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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XD978

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Rehabilitation of Jetty A at the Mouth of the Columbia River

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. Army Corp of Engineers (the Corps) to incidentally harass, by Level B harassment only, six species of marine mammals during activities related to the rehabilitation of Jetty A at the mouth of the Columbia River (MCR).

DATES: This authorization is effective from May 1, 2016 through April 30, 2017.

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

SUPPLEMENTARY INFORMATION:

Availability

An electronic copy of the Corps' 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. 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 February 13, 2015 NMFS received an application from the Corps for the taking of marine mammals incidental to the rehabilitation of Jetty A at the MCR. On June 9, 2015 NMFS received a revised application. NMFS determined that the application was adequate and complete on June 12, 2015. The Corps proposes to conduct in-water work that may incidentally harass marine mammals (i.e., pile driving and removal). 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 project timeframe include killer whale (*Orcinus orca*), Steller sea lion (*Eumatopius jubatus*), gray whale (*Eschrichtius robustus*), harbor porpoise (*Phocoena phocoena*), California sea lion (*Zalophus californianus*), and harbor seal (*Phoca vitulina richardii*).

Description of the Specified Activity

Overview

The Corps is seeking an IHA for the first year of pile installation and, possibly, removal work at Jetty A related to construction and maintenance of a barge offloading facility. The barge facility will be used for activities associated with the rehabilitation of Jetty A. The Corps is seeking this authorization by the end of August 2015 for contract bid scheduling reasons.

Dates and Duration

Work on the first year of pile installation may begin as early as May 2016 and would extend through September 2017. Because the work may extend to two seasons the Corps has requested a Letter of Authorization (LOA) that would come into effect immediately after the IHA expires for the second year of pile maintenance and removal at Jetty A. The LOA would also cover rehabilitation work planned for the North and South Jetties.

Specific Geographic Region

This activity will take place at Jetty A at the MCR jetty system in Pacific County, Washington.

Detailed Description of Activities

We provided a description of the proposed action in our **Federal Register** notice announcing the proposed authorization (80 FR 43739; July 23, 2015). Please refer to that document; we provide only summary information here.

The scheduled rehabilitation of Jetty A would occur as part of the Corps' Major Rehabilitation program for the MCR jetty system. During the first year of the project, operators would install and potentially remove up to 24 24-in steel piles and 93 sections of Z or H piles using a vibratory hammer. USACE expects those activities to take 17 days and would limit them to daylight hours only.

Comments and Responses

A notice of NMFS' proposal to issue an IHA was published in the **Federal Register** on July 23, 2015 (80 FR 43739). During the 30-day public comment period, the Marine Mammal Commission submitted a letter. The letter is available on the Internet at www.nmfs.noaa.gov/pr/permits/incidental/construction.htm. All comments specific to the

Corps' application that address the statutory and regulatory requirements or findings NMFS must make to issue an IHA are addressed in this section of the **Federal Register** notice.

Comment 1: The Commission recommends that a hydroacoustic monitoring plan be incorporated in subsequent years of activity under requested regulations, if and when issued. The Commission believes such a plan is prudent due to the types and sizes of piles to be installed and removed, the substrate of the environment, and the ambient sound and sound propagation loss associated with a river mouth opening into the open ocean.

Response 1: NMFS agrees that a hydroacoustic monitoring plan would be valuable for defining potential injury and harassment zones during future years of the jetty rehabilitation project. There is very limited hydroacoustic data pertaining to the MCR. NMFS will work with the applicant to devise a monitoring plan during the next application cycle.

Description of Marine Mammals in the Area of the Specified Activity

There are six marine mammal species known to occur in the vicinity of the MCR which may be subjected to Level B harassment. These are the killer whale, Steller sea lion, gray whale, harbor porpoise, California sea lion, and harbor seal.

We have reviewed the Corps' detailed species descriptions, including life history information, for accuracy and completeness and refer the reader to Section 3 of the Corps' application as well as the proposed incidental harassment authorization published in the **Federal Register** (80 FR 43739) instead of reprinting the information here. Please also refer to NMFS' website (www.nmfs.noaa.gov/pr/species/mammals) for generalized species accounts which provide information regarding the biology and behavior of the marine resources that occur in the vicinity of the MCR. We provided additional information for the potentially affected stocks,

including details of stock-wide status, trends, and threats, in our **Federal Register** notice of proposed authorization (80 FR 43739).

