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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XG908

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the King Pile Markers Project on 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 NMFS has issued an incidental harassment authorization (IHA) to the U.S. Army Corps of Engineers, Portland District (Corps) to incidentally harass, by Level A and Level B harassment only, marine mammals during the King Pile Markers Project on the Columbia River in Washington and Oregon.

DATES: This Authorization is effective from October 1, 2020 through September 30, 2021.

FOR FURTHER INFORMATION CONTACT: Robert Pauline, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act.* In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

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

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

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On February 11, 2019, NMFS received a request from the Corps for an IHA to take marine mammals incidental to pile driving associated with the replacement of king pile markers at numerous dike locations in the lower Columbia River system. The king pile markers are located in Oregon and Washington between river miles (RM) 41 and 137. The application was

deemed adequate and complete on August 2, 2019. The Corps' request is for take of small numbers of harbor seal (*Phoca vitulina*), Steller sea lion (*Eumetopias jubatus*), and California sea lion (*Zalophus californianus*) that may occur in the vicinity of the project by Level A and Level B harassment. Neither the Corps nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Planned Activity

Overview

The Corps is replacing up to 68 king pile markers at 68 pile dike sites along the lower Columbia River between river miles (RM) 41 and 137. There are a total of 256 pile dikes, in the existing dike system. The king piles that require replacement are not functioning as intended. They were designed to aid navigation by helping mariners avoid pile dikes during high water. Many existing king piles are either missing completely, damaged, or degraded to a point where they no longer provide a visual identifier. This lack of visibility poses a safety concern to both recreational and commercial boaters on the river. Replacement of the king piles will improve visibility of pile dikes and improve safety for Columbia River traffic. Impact and vibratory pile installation would introduce underwater sounds at levels that may result in take, by Level B harassment, of marine mammals in the lower Columbia River. Pile installation is expected to occur for up to 61 days and take place in October and November of 2020. As a contingency, the IHA is effective for a period of one year, from October 1, 2020 through September 30, 2021.

A detailed description of the planned King Pile Project is provided in the **Federal Register** notice for the proposed IHA (84 FR 44866; August 27, 2019). Since that time, no changes have been made to the planned project activities. Therefore, a detailed description is not

provided here. Please refer to that **Federal Register** notice for the description of the specific activity.

Comments and Responses

We published a notice of receipt of the Corps' application and proposed IHA in the **Federal Register** on August 27, 2019 (84 FR 44866). That notice described, in detail, the Corps' activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission (Commission).

Comment: The Commission recommended that NMFS authorize 52 Level B harassment takes and 1 Level A harassment take of harbor seals and 27 Level B harassment takes of Steller sea lions for each of the 68 piles to be driven. The Commission also recommended that take should be calculated based on the number of piles driven instead of the number of working days.

Response: For harbor seals, NMFS has accepted the Commission's recommendation to calculate take based on the total number of piles instead of the total number of driving days as up to nine piles could be driven in single day. The Commission noted that there are a number of harbor seal haulouts located along the section of the Columbia River where king piles will be installed (Jeffries *et al*. 2000). However, this data is 20 years old, and biologists with the Corps indicated there were not aware of large harbor seal haul-outs in close proximity to any of the king pile locations. NMFS has increased the take of harbor seals from three per day to 10 per pile based on local anecdotal evidence included in the Port of Kalama IHA application for the Kalama Manufacturing and Marine Export Facility (81 FR 89436; December 12, 2016). Since the anecdotal evidence pertains to a single fixed location, without an associated temporal component. NMFS calculated take based on the number of piles, instead of the number of days.

It is important to note that driving times are relatively short at each king pile location and will require no more than 1 hour of impact and 30 minutes of vibratory driving. NMFS is also authorizing Level A take of 10 harbor seals as it is possible during impact pile driving that some small number of individuals could enter the permanent threshold shift (PTS) zone and stay for a sufficient duration to be taken before being detected by observers. Of the haulouts cited by Jeffries *et al.* (2000) only 5 were located in the project area and these were described as low use. A total of 10 king pile installation locations are located within five miles of these haulouts.

