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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XA499]

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; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued two incidental harassment authorizations (IHAs) to the U.S. Navy (Navy) to incidentally harass, by Level A and Level B harassment only, marine mammals during construction activities associated with the Transit Protection Program Pier and Support Facilities Project at Naval Base Kitsap Bangor in Silverdale, Washington over two years.

DATES: These authorizations are effective from July 16, 2021 to January 15, 2022, and July 16, 2022 to January 15, 2023, respectively.

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.

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 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 the Specified Activity

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. The Navy anticipates that construction for the TPP project, including vibratory and impact pile driving and vibratory pile removal, will occur over two years. The IHAs are 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 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.

A detailed description of the planned construction project is provided in the **Federal Register** notice for the proposed IHAs (85 FR 48206; August 10, 2020). Since that time, no changes have been made to the planned construction activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity.

Comments and Responses

A notice of NMFS' proposal to issue IHAs to the Navy was published in the **Federal Register** on August 10, 2020 (85 FR 48206). That notice described, in detail, the Navy's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals, their habitat, planned amount and manner of take, and planned mitigation, monitoring and reporting measures. During the 30-day public comment period, NMFS received a comment letter from the Marine Mammal Commission (Commission); the Commission's recommendations and our responses are provided here, and the comments have been posted online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*. Please see the Commission's letter for full detail regarding justification for their recommendations.

Comment 1: The Commission noted that NMFS reanalyzed bubble curtain data collected by Illingworth & Rodkin, Inc. (Illingworth and Rodkin, 2012) at Kitsap and proposed to use an average source level reduction of 8 decibels (dB). The Commission notes that the assumed 8 dB source level reduction may be appropriate for near field impacts such as Level A harassment but it is not appropriate for far-field impacts, particularly Level B harassment. The Commission further provided an example, stating that Illingworth and Rodkin (2012) measured the source level reduction for the mid-water hydrophone of 36-inch (in) pile TTP#2 to be only 5 dB at 145 meters (m), and stated that source level reduction was 5 dB at 120 m for both the mid-water and deep hydrophone during installation of 48-in pile TP#11 and 4 to 5 dB at 754 m for both hydrophones during installation of 48-in pile TP#5. The Commission states that all such measurements are comparable to the Level A harassment zones estimated for low-frequency (LF) and high-frequency (HF) cetaceans and phocids (158–351 m) and the Level B harassment zone (541 m).

The Commission stated that bubble curtains that are placed immediately around the pile do not achieve consistent reductions in sound levels because they cannot attenuate ground-borne sound. Appreciable attenuation is not observed for the sound that resonates through the ground into the far field or for low-frequency sound in general, and an 8-dB source level reduction factor is unsubstantiated by the data. The Commission thus recommends that NMFS (1) refrain from using the 8-dB source level reduction factor for far-field impacts (>100 m) and (2) consult with acousticians, including those at the University of Washington-Applied Physics Laboratory, regarding the appropriate

source level reduction factor to use to minimize near-field (<100 m) and far-field effects on marine mammals.

Response: NMFS does not agree with the Commission's assessment on bubble curtain efficacy that is based on near- and far-distance (referred as "near-field" and "far-field" by the Commission). While NMFS typically recommends a 7 dB reduction at 10 m for using bubble curtains during in-water impact pile driving, this value is based on a study conducted by the California Department of Transportation (CALTRANS) in 2003 and 2004, and is applied to situations where no specific measurements pertaining to the project are available. In the case of the proposed Naval Base Kitsap Bangor construction project, Illingworth & Rodkin conducted a detailed study in 2011 (Illingworth & Rodkin, 2012) and showed an average noise level reduction of 8 dB at 10 m when a bubble curtain is in place. Based on the review of the IHA application, NMFS determined that applying an 8 dB reduction for the source level at 10 m is more appropriate, because the type of piles as well as the design and deployment of the bubble curtain proposed for use in this project are the same as those in the 2011 Illingworth & Rodkin study.

