fishery and not otherwise permitted under a FMP. For example, EFP trials to fish for swordfish with deep-set buoy gear led to a Council recommendation to NMFS to authorize the gear. However, it remains unclear whether deep-set buoy gear will be an economically feasible substitute for DGN, which is used to harvest both swordfish and other marketable highly migratory species. The specific purpose of this EFP is to allow exploratory longline fishing to gauge impacts, determine whether this type of fishing is economically viable, and assess the type and extent of interactions with protected species and non-target finfish.

The proposed action is needed because fishing with longline gear is currently prohibited in the West Coast EEZ under 50 CFR 660.712(a)(1) .This prohibition pre-dates gear and operational modifications in U.S. longline fisheries that have proven effective elsewhere for reducing protected species interactions, injuries, and mortalities (50 CFR 665.812 and 665.815). Without testing potentially viable alternatives to fishing with DGN, the U.S. West Coast swordfish fishery is unlikely to operate at optimum yield into the foreseeable future.

**Gear Configurations and Operations**

Longline gear is an umbrella term referring to two distinct gear configurations. These configurations include deep-set and shallow-set. DSLL is typically fished at depths of ~984 to 1,312 feet (~300 to 400 meters (m) or deeper) and more commonly used to target tunas. SSLL is typically fished at less than 328 feet (<100 m depth) and more commonly used to target swordfish. The proposed action area for this EFP is the United States EEZ off California and Oregon.

**Alternatives**

The range of alternatives includes a No Action alternative and reasonable action alternatives that meet the purpose and need. These action alternatives may differ in the limits set on sea turtles observed hooked, entangled, or killed during fishing under the EFP. Additionally, the action alternatives may differ in limits set on fishing activity (*e.g.,* number of vessels, sets, or hooks, and time-area constraints).

**Terms and Conditions**

In addition to the loggerhead and leatherback sea turtle limits, the action alternatives will include terms and conditions to facilitate data collection and mitigate potential impacts of the EFP activities on the environment. The list of measures below includes a menu of terms and conditions that could apply to the action alternatives in the EIS.

1. 100 percent observer coverage.
2. EFP fishing trips limited to Federal waters only, and cannot co-occur on trips that include fishing under alternative authorizations.
3. Vessel monitoring systems installed and operating for all EFP activities.
4. No transfer of fish to or from vessels operating under the EFP while at sea.
5. No fishing within 50 nautical miles of the mainland shore and islands.
6. No fishing within the Leatherback Critical Habitat area (77 FR 4170, January 26, 2012).
7. No fishing within the Southern California Bight.
8. Restrictions on setting gear within the boundaries of the Pacific leatherback conservation area from August 15 through November 15.
9. Restrictions on EFP fishing in waters north of the Oregon/California border.
10. Gear and bait requirements (*e.g.,* 50 CFR 665.812 and 665.813).
11. Limits on bycatch (*e.g.,* striped marlin).
12. Requirement for setting SSLL at night.
13. Seabird avoidance, protection, and handling measures (50 CFR 660.712(c) and 50 CFR 660.21).
14. Prior to making fishing sets, EFP operators will be required to consult the dynamic ocean modeling tool, EcoCast.
15. Operators must participate in a NMFS-hosted workshop focused on compliance with terms and conditions of the EFP, including training on the use of EcoCast.
16. Operators must possess on board a valid Pacific HMS permit (50 CFR 666.707(a)).

**Public Scoping Process**

The primary purpose of the scoping process is for the public to assist NMFS in developing the EIS. NMFS requests that the comments be specific. In particular, we request information regarding: Important issues; possible alternatives that meet the purpose and need; direct, indirect, and cumulative environmental impacts; and potential terms and conditions that may minimize adverse effects, including time or area restrictions or both to reduce environmental impacts. In addition to written public comments received during this scoping period and the comments received during the proposed webinar, NMFS will consider public comments and recommendations of the Council's advisory bodies related to the Council's recommendations to NMFS to approve the EFP between 2015 and 2019. In addition to those opportunities for public comment and the opportunities being provided with this notice, NMFS will also make a draft EIS for the proposed action available for public comment.

Dated: August 4, 2020.

**Jennifer M. Wallace,**

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

[FR Doc. 2020–17332 Filed 8–7–20; 8:45 am]

**BILLING CODE 3510–22–P**

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

**[RTID 0648–XA267]**

### Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Transit Protection Program Pier and Support Facilities Project at Naval Base Kitsap Bangor, 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. Navy (Navy) for authorization to take marine mammals incidental to the Transit Protection Program Pier and Support Facilities Project at Naval Base Kitsap Bangor in Silverdale, Washington over two years. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue two incidental harassment authorizations (IHAs) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on possible one-time, one-year renewals 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 authorizations and agency responses will be summarized in the final notice of our decision.

**DATES:** Comments and information must be received no later than September 9, 2020.

**ADDRESSES:** Comments should be addressed to Jolie Harrison, Chief,

Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, and submitted via email to *ITP.Davis@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 *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities* 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.

**FOR FURTHER INFORMATION CONTACT:** Leah Davis, Office of Protected Resources, NMFS, (301) 427–8401. 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 above.

**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 issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be 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 January 14, 2020, NMFS received a request from the Navy for an IHA to take marine mammals incidental to the Transit Protection Program Pier and Support Facilities Project at Naval Base Kitsap Bangor in Silverdale, Washington over two years. The Navy submitted a revised application on March 23, 2020, which was deemed adequate and complete on June 10, 2020. The Navy's request is for take of a small number of five species of marine mammals, by Level B harassment and Level A harassment. Neither the Navy nor NMFS expects serious injury or mortality to result from this activity and, therefore, IHAs are appropriate.

The IHAs, if issued, will be effective from July 16, 2021 to January 15, 2022 for Year 1 activities, and July 16, 2022 to January 15, 2023 for Year 2 activities.

## Description of Proposed Activity

### *Overview*

The Navy is proposing to construct and operate a pier for berthing of Transit Protection Program (TPP) blocking vessels, which provide security escort to Fleet Ballistic Missile Submarines between Naval Base Kitsap Bangor and the Strait of Juan de Fuca. These vessels are currently berthed on a space-available basis at various locations at Kitsap Bangor. Kitsap Bangor is located on Hood Canal approximately 20 miles (mi) (32 kilometers (km)) west of Seattle, Washington. Construction activities include vibratory and impact pile driving and vibratory pile removal, over approximately 80 days in year 1 and 10 days in year 2.

### *Dates and Duration*

The Navy anticipates that construction for the TPP project will occur over two years. The proposed IHAs would be effective from July 16, 2021 to January 15, 2022 for Year 1 activities, and July 16, 2022 to January 15, 2023 for Year 2 activities. The Navy expects that pile driving will require a maximum of 90 in-water pile-driving days over the two-year period. They anticipate completing the majority of the proposed construction during Year 1 on approximately 80 in-water workdays. Year 2 activities will include fender pile and guide pile installation only on approximately 10 in-water workdays. Pile driving and removal are expected to occur up to five hours per day during daylight hours. Each year, pile driving will occur during the in-water work window (IWWW) at Kitsap Bangor from July 16 to January 15. This IWWW is typically imposed by the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service (USFWS), and the NMFS in an effort to avoid in-water construction when Endangered Species Act (ESA)-listed juvenile salmonids are most likely to be present.

### *Specific Geographic Region*

Naval Base Kitsap Bangor is located north of the community of Silverdale in Kitsap County on the Hood Canal. Hood Canal is a long, narrow, fjord-like basin of western Puget Sound, characterized by relatively steep sides and irregular seafloor topography. In the entrance to Hood Canal, water depths in the center of the waterway near Admiralty Inlet vary between 300 and 420 feet (ft) (91 and 128 m). As the canal extends southwestward toward the Olympic Mountain Range and Thorndyke Bay, water depth decreases to approximately 160 ft (49 m). The proposed location for the TPP Pier is at the tip of the Keyport/

Bangor Spit, north of the Keyport/Bangor Dock (Figure 1). The Bangor waterfront on Naval Base Kitsap occupies approximately 5 mi (8 km) of the shoreline within northern Hood Canal (1.7 percent of the entire Hood Canal coastline). Depths in the center of the waterway off the Bangor waterfront are generally 200 to 400 ft (61 to 122 m).

Human-generated sound is a significant contributor to the ambient acoustic environment at Kitsap Bangor. Normal port activities include vessel traffic from large ships, support vessels and security boats, and loading and maintenance operations, which all generate underwater sound (Urick, 1983). Other sources of human-generated underwater sound not specific to naval installations include sounds from echo sounders on commercial and recreational vessels, industrial ship noise, and noise from recreational boat engines.

