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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XE323

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Pier Maintenance Project

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 we have issued an incidental harassment authorization (IHA) to the U.S. Navy (Navy) to incidentally harass, by Level B harassment only, three species of marine mammals during construction activities associated with a pier maintenance project at Naval Base Kitsap Bremerton, WA.

DATES: This authorization is effective from December 1, 2015, through November 30, 2016.

FOR FURTHER INFORMATION CONTACT: Ben Laws, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Availability

An electronic copy of the Navy's application and supporting documents, as well as a list of the references cited in this document, may be obtained by visiting the Internet at:

www.nmfs.noaa.gov/pr/permits/incidental/construction.htm. A memorandum describing our

adoption of the Navy's Environmental Assessment (2015) and our associated Finding of No Significant Impact, prepared pursuant to the National Environmental Policy Act, are also available at the same site. In case of problems accessing these documents, please call the contact listed above (see **FOR FURTHER INFORMATION CONTACT**).

Background

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

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

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the U.S. can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an

application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny the authorization. Except with respect to certain activities not pertinent here, the MMPA defines “harassment” as “any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].”

Summary of Request

On April 14, 2015, we received a request from the Navy for authorization to take marine mammals incidental to pile driving and removal associated with the Pier 4 maintenance project at Naval Base Kitsap Bremerton, WA (NBKB). The Navy submitted revised versions of the request on May 20 and June 12, 2015, the latter of which we deemed adequate and complete. The Navy submitted additional information related to a small amount of necessary maintenance work at the adjacent Pier 5 on November 18, 2015. The Navy plans to conduct this project, involving vibratory pile driving only, within the approved in-water work window. Hereafter, use of the generic term “pile driving” may refer to both pile installation and removal unless otherwise noted.

The use of vibratory pile driving is expected to produce underwater sound at levels that have the potential to result in behavioral harassment of marine mammals. Species with the expected potential to be present during the in-water work window include the Steller sea lion (*Eumetopias jubatus monteriensis*), California sea lion (*Zalophus californianus*), and harbor seal

(*Phoca vitulina richardii*). All of these species may be present throughout the period of validity for this IHA.

Description of the Specified Activity

Overview

NBKB serves as the homeport for a nuclear aircraft carrier and other Navy vessels and as a shipyard capable of overhauling and repairing all types and sizes of ships. Other significant capabilities include alteration, construction, deactivation, and dry-docking of naval vessels. Pier 4 was completed in 1922 and requires substantial maintenance to maintain readiness. The Navy plans to remove up to 92 deteriorating fender piles and to replace them with new steel fender piles.

Dates and Duration

The allowable season for in-water work for this project is July 16 through February 15, a window related to bull trout (*Salvelinus confluentus*) occurrence in the project area. Under the specified activity a maximum of thirty pile driving days would occur. Pile driving may occur only during daylight hours. The IHA is valid for one year, from December 1, 2015, through November 30, 2016. The Navy requested a one-year period of validity for this IHA due to uncertainty regarding the project start date. However, the in-water work would occur within only a single work window; i.e., would occur from December 1, 2015, through February 15, 2016, or would occur from July 16, 2016, through November 30, 2016.

Specific Geographic Region

NBKB is located on the north side of Sinclair Inlet in Puget Sound (see Figures 1-1 and 2-1 of the Navy's application). Sinclair Inlet, an estuary of Puget Sound extending 3.5 miles

southwesterly from its connection with the Port Washington Narrows, connects to the main basin of Puget Sound through Port Washington Narrows and then Agate Pass to the north or Rich Passage to the east. Sinclair Inlet has been significantly modified by development activities. Fill associated with transportation, commercial, and residential development of NBKB, the City of Bremerton, and the local ports of Bremerton and Port Orchard has resulted in significant changes to the shoreline. The area surrounding Pier 4 is industrialized, armored and adjacent to railroads and highways. Sinclair Inlet is also the receiving body for a wastewater treatment plant located just west of NBKB. Sinclair Inlet is relatively shallow and does not flush fully despite freshwater stream inputs.