In the proposed rule, NMFS based Level B take of Steller sea lions on observations at one of three tailtraces at Bonneville Dam. NMFS multiplied the number (56) by 3 to account for all the tailtraces for each driving day in the proposed IHA. NMFS understands that many of these observations are likely repeated sightings of the same animal and acknowledges that this take estimate is likely overestimated. A number of these sea lions were "branded" and could be individually identified. Some of these identified animals were observed at the dam over multiple days. NMFS acknowledges that the number of sea lions swimming up and down the Columbia River, passing king pile markers along the way, is far less than the number observed at the dam. Therefore, NMFS will assume that 56 (the maximum number seen at where observations were conducted at the tailtrace, instead of multiplying by 3) is the total number of Steller sea lions could be taken per day resulting in 3,416 takes by Level B harassment. The take estimate for California sea lions remains unchanged at 9 per day for a total of 549 takes by Level B harassment.

Comment: If NMFS chooses to authorize 56 Level B harassment takes of Steller sea lion per day, the Commission recommends that, at a minimum, NMFS authorize the same number of

Level B harassment takes of harbor seals as Steller sea lions and include 1 Level A harassment take per pile of harbor seals.

Response: NMFS explained the reasoning behind the revised estimated take numbers for harbor seals and Steller sea lions in the previous response. NMFS does agree that that authorizing limited take of harbor seals by Level A harassment is prudent and has included this as part of the final authorization. The PTS isopleth is 56.9 meters (m) for harbor seals during impact pile driving so it is conceivable that a harbor seal could enter the Level A harassment zone before being detected resulting in multiple shutdowns which could delay the project, however, the small size of the zone and the likelihood of some degree of aversion make it unlikely that this would happen often.

Comment: The Commission recommended that NMFS obtain more recent pinniped haul-out count data from Washington Department of Fish and Wildlife and the Oregon Department of Fish and Wildlife before processing any additional authorizations for activities occurring in the Columbia River.

Response: When NMFS receives another application for an IHA at a location on the Columbia River these agencies will be contacted.

Comment: The Commission recommended that NMFS conduct a more thorough review of the applications and **Federal Register** notices to ensure accuracy, completeness, and consistency and to ensure that they are based on best available science, prior to submitting them to the **Federal Register** for public comment.

Response: NMFS thanks the Commission for its recommendation. NMFS makes every effort to read the notices thoroughly prior to publication and will continue this effort to publish the best possible product for public comment using the best available science

Comment: The Commission recommended that NMFS conduct a more thorough review of final incidental harassment authorizations and letters of authorization to ensure accuracy and completeness and consistency with the information stipulated in the **Federal Register** notice for final issuance.

Response: NMFS thanks the Commission for its concerns regarding the IHA process and will make a concerted effort to ensure that language in the final IHA is in agreement with text in the **Federal Register** notice for final issuance.

Comment: The Commission recommended that NMFS refrain from using the proposed renewal process for the Corps' authorization. The renewal process should be used sparingly and selectively, by limiting its use only to those proposed incidental harassment authorizations that are expected to have the lowest levels of impacts on marine mammals and that require the least complex analyses. If NMFS elects to use the renewal process frequently or for authorizations that require a more complex review or for which much new information has been generated the Commission recommended that NMFS provide the Commission and other reviewers the full 30-day comment period as set forth in section 101(a)(5)(D)(iii) of the MMPA.

Response: We appreciate the Commission's input and direct the reader to our recent response to the identical comment, which can be found at 84 FR 52464 (October 2, 2019), pg. 52466.

Comment: The Commission recommended that, for all relevant incidental take authorizations, NMFS refrain from using a source level reduction factor for sound attenuation device implementation during impact pile driving, including the 24-in steel piles proposed for use by USACE, until such time that it consults with Caltrans regarding the appropriate source level reduction factor to use to minimize far-field effects on marine mammals

Response: We direct the reader to our recent response to the nearly identical comment, which can be found at 84 FR 45983 (September 3, 2019), pg. 45985. NMFS will evaluate the appropriateness of using a certain source level reduction factor for sound attenuation device implementation during impact pile driving for all relevant incidental take authorizations when more data become available. Caltrans and other entities that have pertinent data may be contacted as necessary.