Table 1 lists marine mammal stocks that could occur in the vicinity of the Jetty A project that may be subject to Level B harassment 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.

Table 1. List of Marine Mammal Species under NMFS Jurisdiction that Occur in the Vicinity of the MCR Project Area*

Species	Stock(s) abundance estimate ¹	ESA Status	MMPA* Status	Frequency of occurrence ³
Killer Whale (<i>Orcinus orca</i>), Eastern N. Pacific, Southern Resident Stock	85	Endangered	Depleted and Strategic	Infrequent/Rare
Killer Whale (<i>Orcinus orca</i>), Eastern N. Pacific, West Coast Transient Stock	243		Non-depleted	Rare
Gray Whale (<i>Eschrichtius robustus</i>), Eastern North Pacific Stock, (Pacific Coast Feed Group)	18,017 (173)	Delisted/Recovered (1994)	Non-depleted	Rare
Harbor Porpoise (<i>Phocoena phocoena</i>), Northern Oregon/Washington Coast Stock	21,487		Non-depleted	Likely
Steller Sea Lion (<i>Eumetopias jubatus</i>), Eastern U.S. Stock/DPS**	63,160-78,198	Delisted/Recovered (2013)	Depleted and Strategic ²	Likely

California Sea Lion (<i>Zalophus californianus</i>), U.S. Stock	296,750		Non-depleted	Likely
Harbor Seal (<i>Phoca vitulina richardii</i>), Oregon and Washington Stock	24,732 ⁴		Non-depleted	Seasonal

¹NOAA/NMFS 2014 marine mammal stock assessment reports at <http://www.nmfs.noaa.gov/pr/sars/species.htm>.

²May be updated based on the recent delisting status.

³Frequency defined here in the range of:

- Rare—Few confirmed sightings, or the distribution of the species is near enough to the area that the species could occur there.
- Infrequent—Confirmed, but irregular sightings.
- Likely—Confirmed and regular sightings of the species in the area year-round.
- Seasonal—Confirmed and regular sightings of the species in the area on a seasonal basis.

⁴Data is 8 years old. No current abundance estimates exist.

*MMPA = Marine Mammal Protection Act.

**DPS = Distinct population segment.

Potential Effects of the Specified Activity on Marine Mammals

The **Federal Register** notice of proposed authorization (80 FR 43739), incorporated here by reference, 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. In summary, the project activities would not modify existing marine mammal habitat. 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. 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 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”). ZOIs are often used to establish a mitigation zone around each pile (when deemed practicable) to prevent Level A harassment to marine mammals, and also provide estimates of the areas within which Level B harassment might occur. ZOIs may vary between different diameter piles and types of installation methods. The Corps will employ the following mitigation measures:

(a) Conduct briefings between construction supervisors and crews, marine mammal monitoring team, and the Corps’ 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.

(b) For in-water heavy machinery work other than pile driving (using, e.g., standard barges, tug boats, barge-mounted excavators, or clamshell equipment used to place or remove material), 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.

This type of work could include the following activities: (1) movement of the barge to the pile location or (2) positioning of the pile on the substrate via a crane (i.e., stabbing the pile).

Monitoring and Shutdown for Pile Driving

The following measures apply to the Corps' mitigation through shutdown and disturbance zones:

Shutdown Zone – For all pile driving activities, the Corps will establish a shutdown zone. Shutdown zones are intended to contain the area in which SPLs equal or exceed the 180/190 dB rms acoustic injury criteria, with the purpose being 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. The estimated shutdown zone for Level A injury to cetaceans would be 1 meter. The Corps, however, would implement a minimum shutdown zone of 10 m radius for all marine mammals around all vibratory pile driving and removal activities. These precautionary measures are intended to further reduce the unlikely possibility of injury from direct physical interaction with construction operations.

Disturbance Zone – Disturbance zones are the areas in which sound pressure levels (SPLs) equal or exceed 120 dB rms (for continuous sound) for pile driving installation and removal. 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. Nominal radial

distances for disturbance zones are shown in Table 2. The shutdown zone for Level B injury would extend 7,356 meters from the sound source. Given the size of the disturbance zone for vibratory pile driving, it is impossible to guarantee that all animals would be observed or to make comprehensive observations of fine-scale behavioral reactions to sound. We discuss monitoring objectives and protocols in greater depth in “Monitoring and Reporting.”