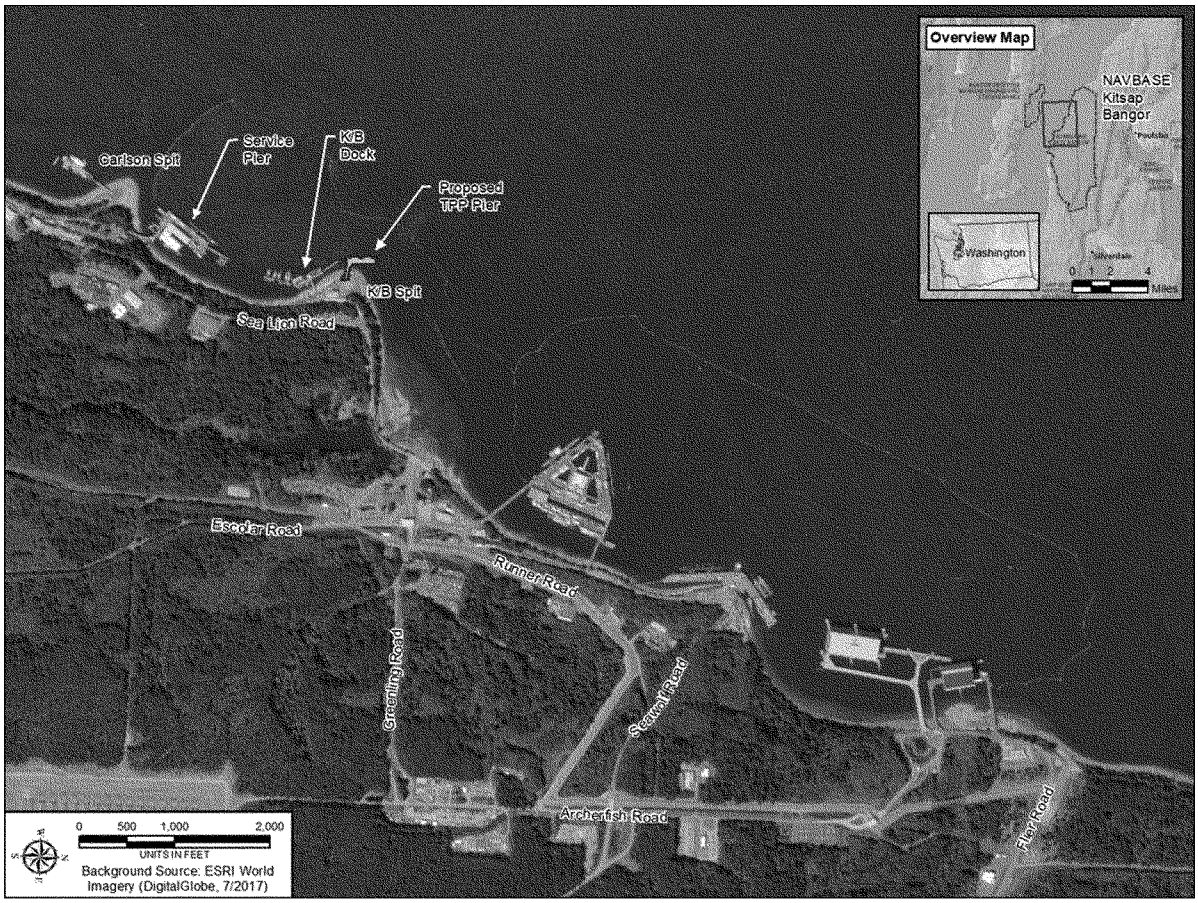


**Figure 1-- Proposed TPP Pier Location**

*Detailed Description of Specific Activity*

The Navy plans to construct a pier for berthing TPP blocking vessels. The TPP pier will consist of an L-shaped, pile-supported trestle from shore connecting to a pile-supported main pier section. The Navy will also install two dolphins, one south and one north of the pier which will be used solely for mooring support. Additionally, the contractor will construct a temporary work trestle (falsework piles and timber decking) for use during construction.

The proposed TPP pier will consist of an L-shaped pile-supported trestle from shore connecting to a pile-supported main pier section. The trestle will be concrete and approximately 114 ft (34.7 m) long and 39 ft (11.9 m) wide, including a pedestrian walkway. The main pier section will also be concrete and approximately 299 ft (91.1 m) long and 69 ft (21 m) wide.

The contractor will need to construct a 140-ft (42.6 m) by 20-ft (6.1 m) temporary work trestle (falsework piles and timber decking). The permanent trestle piles in the intertidal area will be driven from the deck of the temporary work trestle; the temporary trestle will subsequently be removed using a vibratory hammer.

Pier and trestle construction will require one derrick barge with a crane and one support/material barge.

The Navy plans to install a fender system along the west face of the pier with two berthing camels where the blocking vessels will tie up to the pier. Each camel will be 65 ft (19.8 m) long by 12 ft (3.7 m) wide and constructed of grated material. The camels will serve as both a standoff for the blocking vessels and a platform for boarding the blocking vessels. The camels will be accessed via brows down from the main pier deck. The brow platforms and brows will also be constructed of grated material. NMFS does not expect camel or brow platform installation to result in the take of marine mammals, and we do not discuss their installation further in this notice.

The fender piles will be installed on the outer side of the pier to protect it from accidental damage by vessels. Where geotechnical conditions do not allow piles to be driven to the required depth using vibratory methods, an

impact hammer may be used to drive some of the 36-in (91.4 cm) support piles for part or all of their length. The 24-in (61.0 cm) fender piles and 30-in (76.2 cm) camel guide piles will not be impact driven.

The Navy plans to construct two dolphins, one south of the pier, and one north of the pier for mooring support. The dolphins will support mooring hardware for the bow and stern lines of the blocking vessels. The structural system for the mooring dolphins will consist of a 12 ft by 12 ft (3.7 m by 3.7 m) cast-in-place concrete pile cap and four 36-inch battered steel pipe piles. The Navy plans to construct a shoreline abutment under the pier trestle. The shoreline abutment will be constructed from sheet piles and will be constructed landward of mean higher high water (MHHW). Therefore, we do not expect the shoreline abutment to result in take of marine mammals, and it is not discussed further in this notice.

The trestle, pier, and dolphins will require in-water installation of a total of 120 permanent steel piles that are 24, 30, or 36 inches in diameter, and 40 temporary steel falsework piles that are 36 inches in diameter.

An additional four 36-inch trestle support piles and 20 36-inch falsework piles will be located above MHHW, however, we do not expect installation of piles above MHHW to result in take of marine mammals, and these piles are not discussed further.

The Navy will primarily install piles using a vibratory hammer, but may use an impact hammer to install steel support piles. Steel support piles will be advanced to the extent practicable with a vibratory driver. For load-bearing structures, an impact hammer is typically required to strike a pile a number of times to ensure it has met the load-bearing specifications, a process referred to as ''proofing.'' Piles will only be impact driven when required for proofing or when a pile cannot be advanced with a vibratory driver due to hard substrate conditions. The Navy does not plan to conduct pile driving with multiple hammers concurrently.

TABLE 1—SUMMARY OF PILES TO BE INSTALLED OR REMOVED IN YEAR 1 ACROSS ALL STRUCTURES

| Pile type | Driving method | Number of in-water piles |
|---|---|---|
| 36-inch Steel Pipe Piles | Vibratory and Impact (proofing) | 100 |
| 36-inch Steel Falsework Piles | Vibratory | [a] 40 |

[a] These piles will be installed and later removed.

TABLE 2—SUMMARY OF PILES TO BE INSTALLED IN YEAR 2

| Pile type | Driving method | Number of in-water piles |
|---|---|---|
| 24-inch Steel Fender Piles | Vibratory | 10 |
| 30-inch Steel Guide Piles | Vibratory | 10 |

Navy will also conduct several construction activities in upland areas, including installation of diesel fuel tanks, installation of a paved parking area, construction of a vessel maintenance facility, among other activities. Given their location, we do not expect any of these upland construction activities to result in the take of marine mammals, and they are not discussed further in this notice. Please refer to the Navy's application for additional detail on these project components.

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. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; *https://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's website (*https://www.fisheries.noaa.gov/find-species*).

Table 3 lists all species or stocks for which take is expected and proposed to be authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2020). 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's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species 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's 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's U.S. Pacific and Alaska SARs (*e.g.,* Carretta *et al.,* 2020). All values presented in Table 3 are the most recent available at the time of publication and are available in the 2019 SARs (Carretta *et al.,* 2020, Muto *et al.,* 2020).

TABLE 3—SPECIES PROPOSED FOR AUTHORIZED TAKE

| Common name | Scientific name | Stock | ESA/ MMPA status; strategic (Y/N) [a] | Stock abundance (CV, $N_{min}$, most recent abundance survey) [b] | PBR | Annual M/SI [c] |
|---|---|---|---|---|---|---|
| **Order Cetartiodactyla—Cetacea—Superfamily Odontoceti (toothed whales, dolphins, and porpoises)** | | | | | | |
| Family Delphinidae: | | | | | | |
| Killer Whale | *Orcinus orca* | West Coast Transient. | -, -, N | 243 [d] (N/A, 243, 2009) | 2.4 | 0 |
| Family Phocoenidae (porpoises): | | | | | | |
| Harbor porpoise | *Phocoena phocoena* | Washington Inland Waters. | -, -, N | 11,233 (0.37, 8,308, 2015) | 66 | ≥7.2 |
| **Order Carnivora—Superfamily Pinnipedia** | | | | | | |
| Family Otariidae (eared seals and sea lions): | | | | | | |
| California Sea Lion | *Zalophus californianus* | United States | -, -, N | 257,606 (N/A, 233,515, 2014) | 14,011 | >321 |
| Steller sea lion | *Eumetopias jubatus monteriensis* | Eastern U.S. | -, -, N | 43,201 [e] (see SAR, 43,201, 2017) | 2,592 | 113 |
| Family Phocidae (earless seals): | | | | | | |
| Harbor seal | *Phoca vitulina* | Washington Inland Waters, Hood Canal. | -, -, N | 1,088 (0.15, UNK, 1999) [f] | UNK | 0.2 |

[a]–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.