In addition, in its comments, the Commission mistakenly treated the measurements taken by Illingworth & Rodkin (Illingworth and Rodkin, 2012) at 145 m, 120 m, and 754 m as "source levels." These are actually received sound levels at far-distances. A source level is the sound level measured or back-calculated at 1 m from the source, or, in the case of in-water pile driving, it's more commonly referred to sound levels measured at approximately 10 m from the pile. Although the measured levels at far-distances (*i.e.*, >100 m) showed less differences (*e.g.*, 4-5 dB) from those that were measured at near source at 10 m (*e.g.*, 8 dB), this is likely due to propagation effects that

some of the sediment-borne acoustic energy that was not attenuated by the bubble curtain re-emerged into the water-column at much further distances. However, this information should not be used to suggest that a different noise level reduction needs to be used for long-distance (Level B harassment distance) impact assessment. Since the applicant used a conservative practical spreading modeling (*i.e.*, 15 log (r)), acoustic energy that is lost due to boundary refraction and reflection is not considered in determining the impact distances, and this loss is in addition to the practical spreading. Therefore, the small differences at far- distances between with and without bubble curtains indicates that the bubble curtain is less effective in attenuating additional acoustic energy beyond that within the water column.

Comment 2: The Commission recommends that, for both final authorizations, NMFS (1) revise the currently-proposed condition 6(b)(ix) to require the Navy to include in the monitoring report the number of individuals of each species detected within the Level A and B harassment zones and the numbers of marine mammals taken by Level and B harassment, by species (*i.e.*, observed takes), (2) include the standard requirement that the Navy include in its monitoring report an extrapolation of the estimated takes by Level B harassment based on the number of observed exposures within the Level B harassment zone and the percentage of the Level B harassment zone that was not visible (*i.e.*, extrapolated takes), and (3) include an additional requirement that the Navy include in its monitoring report the total number of Level B harassment takes based on both the observed and extrapolated takes for each species.

Response: The final IHAs require the Navy to include in the monitoring report the number of individuals of each species (differentiated by month as appropriate) detected

within the Level A and Level B harassment zones, and estimates of number of marine mammals taken by Level A and Level B harassment, by species, as recommended by the Commission. The final IHA does not include the requirement deemed "standard" by the Commission, that the Navy include in its monitoring report an extrapolation of the estimated takes by Level B harassment based on the number of observed exposures within the Level B harassment zone and the percentage of the Level B harassment zone that was not visible (*i.e.*, extrapolated takes), and therefore, does not include the additional requirement recommended by the Commission that the Navy include in its monitoring report the total number of Level B harassment takes based on both the observed and extrapolated takes for each species. However, both IHAs do include a requirement for the Navy to report the estimated percentage of the Level B harassment zone that was not visible.

Comment 3: The Commission recommends that NMFS reinforce the need for the Navy to keep a running tally of the total takes, based on observed and extrapolated takes, for Level A and B harassment consistent with condition 4(i) in the final Year 1 authorization and 4(g) of the final Year 2 authorization.

Response: We agree that the Navy must ensure they do not exceed authorized takes but do not concur with the recommendation. NMFS is not responsible for ensuring that Navy does not operate in violation of an issued IHA.

Comment 4: The Commission stated that it has raised ongoing concerns regarding NMFS's renewal process over the past few years, and notes that although NMFS recently responded to those concerns, the Commission has not yet had time to consider fully whether and how it plans to respond. For purposes of its comment letter regarding this

IHA, the Commission recommends that NMFS refrain from issuing a renewal for any authorization unless it is consistent with the procedural requirements specified in section 101(a)(5)(D)(iii) of the MMPA.

Response: In prior responses to comments about IHA Renewals (*e.g.*, 84 FR 52464; October 02, 2019 and 85 FR 53342, August 28, 2020), NMFS has explained how the Renewal process, as implemented, is consistent with the statutory requirements contained in section 101(a)(5)(D) of the MMPA, provides additional efficiencies beyond the use of abbreviated notices, and, further, promotes NMFS' goals of improving conservation of marine mammals and increasing efficiency in the MMPA compliance process. Therefore, we intend to continue implementing the Renewal process.

Comment 5: The Commission again recommends that NMFS either make its determinations regarding small numbers and negligible impact based on the total number and type of taking for each species or stock for both authorizations combined or delay the Year 2 activities until 2023 if a renewal authorization is issued for the Year 1 activities.