Table 2. Calculated Area Encompassed Within Zone of Influence at MCR Jetties for Underwater Marine Mammal Sound Thresholds at Jetty A

Jetty	Underwater threshold	Distance— m (mi)	Area excluding land & jetty masses— km ² (mi ²)
Jetty A: ~ Station 78+50, River Side	Vibratory driving, pinniped injury (190 dB)	0	0
	Vibratory driving, cetacean injury (180 dB)	1 (3.3)	<0.000003 (0.000001)
	Vibratory driving, disturbance (120 dB)	7,356 (4.6 miles)	23.63 (9.12)

Time Restrictions—Work would occur only during daylight hours, when visual monitoring of marine mammals can be conducted. In order minimize impact to Southern resident killer whales, in-water work will not be conducted during their primary feeding season extending from October 1 until on or after May 1. Installation could occur from May 1 through September 30 each year.

In order to document observed incidents of harassment, observers 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 and the estimated ZOIs

for relevant activities (i.e., pile installation and removal). This information may then be used to extrapolate observed takes to reach an approximate understanding of actual total takes.

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 project will utilize soft start techniques for all vibratory pile driving. We require the Corps 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 20 minutes or longer.

Monitoring

Monitoring Protocols – Monitoring would be conducted before, during, and after pile driving. 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 and that pile segment would be completed without cessation, unless the animal approaches or enters the shutdown zone, at which point all pile driving activities would be halted. Monitoring will take place from thirty minutes prior to initiation through thirty minutes post-completion of pile driving activities. Pile driving activities include the time to 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.

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. One observer will be placed on or near the drilling rig near Jetty A while a second observer will be stationed on the opposite side of the observable zone of influence on Clatsop Spit. Qualified observers are trained biologists, with the following minimum qualifications:

(a) 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;

(b) Advanced education in biological science or related field (undergraduate degree or higher required);

(c) Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);

(d) Experience or training in the field identification of marine mammals, including the identification of behaviors;

(e) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

(f) 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

(g) 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 30 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.).

If waters exceed a sea-state which restricts the observers' ability to make observations within the marine mammal shutdown zone (*e.g.* excessive wind or fog), pile installation will cease. Pile driving will not be initiated until the entire shutdown zone is visible.

The waters will be scanned 30 minutes prior to commencing pile driving at the beginning of each day, and prior to commencing pile driving after any stoppage of 30 minutes or greater. If marine mammals enter or are observed within the designated marine mammal shutdown zone during or 30 minutes prior to pile driving, the monitors will notify the on-site construction manager to not begin until the animal has moved outside the designated radius.

If any marine mammal species are encountered during activities that are not listed in Table 1 for authorized taking and are likely to be exposed to sound pressure levels (SPLs) greater than or equal to 120 dB re 1mPa (rms), then the Holder of this Authorization must stop pile driving activities and report observations to NMFS' Office of Protected Resources at (301)847-8401.

If a marine mammal approaches or enters the shutdown zone during the course of vibratory pile driving operations, activity will be halted and delayed until the animal has

voluntarily left and been visually confirmed beyond the shutdown zone. If a marine mammal is seen above water and then dives below, the contractor would wait 15 minutes for pinnipeds and 30 minutes for cetaceans. If no marine mammals are seen by the observer in that time it will be assumed that the animal has moved beyond the exclusion zone.

Monitoring will be conducted throughout the time required to drive a pile

(3). Marine mammal presence within the Level B harassment zone will be monitored, but vibratory driving will not be stopped if marine mammals are found to be present. Any marine mammal documented within the Level B harassment zone during vibratory driving would constitute a Level B take (harassment), and will be recorded and reported as such.

Mitigation Conclusions

We have carefully evaluated the Corps' 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 Corps' proposed measures, including information from monitoring of implementation of mitigation measures very similar to those described here under previous IHAs from other marine construction projects, 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:

- (1) An increase in the probability of detecting marine mammals, both within the mitigation zone (thus allowing for more effective implementation of the mitigation) and in general to generate more data to contribute to the analyses mentioned below;
- (2) An increase in our understanding of how many marine mammals are likely to be exposed to levels of pile driving that we associate with specific adverse effects, such as behavioral harassment, TTS, or PTS;
- (3) An increase in our understanding of how marine mammals respond to stimuli expected to result in take and how anticipated adverse effects on individuals (in different ways and to varying degrees) may impact the population, species, or stock (specifically through effects on annual rates of recruitment or survival) through any of the following methods:

- Behavioral observations in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict received level, distance from source, and other pertinent information);
 - Physiological measurements in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict received level, distance from source, and other pertinent information);
 - Distribution and/or abundance comparisons in times or areas with concentrated stimuli versus times or areas without stimuli;
- (4) An increased knowledge of the affected species; and
- (5) An increase in our understanding of the effectiveness of certain mitigation and monitoring measures.

