ensonified Area*

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss coefficient.

The sound field in the project area is the existing background noise plus additional construction noise from the proposed project. Marine mammals are expected to be affected via sound

generated by the primary components of the project (*i.e.*, impact pile driving and vibratory pile installation and removal). Calculation of the area ensonified by the proposed action is dependent on source levels of the proposed activities and the estimated transmission loss coefficients for the proposed activities at the site. These factors are addressed below.

*Sound Source Levels of Proposed Activities*—The intensity of pile driving sounds is greatly influenced by factors such as the type of piles (material and

diameter), hammer type, and the physical environment (*e.g.*, sediment type) in which the activity takes place. In order to calculate the distances to the Level A harassment and the Level B harassment thresholds for the methods and piles being used in this project, the Coast Guard used acoustic monitoring data from sound source verification studies to develop proxy source levels for the various pile types, sizes and methods (Table 5).

TABLE 5—PILE INSTALLATION AND EXTRACTION PARAMETERS

Pile type	Method	Total number	Number per day	Strikes per pile OR hours per day	Proxy levels (@10m)			Reference
					dB re 1 $\mu$ Pa peak	dB re 1 $\mu$ Pa RMS	dB re 1 $\mu$ Pa <sup>2</sup> s SEL <sub>ss</sub>	
12-in steel .....	Impact .....	37	5	100 strikes .....	192	177	166	CALTRANS 2020. Greenbusch 2018. CALTRANS 2020. Greenbusch 2018.
12-in steel .....	Vibratory installation .....	37	10	5 hrs .....	.....	155	.....	
18-in steel .....	Vibratory installation .....	3	2	1 hr .....	.....	158	.....	
12–14-in timber .....	Vibratory extraction .....	48	16	8 hrs .....	.....	160	.....	

*Transmission Loss*—Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is:

$$TL = B * \text{Log}_{10} (R_1/R_2),$$

where:

- TL = transmission loss in dB
- B = transmission loss coefficient
- R<sub>1</sub> = the distance of the modeled SPL from the driven pile, and
- R<sub>2</sub> = the distance from the driven pile of the initial measurement

This formula neglects loss due to scattering and absorption, which is

assumed to be zero here. The degree to which underwater sound propagates away from a sound source is dependent on a variety of factors, most notably the bathymetry and presence or absence of reflective or absorptive conditions including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source (20\*log<sub>10</sub>[range]). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source (10\*log<sub>10</sub>[range]). A practical

spreading value of 15 is often used under conditions where water increases with depth as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions.

Site-specific transmission loss measurements are not available for Port Angeles Harbor. NMFS has therefore used the practical spreading loss model for both vibratory and impact pile driving in this analysis.

*Estimated Harassment Isopleths*—All Level B harassment isopleths are reported in Table 6. Level B harassment isopleths from the proposed project will be limited by the coastline along and across from the project site. The maximum attainable isopleth distance is

4,642 m during vibratory extraction of timber piles (see Figure 1 in the IHA application for further detail).

The ensonified area associated with Level A harassment is more technically challenging to predict due to the need to account for a duration component. Therefore, NMFS developed an optional User Spreadsheet tool to accompany the Technical Guidance that can be used to relatively simply predict an isopleth distance for use in conjunction with marine mammal density or occurrence

to help predict potential takes. We note that because of some of the assumptions included in the methods underlying this optional tool, we anticipate that the resulting isopleth estimates are typically going to be overestimates of some degree, which may result in an overestimate of potential take by Level A harassment. However, this optional tool offers the best way to estimate isopleth distances when more sophisticated modeling methods are not available or practical. For stationary

sources, including pile driving, the optional User Spreadsheet tool predicts the distance at which, if a marine mammal remained at that distance for the duration of the activity, it would be expected to incur PTS. Inputs used in the User Spreadsheet (e.g., number of piles per day, duration and/or strikes per pile, source levels) are presented in Table 1 and Table 5. The resulting isopleths and ensonified areas are reported in Table 6 and Table 7, respectively.