[b]–NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region.* CV is coefficient of variation; Nmin is the minimum estimate of stock abundance.

[c]–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, ship strike). Annual mortality/serious injury (M/SI) often cannot be determined precisely and is in some cases presented as a minimum value or range.

[d]–Based on counts of individual animals identified from photo-identification catalogues. Surveys for abundance estimates of these stocks are conducted infrequently.

[e]–Best estimate of pup and non-pup counts, which have not been corrected to account for animals at sea during abundance surveys.

[f]–The abundance estimate for this stock is greater than eight years old and is therefore not considered current. PBR is considered undetermined for this stock, as there is no current minimum abundance estimate for use in calculation. We nevertheless present the most recent abundance estimates, as these represent the best available information for use in this document.

As indicated above, all five species (with five managed stocks) in Table 3 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing it. While humpback whale, gray whale, Southern Resident killer whale, Dall's porpoise, and bottlenose dolphin have been sighted in the area, the temporal and 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. Humpback whales (*Megaptera novaeangliae*) have been detected year-round in small numbers in Puget Sound. In Hood Canal, after an absence of sightings for over 15 years, an individual was seen over a 1-week period in early 2012, with additional 1-day sightings in 2015, 2016, and 2017 (Orca Network, 2019). However, these sightings are exceptions to the normal occurrence of the species in Washington inland waters. Gray whales (*Eschrichtius robustus*) have been infrequently documented in Hood Canal waters over the past decade. There were five sightings in 2017 and one in 2018 (Orca Network, 2017, 2019). These sightings are an exception to the normal seasonal occurrence of gray whales in Puget Sound feeding areas. The Southern Resident killer whale stock is resident to the inland waters of Washington state and British Columbia; however, it has not been seen in Hood Canal in over 15 years. Dall's porpoise (*Phocoenoides dalli*) was documented once in Hood Canal in 2009 and more recently once in 2018 (Orca Network, 2019); however, Dall's porpoises are unlikely to be present in Hood Canal. Bottlenose dolphin (*Tursiops truncatus*) were documented in Hood Canal twice in 2018 (Orca Network, 2019); however, bottlenose dolphins are unlikely to be present in Hood Canal.

*Killer Whale*

Killer whales in the project area are expected to be from the West Coast Transient stock, which occurs from California through southeastern Alaska with a preference for coastal waters of southern Alaska and British Columbia (Krahn *et al.,* 2002). Transient killer whales in the Pacific Northwest spend most of their time along the outer coast of British Columbia and Washington, but visit inland waters in search of harbor seals, sea lions, and other prey.

Transients may occur in inland waters in any month (Orca Network, 2015). However, Morton (1990) found bimodal peaks in spring (March) and fall (September to November) for transients on the northeastern coast of British Columbia, and Baird and Dill (1995) found some transient groups frequenting the vicinity of harbor seal haulouts around southern Vancouver Island during August and September, which is the peak period for pupping through post-weaning of harbor seal pups. Not all transient groups were seasonal in these studies, and their movements appeared to be unpredictable. From 2004–2010, transient killer whales occurred in Washington inland waters most frequently in August–September with a strong second peak in April–May (Houghton *et al.,* 2015).

The number of West Coast Transient killer whales in Washington inland waters at any one time was previously considered likely to be fewer than 20 individuals (Wiles, 2004). Recent research suggests that the transient killer whales use of inland waters increased from 2004 through 2010, with the trend likely due to increasing prey abundance (Houghton *et al.,* 2015). Many of the West Coast Transients in Washington inland waters have been catalogued by photo identification.

Transient killer whales were observed for lengthy periods in Hood Canal in 2003 (59 days) and 2005 (172 days) between the months of January and July (London, 2006), but were not observed again until March 2016 (Orca Network, 2016). Transient killer whales were observed in Hood Canal on two days in

March 2016, one day in April 2016, eight consecutive days in May 2016, one day in 2017, 11 consecutive days in April 2018, and one day on two additional occasions in 2018. Some of the sightings in 2016 and 2018 were in Dabob Bay (Orca Network, 2017, 2019). Killer whales were historically documented in Hood Canal by sound recordings in 1958 (Ford, 1991), a photograph from 1973, sound recordings in 1995 (Unger, 1997), and anecdotal accounts of historical use. Long-term use of Hood Canal is likely anomalous. The more typical use of Hood Canal appears to be short-term occupancy for foraging in a small area, followed by departure from Hood Canal.

*Harbor Porpoise*

Harbor porpoise in Puget Sound are expected to be from the Washington Inland Waters stock. In Washington inland waters, harbor porpoise are known to occur in the Strait of Juan de Fuca and the San Juan Island area year-round (Calambokidis & Baird, 1994; Osmek *et al.,* 1996; Carretta *et al.,* 2012). Harbor porpoises were historically one of the most commonly observed marine mammals in Puget Sound (Scheffer & Slipp, 1948); however, there was a significant decline in sightings beginning in the 1940s (Everitt *et al.,* 1979; Calambokidis *et al.,* 1992). Only a few sightings were reported between the 1970s and 1980s (Calambokidis *et al.,* 1992; Osmek *et al.,* 1996; Suryan & Harvey, 1998), and no harbor porpoise sightings were recorded during multiple ship and aerial surveys conducted in Puget Sound (including Hood Canal) in 1991 and 1994 (Calambokidis *et al.,* 1992; Osmek *et al.,* 1996). Incidental sightings of marine mammals during aerial bird surveys conducted as part of the Puget Sound Ambient Monitoring Program (PSAMP) detected few harbor porpoises in Puget Sound between 1992 and 1999 (Nysewander *et al.,* 2005). However, these sightings may have been negatively biased due to the low elevation of the plane that may have caused an avoidance behavior. Since 1999, PSAMP data, stranding data, and aerial surveys conducted from 2013 to 2015 documented increasing numbers of harbor porpoise in Puget Sound (Nysewander, 2005; WDFW, 2008; Jeffries, 2013; Jefferson *et al.,* 2016; Smultea *et al.,* 2017).

Sightings in Hood Canal, north of the Hood Canal Bridge, have increased in recent years (Calambokidis, 2010). During line-transect vessel surveys conducted in the Hood Canal in 2011 for the Test Pile Program near Naval Base Kitsap Bangor and Dabob Bay (HDR, 2012), an average of six harbor porpoises were sighted per day in the deeper waters.

*Steller Sea Lion*

Steller sea lions in the project area are expected to be from the Eastern U.S. stock. The Eastern U.S. stock of Steller sea lions is found along the coasts of southeast Alaska to northern California where they occur at rookeries and numerous haulout locations along the coastline (Jeffries *et al.,* 2000; Scordino, 2006; NMFS, 2013). Along the northern Washington coast, up to 25 pups are born annually (Jeffries, 2013). Male Steller sea lions often disperse widely outside of the breeding season from breeding rookeries in northern California (St. George Reef) and southern Oregon (Rogue Reef) (Scordino, 2006; Wright *et al.,* 2010). Based on mark recapture sighting studies, males migrate back into these Oregon and California locations from winter feeding areas in Washington, British Columbia, and Alaska (Scordino, 2006).

In Washington, Steller sea lions use haulout sites primarily along the outer coast from the Columbia River to Cape Flattery, as well as along the Vancouver Island side of the Strait of Juan de Fuca (Jeffries *et al.,* 2000). A major winter haulout is located in the Strait of Juan de Fuca at Race Rocks, British Columbia, Canada (Canadian side of the Strait of Juan de Fuca) (Edgell and Demarchi, 2012). Numbers vary seasonally in Washington with peak numbers present during the fall and winter months and a decline in the summer months that corresponds to the breeding season at coastal rookeries (approximately late May to early June) (Jeffries *et al.,* 2000). In Puget Sound, Jeffries (2012) identified five winter haulout sites used by adult and subadult (immature or pre-breeding animals) Steller sea lions, ranging from immediately south of Port Townsend (near Admiralty Inlet) to Olympia in southern Puget Sound (see Figure 4–1 of the Navy's application). Numbers of animals observed at these sites ranged from a few to less than 100 (Jeffries, 2012). In addition, Steller sea lions opportunistically haul out on various navigational buoys in Admiralty Inlet south through southern Puget Sound near Olympia (Jeffries, 2012). Typically, one or two animals occur at a time on these buoys.

Steller sea lions have been seasonally documented in shore-based surveys at Naval Base Kitsap Bangor in Hood Canal since 2008 with up to 15 individuals observed hauled out on submarines at Delta Pier (Navy, 2016, 2019). Navy surveys at Naval Base Kitsap Bangor indicate Steller sea lions begin arriving in September and depart by the end of May (Navy, 2016, 2019). Survey methods and frequency are detailed Appendix A of the Navy's application.