Detailed Description of Activities

The Navy plans to remove eighty deteriorated 14-in timber fender piles at Pier 4 and replace them with eighty new 12 to 14-in steel fender piles. The Navy assumes a notional production rate of eight piles per day (removal) and four piles per day (installation) in determining the number of days of pile driving expected, and scheduling (as well as exposure analysis) is based on this assumption. All pile driving and removal would be accomplished with a vibratory driver (except where removal is accomplished by direct pull or other mechanical means, e.g., clamshell, cutting). Vibratory driving and/or removal could occur on any work day during the period of the IHA. Only one pile driving rig is planned for operation at any given time.

Changes from the Notice of Proposed Authorization – The Navy requested an expansion of the specified activity to include additional maintenance work at the immediately adjacent Pier 5. This additional work will involve the removal and replacement of an additional twelve piles.

The piles would be the same as those considered for Pier 4 (14-in timber piles to be removed and replaced with 12- to 14-in steel piles) and all pile driving and removal would be accomplished with a vibratory driver. This work would require an additional five in-water work days, but would not involve use of any additional or concurrent pile driving. We have determined that this additional work represents an inconsequential increase to the scope of work considered in our notice of proposed authorization (July 24, 2015; 80 FR 44033).

Comments and Responses

We published a notice of receipt of the Navy's application and proposed IHA in the **Federal Register** on July 24, 2015 (80 FR 44033). We received a letter from the Marine Mammal Commission, which concurred with our preliminary findings and recommended that we issue the requested IHA, subject to inclusion of the proposed mitigation and monitoring measures. All mitigation and monitoring measures described in our notice of proposed IHA have been included in the IHA as issued. The Commission also recommended that we ensure that the Navy is sufficiently aware of the requirements set forth in the authorization, and we agree with the recommendation.

Description of Marine Mammals in the Area of the Specified Activity

There are five marine mammal species with records of occurrence in waters of Sinclair Inlet in the action area. These are the California sea lion, harbor seal, Steller sea lion, gray whale (*Eschrichtius robustus*), and killer whale (*Orcinus orca*). The harbor seal is a year-round resident of Washington inland waters, including Puget Sound, while the sea lions are absent for portions of the summer. For the killer whale, both transient (west coast stock) and resident (southern stock) animals have occurred in the area. However, southern resident animals are known to have

occurred only once, with the last confirmed sighting from 1997 in Dyes Inlet. A group of 19 whales from the L-25 subpod entered and stayed in Dyes Inlet, which connects to Sinclair Inlet northeast of NBKB, for 30 days. Dyes Inlet may be reached only by traversing from Sinclair Inlet through the Port Washington Narrows, a narrow connecting body that is crossed by two bridges, and it was speculated at the time that the whales' long stay was the result of a reluctance to traverse back through the Narrows and under the two bridges. There is one other unconfirmed report of a single southern resident animal occurring in the project area, in January 2009. Of these stocks, the southern resident killer whale is listed (as endangered) under the Endangered Species Act (ESA).

An additional seven species have confirmed occurrence in Puget Sound, but are considered rare to extralimital in Sinclair Inlet and the surrounding waters. These species—the humpback whale (*Megaptera novaeangliae*), minke whale (*Balaenoptera acutorostrata scammoni*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), harbor porpoise (*Phocoena phocoena vomerina*), Dall's porpoise (*Phocoenoides dalli dalli*), and northern elephant seal (*Mirounga angustirostris*), along with the southern resident killer whale—are considered extremely unlikely to occur in the action area or to be affected by the specified activities, and are not considered further in this document. A review of sightings records available from the Orca Network (www.orcanetwork.org; accessed July 13, 2015) confirms that there are no recorded observations of these species in the action area (with the exception of the southern resident sightings described above).

We have reviewed the Navy's detailed species descriptions, including life history information, for accuracy and completeness and refer the reader to Sections 3 and 4 of the

Navy’s application instead of reprinting the information here. Please also refer to NMFS’ website (www.nmfs.noaa.gov/pr/species/mammals) for generalized species accounts and to the Navy’s Marine Resource Assessment for the Pacific Northwest, which documents and describes the marine resources that occur in Navy operating areas of the Pacific Northwest, including Puget Sound (DoN, 2006). The document is publicly available at [www.navfac.navy.mil/products_and_services/ev/products_and_services/marine_resource_assessments.html](http://www.navfac.navy.mil/products_and_services/ev/products_and_services/marine_resources/marine_resource_assessments.html) (accessed November 13, 2015). We provided additional information for marine mammals with potential for occurrence in the area of the specified activity in our **Federal Register** notice of proposed authorization (July 24, 2015; 80 FR 44033).