TABLE 6—ESTIMATED ISOPLETHS BY ACTIVITY

Activity	Method	Underwater						Airborne Level B harassment isopleths [m]	
		Level A harassment isopleths [m]					Level B harassment isopleths [m]	Harbor Seals	Other Pinnipeds
		LF	MF	HF	PW	OW			
12-in steel .....	Impact .....	46.0	1.6	55.0	25.0	2.0	136.0	150	47
12-in steel .....	Vibratory installation .....	8.0	0.7	11.8	4.8	0.3	2,154	19	6
18-in steel .....	Vibratory installation .....	4.3	0.4	6.4	2.6	0.2	3,415		
12–14-in timber .....	Vibratory extraction .....	23.4	2.1	34.6	14.2	1.0	4,642		

TABLE 7—AREAS ENSONIFIED

Activity	Method	Level A harassment [km <sup>2</sup> ]					Level B harassment [km <sup>2</sup> ]
		LF	MF	HF	PW	OW	
12-in steel .....	Impact .....	0.02	<0.01	0.02	0.01	<0.01	0.07
12-in steel .....	Vibratory installation .....	<0.01	<0.01	<0.01	<0.01	<0.01	7.74
18-in steel .....	Vibratory installation .....	<0.01	<0.01	<0.01	<0.01	<0.01	14.52
12–14-in timber .....	Vibratory extraction .....	0.01	<0.01	0.02	<0.01	<0.01	17.59

Marine Mammal Occurrence

In this section we provide information about the occurrence of marine mammals, including density or other relevant information which will inform the take calculations.

For marine mammal density information in the Port Angeles area we used data from the Pacific Navy Marine

Species Density Database (U.S. Navy, 2019) to estimate take for marine mammals. The Marine Species Density Database incorporates analyzed literature and research for marine mammal density estimates per season for the Gulf of Alaska and the West Coast of the United States. Density estimates specific to the Strait of Juan de Fuca are not available for any of the

species addressed in this application, and therefore takes were estimated based on the nearest available and most appropriate density estimates, plus site-specific knowledge and professional judgement. Table 8 density estimates are calculated based on the in-water work window (July–February) and based on the highest seasonal density estimates for the relevant area.

TABLE 8—SEASONAL DENSITY OF SPECIES IN THE PROJECT AREA

Species	Densities (animals/km <sup>2</sup> )
Humpback whale .....	0.0027 (summer/fall).
Killer whale—Southern Resident .....	0.0012 (summer).
Killer whale—Transient .....	0.0208 (fall).
Harbor porpoise .....	2.16 (annual).
Harbor seal .....	0.76 (summer/fall).
Northern elephant seal .....	0.0029 (fall).
Steller sea lion .....	0.0027 (fall/winter).
California sea lion .....	0.300 (September).

Take Estimation

Here we describe how the information provided above is synthesized to produce a quantitative estimate of the

take that is reasonably likely to occur and proposed for authorization.

Using the overall area of disturbance generated by pile removal and installation given calculated distances

to attenuation below disturbance (Level B harassment) thresholds, incidental take for each activity is estimated by the following equation: *Incidental take*

$estimate = species\ density * ensonified\ area * days\ of\ pile-related\ activity.$

This equation is a reasonable extrapolation for take estimates, which relies on the likelihood that a species is present within the ensonified area on a day where the proposed activity is occurring. Take estimates were calculated with the conservative assumption that each activity (*i.e.*, vibratory extraction of steel piles, vibratory extraction of timber piles, vibratory installation, and impact installation) would occur on separate days, using a maximum of 23 days of in-water work. However, the Coast Guard would perform some activities on the same day, resulting in reduced numbers of overall take during the proposed 15 days of pile driving.