Changes from the Proposed IHA to Final IHA

The project has been delayed by one year due to contracting issues. Therefore, construction activities will not begin until October 1, 2020. Therefore, NMFS has revised the effective dates of the IHA from October 1, 2020 through September 30, 2021 to reflect this change.

As described in the **Federal Register** notice for the proposed IHA (84 FR 44866; August 27, 2019), NMFS did not propose take by Level A harassment. The permanent threshold shift (PTS) isopleth is 56.9 m for harbor seal for an hour of impact pile driving. As such, it is possible that during the course of the activities some small number of harbor seals could enter the Level A harassment zone and stay for a sufficient duration to be taken before the Corps detects them and is able to shutdown. Therefore, in consideration of the recommendation from the Commission, NMFS is authorizing 10 instances of take of harbor seal by Level A harassment. NMFS has also revised Level B harassment takes for harbor seals based on the number of piles installed instead of the number of pile driving days. These changes are described in the "Estimated Take" section.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (*https://www.fisheries.noaa.gov/find*-species).

Table 1 lists all marine mammal species with expected potential for occurrence in the lower Columbia River and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2016). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprise that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's 2018 U.S. Pacific Marine Mammal SARs (Carretta *et*

al., 2019). All values presented in Table 1 are the most recent available at the time of publication and are available in the 2018 SARs (Carretta *et al.*, 2019).

Table 1. Marine Mammal Species Likely to be in Lower Columbia River near King Pile Marker Sites

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR	Annual M/SI[3]
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
California sea lion	*Zalophus californianus*	U.S. Stock	-, -, N	257,606 (N/A, 233,515, 2014)	14,011	>320
Steller sea lion	*Eumetopias jubatus*	Eastern U.S.	-, -, N	41,638 (See SAR, 41,638, 2015)	2,498	108
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina richardii*	Oregon and Washington Coast	-, -, N	UNK (UNK, UNK, 1999)	UND	10.6

1 - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.
2- NMFS marine mammal stock assessment reports online at: www.nmfs.noaa.gov/pr/sars/. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.
3 - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

All species that could potentially occur in the planned survey areas are included in Table 1. All three species (with three managed stocks) described below co-occur temporally and spatially co-occur with the planned activity to the degree that take is reasonably likely to occur, and we have authorized it.

A detailed description of the of the species likely to be affected by the Corps' project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, were provided in the **Federal Register** notice for the

proposed IHA (84 FR 44866; August 27, 2019). Since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (*https://www.fisheries.noaa.gov/find-species*) for generalized species accounts.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

Acoustic effects on marine mammals during the specified activity can occur from vibratory and impact pile driving. The effects of underwater noise from the Corps' planned activities have the potential to result in Level A and Level B harassment of marine mammals in the vicinity of the action area. The effects of pile driving on marine mammals are dependent on several factors, including the size, type, and depth of the animal; the depth, intensity, and duration of the pile driving sound; the depth of the water column; the substrate of the habitat; the standoff distance between the pile and the animal; and the sound propagation properties of the environment. It is likely that the pile driving could result in temporary, short term changes in an animal's typical behavioral patterns and/or avoidance of the affected area as well as minor PTS in a limited number of harbor seal. The **Federal Register** notice for the proposed IHA (84 FR 44866; August 27, 2019) included a discussion of the effects of anthropogenic noise on marine mammals, therefore that information is not repeated here.

Anticipated Effects on Marine Mammal Habitat

The main impact issue associated with the planned activity would be temporarily elevated sound levels and the associated direct effects on marine mammals. The most likely impact to marine mammal habitat occurs from pile driving effects on likely marine mammal prey (*i.e.*, fish) near where the piles are installed. Impacts to the immediate substrate during installation and removal of piles are anticipated, but these would be limited to minor, temporary

suspension of sediments, which could impact water quality and visibility for a short amount of time, but which would not be expected to have any effects on individual marine mammals. Impacts to substrate are therefore not discussed further. These potential effects are discussed in detail in the **Federal Register** notice for the proposed IHA (84 FR 44866; August 27, 2019).