Table 1 lists the marine mammal species with expected potential for occurrence in the vicinity of NBKB during the project timeframe and summarizes key information regarding stock status and abundance. Taxonomically, we follow Committee on Taxonomy (2014). Please see NMFS’ Stock Assessment Reports (SAR), available at www.nmfs.noaa.gov/pr/sars, for more detailed accounts of these stocks’ status and abundance. The harbor seal, California sea lion, and gray whale are addressed in the Pacific SARs (e.g., Carretta *et al.*, 2015), while the Steller sea lion and transient killer whale are treated in the Alaska SARs (e.g., Allen and Angliss, 2015).

Table 1. Marine Mammals Potentially Present in the Vicinity of NBKB.

Species	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR ³	Annual M/SI ⁴	Relative occurrence in Sinclair Inlet; season of occurrence
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae						
Gray whale	Eastern North Pacific	-; N	20,990 (0.05; 20,125; 2010-11)	624	132 ⁹	Rare; year-round
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	West coast transient ⁵	-; N	243 (n/a; 2009)	2.4	0	Rare; year-round

Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
California sea lion	U.S.	-; N	296,750 (n/a; 153,337; 2011)	9,200	389	Common; year-round (excluding July)
Steller sea lion	Eastern U.S.	-; N ⁷	60,131-74,448 (n/a; 36,551; 2008-13) ⁸	1,645	92.3	Occasional/seasonal; Oct-May
Family Phocidae (earless seals)						
Harbor seal	Washington northern inland waters ⁶	-; N	11,036 (0.15; 7,213; 1999)	undetermined	>2.8	Common; year-round

¹ESA 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 (see footnote 3) 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.

²CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For killer whales, the abundance values represent direct counts of individually identifiable animals; therefore there is only a single abundance estimate with no associated CV. For certain stocks of pinnipeds, abundance estimates are based upon observations of animals (often pups) ashore multiplied by some correction factor derived from knowledge of the species' (or similar species') life history to arrive at a best abundance estimate; therefore, there is no associated CV. In these cases, the minimum abundance may represent actual counts of all animals ashore. The most recent abundance survey that is reflected in the abundance estimate is presented; there may be more recent surveys that have not yet been incorporated into the estimate.

³Potential biological removal, 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 size (OSP).

⁴These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, subsistence hunting, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value.

⁵The abundance estimate for this stock includes only animals from the "inner coast" population occurring in inside waters of southeastern Alaska, British Columbia, and Washington – excluding animals from the "outer coast" subpopulation, including animals from California – and therefore should be considered a minimum count. For comparison, the previous abundance estimate for this stock, including counts of animals from California that are now considered outdated, was 354.

⁶Abundance estimates for these stocks are greater than eight years old and are therefore not considered current. PBR is considered undetermined for these stocks, as there is no current minimum abundance estimate for use in calculation. We nevertheless present the most recent abundance estimates and PBR values, as these represent the best available information for use in this document.

⁷The eastern distinct population segment of the Steller sea lion, previously listed under the ESA as threatened, was delisted on December 4, 2013 (78 FR 66140; November 4, 2013).

⁸Best abundance is calculated as the product of pup counts and a factor based on the birth rate, sex and age structure, and growth rate of the population. A range is presented because the extrapolation factor varies depending on the vital rate parameter resulting in the growth rate (i.e., high fecundity or low juvenile mortality).

⁹Includes annual Russian harvest of 127 whales.

Potential Effects of the Specified Activity on Marine Mammals

Our **Federal Register** notice of proposed authorization (July 24, 2015; 80 FR 44033) provides a general background on sound relevant to the specified activity as well as a detailed description of marine mammal hearing and of the potential effects of these construction activities on marine mammals.

Anticipated Effects on Habitat

We described potential impacts to marine mammal habitat in detail in our **Federal Register** notice of proposed authorization (July 24, 2015; 80 FR 44033). In summary, we have determined that given the short daily duration of sound associated with individual pile driving events and the relatively small areas being affected, pile driving activities associated with the proposed action are not likely to have a permanent, adverse effect on any fish habitat, or populations of fish species. The area around NBKB, including the adjacent ferry terminal and nearby marinas, is heavily altered with significant levels of industrial and recreational activity, and is unlikely to harbor significant amounts of forage fish. Thus, any impacts to marine mammal habitat are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

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 such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses.