The Corps consulted with NMFS to create a marine mammal monitoring plan as part of the IHA application for this project.

Visual Marine Mammal Observations

- Two individuals meeting the minimum qualifications previously identified will monitor the marine mammal buffer area and Level B harassment zones during vibratory pile. Monitors will be stationed on the drilling rig or Jetty A as well as on Clatsop Spit.
- During vibratory pile driving, the area within 10 meters of pile driving activity will be monitored and maintained as a marine mammal buffer area in which pile installation will not commence or will be suspended temporarily if any marine mammals are observed within or approaching the area of potential disturbance. The Level B harassment area will be monitored by 2 observers at locations listed above. The monitoring staff will

record any presence of marine mammals by species, will document any behavioral responses noted, and record Level B takes when sightings overlap with pile installation activities.

- The individuals will scan the waters within each monitoring zone activity using binoculars (Vector 10X42 or equivalent), spotting scopes (Swarovski 20-60 zoom or equivalent), and visual observation.
- The area within which the Level B harassment thresholds could be exceeded during vibratory pile driving will be monitored for the presence of marine mammals. Marine mammal presence within these zones, if any, will be monitored but pile driving activity will not be stopped if marine mammals were found to be present. Any marine mammal documented within the Level B harassment zone will constitute a Level B take, and will be recorded and used to document the number of take incidents.
- If waters exceed a sea-state which restricts the observers' ability to make observations within the marine mammal buffer zone (e.g. excessive wind or fog), pile installation will cease until conditions allow the resumption of monitoring.
- The waters will be scanned for 30 minutes before, during, and 30 minutes after any and all pile driving and removal activities.
- If marine mammals enter or are observed within the designated marine mammal buffer zone (10 m) during or 30 minutes prior to pile driving, the monitors will notify the on-site construction manager to not begin until the animal has moved outside the designated radius.

- If a marine mammal approaches the shutdown zone prior to initiation of pile driving, the Corps cannot commence activities until the marine mammal (a) is observed to have left the Level A harassment zone or (b) has not been seen or otherwise detected within the Level A harassment zone for 30 minutes.
- The waters will continue to be scanned for at least 30 minutes after pile driving has completed each day, and after each stoppage of 30 minutes or greater.

Data Collection

We require that observers use approved data forms. Among other pieces of information, the Corps 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 Corps 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;

- Locations of all marine mammal observations; and
- Other human activity in the area.

Reporting

The Corps will notify NMFS prior to the initiation of the pile driving activities. The Corps will provide NMFS with a draft monitoring report within 90 days of the conclusion of the proposed construction work. This report will detail the monitoring protocol, summarize the data recorded during monitoring, and estimate the number of marine mammals that may have been harassed. If no comments are received from NMFS within 30 days, the draft final report will constitute the final report. If comments are received, a final report must be submitted within 30 days after receipt of comments.

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 pile driving/removal and involving temporary changes in behavior. Injurious or lethal takes are not expected due to the expected source levels and sound source characteristics associated with the

activity, and the planned mitigation and monitoring measures are expected to further minimize the possibility of such take.

Given the many uncertainties in predicting the quantity and types of impacts of sound in every given situation 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, based on the available science.

This practice potentially overestimates the numbers of marine mammals taken for stationary activities, as it is 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 Corps requested authorization for the incidental taking of small numbers of killer whale, Gray whale, harbor porpoise, Steller sea lion, California sea lion, and harbor seal near the MCR project area that may result from vibratory pile driving and removal during construction activities associated with the rehabilitation of Jetty A at the MCR.

In order to estimate the potential incidents of take that may occur incidental to the specified activity, we must first estimate the extent of the sound field that may be produced by the activity and then consider 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 incidences of take, in our **Federal Register** notice of proposed authorization (80 FR 43739; July 23, 2015).

Table 2 above illustrated that during vibratory driving the 120 dB Level B harassment threshold could be exceeded at 7,356 meters. Note that the actual area ensonified by pile driving activities is significantly constrained by local topography relative to the identified threshold radii.