Response: As stated in informal correspondence with the Commission regarding this project, the Navy's activities would occur in a linear fashion. Therefore, activities described in association with the Year 1 IHA would not occur concurrently with activities described in association with the Year 2 IHA, whether occurring under the issued Year 1 IHA or under a renewal of the Year 1 IHA, if necessary. There is a chance they could occur within the same in-water work period if a renewal is issued for Year 1. Therefore, the Commission's recommendation is moot.

Changes from the Proposed IHA to Final IHA

As a result of an informal comment from the Commission, NMFS corrected an error in the California sea lion take estimates in both IHAs, to reflect a maximum average of 60 sea lions per day, rather than 54. Please see the **Estimated Take** section for additional information on this take estimation. NMFS also updated the distance to the Level B harassment isopleths for vibratory pile driving of 24-inch, 30-inch, and 36-inch pile driving to standardize rounding across pile types in response to a Commission comment. These updated distances are reflected in Table 5 of this notice, and Table 2 of each IHA.

NMFS added additional requirements for reporting stranded marine mammals to both IHAs, as suggested by the Commission. Please see the *Reporting* section for additional information. Additionally, NMFS removed two mitigation measures, regarding soft start and bubble curtains during impact pile driving, from the Year 2 IHA, as the Navy does not plan to conduct impact pile driving in Year 2, also suggested by the Commission. NMFS also removed a measure from both IHAs requiring the Navy to submit PSO CVs to NMFS for approval prior to pile driving.

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 1 lists all species or stocks for which take is expected and 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 1 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 1 -- Species for Which take is Authorized

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 1 temporally and spatially co-occur with the activity to the degree that take is reasonably

likely to occur, and we have authorized 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.

A detailed description of the species likely to be affected by the Navy's project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHAs (85 FR

48206; August 10, 2020); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (*https://www.fisheries.noaa.gov/find-species*) for generalized species accounts.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from the Navy's construction activities have the potential to result in behavioral harassment of marine mammals in the vicinity of the survey area. The notice of proposed IHAs (85 FR 48206; August 10, 2020) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from the Navy's construction activities on marine mammals and their habitat. That information and analysis is incorporated by reference into these final IHA determinations and is not repeated here; please refer to the notice of proposed IHAs (85 FR 48206; August 10, 2020).

Estimated Take

This section provides an estimate of the number of incidental takes authorized through these IHAs, 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 are primarily 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 required 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 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 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 permanent threshold shift (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 planned 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 planned 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 2 -- Thresholds Identifying the Onset of Permanent Threshold Shift

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	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 planned 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 approximately 11.7 km (7.3 mi) from the source, with an area of approximately 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 3.

The Navy will implement bubble curtains (*e.g.* pneumatic barrier typically comprised of hosing or PVC piping that disrupts underwater noise propagation; see **Mitigation Measures** 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: root-mean-square sound pressure level (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 a peak sound pressure level (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 accepted Navy's proposal to use an 8 dB reduction during impact pile driving.

Table 3 -- Project Sound Source Levels (Navy, 2015)

Pile Type and Size	Installation Method	Source Level at 10m		
		dB RMS	dB Peak	dB SEL
36-inch Steel	Impact	194[a]	211[a]	181[a]
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 4 -- 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	5[b]	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 5 -- 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	5,412
30-inch Steel		43	4	64	26	2	11,659
36-inch Steel		43	4	64	26	2	11,659

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 has authorized 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 5). Given the small size of the Level A harassment zones, we do 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 7). These shutdown zones are expected to eliminate the potential for Level A harassment take of killer whale.

Therefore, NMFS has not authorized 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/ km^2) (95 percent Confidence Interval (CI) = 0.72–1.10, all seasons pooled) and density in Hood Canal was 0.44/ km^2 (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 will 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 x 49.1km^2 x 80 days). During Year 2, the Navy estimated 216 Level B harassment takes (0.44 animals/km^2 x 49.1 km^2 x 10 days). NMFS concurs with this approach, and has authorized 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 5). The Navy is planning to implement a 355 m shutdown zone for all cetaceans during that activity