*California Sea Lion*

Jeffries *et al.* (2000) and Jeffries (2012) identified dedicated, regular haulouts used by adult and subadult California sea lions in Washington inland waters. Main haulouts occur at Naval Base Kitsap Bangor, Naval Base Kitsap Bremerton, and Naval Station Everett, as well as in Rich Passage near Manchester, Seattle (Shilshole Bay), south Puget Sound (Commencement Bay, Budd Inlet), and numerous navigation buoys south of Whidbey Island to Olympia in south Puget Sound (Jeffries *et al.,* 2000; Jeffries, 2012) (Figure 4–1 of the Navy's application). Race Rocks, British Columbia, Canada (Canadian side of the Strait of Juan de Fuca) has been identified as a major winter haulout for California sea lions (Edgell and Demarchi, 2012). California sea lions are typically present most of the year except for mid-June through July in Washington inland waters, with peak abundance numbers between October and May (NMFS, 1997; Jeffries *et al.,* 2000). California sea lions are expected to forage within the area, following local prey availability. During summer months and associated breeding periods, the inland waters are not considered a high-use area by California sea lions, as they are returning to rookeries in California waters. However, California sea lions have been documented during shore-based surveys at Naval Base Kitsap Bangor in Hood Canal since 2008 in all survey months, with as many as 320 individuals observed at one time (October 2018) hauled out on submarines at Delta Pier and on port security barrier (PSB) floats (Navy, 2016, 2019; Appendix A of the Navy's application). Relatively few individuals (<17 sighted per survey) were present during these surveys from June through August.

*Harbor Seal*

Harbor seals are a coastal species, rarely found more than 12 mi (19.3 km) from shore. They frequently occupy bays, estuaries, and inlets. Individual seals have been observed several miles upstream in coastal rivers (Baird, 2001). Ideal harbor seal habitat includes haulout sites, areas providing shelter during breeding periods, and areas with sufficient food (Bjørge, 2002). Haulout areas can include intertidal and subtidal rock outcrops, sandbars, sandy beaches, peat banks in salt marshes, and man-

made structures such as log booms, docks, and recreational floats (Wilson, 1978; Prescott, 1982; Schneider & Payne, 1983, Gilbert & Guldager, 1998; Jeffries *et al.,* 2000; Lambourn *et al.,* 2010). Harbor seals do not make extensive pelagic migrations, though some long distance movement of tagged animals in Alaska (108 mi (174 km)) and along the U.S. west coast (up to 342 mi (550 km)) have been recorded (Brown & Mate, 1983; Womble & Gende, 2013). Harbor seals have also displayed strong fidelity to haulout sites.

Harbor seals are the most common, widely distributed marine mammal found in Washington marine waters and are frequently observed in the nearshore marine environment. They occur year-round and breed in Washington. Numerous harbor seal haulouts occur in Washington inland waters. Haulouts include intertidal and subtidal rock outcrops, beaches, reefs, sandbars, log booms, and floats. Numbers of individuals at haulouts range from a few to between 100 and 500 individuals (Jeffries *et al.,* 2000).

Harbor seals are expected to occur year-round at Naval Base Kitsap Bangor. In Hood Canal, where Kitsap Bangor is located, known haulouts occur on the west side of Hood Canal at the mouth of the Dosewallips River and on the western and northern shorelines in Dabob Bay located approximately 8 mi (13 km) away from the Navy's installation. Vessel-based surveys conducted from 2007 to 2010 at Kitsap Bangor, observed harbor seals in every month of surveys (Agness & Tannenbaum, 2009; Tannenbaum *et al.,* 2009, 2011). Harbor seals were routinely seen during marine mammal monitoring for two construction projects, the Test Pile Project and EHW–2 construction projects (HDR, 2012; Hart Crowser, 2013, 2014, 2015). Small numbers of harbor seals have been documented hauling out on the PSB floats, wavescreens at Carderock Pier, buoys, barges, marine vessels, and logs (Agness and Tannenbaum, 2009; Tannenbaum *et al.,* 2009, 2011; Navy, 2016) and on man-made floating structures near Keyport Bangor Dock and Delta Pier. Opportunistic surveys by a Naval Facilities Engineering Command biologist in August and September 2016 recorded as many as 28 harbor seals hauled out under Marginal Wharf or swimming in adjacent waters. On two occasions, four to six individuals were observed hauled out near Delta Pier.

The Navy identified a few observations of harbor seal births or neonates. In 2014, the Navy's knowledge of harbor seal births increased due to increased pinniped surveys on the waterfront and increased contact with waterfront personnel who have had lengthy careers at Bangor (Navy, 2016). Known harbor seal births include one on the Carderock wave screen in August 2011 and at least one on a small 10 by 10 ft (3 by 3 m) floating dock at EHW–2 in fall 2013, as reported by EHW–2 construction crews, and afterbirth observed on a float at Magnetic Silencing Facility with an unknown date. In addition, Navy biologists learned that harbor seal pupping has occurred on a section of the Service Pier since approximately 2001, according to the Port Operations vessel crews. Harbor seal mother and pup sets were observed in 2014 hauled out on the Carderock wavescreen and swimming in nearby waters, and swimming near Delta Pier (Navy, 2016).

*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. Current data indicate that 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) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. 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 4.

TABLE 4—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, *Kogia,* river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*). | 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 and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Five marine mammal species (two cetacean and two pinniped (two otariid and one phocid) species) have the reasonable potential to co-occur with the proposed construction (Table 4). Of the cetacean species that may be present, one is classified as a mid-frequency cetacean (*i.e.,* killer whale), and one is classified as a high-frequency cetacean (*i.e.,* harbor porpoise).

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

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The Estimated Take 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 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 how those impacts on individuals are likely to impact marine mammal species or stocks.

Acoustic effects on marine mammals during the specified activity can occur from vibratory and impact pile driving. The effects of underwater noise from the Navy's proposed activities have the potential to result in Level A and Level B harassment of marine mammals in the action area.

*Description of Sound Sources*

The marine soundscape is comprised of both ambient and anthropogenic sounds. Ambient sound is defined as the all-encompassing sound in a given place and is usually a composite of sound from many sources both near and far. The sound level of an area is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.,* waves, wind, precipitation, earthquakes, ice, atmospheric sound), biological (*e.g.,* sounds produced by marine mammals, fish, and invertebrates), and anthropogenic sound (*e.g.,* vessels, dredging, aircraft, construction).

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

In-water construction activities associated with the project would include impact pile driving, vibratory pile driving, and vibratory pile removal. The sounds produced by these activities fall into one of two general sound types: Impulsive and non-impulsive. Impulsive sounds (*e.g.,* explosions, gunshots, sonic booms, impact pile driving) are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (ANSI 1986; NIOSH 1998; ANSI 2005; NMFS 2018a). Non-impulsive sounds (*e.g.,* aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems) can be broadband, narrowband or tonal, brief or prolonged (continuous or intermittent), and typically do not have the high peak sound pressure with raid rise/decay time that impulsive sounds do (ANSI 1995; NIOSH 1998; NMFS 2018a). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.,* Ward 1997 in Southall *et al.* 2007).

Two types of pile hammers would be used on this project: Impact and vibratory. Impact hammers operate by repeatedly dropping a heavy piston onto a pile to drive the pile into the substrate. Sound generated by impact hammers is 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 produce significantly less sound than impact hammers. Peak sound pressure levels (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). Rise time is slower, reducing the probability and severity of injury, and 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 Navy's proposed activity 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, any impacts to marine mammals are expected to primarily be acoustic in nature. Acoustic stressors include effects of heavy equipment operation during pile installation and removal.

*Acoustic Impacts*

The introduction of anthropogenic noise into the aquatic environment from pile driving and removal is the primary means by which marine mammals may be harassed from the Navy'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). In general, exposure to pile driving and removal 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 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 and removal 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 and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.,* how an 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).

*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). 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)*—TTS is 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 cetacean TTS measurements (see Southall *et al.* 2007), 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 (Schlundt *et al.* 2000; Finneran *et al.* 2000, 2002). As described in Finneran (2015), marine mammal studies have shown the amount of TTS increases with cumulative sound exposure level (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.

Currently, TTS data only exist for four species of cetaceans (bottlenose dolphin, beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiaeorientalis*)) and five species of pinnipeds exposed to a limited number of sound sources (*i.e.,* mostly tones and octave-band noise) in laboratory settings (Finneran 2015). TTS was not observed in trained spotted (*Phoca largha*) and ringed (*Pusa hispida*) seals exposed to impulsive noise at levels matching previous predictions of TTS onset (Reichmuth *et al.* 2016). In general, harbor seals and harbor porpoises have a lower TTS onset than other measured pinniped or cetacean species (Finneran 2015). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species. No data are available on noise-induced hearing loss for mysticetes. For summaries of data on TTS in marine mammals or for further discussion of TTS onset thresholds, please see Southall *et al.* (2007), Finneran and Jenkins (2012), Finneran (2015), and Table 5 in NMFS (2018). Installing piles requires a combination of impact pile driving and vibratory pile driving. For this project, these activities would not occur at the same time and there would be pauses in activities producing the sound during each day. Given these pauses and that many marine mammals are likely moving through the ensonified area and not remaining for extended periods of time, the potential for TS declines.