The method used for calculating potential exposures to vibratory pile driving noise for each threshold was estimated using local marine mammal data sets, the Biological Opinion, best professional judgment from state and federal agencies, and data from IHA estimates on similar projects with similar actions. All estimates are conservative and include the following assumptions:

- During construction, each species could be present in the project area each day. The potential for a take is based on a 24-hour period. The model assumes that there can be one potential take (Level B harassment exposure) per individual per 24-hours.
- All pilings installed at each site would have an underwater noise disturbance equal to the piling that causes the greatest noise disturbance (*i.e.*, the piling furthest from shore) installed with the method that has the largest ZOI. The largest underwater disturbance ZOI would be produced by vibratory driving steel piles. The ZOIs for each threshold are not spherical and are truncated by land masses which would dissipate sound pressure waves.
- Exposures were based on an estimated 17 days of in-water work.

In absence of site specific underwater acoustic propagation modeling, the practical spreading loss model was used to determine the ZOI.

Southern resident killer whales have been observed offshore near the study area and ZOI, but the Corps does not have fine-scale details on frequency of use. While killer whales do occur in the Columbia River plume, where fresh water from the river intermixes with salt water from the ocean, they are rarely seen in the interior of the Columbia River Jetty system. The ensonified area associated with the proposed action at Jetty A does not extend out into the open ocean where killer whales are likely to be found. Furthermore, the Corps has limited its pile installation window in order to avoid peak salmon runs and any overlap with the presence of Southern residents. To ensure no Level B acoustical harassment occurs, the Corps will restrict pile installation from October 1 until April 30 of each season. However, this restriction was enacted primarily for construction work at the North and South jetties, where the ensonified zone will radiate out towards the open ocean. As such NMFS is not anticipating any acoustic exposure to Southern residents. Also note that in the 2011 Biological Opinion, NMFS issued a not likely to adversely affect determination. Therefore, NMFS has determined that authorization of take for Southern residents is not warranted.

Western Transient killer whales may be traversing offshore over a greater duration of time than the feeding resident. They are rarely observed inside of the jetty system. The Southwest Fisheries Science Center (SWFSC) stratum model under the Marine Animal Monitor Model provides an estimated density of 0.00070853 animals per km² for summer killer whales for areas near MCR, which may provide a surrogate proxy value for assuming possible densities near the jetties (Barlow *et al.* 2009, Halpin *et al.* 2009 at OBIS-SEAMAP). Given anecdotal evidence (Griffith 2015) and sightings recorded on the OBIS network from surveys done in 2005

(Halpin *et al.* 2009, OBIS-SEAMAP 2015), this density may be appropriate for the MCR vicinity.

The following formula was used to calculate exposure using

Exposure Estimate = $(0.000708 \text{ DensityEstimate} * 23.63 \text{ ZOI Jetty A} * 17 \text{ days}) = 0.28$ killer whale exposures

Where:

$N_{\text{DensityEstimate}}$ = Represents estimated density of species within the 4.6-mile radius (23.63 km²) encompassing the ZOI at Jetty A; using the density model suggested by NOAA (2015), this equates to 0.000708 animals per km² (Barlow *et al.* 2009).

Days = Total days of pile installation or removal activity (~17 days)

Given the low density and rare occurrence of transient killer whales in the ZOI, exposure of feeding or transient killer whales to Level B acoustical harassment from pile driving is unlikely to occur. However, NMFS proposes to authorize take of small number due to the remote chance that transient orcas remain in the vicinity to feed on pinnipeds that frequent the haulouts at the South Jetty.

NMFS believes that an authorized take of 8 transients is warranted because solitary killer whales are rarely observed, and transient whales travel in pods of 2-15 members. NMFS has assumed a pod size of 8.

Based on anecdotal information and sightings between 2006 and 2011 (Halpin *et al.* 2009 at OBIS SEAMAP 2015), gray whales may be in the proximity of the proposed action area and exposed to underwater acoustic disturbances. However, no data exists that is specific to presence and numbers in the MCR vicinity and gray whale density estimates were not available on the SERDP or OBIS-SEAMAP web model sites. Anecdotal evidence also indicates gray whales

have been seen at MCR, but are not a common visitor, as they mostly remain in the vicinity of the further offshore shelf-break (Griffith 2015). According to NOAA's Cetacean Mapping classification of the MCR vicinity pertaining to gray whale use, its Biologically Important Area categorization is indicated as a migration corridor (<http://cetsound.noaa.gov/biologically-important-area-map>). As primarily bottom feeders, gray whales are the most coastal of all great whales; they primarily feed in shallow continental shelf waters and live much of their lives within a few tens of kilometers of shore (Barlow et. al. 2009 on OBIS-SEAMAP 2015).