Estimated Take

This section provides an estimate of the number of incidental takes authorized through this IHA, which informs both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Take of marine mammals incidental to the Corps' pile driving activities could occur as a result of Level A and B harassment. As described previously, no mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note

that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the take estimate.

Acoustic Thresholds

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

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

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

Level A harassment for non-explosive sources - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). The Corp's planned activity includes the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving) source.

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance*.

Table 2. Thresholds Identifying the Onset of PTS

	PTS Onset Acoustic Thresholds* **(Received Level)**	
Hearing Group	**Impulsive**	**Non-impulsive**
Low-Frequency (LF) Cetaceans	*Cell 1* $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	*Cell 2* $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	*Cell 3* $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	*Cell 4* $L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	*Cell 5* $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	*Cell 6* $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	*Cell 7* $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	*Cell 8* $L_{E,PW,24h}$: 201 dB

Otariid Pinnipeds (OW) (Underwater)	*Cell 9* $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	*Cell 10* $L_{E,OW,24h}$: 219 dB
* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered. Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1μPa²s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.		

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

Sound Propagation

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

$TL = B * \log_{10} (R_1/R_2)$, where:

B = transmission loss coefficient (assumed to be 15)

R_1 = the distance of the modeled sound pressure Level from the driven pile, and

R_2 = the distance from the driven pile of the initial measurement.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source is dependent

on a variety of factors, most notably the water bathymetry and presence or absence of reflective or absorptive conditions including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source (20*log(range)). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source (10*log(range)). As is common practice in coastal waters, here we assume practical spreading loss (4.5 dB reduction in sound level for each doubling of distance). Practical spreading is a compromise that is often used under conditions where water depth increases as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions.

Sound Source Levels

The intensity of pile driving sounds is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the activity takes place. Pile driving may be done with either vibratory or impact hammer, with vibratory driving being the preferred method. Due to anticipated enrockment surrounding existing piles, however, use of impact hammers may be required.

Estimated in-water sound levels anticipated from vibratory installation and impact hammer installation of steel pipe piles are summarized in Table 3. Sound pressure levels for impact driving of 24-in steel piles were taken from Caltrans (2015). The source levels (SLs) in the table below include a 7 dB reduction for impact driving due to attenuation associated with the use of bubble curtains. Vibratory driving source levels for 24-in steel piles came from the United

States Navy (2015). Due to the short operating window (61 days), and concerns about possible delays due to bad weather, the Corps does not propose to use bubble curtains during vibratory driving. This should expedite pile installation at king pile locations where use of vibratory hammers is employed.

Table 3. Estimated Underwater Source Levels Associated with Vibratory Pile Driving and Impact Hammer Pile Driving

Pile Type	SPL (single strike)		
24-Inch Steel Pipe Piles w/impact hammer (attenuated)[1]	200 dB_{PEAK}	187 dB_{RMS}	171 dB_{SEL}
24-Inch Steel Pipe Piles w/vibratory (unattenuated)[2]	Not Available	161 dB_{RMS}	Not Available

[1] From Caltrans (2015) Acoustic data from CalTrans 2015 Table I.2-1. Summary of Near-Source (10-Meter) Unattenuated Sound Pressure Levels for In-Water Pile Driving Using an Impact Hammer: 0.61-meter (24-inch) steel pipe pile in water ~15 meters deep, w/ 7dB reduction for use of attenuation (as per NMFS 2019 pers. Comm).

[2] From United States Navy. 2015. Proxy source sound levels and potential bubble curtain attenuation for acoustic modeling of nearshore marine pile driving at Navy installations in Puget Sound. Prepared by Michael Slater, Naval Surface Warfare Center, Carderock Division, and Sharon Rainsberry, Naval Facilities Engineering Command Northwest. Revised January 2015. Table 2-2.