*Behavioral Harassment*—Exposure to noise from pile driving and removal also has the potential to behaviorally disturb marine mammals. 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 & Bejder 2007; Weilgart 2007; NRC 2005).

Disturbance may result in changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke 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.* 2003; Southall *et al.,* 2007; Weilgart 2007; Archer *et al,.* 2010). 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). In general, pinnipeds seem more tolerant of, or at least habituate more quickly to, potentially disturbing underwater sound than do cetaceans, and generally seem to be less responsive to exposure to industrial sound than most cetaceans. Please see Appendices B–C of Southall *et al.* (2007) for a review of studies involving marine mammal behavioral responses to sound.

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.

*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.,* Seyle 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, 2003), however distress is an unlikely result of this project based on observations of marine mammals during previous, similar projects in the area.

*Masking*—Sound can disrupt behavior through masking, or interfering 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). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.,* snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.,* pile driving, shipping, sonar, seismic exploration) in origin. 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. Masking of natural sounds can result when human activities produce high levels of background sound at frequencies important to marine mammals. Conversely, if the background level of underwater sound is high (*e.g.,* on a day with strong wind and high waves), an anthropogenic sound source would not be detectable as far away as would be possible under quieter conditions and would itself be masked.

*Airborne Acoustic Effects*—Pinnipeds that occur near the project site could be exposed to airborne sounds associated with pile driving and removal that have the potential to cause behavioral harassment, depending on their distance from pile driving activities. Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA.

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 exceeding the acoustic thresholds. 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, authorization of incidental take resulting from airborne sound for pinnipeds is not warranted, and airborne sound is not discussed further here.

*Marine Mammal Habitat Effects*

The Navy's construction activities could have localized, temporary impacts on marine mammal habitat by increasing in-water sound pressure levels and slightly decreasing water quality. Construction activities are of short duration and would likely have temporary impacts on marine mammal habitat through increases in underwater sound. Increased noise levels may affect acoustic habitat (see masking discussion above) and adversely affect marine mammal prey in the vicinity of the project area (see discussion below). During impact and vibratory pile driving, elevated levels of underwater noise would ensonify Hood Canal where both fish and mammals may occur and could affect foraging success. Additionally, marine mammals may

avoid the area during construction, however, displacement due to noise is expected to be temporary and is not expected to result in long-term effects to the individuals or populations.

A temporary and localized increase in turbidity near the seafloor would occur in the immediate area surrounding the area where piles are installed (and removed in the case of the temporary piles). The sediments on the sea floor will be disturbed during pile driving; however, suspension will be brief and localized and is unlikely to measurably affect marine mammals or their prey in the area. In general, turbidity associated with pile installation is localized to about a 25–foot (7.6–meter) radius around the pile (Everitt *et al.* 1980). Cetaceans are not expected to be close enough to the pile driving areas to experience effects of turbidity, and any pinnipeds could avoid localized areas of turbidity. Therefore, we expect the impact from increased turbidity levels to be discountable to marine mammals and do not discuss it further.

*In-Water Construction Effects on Potential Foraging Habitat*

The proposed activities would not result in permanent impacts to habitats used directly by marine mammals except for the actual footprint of the project. 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 in Hood Canal.

Avoidance by potential prey (*i.e.,* fish) of the immediate area due to the temporary loss of this foraging habitat is also possible. The duration of fish avoidance of this area after pile driving stops is unknown, but we anticipate a rapid return to normal recruitment, distribution and behavior. Any behavioral avoidance by fish of the disturbed area would still leave large areas of fish and marine mammal foraging habitat in the nearby vicinity in Hood Canal.

*Effects on Potential Prey*

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.,* fish). Marine mammal prey varies by species, season, and location. Here, we describe studies regarding the effects of noise on known marine mammal prey.

Fish 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 which are especially strong and/or intermittent low-frequency sounds, and behavioral responses such as flight or avoidance are the most likely effects. 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 fish, although several are based on studies in support of large, multiyear bridge construction projects (*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.,* Pena *et al.,* 2013; Wardle *et al.,* 2001; Jorgenson and Gyselman, 2009; Cott *et al.,* 2012).

SPLs of sufficient strength have been known to cause injury to fish and fish mortality. 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.* (2012a) 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.,* 2012b; Casper *et al.,* 2013).

The most likely impact to fish from pile driving activities at the project areas would be temporary behavioral avoidance of the area. The duration of fish avoidance of an area after pile driving stops is unknown, but a rapid return to normal recruitment, distribution and behavior is anticipated.

The area impacted by the project is relatively small compared to the available habitat in the remainder of Hood Canal. 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. Additionally, as noted previously, the Navy will adhere to the IWWW for pile extraction and installation (July 16 to January 15) to reduce potential effects to salmonids, including juvenile ESA-listed salmonids. As described in the preceding, the potential for the Navy'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**

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

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 primarily be by Level B harassment, as use of the acoustic sources (*i.e.,* vibratory and impact pile driving) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result, primarily for phocids, because predicted auditory injury zones are larger than for mid-frequency cetaceans and otariids, and Navy expects that protected species observers (PSOs) will not be able to effectively observe the entire Level A harassment zone due to

the numerous docks in the area. Auditory injury is unlikely to occur for mid-frequency cetaceans, high-frequency cetaceans, and otariids. The proposed mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable.

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

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) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of 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 estimate.

*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 for non-explosive sources*—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 (*e.g.,* frequency, predictability, duty cycle), the environment (*e.g.,* bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.,* 2007, Ellison *et al.,* 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 dB re 1 µPa (rms) for continuous (*e.g.,* vibratory pile-driving, drilling) and above 160 dB re 1 µPa (rms) for non-explosive impulsive (*e.g.,* seismic airguns) or intermittent (*e.g.,* scientific sonar) sources.

Navy's proposed activity includes the use of continuous (vibratory pile driving) and impulsive (impact pile driving) sources, and therefore the 120 and 160 dB re 1 µPa (rms) thresholds are applicable.

*Level A harassment for non-explosive sources*—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). Navy's proposed activity includes the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving) sources.

These thresholds are provided in the table 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 *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.*

TABLE 5—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 µPa, and cumulative sound exposure level ($L_E$) has a reference value of 1µPa$^2$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 will feed into identifying the area ensonified above the acoustic thresholds, which include 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 driving and removal). The largest calculated Level B harassment zone is 11.7 km (7.3 mi) from the

source, with an area of 49.1 $km^2$ (18.9 $mi^2$).

The source levels were derived from the Navy's document titled ''Proxy Source Sound Levels and Potential Bubble Curtain Attenuation for Acoustic Modeling of Nearshore Marine Pile Driving at Navy Installations in Puget Sound'' (Navy 2015a). In that document, the Navy reviewed relevant data available for various types and sizes of piles typically used for pile driving and recommend proxy source values for Navy installations in Puget Sound. This document is included as Appendix B in the Navy's application. Source levels for each pile size and activity are presented in Table 6.

The Navy will implement bubble curtains (*e.g.* pneumatic barrier typically comprised of hosing or PVC piping that disrupts underwater noise propagation; see Proposed Mitigation section below) during impact pile driving, with the possible exception of short periods when the device is turned off to test the effectiveness of the noise attenuation device. We have reduced the source level for these activities by 8 dB in consideration of site-specific measurements of source level reduction with use of bubble curtains (Navy, 2015). These reductions ranged from 8 dB to 10 dB. In their analysis, the Navy averaged different metrics for the same pile size. NMFS independently calculated the average source level reduction, averaging reductions of the same metric (ex: SPLrms) reported for both 36-in and 48-in piles. As such, NMFS calculated an SEL reduction of 8.5 dB, an SPLrms reduction of 8 dB, and an SPLpk reduction of 10 dB. Therefore, given that the site-specific 8 dB reduction proposed by the Navy is the same or lower than the result of NMFS's site-specific calculation, NMFS preliminarily accepted Navy's proposal to use an 8 dB reduction during impact pile driving.

TABLE 6—PROJECT SOUND SOURCE LEVELS (NAVY, 2015)

| Pile type and size | Installation method | Source level @10m | | |
|---|---|---|---|---|
| | | dB RMS | dB Peak | dB SEL |
| 36-inch Steel | Impact | [a] 194 | [a] 211 | [a] 181 |
| 24-inch Steel | Vibratory | 161 | | |
| 30-inch Steel | | | | 166 |
| 36-inch Steel | | | | 166 |

[a] Unattenuated.

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:

$TL = B * Log_{10} (R_1/R_2)$,

where

TL = transmission loss in dB
B = transmission loss coefficient
$R_1$ = the distance of the modeled SPL from the driven pile, and
$R_2$ = the distance from the driven pile of the initial measurement

Absent site-specific acoustical monitoring with differing measured transmission loss, a practical spreading value of 15 is used as the transmission loss coefficient in the above formula. Site-specific transmission loss data for the TPP pier site are not available, therefore the default coefficient of 15 is used to determine the distances to the Level A and Level B harassment thresholds.

When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as pile driving, NMFS User Spreadsheet predicts the distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would incur PTS. Inputs used in the User Spreadsheet, and the resulting isopleths are reported below.