Measurements from similar pile driving events were coupled with practical spreading loss to estimate zones of influence (ZOI; see “Estimated Take by Incidental Harassment”); these values were used to develop mitigation measures for pile driving activities at NBKB. The ZOIs effectively represent the mitigation zone that would be established around each pile to prevent Level A harassment to marine mammals, while providing estimates of the areas within which Level B harassment might occur. In addition to the specific measures described later in this section, the Navy will conduct briefings between construction supervisors and crews, marine mammal monitoring team, and Navy staff prior to the start of all pile driving activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

Monitoring and Shutdown for Pile Driving

The following measures apply to the Navy’s mitigation through shutdown and disturbance zones:

Shutdown Zone – For all pile driving activities, the Navy will establish a shutdown zone intended to contain the area in which SPLs equal or exceed the acoustic injury criteria for pinnipeds (190 dB root mean square [rms]). The purpose of a shutdown zone is to define an area within which shutdown of activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area), thus preventing injury of marine mammals (as described previously under “Potential Effects of the Specified Activity on Marine Mammals” in our notice of proposed authorization [July 24, 2015; 80 FR 44033], serious injury or death are unlikely outcomes even in the absence of mitigation measures). Modeled radial distances for shutdown zones are shown in Table 2. Although no potential for injury is predicted, a minimum

shutdown zone of 10 m will be established during all pile driving activities. This precautionary measure is intended to prevent the already unlikely possibility of physical interaction with construction equipment and to further reduce any possibility of acoustic injury.

Disturbance Zone – Disturbance zones are the areas in which SPLs equal or exceed 160 and 120 dB rms (for impulse and continuous sound, respectively). Disturbance zones provide utility for monitoring conducted for mitigation purposes (i.e., shutdown zone monitoring) by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring of disturbance zones enables observers to be aware of and communicate the presence of marine mammals in the project area but outside the shutdown zone and thus prepare for potential shutdowns of activity. However, the primary purpose of disturbance zone monitoring is for documenting incidents of Level B harassment; disturbance zone monitoring is discussed in greater detail later (see “Monitoring and Reporting”). Nominal radial distances for disturbance zones are shown in Table 2.

In order to document observed incidents of harassment, monitors record all marine mammal observations, regardless of location. The observer’s location, as well as the location of the pile being driven, is known from a GPS. The location of the animal is estimated as a distance from the observer, which is then compared to the location from the pile. It may then be estimated whether the animal was exposed to sound levels constituting incidental harassment on the basis of predicted distances to relevant thresholds in post-processing of observational and acoustic data, and a precise accounting of observed incidences of harassment created. This information may then be used to extrapolate observed takes to reach an approximate understanding of actual total takes.

Monitoring Protocols – Monitoring will be conducted before, during, and after pile driving 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. Observations made outside the shutdown zone will not result in shutdown; that pile segment would be completed without cessation, unless the animal approaches or enters the shutdown zone, at which point all pile driving activities must be halted. Monitoring will take place from fifteen minutes prior to initiation through thirty minutes post-completion of pile driving activities. 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 thirty minutes. Please see the Monitoring Plan (Appendix C in the Navy’s application), developed by the Navy in consultation with NMFS, for full details of the monitoring protocols.

The following additional measures apply to visual monitoring:

(1) Monitoring will be conducted by qualified observers, who will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. Qualified observers are trained biologists, with the following minimum qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water’s surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Advanced education in biological science or related field (undergraduate degree or higher required);

- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);
- Experience or training in the field identification of 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 and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

(2) Prior to the start of pile driving activity, the shutdown zone will be monitored for fifteen minutes to ensure that it is clear of marine mammals. Pile driving will only commence once observers have declared the shutdown zone clear of marine mammals; animals will be allowed to remain in the shutdown zone (i.e., must leave of their own volition) and their behavior will be monitored and documented. The shutdown zone may only be declared clear, and pile driving started, when the entire shutdown zone is visible (i.e., when not obscured by dark, rain, fog, etc.). In addition, if such conditions should arise during impact pile driving that is already underway, the activity must be halted.