No take by Level A harassment is proposed for any species of marine mammal due to the small zones, in conjunction with Coast Guard’s proposed shutdown mitigation measure. Shutdown zones would be enforced at

the extent of the estimated Level A harassment isopleth for all species groups except for large whales (*i.e.*, baleen whales, including humpbacks, and killer whales). The Coast Guard has proposed to shut down for killer whales upon observation regardless of location in order to prevent potential take of members of the Southern Resident stock, and shutdown zones for other large whale species would be enforced at the extent of the Level B harassment isopleths. Given the remote likelihood of large whale species entering Port Angeles Harbor during the 15 days of pile driving work (see calculated take estimates for humpback and killer whales in Table 9) and the locations of Protected Species Observers (PSOs) described in the Proposed Monitoring and Reporting section, NMFS agrees that monitoring and shutdown measures are likely to be successful at avoiding take of these species. Therefore, no take of large whale species (including but not limited to humpback and killer whales)

has been requested and none is proposed for authorization.

Based on sightings reported during the 2016–2017 Navy TPS Port Angeles project (Northwest Environmental Consulting, LLC 2018), Coast Guard anticipates the number of harbor seals present in the project area during the proposed in-water activities may exceed calculated exposure estimates. During the 2016–2017 Navy TPS Port Angeles project, 275 harbor seals were observed in the estimated Level B harassment zone over approximately 45 days during which pile driving occurred (Northwest Environmental Consulting, LLC., 2018). The Coast Guard project will have only 15 days of in-water pile driving. Therefore, Coast Guard has requested, and NMFS proposes to authorize, 210 incidents of Level B harassment for harbor seals, approximately half the difference in sightings between the 2016–2017 Navy TPS Port Angeles project and the exposure estimate for this project.

TABLE 9—CALCULATED AND PROPOSED AUTHORIZED AMOUNT OF TAKING AND PERCENT OF STOCKS

Species	Stock	Take by Level A harassment		Take by Level B harassment		Total take	Percent of stock
		Calculated	Proposed	Calculated	Proposed		
Humpback whale .....	Hawai'i .....	0	0	0.51	0	0	0
	Mainland Mexico—CA/OR/WA.						
	Central America/Southern Mexico—CA/OR/WA.						
Killer whale .....	Eastern North Pacific Southern Resident.	0	0	0.23	0	0	0
	West Coast Transient .....	0	0	3.94	0	0	0
Harbor porpoise .....	Washington Inland Waters .....	0.73	0	408.9	409	409	4.92
Harbor seal .....	Washington Northern Inland Waters	0.13	0	143.9	210	210	<sup>1</sup> NA
Northern Elephant Seal .....	CA Breeding .....	0	0	0.55	1	1	<0.01
Steller Sea Lion .....	Eastern .....	0	0	0.51	1	1	<0.01
California Sea Lion .....	U.S .....	0.1	0	56.8	57	57	0.02

<sup>1</sup> Stock size for the Washington Northern Inland Waters stock of harbor seals is not available from the most recent SARs due to a lack of recent data.

**Proposed Mitigation**

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, NMFS considers two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost and impact on operations.

*Shutdown Zones*—The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Construction supervisors and crews, Protected Species Observers (PSO), and relevant Coast Guard staff must avoid direct physical interaction with marine mammals during construction activities, which could include (but are not limited to) the following: (1) barge movement to the pile location; (2) pile positioning on the substrate via a crane (*i.e.*, stabbing the pile); and (3) pile removal from the water column/substrate via a crane (*i.e.*, deadpull). If a marine mammal comes within 10

meters of such activity, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions, as necessary to avoid direct physical interaction.

Further, Coast Guard must implement activity-specific shutdown zones as described in Table 10. The shutdown

zone for humpback whales or other non-authorized marine mammal species (except killer whales) would be the predicted Level B harassment isopleth. For these species, project activity may resume after the animal has not been observed for 15 minutes, or has been observed leaving the shutdown zone (*i.e.*, the Level B harassment zone). As

proposed by the Coast Guard, killer whales will require a shutdown upon observation no matter location in order to prevent take of members of the Southern Resident stock. If killer whales are sighted, the project activity would resume only after the killer whale is not observed for 15 minutes.