TABLE 7—USER SPREADSHEET INPUT PARAMETERS USED FOR CALCULATING LEVEL A HARASSMENT ISOPLETHS

| Pile size and installation method | Spreadsheet tab used | Weighting factor adjustment (kHz) | Source level | Number of piles within 24-h period | Duration to drive a single pile (minutes) | Number of strikes per pile | Propagation (xLogR) | Distance from source level measurement (meters) |
|---|---|---|---|---|---|---|---|---|
| 36-inch Steel-Impact. | E.1) Impact pile driving. | 2 | 173 dB SEL[a]. | 4 | 30 | 400 | 15 | 10 |
| 24-inch Steel-Vibratory. | A.1) Vibratory pile driving. | 2.5 | 161 dB RMS. | [b] 5 | 60 | | | |
| 30-inch Steel-Vibratory. | | | 166 dB RMS | | | | | |
| 36-inch Steel-Vibratory. | | | 166 dB RMS | | | | | |

[a] This source level includes an 8dB reduction from the use of a bubble curtain.
[b] The Navy expects to install only 4 piles per day using a vibratory hammer; however, for purposes of calculating the Level A harassment zones, they have conservatively assumed that they may install 5 piles per day.

TABLE 8—CALCULATED DISTANCES TO LEVEL A AND LEVEL B HARASSMENT ISOPLETHS

| Pile type and size | Installation method | Distance to level A harassment isopleth (m) | | | | | Distance to level B harassment isopleth (m) |
|---|---|---|---|---|---|---|---|
| | | LF cetacean | MF cetacean | HF cetacean | Phocid | Otariid | |
| 36-inch Steel | Impact | 294 (1m pk) | 11 | 351 (14m pk) | 158 (1m pk) | 12 | 541 |
| 24-inch Steel | Vibratory | 20 | 2 | 30 | 12 | 1 | 5,400 |
| 30-inch Steel | | 43 | 4 | 64 | 26 | 2 | 11,700 |
| 36-inch Steel | | 43 | 4 | 64 | 26 | 2 | 11,700 |

*Marine Mammal Occurrence and Take Calculation and Estimation*

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations. We describe how the information provided above is brought together to produce a quantitative take estimate.

Killer Whale

Transient killer whales occasionally occur throughout Puget Sound but are rare in Hood Canal. In Puget Sound, they are typically observed in small groups with an average group size of six individuals (Houghton, 2012). Based on this Puget Sound average, the Navy estimated that two groups of six whales may occur within the Level B harassment zone during construction each year, and has requested 12 Level B harassment takes of killer whale for Year 1 and Year 2. NMFS concurs with this estimate, and proposes to authorize 12 Level B harassment takes of killer whale in each year. Given the estimated number of construction days in Year 2 (10 days), NMFS expects that 12 Level B harassment takes is a conservative estimate for Year 2, but is appropriate given that it accounts for the occurrence of just two groups.

The largest Level A harassment zone for mid-frequency cetaceans extends 11 m from the source during impact pile driving of 36-inch steel piles (Table 8). Given the small size of the Level A harassment zones, we would not expect Level A harassment take of killer whales to occur. Additionally, the Navy is planning to implement a 355 m shutdown zone for all cetaceans during that activity (Table 10). These shutdown zones are expected to eliminate the potential for Level A harassment take of killer whale. Therefore, NMFS does not propose to authorize Level A harassment take of killer whale in Year 1 or Year 2.

Harbor Porpoise

Harbor porpoises may be present in all major regions of Puget Sound throughout the year. Aerial surveys conducted throughout 2013 to 2015 in Puget Sound indicated density in Puget Sound was 0.91 individuals/sq km) (95 percent CI = 0.72–1.10, all seasons pooled) and density in Hood Canal was 0.44/sq km (95 percent CI = 0.29–0.75, all seasons pooled) (Smultea *et al.,* 2017). Mean group size of harbor porpoises in Puget Sound in the 2013–2015 surveys was 1.7 in Hood Canal.

In consideration of the harbor porpoise take estimate, the Navy conservatively assumed that vibratory installation of 36-inch piles would occur on every in-water work day, given that that activity resulted in the largest Level B harassment zone. The Navy estimated Level B harassment takes of harbor porpoise by multiplying the 0.44 animals/km$^2$ by 49.1 km$^2$ (estimated Level B harassment zone during vibratory driving of 36-inch piles) by the number of in-water workdays during each year. Therefore, during Year 1, the Navy estimated 1,728 Level B harassment takes (0.44 animals/km$^2$ × 49.1km$^2$ × 80 days). During Year 2, the Navy estimated 216 Level B harassment takes (0.44 animals/km$^2$ × 49.1 km$^2$ × 10 days). NMFS concurs with this approach, and proposes to authorize 1,728 Level B harassment takes of harbor porpoise in Year 1, and 216 Level B harassment takes of harbor porpoise in Year 2.

The largest Level A harassment zone for high-frequency cetaceans extends 351 m from the source during impact pile driving of 36-inch steel piles (Table 8). The Navy is planning to implement a 355 m shutdown zone for all cetaceans during that activity (Table 10), which incorporates the entire Level A harassment zone, and the 14 m peak PTS isopleth (Table 8). Therefore, the shutdown zones are expected to eliminate the potential for Level A harassment take of harbor porpoise, and NMFS does not propose to authorize Level A harassment take of harbor porpoise.

Steller Sea Lion

Steller sea lions are routinely seen hauled out from mid-September through May on submarines at Naval Base Kitsap Bangor, with a maximum haulout count of 15 individuals in November 2018. Because the daily average number of Steller sea lions hauled out at Kitsap Bangor has increased since 2013 compared to prior years, the Navy relied on monitoring data from July 2012 through February 2019 to determine the average of the maximum count of hauled out Steller sea lions for each month in the IWWW (Navy, 2016, 2019). While pinnipeds may haul out longer than the period required for pile driving, therefore not being exposed to underwater sound, the Navy conservatively assumed that any Steller sea lion that hauls out at Kitsap Bangor may enter the Level B harassment zone each day during pile driving.

For each in-water work month, the Navy averaged the maximum number of hauled out Steller sea lions observed in a single survey at Kitsap Bangor during that month for each year (2008 to 2019; see Appendix A of the Navy's application). The Navy then averaged these monthly averages across the entire in-water work period, resulting in a maximum average of four Steller sea lions hauled out per day. The Navy assumed that each of these animals may enter the Level B harassment zone on each in-water work day. Therefore, the Navy requested 320 Level B harassment takes of Steller sea lion in Year 1 (4 Steller sea lions × 80 in-water work days), and 40 Level B harassment takes of Steller sea lions during Year 2 (4 Steller sea lions × 10 in-water work days). NMFS concurs with this approach and proposes to authorize 320 Level B harassment takes of Steller sea lion during Year 1, and 40 Level B harassment takes of Steller sea lion during Year 2.

The largest Level A harassment zone for otariids extends 11 m from the source during impact pile driving of 36-inch steel piles (Table 8). Given the small size of the Level A harassment zones, we would not expect Level A harassment take of Steller sea lion to occur. Additionally, the Navy is planning to implement a 15m shutdown zone during that activity (Table 10). The Navy's shutdown zones are expected to eliminate the potential for Level A

harassment take of Steller sea lion. Therefore, NMFS does not propose to authorize Level A harassment take of Steller sea lion.

California sea lion

From August through June, California sea lions routinely haul out on the PSB floats and submarines at Kitsap Bangor. For each in-water work month, the Navy averaged the maximum number of hauled out California sea lions observed in a single survey at Kitsap Bangor during that month for each year (2008 to 2019; see Appendix A of the Navy's application). The Navy then averaged these monthly averages across the entire in-water work period, resulting in a maximum average of 54 California sea lions hauled out per day. The daily average number of California sea lions hauled out at Kitsap Bangor has increased since 2013 compared to prior years. Therefore, the Navy relied on monitoring data from July 2012 through February 2019 to determine the average of the maximum count (Navy, 2016, 2019).

While pinnipeds may haul out longer than the period required for pile driving, therefore not being exposed to underwater sound, the Navy conservatively assumed that any California sea lion hauled out at Kitsap Bangor may swim into the Level B harassment zone on each pile driving day. Therefore, the Navy requested 4,320 Level B harassment takes of California sea lion in Year 1 (54 California sea lions × 80 in-water work days), and 540 Level B harassment takes of California sea lions during Year 2 (54 California sea lions × 10 in-water work days). NMFS concurs with this approach and proposes to authorize 4,320 Level B harassment takes of California sea lion during Year 1, and 540 Level B harassment takes of California sea lion during Year 2.

The largest Level A harassment zone for otariids extends 11 m from the source during impact pile driving of 36-inch steel piles (Table 8). Given the small size of the Level A harassment zones, we would not expect Level A harassment take of California sea lion to occur. Additionally, the Navy is planning to implement a 15 m shutdown zone during that activity (Table 10). The Navy's shutdown zones are expected to eliminate the potential for Level A harassment take of California sea lion. Therefore, NMFS does not propose to authorize Level A harassment take of California sea lion.