(3) If a marine mammal approaches or enters the shutdown zone during the course of pile driving operations, activity will be halted and delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or fifteen minutes have passed without re-detection of the animal. Monitoring will be conducted throughout the time required to drive a pile.

Special Conditions

The Navy did not request the authorization of incidental take for killer whales or gray whales (see discussion below in “Estimated Take by Incidental Harassment”). Therefore, shutdown will be implemented in the event that either of these species is observed in the vicinity, prior to entering the defined disturbance zone. As described later in this document, we believe that occurrence of these species during the in-water work window would be uncommon and that the occurrence of an individual or group would likely be highly noticeable and would attract significant attention in local media and with local whale watchers and interested citizens. Prior to the start of pile driving on any day, the Navy will contact and/or review the latest sightings data from the Orca Network and/or Center for Whale Research to determine the location of the nearest marine mammal sightings. The Orca Sightings Network consists of a list of over 600 residents, scientists, and government agency personnel in the U.S. and Canada, and includes passive acoustic detections. The presence of a killer whale or gray whale in the southern reaches of Puget Sound would be a notable event, drawing public attention and media scrutiny. With this level of coordination in the region of activity, the Navy should be able to effectively receive real-time information on the presence or absence of whales, sufficient to inform the day’s

activities. Pile driving will not occur if there was the risk of incidental harassment of a species for which incidental take was not authorized.

One land-based observer will be positioned at the pier work site. Additionally, one vessel-based observer will travel through the monitoring area, completing an entire loop approximately every thirty minutes (please see Figure 1 of Appendix C in the Navy's applications). If any killer whales or gray whales are detected, activity would not begin or would shut down.

Timing Restrictions

In the project area, designated timing restrictions exist to avoid in-water work when salmonids and other spawning forage fish are likely to be present. The in-water work window is July 16-February 15. All in-water construction activities will occur only during daylight hours (sunrise to sunset).

Soft Start

The use of a soft start procedure is believed to provide additional protection to marine mammals by warning or providing a chance to leave the area prior to the hammer operating at full capacity, and typically involves a requirement to initiate sound from the hammer at reduced energy followed by a waiting period. This procedure is repeated two additional times. It is difficult to specify the reduction in energy for any given hammer because of variation across drivers. The pier maintenance project will utilize soft start techniques, which require the Navy to initiate sound from vibratory hammers for fifteen seconds at reduced energy followed by a thirty-second waiting period, with the procedure repeated two additional times. Soft start will be

required at the beginning of each day's pile driving work and at any time following a cessation of pile driving of thirty minutes or longer.

We have carefully evaluated the Navy's proposed mitigation measures and considered their effectiveness in past implementation to determine whether they are likely to effect the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals, (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any mitigation measure(s) we prescribe should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed below:

- (1) Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal).
- (2) A reduction in the number (total number or number at biologically important time or location) of individual marine mammals exposed to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing takes by behavioral harassment only).
- (3) A reduction in the number (total number or number at biologically important time or location) of times any individual marine mammal would be exposed to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing takes by behavioral harassment only).

(4) A reduction in the intensity of exposure to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing the severity of behavioral harassment only).

(5) Avoidance or minimization of adverse effects to marine mammal habitat, paying particular attention to the prey base, blockage or limitation of passage to or from biologically important areas, permanent destruction of habitat, or temporary disturbance of habitat during a biologically important time.

(6) For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Based on our evaluation of the Navy's proposed measures, as well as any other potential measures that may be relevant to the specified activity, we have determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammal 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 incidental take 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.

Any monitoring requirement we prescribe should improve our understanding of one or more of the following:

- Occurrence of marine mammal species in action area (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 responses to acute stressors, or impacts of chronic exposures (behavioral or physiological).
- How anticipated responses to stressors impact either: (1) Long-term fitness and survival of an individual; or (2) Population, species, or stock.
- Effects on marine mammal habitat and resultant impacts to marine mammals.
- Mitigation and monitoring effectiveness.

The Navy marine mammal monitoring plan can be found as Appendix C of the Navy's application, on the Internet at www.nmfs.noaa.gov/pr/permits/incidental/construction.htm.