When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop

ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as pile driving, NMFS User Spreadsheet predicts the distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would incur PTS. Inputs used in the User Spreadsheet, and the resulting Level A harassment isopleths are reported below in Tables 4 and 5 respectively. Note that while up to 9 piles could be installed in a single day, they would be driven at different locations and the ensonified areas associated with each location would not overlap. For the purpose of calculating PTS isopleths using the User Spreadsheet, it is assumed that a single pile would be driven per day at a single location (*i.e.*, the zones for each pile are calculated independently) since there will be no overlap of disturbance zones from adjacent king pile installation sites. The Level B harassment isopleths were calculated using the practical spreading loss model. Underwater noise will fall below the behavioral effects threshold of 160 dB for impact driving and 120 dB rms for vibratory driving at the distances shown in Table 5.

Table 4. NMFS Technical Guidance (2018) User Spreadsheet Input To Calculate PTS Isopleths

Inputs	24-in Steel Impact Installation	24-in Steel Vibratory Installation
Spreadsheet Tab Used	E.1) Impact Pile Driving	A.1) Vibratory Pile Driving
Source Level (Single Strike/shot SEL)	171 dB SEL/ 200 dB Peak	161 dB RMS
Weighting Factor Adjustment (kHz)	2	2.5
Number of strikes per pile	550	
Number of piles per day	1	1
Duration to install single pile (minutes)	60	30
Propagation (xLogR)	15	15
Distance of source level measurement (meters)[+]	10	10

Table 5. Level A and Level B Harassment Isopleths

Noise Generation	Level A Harassment	Level B Harassment

Type	PTS Isopleth (meters)		Isopleth (meters)
	Phocid Pinniped	Otariid Pinniped	All Groups
24" Steel Pipe Impact attenuated	56.9	4.1	631
24" Steel Pipe Vibratory unattenuated	2.6	0.2	5,412

Marine Mammal Occurrence and Take Calculation and Estimation

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations. Pinnipeds are typically concentrated at haul out sites (*e.g*. the MCR South jetty) and feeding areas where there are concentrations of salmon (*e.g.* Bonneville Dam). Individual animals that occur near king pile locations are likely to be in transit between these two prominent sites. Pinnipeds that travel to Bonneville Dam consistently forage in all three of the dam's tailraces. A tailrace is the flume, or water channel leading away from the dam. Pinniped presence at the dam during the spring months has been recorded since 2002 and during fall/winter months starting in 2011 to assess the impact of predation on adult salmonids and other fish (Tidwell *et al.* 2019).

Estimated take in the proposed IHA was calculated using the maximum daily number of individuals observed at Bonneville dam (Tidwell *et al.* 2019), multiplied by the total number of work days (61). The maximum daily number of animals observed at the dam between August 15 and December 31 was used for both California sea lions (3 in 2015 and 2017) and Steller sea lions (56 in 2016). No harbor seals were observed during the fall/winter sampling period. However, only one of the three tailraces was monitored during the fall/winter months and only when sea lion abundance was ≥20 animals. Therefore, NMFS multiplied the number of observed California and Steller sea lions by three to account for potential animals at all of the tailraces.

Since there were no harbor seals observed during the fall/winter period, NMFS used the maximum daily observation from the spring observation period (3 in 2006) during which all three tailraces were monitored.

For the final IHA, NMFS revised take numbers of Steller sea lions and harbor seals. For Steller sea lions NMFS reduced take by utilizing the maximum of observations (56) at only one tailrace instead of multiplying by 3 as was done in the proposed IHA because many of these observations at the dam are likely repeated sightings of the same animal, some of whom are known to remain at the dam for extended periods. NMFS feels this reduced take estimate is more appropriate given that the initial estimate in the proposed IHA was overly conservative. Therefore, NMFS will assume that 56 is the total number of Steller sea lions could be taken per day resulting in 3,416 takes by Level B harassment. Take of California sea lions remains unchanged at 9 takes per day.

Harbor seal takes were increased to 10 per pile based on anecdotal evidence reported by the Port of Kalama in their IHA application for the. Kalama Manufacturing and Marine Export Facility (81 FR 89436; December 12, 2016). NMFS elected to calculate seal takes based on the number of animals taken per pile instead of per day. This was done since the anecdotal data represents a single location without any temporal component on which a daily take rate could be derived. NMFS authorized take of 10 harbor seals by Level A harassment since it is possible during impact pile driving that a harbor seal could enter the Level A harassment zone before being detected by observers.