TABLE 10—REQUIRED SHUTDOWN ZONES

Pile type	Pile driving method	Shutdown zone (m)					Monitoring zone (m)—all species
		Killer whales	LF	MF	HF	PW	
Steel .....	Vibratory .....	Any sighting at any distance	3,415			12	3,415
	Impact .....		136			55	136
Timber .....	Vibratory .....		4,642			35	4,642

**Protected Species Observers**—The placement of PSOs during all construction activities (described in the Proposed Monitoring and Reporting section) would ensure that the entire shutdown zone is visible. Coast Guard would employ three PSOs for vibratory installation and extraction of steel and timber piles. Two PSOs would be land-based, while one would be positioned on a vessel to ensure full monitoring coverage to the estimated Level B harassment isopleth. For impact pile driving activities, Coast Guard would employ one PSO.

**Pre and Post-Activity Monitoring**—must take place from 30 minutes prior to initiation of pile driving activity (*i.e.*, pre-start clearance monitoring) through 30 minutes post-completion of pile driving activity. Pre-start clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine that the shutdown zones indicated in Table 10 are clear of marine mammals. Pile driving may commence following 30 minutes of observation when the determination is made that the shutdown zones are clear of marine mammals. If a marine mammal is observed entering or within the shutdown zones, pile driving activity must be delayed or halted. If pile driving is delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the shutdown zone or 15 minutes have passed without re-detection of the animal. If a marine mammal for which take by Level B harassment is authorized is present in the Level B harassment zone, activities would begin and Level B harassment take would be recorded.

**Monitoring for Level B Harassment**—PSOs would monitor the shutdown

zones and beyond to the extent that PSOs can see. For this activity, the monitoring zone is defined as the largest predicted Level B harassment isopleth for a given activity (Table 10). Monitoring beyond the shutdown zones enables observers to be aware of and communicate the presence of marine mammals in the project areas outside the shutdown zones and thus prepare for a potential cessation of activity should the animal enter the shutdown zone. If weather or sea conditions restrict the observer’s ability to observe the monitoring zone, pile driving activities must cease until conditions are favorable for observations to resume.

**Soft Start**—Soft-start procedures are used to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity. For impact pile driving, soft start requires contractors to provide an initial set of three strikes at reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strike sets. A soft start must be implemented at the start of each day’s impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer.

If unsafe working conditions during ramp ups are reported (*e.g.*, crane failure from excess wear due to the ramp up procedure) by the contractor and verified by an independent safety inspection, the Coast Guard may elect to discontinue impact driver ramp ups. The Coast Guard will inform NMFS if the ramp up procedure is discontinued. If use of a variable moment driver is infeasible and the model of impact driver was not specifically designed for ramp up procedures, then the Coast Guard will not employ impact ramp up procedures due to personnel safety concerns.

**In-water Work Window**—To reduce impacts to marine fishes, the Coast Guard will follow the in-water work window designated for the Strait of Juan de Fuca and associated bays and inlets by the U.S. Army Corps of Engineers. The work window extends from July 16 to February 15; no in-water work will be conducted outside of that date range unless a modification is negotiated with the relevant regulatory agencies, including the U.S. Army Corps of Engineers.

NMFS and Coast Guard considered the use of bubble curtains as a mitigation measure during this project. However, based on the limited amount of impact driving expected, the relatively small estimated Level A harassment isopleths, and the potential for increased turbidity during bubble curtain use, NMFS has determined that use of a bubble curtain would not further reduce take of marine mammals during this project and they are not included in the proposed mitigation methods.

Based on our evaluation of the applicant’s proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

**Proposed Monitoring and Reporting**

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must 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 authorizations must include the suggested means of accomplishing

the necessary monitoring and reporting that will 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 while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the activity; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

#### Visual Monitoring

Marine mammal monitoring must be conducted in accordance with the Marine Mammal Monitoring Plan, dated July 2023, available online at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities>. Marine mammal monitoring during pile driving and removal must be conducted by NMFS-approved PSOs in a manner consistent with the following:

- PSOs must be independent of the activity contractor (for example, employed by a subcontractor) and have no other assigned tasks during monitoring periods;

- At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization;

- Other PSOs may substitute other relevant experience, education (degree in biological science or related field) or training for experience performing the duties of a PSO during construction activities pursuant to a NMFS-issued incidental take authorization;

- Where a team of three or more PSOs is required, a lead observer or monitoring coordinator must be designated. The lead observer must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization; and

- PSOs must be approved by NMFS prior to beginning any activity subject to this IHA.