Visual Marine Mammal Observations

The Navy will collect sighting data and behavioral responses to construction for marine mammal species observed in the region of activity during the period of activity. All observers will be trained in marine mammal identification and behaviors and are required to have no other construction-related tasks while conducting monitoring. The Navy will monitor the shutdown zone and disturbance zone before, during, and after pile driving, with observers located at the

best practicable vantage points. Based on our requirements, the Navy would implement the following procedures for pile driving:

- MMOs will be located at the best vantage point(s) in order to properly see the entire shutdown zone and as much of the disturbance zone as possible.
- During all observation periods, observers will use binoculars and the naked eye to search continuously for marine mammals.
- If the shutdown zones are obscured by fog or poor lighting conditions, pile driving at that location will not be initiated until that zone is visible. Should such conditions arise while impact driving is underway, the activity must be halted.
- The shutdown and disturbance zones around the pile will be monitored for the presence of marine mammals before, during, and after any pile driving or removal activity.

Two observers will be deployed as described under Mitigation, including one land-based observer and one-vessel-based observer traversing the extent of the Level B harassment zone. Individuals implementing the monitoring protocol will assess its effectiveness using an adaptive approach. Monitoring biologists will use their best professional judgment throughout implementation and seek improvements to these methods when deemed appropriate. Any modifications to protocol will be coordinated between NMFS and the Navy.

Data Collection

We require that observers use approved data forms. Among other pieces of information, the Navy will record detailed information about any implementation of shutdowns, including the distance of animals to the pile and description of specific actions that ensued and resulting behavior of the animal, if any. In addition, the Navy will attempt to distinguish between the

number of individual animals taken and the number of incidents of take. We require that, at a minimum, the following information be collected on the sighting forms:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (e.g., percent cover, visibility);
- Water conditions (e.g., sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Description of implementation of mitigation measures (e.g., shutdown or delay);
- Locations of all marine mammal observations; and
- Other human activity in the area.

Reporting

A draft report will be submitted to NMFS within 45 days of the completion of marine mammal monitoring, or sixty days prior to the issuance of any subsequent IHA for this project, whichever comes first. The report will include marine mammal observations pre-activity, during-activity, and post-activity during pile driving days, and will also provide descriptions of any behavioral responses to construction activities by marine mammals and a complete description of all mitigation shutdowns and the results of those actions and an extrapolated total take estimate

based on the number of marine mammals observed during the course of construction. A final report must be submitted within thirty days following resolution of comments on the draft report.

Estimated Take by Incidental Harassment

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].”

All anticipated takes would be by Level B harassment resulting from vibratory and impact pile driving and involving temporary changes in behavior. The planned mitigation and monitoring measures are expected to minimize the possibility of injurious or lethal takes such that take by Level A harassment, serious injury, or mortality is considered extremely unlikely. However, it is unlikely that injurious or lethal takes would occur even in the absence of the planned mitigation and monitoring measures.

If a marine mammal responds to a stimulus by changing its behavior (e.g., through relatively minor changes in locomotion direction/speed or vocalization behavior), the response may or may not constitute taking at the individual level, and is unlikely to affect the stock or the species as a whole. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on animals or on the stock or species could potentially be significant (e.g., Lusseau and Bejder, 2007; Weilgart, 2007). Given the many uncertainties in predicting the quantity and types of impacts of sound on marine mammals,

it is common practice to estimate how many animals are likely to be present within a particular distance of a given activity, or exposed to a particular level of sound. In practice, depending on the amount of information available to characterize daily and seasonal movement and distribution of affected marine mammals, it can be difficult to distinguish between the number of individuals harassed and the instances of harassment and, when duration of the activity is considered, it can result in a take estimate that overestimates the number of individuals harassed. In particular, for stationary activities, it is more likely that some smaller number of individuals may accrue a number of incidences of harassment per individual than for each incidence to accrue to a new individual, especially if those individuals display some degree of residency or site fidelity and the impetus to use the site (e.g., because of foraging opportunities) is stronger than the deterrence presented by the harassing activity.

The project area is not believed to be particularly important habitat for marine mammals, nor is it considered an area frequented by marine mammals, although harbor seals may be present year-round and sea lions are known to haul-out on man-made objects at the NBKB waterfront. Sightings of other species are rare. Therefore, behavioral disturbances that could result from anthropogenic sound associated with these activities are expected to affect only a relatively small number of individual marine mammals, although those effects could be recurring over the life of the project if the same individuals remain in the project vicinity.