Harbor Seal

The harbor seal is the only species of marine mammal that is consistently abundant and considered resident in Hood Canal (Jeffries *et al.,* 2003). The closest major haulouts to Kitsap Bangor that are regularly used by harbor seals are the mouth of the Dosewallips River located approximately 13.2 km (8.2 mi) away. No harbor seal haulouts were seen on the shoreline opposite Kitsap Bangor (the east-side of the Toandos Peninsula) during 2015 and 2016 beach seine surveys. A small haulout occurs at Kitsap Bangor under Marginal Wharf and small numbers of harbor seals are known to routinely haul out around the Carderock pier (see Figure 1–2 of the Navy's application). Boat-based surveys and monitoring indicate that harbor seals regularly swim in the waters at Kitsap Bangor. Hauled out adults, mother/pup pairs, and neonates have been documented occasionally but quantitative data are limited. Incidental surveys in August and September 2016 recorded as many as 28 harbor seals hauled out under Marginal Wharf or swimming in adjacent waters. Assuming a few other individuals may be present elsewhere on the Kitsap Bangor waterfront, the Navy estimates that 35 harbor seals may be present during summer and early fall months. Based on haulout survey data from Naval Station Everett (Navy, 2016), the number of harbor seals present at Kitsap Bangor is likely to be lower in late fall and winter months.

The Navy conservatively assumed that each of the estimated 35 harbor seals may occur within the Level B harassment zone on each pile driving day. Therefore, the Navy requested 2,800 Level B harassment takes of harbor seal in Year 1 (35 harbor seals × 80 in-water work days), and 350 Level B harassment takes of harbor seal during Year 2 (35 harbor seals × 10 in-water work days). NMFS concurs with this approach and proposes to authorize 2,800 Level B harassment takes of harbor seal during Year 1, and 350 Level B harassment takes of harbor seal during Year 2.

The largest Level A harassment zone for phocids during Year 1 extends 158 m during impact installation of 36-inch steel piles (Table 8). The Navy is planning to implement a 160 m shutdown zone during that activity (Table 10), which incorporates the entire Level A harassment zone, and the 1 m peak PTS isopleth (Table 8). However, the Navy estimates that some harbor seals may enter, and remain inside the Level A harassment zone undetected by PSOs for a period long enough to be taken by Level A harassment during Year 1. NMFS concurs, and proposes to authorize 20 Level A harassment takes of harbor seal in Year 1 (1 harbor seal for every 4 in-water work days).

During Year 2, the largest Level A harassment zone for phocids extends 26 m from the source during vibratory pile driving of 30 and 36-inch steel piles, as no impact pile driving is planned for Year 2. The Navy expects to be able to effectively monitor this zone and implement a 30 m shutdown zone. Therefore, the Navy does not expect Level A harassment take to occur during Year 2. NMFS concurs that the Navy's shutdown zones are expected to eliminate the potential for Level A harassment take of harbor seal in Year 2, and does not propose to authorize Level A harassment take of harbor seal in Year 2.

TABLE 9—ESTIMATED TAKE BY LEVEL A AND LEVEL B HARASSMENT, BY SPECIES AND STOCK

| Species | Stock | Stock Abundance | Year 1 | | | Year 2 | |
|---|---|---|---|---|---|---|---|
| | | | Level A harassment take | Level B harassment take | Total take (percent of stock) | Level B harassment take (percent of stock) | Total take (percent of stock) |
| Killer whale ..... | West Coast Transient. | 243 ..... | 0 | 12 | 12 (4.9) ..... | 12 | 12 (4.9) |
| Harbor porpoise .... | Washington Inland Waters. | 11,233 ..... | | 1,728 | 1,728 (15.4) ... | 216 | 216 (1.9) |
| Steller sea lion ..... | Eastern U.S. ..... | 43,201 ..... | | 320 | 320 (0.7) ..... | 40 | 40 (0.1) |
| California sea lion | United States ..... | 257,606 ..... | | 4,320 | 4,320 (1.7) ..... | 540 | 540 (0.2) |

TABLE 9—ESTIMATED TAKE BY LEVEL A AND LEVEL B HARASSMENT, BY SPECIES AND STOCK—Continued

| Species | Stock | Stock Abundance | Year 1 | | | Year 2 | |
|---|---|---|---|---|---|---|---|
| | | | Level A harassment take | Level B harassment take | Total take (percent of stock) | Level B harassment take (percent of stock) | Total take (percent of stock) |
| Harbor seal ..... | Washington Inland Waters, Hood Canal. | Unknown ..... | 20 | 2,800 | 2,820 (Unknown). | 350 | 350 (Unknown) |

**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, we carefully consider 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, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

In addition to the measures described later in this section, the Navy will employ the following mitigation measures:

- For in-water heavy machinery work other than pile driving, if a marine mammal comes within 10 m, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions;
- Conduct briefings between construction supervisors and crews and the marine mammal monitoring team prior to the start of all pile driving activity and when new personnel join the work, to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures;
- For those marine mammals for which Level B harassment take has not been requested, in-water pile installation/removal will shut down immediately if such species are observed within or entering the Level B harassment zone; and
- If take reaches the authorized limit for an authorized species, pile installation/removal will shut down immediately if these species approach the Level B harassment zone to avoid additional take.

The following mitigation measures apply to the Navy's in-water construction activities.

- *Establishment of Shutdown Zones*—The Navy will establish shutdown zones for all pile driving and removal activities. 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). Shutdown zones will vary based on the activity type and marine mammal hearing group (Table 10). In addition to the shutdown zones listed in Table 10, the Navy has proposed to shut down pile driving if a cetacean is observed within the Level B harassment zone.
- *PSOs*—The placement of PSOs during all pile driving and removal activities (described in detail in the Proposed Monitoring and Reporting section) will ensure that the entire shutdown zone is visible during pile driving and removal (except where structures may interfere with visibility of harbor seals). Should environmental conditions deteriorate such that marine mammals within the entire shutdown zone would not be visible (*e.g.,* fog, heavy rain), pile driving and removal must be delayed until the PSO is confident marine mammals within the shutdown zone could be detected.

TABLE 10—SHUTDOWN ZONES DURING PILE INSTALLATION AND REMOVAL

| | Cetaceans (m) | Phocids (m) | Otariids (m) |
|---|---|---|---|
| All Vibratory Pile Driving ..... | 65 | 30 | 10 |
| All Impact Pile Driving ..... | 355 | 160 | 15 |

- *Monitoring for Level A and Level B Harassment*—The Navy will monitor the Level B harassment zones (areas where SPLs are equal to or exceed the 160 dB rms threshold for impact driving and the 120 dB rms threshold during vibratory pile driving) to the extent practicable and the Level A harassment zones. Monitoring zones provide utility

for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project area outside the shutdown zone and thus prepare for a potential cessation of activity should the animal enter the shutdown zone. Placement of PSOs on the pier, shoreline, and a vessel (see Proposed Monitoring and Reporting) around the TPP site will allow PSOs to observe marine mammals within the Level B harassment zones.

- *Pre-activity Monitoring*—Prior to the start of daily in-water construction activity, or whenever a break in pile driving/removal of 30 minutes or longer occurs, PSOs will observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone will be considered cleared when a marine mammal has not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zone, a soft-start cannot proceed until the animal has left the zone or has not been observed for 15 minutes. When a marine mammal for which Level B harassment take is authorized is present in the Level B harassment zone, activities may begin and Level B harassment take will be recorded. If the entire Level B harassment zone is not visible at the start of construction, pile driving activities can begin. If work ceases for more than 30 minutes, the pre-activity monitoring of the shutdown zones will commence.
- *Soft Start*—Soft-start procedures are believed 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, contractors will be required to provide an initial set of three strikes from the hammer at reduced energy, followed by a 30-second waiting period. This procedure will be conducted three times before impact pile driving begins. Soft start will 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.
- *Pile driving energy attenuator*—The Navy will use a marine pile-driving energy attenuator (*i.e.,* air bubble curtain system) during impact pile driving. The use of sound attenuation will reduce SPLs and the size of the zones of influence for Level A harassment and Level B harassment. Bubble curtains will meet the following requirements:
  - The bubble curtain must distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column.
  - The lowest bubble ring shall be in contact with the mudline for the full circumference of the ring, and the weights attached to the bottom ring shall ensure 100 percent mudline contact. No parts of the ring or other objects shall prevent full mudline contact.
  - The bubble curtain shall be operated such that there is proper (equal) balancing of air flow to all bubblers.

Based on our evaluation of the Navy's proposed measures, NMFS has preliminarily determined that the proposed mitigation measures provide the means 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 in the proposed action area. 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 action; 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).
- Mitigation and monitoring effectiveness.

*Visual Monitoring*

Marine mammal monitoring must be conducted in accordance with the Marine Mammal Monitoring Plan. Marine mammal monitoring during pile driving and removal must be conducted by NMFS-approved PSOs in a manner consistent with the following:

- Independent PSOs (*i.e.,* not construction personnel) who have no other assigned tasks during monitoring periods must be used;
- Where a team of three or more PSOs are required, a lead observer or monitoring coordinator must be designated. The lead observer must have prior experience working as a marine mammal observer during construction;
- Other PSOs may substitute education (degree in biological science or related field) or training for experience; and
- The Navy must submit PSO curriculum vitae for approval by NMFS prior to the onset of pile driving.