(Table 7), which incorporates the entire Level A harassment zone, and the 14 m peak PTS isopleth (Table 5). Therefore, the shutdown zones are expected to eliminate the potential for Level A harassment take of harbor porpoise, and NMFS has not authorized 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 in-water work window (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 x 80 in-water work days), and 40 Level B

harassment takes of Steller sea lions during Year 2 (4 Steller sea lions x 10 in-water work days). NMFS concurs with this approach and has authorized 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 5). Given the small size of the Level A harassment zones, we do 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 7). The Navy's shutdown zones are expected to eliminate the potential for Level A harassment take of Steller sea lion. Therefore, NMFS has not authorized 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). NMFS averaged these monthly averages across the entire in-water work period, resulting in a maximum average of 60 California sea lions hauled out per day. (The proposed rule incorrectly indicated an 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, NMFS 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. NMFS concurs, and therefore, NMFS has authorized 4,800 Level B harassment takes of California sea lion in Year 1 (60 California sea lions x 80 in-water work days), and 600 Level B harassment takes of California sea lions during Year 2 (60 California sea lions x 10 in-water work days).

The largest Level A harassment zone for otariids extends 11 m from the source during impact pile driving of 36-inch steel piles (Table 5). Given the small size of the Level A harassment zones, we do 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 7). The Navy's shutdown zones are expected to eliminate the potential for Level A harassment take of California sea lion. Therefore, NMFS has not authorized 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 x 80 in-water work days), and 350 Level B harassment takes of harbor seal during Year 2 (35 harbor seals x 10 in-water work days). NMFS concurs with this approach and has authorized 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 5). The Navy is planning to implement a 160 m shutdown zone during that activity (Table 7), which incorporates the entire Level A harassment zone, and the 1 m peak PTS isopleth (Table 5). 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 has authorized 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 has not authorized Level A harassment take of harbor seal in Year 2.

Table 6 -- 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		4,800	4,800 (1.9)	600	600 (0.2)
Harbor seal	Washington Inland Waters, Hood Canal	Unknown	20	2,800	2,820 (Unknown)	350	350 (Unknown)

Mitigation Measures

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 will 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 7). In addition to the shutdown zones listed in Table 7, the Navy plans 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 **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 will 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 7 -- Shutdown Zones During Pile Installation and Removal

	Cetaceans	Phocids	Otariids
All Vibratory Pile Driving	65 m	30 m	10 m
All Impact Pile Driving	355 m	160 m	15 m

- *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 **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 mitigation measures, NMFS has determined that the planned 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.

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

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 a live marine mammal is found stranded, whether on shore or in or on any structure or vessel, the following steps shall be taken:

i. Project personnel who discover the marine mammal shall immediately notify the most appropriate onsite personnel with relevant expertise (*e.g.*, marine mammal observers) as well as the Navy (if non-Navy project personnel initially discover the animal).

ii. The Navy shall then immediately notify the West Coast Regional

Stranding Coordinator, NMFS, and, in consultation with the Stranding Coordinator, shall immediately notify the most appropriate qualified individual (*i.e.*, biologist or veterinarian) to respond to the event.

iii. In the interim, or in the event that no qualified individual other than onsite marine mammal observers is available to respond to the event, the Navy shall manage the event response and shall take action to prevent any further deterioration of the animal's condition, to the extent possible. Appropriate action may be specific to the event. At minimum, the Navy should provide shade for the animal (if possible), shall not move the animal or cause the animal to move, and shall suspend project activity until the situation is resolved.

iv. The Navy shall report the incident to the Office of Protected Resources (OPR), NMFS, within 48 hours after discovery.

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 6, 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 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 will 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 planned 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 will 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 authorized 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 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 will 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 2 kilohertz (kHz)), 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 will 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 will 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 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 authorized.
- 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 monitoring and mitigation measures, NMFS 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 monitoring and mitigation measures, NMFS 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 current 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 6) 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 are 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 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 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 will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

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 evaluate our proposed action (*i.e.*, the issuance of an IHA) and alternatives with respect to potential impacts on the human environment. This action is consistent with categories of activities identified in Categorical Exclusion B4 of the Companion Manual for NAO 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 preclude this categorical exclusion. Accordingly, NMFS has determined that this action qualifies to be categorically excluded from further NEPA review.

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 authorized 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.

Authorization

NMFS has issued two IHAs to the Navy for the potential harassment of small numbers of five marine mammal species incidental to Transit Protection Program Pier and Support Facilities Project at Naval Base Kitsap Bangor in Silverdale, Washington over two years, provided the previously mentioned mitigation, monitoring and reporting requirements are followed.

Dated: October 23, 2020.

Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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