The Navy requested authorization for the incidental taking of small numbers of Steller sea lions, California sea lions, and harbor seals in Sinclair Inlet and nearby waters that may result from pile driving during construction activities associated with the pier maintenance project described previously in this document. In order to estimate the potential incidents of take that

may occur incidental to the specified activity, we first estimated the extent of the sound field that may be produced by the activity and then considered that in combination with information about marine mammal density or abundance in the project area. We provided detailed information on applicable sound thresholds for determining effects to marine mammals as well as describing the information used in estimating the sound fields, the available marine mammal density or abundance information, and the method of estimating potential incidents of take, in our **Federal Register** notice of proposed authorization (July 24, 2015; 80 FR 44033). The only change to that information is the addition of five days of in-water pile driving to account for the additional work to be conducted at the adjacent Pier 5, increasing the total in-water work days from thirty to 35. Our take estimates were calculated in the same manner and on the basis of the same information as what was described in the **Federal Register** notice. Modeled distances to relevant thresholds are shown in Table 2 and total estimated incidents of take are shown in Table 3. Please see our **Federal Register** notice of proposed authorization (July 24, 2015; 80 FR 44033) for full details of the process and information used in estimating potential incidents of take.

Table 2. Distances to Relevant Sound Thresholds and Areas of Ensonification, Underwater.

Description	Distance to threshold (m) and associated area of ensonification (km ²) ¹			
	190 dB	180 dB	160 dB	120 dB
Steel piles, vibratory	0	0	n/a	2,154 ² , 7.5
Timber piles, vibratory	0	0	n/a	1,585; 5.0

¹SPLs used for calculations were: 170 dB for vibratory removal of steel piles, and 168 dB for vibratory removal of timber piles.

²Areas presented take into account attenuation and/or shadowing by land. Please see Appendix B in the Navy's applications.

Sinclair Inlet does not represent open water, or free field, conditions. Therefore, sounds would attenuate according to the shoreline topography. Distances shown in Table 2 are estimated for free-field conditions, but areas are calculated per the actual conditions of the action area. See

Appendix B of the Navy’s application for a depiction of areas in which each underwater sound threshold is predicted to occur at the project area due to pile driving.

The additional five days of pile driving work result in an increase in the estimated take numbers from what was considered in our notice of proposed authorization. The total numbers of authorized takes shown in Table 3 represent an increase of approximately seventeen percent for each species.

Table 3. Calculations for Incidental Take Estimation.

Species	n (animals/km ²) ¹	n * ZOI (vibratory steel pile removal) ²	Abundance ³	Total authorized takes (% of total stock)
California sea lion	0.1266	1	48	1,680 (0.6)
Steller sea lion	0.0368	0	1	35 (0.06)
Harbor seal	1.219 ⁴	9	11	385 (3.5)
Killer whale (transient)	0.0024 (fall)	0	n/a	0
Gray whale	0.0005 (winter)	0	n/a	0

¹Best available species- and season-specific density estimate, with season noted in parentheses where applicable (Hanser *et al.*, 2015).

²Product of density and largest ZOI (7.5 km²) rounded to nearest whole number; presented for reference only.

³Best abundance numbers multiplied by expected days of activity (35) to produce take estimate.

⁴Uncorrected density; presented for reference only.

Analyses and Determinations

Negligible Impact Analysis

NMFS has defined “negligible impact” in 50 CFR 216.103 as “...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.”

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 Level B harassment 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 behavioral harassment, we consider 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 the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and effects on habitat.

Pile driving activities associated with the pier maintenance project, as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment (behavioral disturbance) only, from underwater sounds generated from pile driving. Potential takes could occur if individuals of these species are present in the ensonified zone when pile driving is happening.

No injury, serious injury, or mortality is anticipated given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. The potential for these outcomes is minimized through the construction method and the implementation of the planned mitigation measures. Specifically, piles will be installed and removed via vibratory means, an activity that does not have the potential to cause injury to marine mammals due to the relatively low source levels produced (less than 180 dB) and the lack of potentially injurious source characteristics. Environmental conditions in Sinclair Inlet are expected to generally be good, with calm sea states, although Sinclair Inlet waters may be more turbid than waters further north in Puget Sound or in Hood Canal. Nevertheless, we expect conditions in Sinclair Inlet will allow a high marine mammal detection capability for the trained observers required, enabling a

high rate of success in implementation of shutdowns. In addition, the topography of Sinclair Inlet should allow for placement of observers sufficient to detect cetaceans, should any occur (see Figure 1 of Appendix C in the Navy's application).