PSOs should have the following additional qualifications:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, 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 marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

A team of one to two land based PSOs would be deployed to observe the monitoring zones for vibratory and impact pile driving during this project. PSOs will be located at the best vantage points to see the entirety of the active zone. One PSO will have an unobstructed view of all water within the shutdown zones, and will be stationed at or near the project activity. While the exact monitoring stations have not yet been determined, Coast Guard provided potential locations in Figure 1 of its Marine Mammal Monitoring and Mitigation Plan. Additionally, a PSO will be stationed for monitoring on an observation vessel in order to ensure the entire monitoring

zone to the extent of the relevant predicted Level B harassment isopleth can be observed during vibratory pile installation and removal.

Monitoring would be conducted 30 minutes before, during, and 30 minutes after all in water construction activities. In addition, PSOs would record all incidents of marine mammal occurrence, regardless of distance from activity, and would document any behavioral reactions in concert with distance from piles being driven or removed. Pile driving activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

#### Reporting

Coast Guard would submit a draft report to NMFS within 90 calendar days of the completion of monitoring or 60 calendar days prior to the requested issuance of any subsequent IHA for construction activity at the same location, whichever comes first. The marine mammal monitoring report would include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report would include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including: (1) The number and type of piles that were driven and the method (*e.g.*, impact or vibratory); and (2) Total duration of driving time for each pile (vibratory driving) and number of strikes for each pile (impact driving);
- PSO locations during marine mammal monitoring;
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;
- Upon observation of a marine mammal, the following information: (1) Name of PSO who sighted the animal(s) and PSO location and activity at time of sighting; (2) Time of sighting; (3) Identification of the animal(s) (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species; (4) Distance and location of each observed marine mammal relative to the pile being driven for each sighting; (5) Estimated number of animals (min/max/best estimate); (6)

Estimated number of animals by cohort (adults, juveniles, neonates, group composition, *etc.*); (7) Animal's closest point of approach and estimated time spent within the harassment zone; (8) Description of any marine mammal behavioral observations (*e.g.*, observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (*e.g.*, no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);

- Number of marine mammals detected within the harassment zones, by species; and
- Detailed information about implementation of any mitigation (*e.g.*, shutdowns and delays), a description of specific actions that ensued, and resulting changes in behavior of the animal(s), if any.

A final report must be prepared and submitted within 30 calendar days following receipt of any NMFS comments on the draft report. If no comments are received from NMFS within 30 calendar days of receipt of the draft report, the report shall be considered final.

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the Holder must report the incident to the OPR, NMFS ([PR.ITP.MonitoringReports@noaa.gov](mailto:PR.ITP.MonitoringReports@noaa.gov) and [itp.hotchkin@noaa.gov](mailto:itp.hotchkin@noaa.gov)) and to the West Coast regional stranding network (866-767-6114) as soon as feasible. If the death or injury was clearly caused by the specified activity, the Holder must immediately cease the activities until NMFS OPR is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of this IHA. The Holder must not resume their activities until notified by NMFS.

The report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

### Negligible Impact Analysis and Determination

NMFS has defined negligible impact 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 (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" through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.*, intensity, duration), the context of any impacts or responses (*e.g.*, critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the majority of our analysis applies to all the species listed in Table 9, given that many of the anticipated effects of this project on different marine mammal stocks are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are described independently in the analysis below.

Pile driving and removal activities associated with the project, as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment, from underwater sounds generated from pile driving and removal. Potential takes could occur if individuals of these species are present

in zones ensounded above the thresholds for Level B harassment, identified above, when these activities are underway.

The takes by Level B harassment would be due to potential behavioral disturbance. No mortality or serious injury is anticipated given the nature of the activity, and no Level A harassment is anticipated due to Coast Guard's construction method and proposed mitigation measures (see Proposed Mitigation section).

Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from other similar activities, would likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring; *e.g.*, Thorson and Reyff 2006; HDR, Inc. 2012; Lerma 2014; ABR 2016). Most likely, individuals would simply move away from the sound source and be temporarily displaced from the areas of pile driving and removal, although even this reaction has been observed primarily only in association with impact pile driving, which Coast Guard anticipates using for only 10 percent of pile driving. If sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the area while the activity is occurring, particularly as the project is expected to occur over just 15 in-water pile driving days.

The project is also not expected to have significant adverse effects on affected marine mammals' habitats. The project activities would not modify existing marine mammal habitat for a significant amount of time. The activities may cause some fish to leave the area of disturbance, thus temporarily impacting marine mammals' foraging opportunities in a limited portion of the foraging range. Given the short duration of the activities and the relatively small area of the habitat that may be affected, the impacts to marine mammal habitat, including fish, are not expected to cause significant or long-term negative consequences.

There are two known harbor seal haulouts close to the project site. The first haulout site is directly across Port Angeles Harbor from the USCG Air Station, approximately 2.4 km away. Seals swimming to and from this haulout have the potential to experience Level B harassment due to underwater sound exposure during vibratory or impact pile driving activities. However, the project activities are not expected to occur during any particularly sensitive time (*e.g.*, molting or pupping season), and the project duration is short, with

approximately 15 days of in-water work. Given the availability of a second haulout close by (3.5 km (2.17 mi) from the project site on the opposite side of Ediz Hook) which is not expected to be exposed to noise from pile driving and the short duration of the project, there are no anticipated significant or long-term negative consequences to harbor seals in the project area.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- The anticipated incidents of Level B harassment would consist of, at worst, temporary modifications in behavior that would not result in fitness impacts to individuals;
- Take estimates were calculated assuming that no activities would occur on the same day. However, in reality, vibratory and impact driving are likely to occur on the same day, reducing the overall impact to marine mammal species;
- The area impacted by the specified activity is very small relative to the overall habitat ranges of all species;
- While impacts would occur within areas that are important for feeding or resting for multiple stocks, because of the small footprint of the activity relative to the area of these important use areas, and the scope and nature of the anticipated impacts of pile driving exposure, we do not expect impacts to the reproduction or survival of any individuals.

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 proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

#### Small Numbers

As noted previously, only take of small numbers of marine mammals may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our

determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one-third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The number of instances of take for each species or stock proposed to be taken as a result of this project is included in Table 9. Our analysis shows that less than one-third of the best available population abundance estimate of each stock could be taken by harassment. The number of animals proposed to be taken for all stocks would be considered small relative to the relevant stock's abundances even if each estimated taking occurred to a new individual, which is an unlikely scenario.

A lack of an accepted stock abundance value for the Washington Northern Inland Waters stock of harbor seal did not allow for the calculation of an expected percentage of the population that would be affected. The most relevant estimate of partial stock abundance is 7,513 seals (CV = 11.5%) (Jefferson *et al.* 2021). Given 210 proposed takes by Level B harassment for the stock, comparison to the best estimate of stock abundance shows, at most, 2.8 percent of the stock would be expected to be impacted.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals would be taken relative to the population size of the affected species or stocks.

#### Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS 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

Section 7(a)(2) of the ESA of 1973 (16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the

destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

No incidental take of ESA-listed species is proposed for authorization or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

#### Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to the Coast Guard for conducting Pier Maintenance and Bank Stabilization at USCG Air Station Port Angeles, in Port Angeles, Washington, between November 15, 2023 and November 14, 2024 provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities>.

#### Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed Pier Maintenance and Bank Stabilization. We also request comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the Description of Proposed Activity section of this notice is planned or (2) the activities as described in the Description of Proposed Activity section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed renewal IHA effective date (recognizing that the renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA); and
- The request for renewal must include the following:

(1) An explanation that the activities to be conducted under the requested renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take); and

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: September 1, 2023.