PSOs must 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.
- 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.

At least two PSOs will monitor for marine mammals during all pile driving and removal activities. PSO locations will provide a view of the entire shutdown zone for all activities, other than areas where structures may potentially block limited portions of the zone, and as much of the Level B harassment zones as possible. PSO locations are as follows:

i. During vibratory pile driving, two PSOs will be stationed on the pier or shore.

ii. During impact pile driving, two PSOs will be stationed on the pier, and one additional PSO will observe from a vessel positioned approximately 200 m from shore.

Monitoring will be conducted 30 minutes before, during, and 30 minutes after pile driving/removal activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall 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*

A draft marine mammal monitoring report will be submitted to NMFS within 90 days after the completion of pile driving and removal activities. The report will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report must include:

- Dates and times (begin and end) of all marine mammal monitoring.
- Construction activities occurring during each daily observation period, including how many and what type of piles were driven or removed and by what method (*i.e.,* impact or vibratory).
- Weather parameters and water conditions during each monitoring period (*e.g.,* wind speed, percent cover, visibility, sea state).
- The number of marine mammals observed, by species, relative to the pile location and if pile driving or removal was occurring at time of sighting.
- Age and sex class, if possible, of all marine mammals observed.
- PSO locations during marine mammal monitoring.
- Distances and bearings of each marine mammal observed to the pile being driven or removed for each sighting (if pile driving or removal was occurring at time of sighting).
- Description of any marine mammal behavior patterns during observation, including direction of travel and estimated time spent within the Level A and Level B harassment zones while the source was active.
- Number of individuals of each species (differentiated by month as appropriate) detected within the monitoring zone, and estimates of number of marine mammals taken, by species (a correction factor may be applied to total take numbers, as appropriate).
- Detailed information about any implementation of any mitigation triggered (*e.g.,* shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal, if any.
- Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals.

If no comments are received from NMFS within 30 days, the draft report will constitute the final report. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the IHA-holder shall report the incident to the Office of Protected Resources (OPR) (301–427–8401), NMFS and to the West Coast Region Stranding Hotline (866–767–6114) as soon as feasible. If the death or injury was clearly caused by the specified activity, the IHA-holder must immediately cease the specified activities until NMFS 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 the IHA. The IHA-holder must not resume their activities until notified by NMFS.

The report must include the following information:

i. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);

ii. Species identification (if known) or description of the animal(s) involved;

iii. Condition of the animal(s) (including carcass condition if the animal is dead);

iv. Observed behaviors of the animal(s), if alive;

v. If available, photographs or video footage of the animal(s); and

vi. 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 responses (*e.g.,* intensity, duration), the context of any responses (*e.g.,* critical reproductive time or location, migration), 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's 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 environmental 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, this introductory discussion of our analyses applies to all of 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 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. The analysis below applies to both the Year 1 and Year 2 proposed IHAs, except where noted otherwise.

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 A harassment and Level B harassment from underwater sounds generated by pile driving and removal. Potential takes

could occur if marine mammals are present in zones ensonified above the thresholds for Level A or Level B harassment, identified above, while activities are underway.

The nature of the pile driving project precludes the likelihood of serious injury or mortality. The mitigation is expected to ensure that no Level A harassment occurs to any species except harbor seal, which may be taken by Level A harassment during Year 1 activities. The nature of the estimated takes anticipated to occur are similar among all species and similar in Year 1 and Year 2, other than the potential Level A harassment take of harbor seal in Year 1, described further below.

For all species and stocks, take will occur within a limited portion of Hood Canal, and for the Hood Canal stock of harbor seals, the project site is approximately 13.2 km (8.2 mi) away from the nearest major haulout at the mouth of the Dosewallips River. For all species other than harbor seal, take would be limited to Level B harassment only due to potential behavioral disturbance and TTS. 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, will 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). Level B harassment will be reduced to the level of least practicable adverse impact through use of mitigation measures described herein, and, if sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the area while the activity is occurring. While vibratory driving associated with the proposed project may produce sound at distances of many kilometers from the project site, the project site itself is located on a busy waterfront with high amounts of vessel traffic. Therefore, we expect that animals disturbed by project sound would simply avoid the area and use more-preferred habitats, particularly as pile driving is expected to occur for a maximum of five hours per day. Further, the instances of take proposed for authorization for killer whale West Coast Transient stock, harbor porpoise Washington Inland Waters stock, Steller sea lion Eastern U.S. stock, and California sea lion United States stock is small when compared to stock abundance.

In addition to the expected effects resulting from proposed Level B harassment, we anticipate that harbor seals may sustain some Level A harassment in the form of auditory injury in Year 1 only. However, animals that experience PTS would likely only receive slight PTS, *i.e.,* minor degradation of hearing capabilities within regions of hearing that align most completely with the frequency range of the energy produced by pile driving (*i.e.,* the low-frequency region below 2kHz), not severe hearing impairment or impairment in the reigns of greatest hearing sensitivity. If hearing impairment does occur, it is most likely that the affected animal would lose a few dBs in its hearing sensitivity, which in most cases, is not likely to meaningfully affect its ability to forage and communicate with conspecifics. As described above, we expect that marine mammals would be likely to move away from a sound source that represents an aversive stimulus, especially at levels that would be expected to result in PTS, given sufficient notice through use of soft start.

As noted above in the Description of Marine Mammals in the Area of Specified Activities, the Navy has identified a few observations of harbor seal births at Kitsap Bangor. However, Kitsap Bangor is not a significant rookery area; observation of these births are very rare, and only a few have been reported. The closest major haulouts to Kitsap Bangor that are regularly used by harbor seals are at the mouth of the Dosewallips River, located approximately 13.2 km (8.2 mi) away. Given the rarity of harbor seal births at Kitsap Bangor and the maximum of five hours of pile driving anticipated in a day, we do not expect harbor seals to give birth in the TPP project area while the project is underway.

The project is also not expected to have significant adverse effects on affected marine mammals' habitats. The project activities will 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; but, because of the short duration of the activities and the relatively small area of the habitat that may be affected, the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences.

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 the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or authorized.
- For all species except harbor seal, no Level A harassment is anticipated or proposed for authorization.
- The Level A harassment exposures are anticipated to result only in slight PTS, within the lower frequencies associated with pile driving for harbor seals only;
- The intensity of anticipated takes by Level B harassment is relatively low for all stocks.
- Pile driving is only expected to occur for a maximum of five hours in a day.
- We do not expect significant or long-term negative effects to marine mammal habitat.

*Year 1 IHA*—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 Navy's construction activities will have a negligible impact on all affected marine mammal species or stocks.

*Year 2 IHA*—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 Navy's construction activities will have a negligible impact on all affected marine mammal species or stocks.

**Small Numbers**

As noted above, only small numbers of incidental take 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.

For the Washington Inland Waters, Hood Canal stock of harbor seal, no

valid abundance estimate is available. The most recent abundance estimate for harbor seals in Washington inland waters is from 1999, which estimated 1,088 harbor seals in the Washington Inland Waters, Hood Canal stock. It is generally believed that harbor seal populations have increased significantly since (*e.g.,* Mapes, 2013). The estimated instances of take of the Washington Inland Waters, Hood Canal stock of harbor seals in Year 1 (Table 9) appear high when compared to the latest stock abundance from 1999. However, when other qualitative factors are used to inform an assessment of the likely number of individual harbor seals taken, the resulting numbers are considered small in Year 1 and Year 2.

We anticipate that estimated takes of harbor seals are likely to occur only within some portion of the relevant population, rather than to animals from the stock as a whole. For example, takes anticipated to occur at Kitsap Bangor would be expected to accrue to the same individual seals that routinely occur on haulouts at these locations, rather than occurring to new seals on each construction day. In summary, harbor seals taken as a result of the specified activities are expected to comprise only a limited portion of individuals comprising the overall relevant stock abundance. Therefore, we find that small numbers of harbor seals will be taken relative to the population size of the Hood Canal stock of harbor seal in Year 1 and Year 2.

For all other species and stocks, our analysis shows that, in Year 1 and Year 2, take of all species or stocks is below one third of the estimated stock abundance. The number of animals authorized to be taken for the killer whale West Coast Transient stock, harbor porpoise Washington Inland Waters stock, Steller sea lion Eastern U.S. stock, and California sea lion United States stock, 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.

*Year 1 IHA*—Based on the analysis contained herein of the activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks in Year 1 of the project.

*Year 2 IHA*—Based on the analysis contained herein of the activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks in Year 2 of the project.

**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 Endangered Species Act of 1973 (ESA: 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 Navy for conducting the Transit Protection Program Pier and Support Facilities Project at Naval Base Kitsap Bangor in Silverdale, Washington over two years, beginning July 2021 and July 2022, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. Drafts of the proposed IHAs can be found at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.*

**Request for Public Comments**

We request comment on our analyses, the proposed authorizations, and any other aspect of this notice of proposed IHAs for the proposed Transit Protection Program Pier and Support Facilities Project. We also request at this time comment on the potential Renewal of these proposed IHAs 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 these IHAs or subsequent Renewal IHAs.

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).
- 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).

(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: August 5, 2020.

**Donna S. Wieting,**

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

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