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, 2012). Most likely, individuals will simply move away from the sound source and be temporarily displaced from the areas of pile driving, although even this reaction has been observed primarily only in association with impact pile driving. The pile driving activities analyzed here are similar to, or less impactful than, numerous other construction activities conducted in San Francisco Bay and in the Puget Sound region, which have taken place with no reported injuries or mortality to marine mammals, and no known long-term adverse consequences from behavioral harassment. Repeated exposures of individuals to levels of sound that may cause Level B harassment are unlikely to result in hearing impairment or to significantly disrupt foraging behavior. Thus, even repeated Level B harassment of some small subset of the overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. Level B harassment will be reduced to the level of least practicable 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.

We preliminarily determined in our notice of proposed authorization that the effects of the specified activity would represent a negligible impact on the affected marine mammal stocks. Here, we have added an additional five days of in-water pile driving (of the same size and type of piles, by the same methods, and adhering to the same mitigation and monitoring requirements) and determine that the likely total impacts to the affected marine mammal stocks, considering the additional activity, remains within the scope of analysis provided in our notice of proposed authorization.

In summary, this negligible impact analysis is founded on the following factors: (1) the possibility of injury, serious injury, or mortality may reasonably be considered discountable; (2) the anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior; (3) the absence of any significant habitat within the project area, including rookeries, significant haul-outs, or known areas or features of special significance for foraging or reproduction; (4) the presumed efficacy of the planned mitigation measures in reducing the effects of the specified activity to the level of least practicable impact. In addition, these stocks are not listed under the ESA or considered depleted under the MMPA. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activity will have only short-term effects on individuals. The specified activity is not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts. 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 planned monitoring and mitigation measures, we find

that the total marine mammal take from Navy's pier maintenance activities will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers Analysis

The number of incidents of take authorized for these stocks would be considered small relative to the relevant stocks or populations (less than one percent for both sea lion stocks and three percent for harbor seals; Table 3) even if each estimated taking occurred to a new individual. This is an extremely unlikely scenario as, for pinnipeds in estuarine/inland waters, there is likely to be some overlap in individuals present day-to-day.

We preliminarily determined in our notice of proposed authorization that the total taking proposed for authorization would be small relative to the populations of the affected species or stocks. The additional takes authorized due to the addition of five in-water pile driving days result in slight increases for each species (0.5 percent to 0.6 percent for California sea lions; 0.05 percent to 0.06 percent for Steller sea lions; 3.0 percent to 3.5 percent for harbor seals). These increases do not affect the preliminary small numbers determination.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, we find that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action. Therefore, we have determined that the total taking of affected species or stocks would not have

an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

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

National Environmental Policy Act (NEPA)

In compliance with the NEPA of 1969 (42 U.S.C. 4321 *et seq.*), as implemented by the regulations published by the Council on Environmental Quality (CEQ; 40 CFR parts 1500-1508), the Navy prepared an Environmental Assessment (EA) to consider the direct, indirect and cumulative effects to the human environment resulting from the pier maintenance project. We made the Navy's EA available to the public for review and comment, in relation to its suitability for adoption in order to assess the impacts to the human environment of issuance of an IHA to the Navy. In compliance with NEPA, the CEQ regulations, and NOAA Administrative Order 216-6, we subsequently adopted that EA and signed a Finding of No Significant Impact (FONSI) on November 5, 2015. The 2015 NEPA documents are available for review at www.nmfs.noaa.gov/pr/permits/incidental/construction.htm.

We considered the addition of five days of in-water pile driving work at the same location and time, involving the same size and type of piles and conducted by the same means (i.e., vibratory hammer), and determined that the addition of this activity remains within the scope of analysis provided by the Navy's EA and considered in our adoption memorandum and FONSI. Therefore, we do not need to conduct additional analysis under NEPA.

Authorization

As a result of these determinations, we have issued an IHA to the Navy for conducting the described pier maintenance activities in Sinclair Inlet, from December 1, 2015, through November 30, 2016, provided the previously described mitigation, monitoring, and reporting requirements are incorporated.

Dated: November 20, 2015.

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

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