The Pacific Coast Feeding Group or northbound summer migrants would be the most likely gray whales to be in the vicinity of MCR. Since no information pertaining to gray whale densities could be identified, NMFS elected to apply proxy data for estimating densities. As a proxy, data pertinent to humpback whales (0.0039 animals per km²) was selected because both are baleen species found near the MCR vicinity for the same purposes (as a migration route or temporary feeding zone). However, the number of estimated exposures at Jetty A was increased to account for the fact that gray whales are more likely to be in the nearshore environment than humpback whales. This increase was proposed strictly as a conservative assumption to acknowledge the distinct preference gray whales may have over humpbacks for nearshore feeding.

The following formula was used to calculate exposure:

Exposure Estimate = (0.0039 DensityEstimate * 23.63 ZOI Jetty A * 17 days) + 1 = 1.56 gray whale exposures

Migrating gray whales often travel in groups of 2, although larger pods do occur. For gray whales, NMFS believes 4 Level B authorized takes is reasonable.

Harbor porpoises are known to occupy shallow, coastal waters and, therefore, are likely

to be found in the vicinity of the MCR. They are known to occur within the proposed project area, however, density data for this region is unavailable (Griffith 2015).

The SWFSC stratum model under the Marine Animal Monitor Model provides an estimated density per km² of year-round porpoises for areas near northern California, which may provide a surrogate proxy value for assuming possible densities near the jetties. Though not in the project vicinity, the range of 3.642 animals/km² (Barlow *et al.* 2009, Halpin *et al.* 2009) is a relatively high density compared to values moving even further south along the model boundaries, for which the northern-most extent ends in California. Given anecdotal evidence (Griffith 2015) and sightings recorded on the OBIS network from surveys done between 1989 and 2005, (Halpin *et al.* 2009, OBIS-SEAMAP 2015), this higher density may be appropriate for the MCR vicinity, or may be conservative.

The formula previously described was used to arrive at a take estimate for harbor porpoise.

$$\text{Exposure Estimate} = (3.642_{\text{DensityEstimate}} * 23.63_{\text{ZOI Jetty A}} * 17_{\text{days}}) = 1,464.$$

Based on the density model suggested by NOAA (2015), the Corps has provided a very conservative maximum estimate of 1,464 harbor porpoise disturbance exposures over the 17 days of operation. However, this number of potential exposures does not accurately reflect the actual number of animals that would potentially be taken for the MCR jetty project. Rather, it is more likely that the same pod may be exposed more than once during the 17-day operating window. The highest estimated number of animals exposed on any single day based on the modeled proxy density (Barlow *et al.* 2009 at SERDP) and the jetty with the greatest ZOI is 193 animals (from South Jetty Channel). While the number of pods in the vicinity of the MCR is unknown, the size of the pods is usually assumed to be significantly smaller than 193 animals.

According to OBIS-SEAMAP (2015 and Halpin *et al.* 2009), the normal range of group size generally consists of less than five or six individuals, though aggregations into large, loose groups of 50 to several hundred animals could occur for feeding or migration. Because the ZOI only extends for a maximum of 7,256 meters (4.6 miles), it may also be assumed that due to competition and territorial circumstances only a limited number of pods would be feeding in the ZOI at any particular time. If the modeled density calculations are assumed, then this means anywhere from 32 small pods to 2 large, 100-animal pods might be feeding during every day of pile installation. Given these values seem an unrealistic representation of use and pod densities within any one of the ZOIs, NMFS is proposing an alternative calculation.

NMFS conservatively assumed that a single, large feeding pod of 50 animals forms within the ZOI for Jetty A on each day of pile installation. Though this is likely much higher than actual use by multiple pods in the vicinity, it more realistically represents a worst-case scenario for the number of animals that could potentially be affected by the proposed work. This calculation also assumes that it is a new pod of individuals would be affected on each installation day, which is also unlikely given pod residency. Therefore, NMFS is permitting a Level B take for 850 animals.