**Kimberly Damon-Randall,**

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

[FR Doc. 2023-19327 Filed 9-6-23; 8:45 am]

**BILLING CODE 3510-22-P**

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[RTID 0648-XD321]

#### Fisheries of the Gulf of Mexico and South Atlantic; Southeast Data, Assessment, and Review (SEDAR); Public Meeting

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

**ACTION:** Notice of SEDAR 79 Post-Data Workshop webinar for Gulf of Mexico and South Atlantic Mutton Snapper.

**SUMMARY:** The SEDAR 79 assessment process for Gulf of Mexico and South Atlantic mutton snapper will consist of a Data Workshop, and a series of assessment webinars, and a Review Workshop. See **SUPPLEMENTARY INFORMATION**.

**DATES:** The SEDAR 79 Post-Data Workshop webinar will be held September 25, 2023, from 1 p.m. to 3 p.m., Eastern Time. The established times may be adjusted as necessary to accommodate the timely completion of

discussion relevant to the assessment process. Such adjustments may result in the meeting being extended from or completed prior to the time established by this notice.

#### ADDRESSES:

**Meeting address:** The meeting will be held via webinar. The webinar is open to members of the public. Those interested in participating should contact Julie A. Neer at SEDAR (see **FOR FURTHER INFORMATION CONTACT** below) to request an invitation providing webinar access information. Please request webinar invitations at least 24 hours in advance of each webinar.

SEDAR address: 4055 Faber Place Drive, Suite 201, North Charleston, SC 29405.

**FOR FURTHER INFORMATION CONTACT:** Julie A. Neer, SEDAR Coordinator; (843) 571-4366; email: [Julie.neer@safmc.net](mailto:Julie.neer@safmc.net).

**SUPPLEMENTARY INFORMATION:** The Gulf of Mexico, South Atlantic, and Caribbean Fishery Management Councils, in conjunction with NOAA Fisheries and the Atlantic and Gulf States Marine Fisheries Commissions have implemented the Southeast Data, Assessment and Review (SEDAR) process, a multi-step method for determining the status of fish stocks in the Southeast Region. SEDAR is a multi-step process including: (1) Data Workshop, (2) a series of assessment webinars, and (3) a Review Workshop. The product of the Data Workshop is a report that compiles and evaluates potential datasets and recommends which datasets are appropriate for assessment analyses. The assessment webinars produce a report that describes the fisheries, evaluates the status of the stock, estimates biological benchmarks, projects future population conditions, and recommends research and monitoring needs. The product of the Review Workshop is an Assessment Summary documenting panel opinions regarding the strengths and weaknesses of the stock assessment and input data. Participants for SEDAR Workshops are appointed by the Gulf of Mexico, South Atlantic, and Caribbean Fishery Management Councils and NOAA Fisheries Southeast Regional Office, HMS Management Division, and Southeast Fisheries Science Center. Participants include data collectors and database managers; stock assessment scientists, biologists, and researchers; constituency representatives including fishermen, environmentalists, and NGO's; International experts; and staff of Councils, Commissions, and state and federal agencies.

The items of discussion during the Post-Data Workshop webinar are as follows:

Panelists will review the data sets being considered for the assessment.

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

#### Special Accommodations

The meeting is physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to the Council office (see **ADDRESSES**) at least 5 business days prior to each workshop.

**Note:** The times and sequence specified in this agenda are subject to change.

**Authority:** 16 U.S.C. 1801 *et seq.*

Dated: September 1, 2023.

**Rey Israel Marquez,**

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

[FR Doc. 2023-19314 Filed 9-6-23; 8:45 am]

**BILLING CODE 3510-22-P**

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[RTID 0648-XD336]

#### New England Fishery Management Council; Public Meeting

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

**ACTION:** Notice of public meeting.

**SUMMARY:** The New England Fishery Management Council (Council, NEFMC) will hold a four-day hybrid meeting with both in-person and remote participation to consider actions affecting New England fisheries in the exclusive economic zone (EEZ).

**DATES:** The meeting will be held on Monday, September 25, 2023 through Thursday, September 28, 2023. The meetings will begin at 12 p.m. on Monday, and 9 a.m. on Tuesday, Wednesday, and Thursday.

**ADDRESSES:**