There are haulout sites on the South Jetty used by pinnipeds, especially Steller sea lions. It is likely that pinnipeds that use the haulout area in would be exposed to 120 dB threshold acoustic threshold during pile driving activities. The number of exposures would vary based on weather conditions, season, and daily fluctuations in abundance. Based on a survey by the Washington Department of Fish & Wildlife (WDFW) the number of affected Steller sea lions could be between 200-800 animals per month; California sea lion numbers could range from 1 to 500 per month and the number of harbor seals could be as low as 1 to as high as 57 per month.

Exposure and take estimates below are based on past pinniped data from WDFW (2000-2014 data), which had a more robust monthly sampling frequency relative to Oregon Department of Fish & Wildlife (ODFW) counts. The exception to this was for harbor seal counts, for which ODFW (also 2000-2014 data) had more sampling data in certain months. Therefore, ODFW harbor seal data was used for the months of May and July. Exposure estimates are much higher than take estimates. This is because unlike the exposure estimate which assumes all new individuals, the take estimate request assumes that some of the same individuals will remain in the area and be exposed multiple times during the short 17-day installation period to complete and remove each offloading facility (for a total of about 68 days). NMFS examined the estimated monthly average number of animals from 2000-2014 hauled on South Jetty during May and June, which are the most likely months for pile installation as is shown in Table 3. There are no anticipated airborne exposures since the main haul out sites are not in close proximity to Jetty A. Note that the formula used by NMFS is different than that employed by the Corps in their application as NMFS is only analyzing potential impacts associated with Jetty A.

To reiterate, these exposure estimates assume a new individual is exposed every day throughout each acoustic disturbance, for the entire duration of the project.

$$\text{Exposure Estimate}_{\text{Stellar}} = (N_{\text{est(May+June/2)}} * 17_{\text{underwater/piles days}}) = 12,750 \text{ Steller sea lions}$$

$$\text{Exposure Estimate}_{\text{California}} = (N_{\text{est(May+June/2)}} * 17_{\text{underwater/piles days}}) = 2,788 \text{ CA sea lions}$$

$$\text{Exposure Estimate}_{\text{Harbor}} = (N_{\text{est(May+June/2)}} * 17_{\text{underwater/piles days}}) = 493 \text{ Harbor porpoises}$$

where:

N_{est} = Estimated daily average number of animals for May and June hauled out at South Jetty based on WDFW data.

Duration = total days of pile installation or removal activity for underwater thresholds (17);

Table 3. Authorized Takes of Pinnipeds During Pile Installation at Jetty A

Month	Steller Sea Lion	California Sea Lion	Harbor Seal
	Avg ¹ #	Avg ¹ #	Avg ^{1,2} #
April	587	99	-
May	824	125	0
June	676	202	57
July	358	1	10
August	324	115	1
September	209	249	-
October	384	508	-
Avg Daily Count (May+ June/2) ³	750	164	29
Total Exposures over Duration ⁴ (17 days)	12,750	2,788	493

¹ WDFW average daily count per month from 2000-2014.

² ODFW average daily count per month for May and July 2000-2014 due to additional available sampling data.

³ Conservatively assumes each exposure is to new individual, all individuals are new arrivals each month, and no individual is exposed more than one time.

⁴ Assumed 17 pile installation/removal days.

Analyses and Determinations

Negligible Impact Analysis

Negligible impact is “an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival” (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of 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, NMFS must consider other factors, such as the likely nature of any

responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration, etc.), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, effects on habitat, and the status of the species.

To avoid repetition, the discussion of our analyses applies to all the species listed in Table 4 given that the anticipated effects of this pile driving project on marine mammals are expected to be relatively similar in nature. There is no information about the size, status, or structure of any species or stock that would lead to a different analysis for this activity, else species-specific factors would be identified and analyzed.

Pile driving activities associated with the rehabilitation of Jetty A at the mouth of the Columbia River, as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the planned 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, vibratory hammers will be the only method of installation utilized. No impact driving is planned. Vibratory driving does not have significant potential to cause injury to marine mammals due to the relatively low source levels produced (site-specific acoustic monitoring data show no source level measurements above 180 dB rms) and the lack of potentially injurious source characteristics. The likelihood that marine mammal detection ability by trained observers is high under the environmental conditions described for

the rehabilitation of Jetty A at MCR further enables the implementation of shutdowns to avoid injury, serious injury, or mortality.

The Corps' proposed activities are localized and of short duration. The entire project area is limited to the Jetty A area and its immediate surroundings. Actions covered under the Authorization would include installing a maximum of 24 piles for use as dolphins and a maximum of 93 sections of Z or H piles for retention of rock fill over 17 days. The piles would be a maximum diameter of 24 inches and would only be installed by vibratory driving method. The possibility exists that smaller diameter piles may be used but for this analysis it is assumed that 24 inch piles will be driven.

These localized and short-term noise exposures may cause brief startle reactions or short-term behavioral modification by the animals. These reactions and behavioral changes are expected to subside quickly when the exposures cease. Moreover, the proposed mitigation and monitoring measures are expected to reduce potential exposures and behavioral modifications even further. Additionally, no important feeding and/or reproductive areas for marine mammals are known to be near the proposed action area. Therefore, the take resulting from the proposed project is not reasonably expected to and is not reasonably likely to adversely affect the marine mammal species or stocks through effects on annual rates of recruitment or survival.

The project also is not expected to have significant adverse effects on affected marine mammals' habitat, as analyzed in detail in the "Anticipated Effects on Marine Mammal Habitat" section. The project activities would not modify existing marine mammal habitat. 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.

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; Lerma, 2014). 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. In response to vibratory driving, pinnipeds (which may become somewhat habituated to human activity in industrial or urban waterways) have been observed to orient towards and sometimes move towards the sound. The pile driving activities analyzed here are similar to, or less impactful than, numerous construction activities conducted in other similar locations, 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 fitness 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 project area while the activity is occurring.

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 and; (3) the presumed efficacy of the proposed mitigation measures in reducing the effects of the specified activity to the level of least practicable impact. 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 proposed monitoring and mitigation measures, NMFS finds that the total marine mammal take from the Corps' rehabilitation of Jetty A at MCR will have a negligible impact on the affected marine mammal species or stocks.

Table 4. Estimated Percentage of Species/Stocks That May Be Exposed to Level B Harassment

Species	Total proposed authorized takes	Abundance	Percentage of total stock
Killer whale (Western transient stock)	8	243	3.2%
Gray whale (Eastern North Pacific Stock)	4	18,017	<0.01%
Harbor porpoise	850	21,487	3.9%
Steller sea lion	12,750	63,160- 78,198	20.2-16.3- 1.0%

California sea lion	2,788	296,750	0.01%
Harbor seal	493	24,732	2.0%

Small Numbers Analysis

Table 4 illustrates the number of animals that could be exposed to received noise levels that could cause Level B behavioral harassment for the proposed work associated with the rehabilitation of Jetty A at MCR. The analyses provided above represents between <0.01%—20.9% of the populations of these stocks that could be affected by Level B behavioral harassment. The numbers of animals authorized to be taken for all species would be considered small relative to the relevant stocks or populations even if each estimated taking occurred to a new individual—an extremely unlikely scenario. For pinnipeds occurring in the vicinity of Jetty A, there will almost certainly be overlap in individuals present day-to-day, and these takes are likely to occur only within some small portion of the overall regional stock.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, which are expected to reduce the number of marine mammals potentially affected by the proposed action, NMFS finds 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 subsistence uses of marine mammals in the proposed project area; and, thus, no subsistence uses impacted by this action.

Endangered Species Act (ESA)

There are two marine mammal species that are listed as endangered under the ESA with confirmed or possible occurrence in the study area: humpback whale and Southern resident killer whale. For the purposes of this IHA, NMFS determined that take of Southern resident killer whales was highly unlikely given the rare occurrence of these animals in the project area. A similar conclusion was reached for humpback whales. On March 18, 2011, NMFS signed a Biological Opinion concluding that the proposed action is not likely to jeopardize the continued existence of humpback whales and may affect, but is not likely to adversely affect Southern resident killer whales.

National Environmental Policy Act (NEPA)

The Corps issued the *Final Environmental Assessment Columbia River at the Mouth, Oregon and Washington Rehabilitation of the Jetty System at the Mouth of the Columbia River* and *Finding of No Significant Impact* in 2011. The environmental assessment (EA) and finding of no significant interest (FONSI) were revised in 2012 with a FONSI being signed on July 26, 2012. NMFS has adopted the findings of the 2012 FONSI.

Authorization

As a result of these determinations, we have issued an IHA to the Corps for conducting the described activities related to the rehabilitation of Jetty A at the MCR from May 1, 2016

through April 30, 2017 provided the previously described mitigation, monitoring, and reporting requirements are incorporated.

Dated: September 1, 2015.

Perry Gayaldo,
Deputy Director,
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National Marine Fisheries Service.

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