Table 6 depicts the stocks NMFS proposes to authorize for take, the numbers authorized, and the percentage of the stock taken.

Table 6. Level B Harassment Take Estimates for the King Pile Marker Project

Species	Level A Take	Level B Take	Stock Abundance	Percentage of Stock Taken
California Sea Lion	--	549	296,750	0.2%
Stellar Sea Lion	--	3,416	41,638	8.2%
Harbor Seal	10	610	24,732*	2.5%

*There is no current estimate of abundance available for this stock since most recent abundance estimate is >8 years old. Abundance value provided represents best available information from 1999.

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 (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

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

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

(2) the practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

In addition to the measures described later in this section, the Corps must employ the following standard mitigation measures:

- Conduct briefings between construction supervisors and crews and the marine mammal monitoring team prior to the start of all pile driving activity, and when new personnel join the work, to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures;
- For in-water heavy machinery work other than pile driving (*e.g.*, standard barges, tug boats), 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);
- Work may only occur during daylight hours, when visual monitoring of marine mammals can be conducted;
- For any marine mammal species for which take by Level B harassment has not been requested or authorized, in-water pile installation will shut down immediately when the animals are sighted;
- If take by Level B harassment reaches the authorized limit for an authorized species, pile installation will be stopped as these species approach the Level B harassment zone to avoid additional take of them.

Establishment of Shutdown and Level A Harassment Zones—For all pile driving activities, the Corps shall establish a shutdown zone. The purpose of a shutdown zone is generally 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). Shutdown zones will vary based on the type of driving activity and by marine mammal hearing group. Shutdown zones during impact and vibratory driving will be 10 m for all species. Planned shutdown zones are larger than the calculated Level A harassment isopleths shown in Table 5 for Steller sea lions and California sea lions. The Level A harassment zone is larger for phocids than for other authorized species. Seals could appear unexpectedly in this zone before being observed by protected species observers (PSOs). Therefore, the area between 10 m and 60 m is established as a Level A harassment zone for harbor seal and must be monitored as such by PSOs. The placement of PSOs during all pile driving activities (described in detail in the Monitoring and Reporting Section) will ensure that the entirety of all shutdown zones are visible during pile installation.

Establishment of Monitoring Zones for Level B Harassment—The Corps will establish monitoring zones, based on the Level B harassment isopleths which are areas where SPLs are equal to or exceed the 160 dB rms threshold for impact driving and the 120 dB rms threshold during vibratory driving. Monitoring zones provide utility for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project area outside the shutdown zone and thus prepare for a potential cease of activity should the animal enter the shutdown zone. In the unlikely event that a cetacean enters the Level B harassment zones work will stop immediately until the animal either departs the zone or is undetected for 15

minutes. Distances to the Level B harassment zones are depicted in Table 5. In addition, the Corps will establish minimum allowable work distances between adjacent work platforms, based on monitoring zone isopleths, to ensure that there is no overlap of behavioral harassment zones.

Sound Attenuation— Bubble curtains will be used during any impact pile driving of piles located in water greater than 2 ft. in depth. The bubble curtain will be operated in a manner consistent with the following performance standards:

a. The bubble curtain will distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column;

b. The lowest bubble ring will be in contact with the mudline for the full circumference of the ring, and the weights attached to the bottom ring shall ensure 100 percent mudline contact. No parts of the ring or other objects shall prevent full mudline contact; and

c. Air flow to the bubblers must be balanced around the circumference of the pile.

Soft Start—The use of a soft-start procedure are believed to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity. For impact pile driving, contractors will be required to provide an initial set of strikes from the hammer at reduced percent energy, each strike followed by no less than a 30-second waiting period. This procedure will be conducted a total of three times before impact pile driving begins. Soft start is not required during vibratory pile driving activities. A soft start must be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of thirty minutes or longer. If a marine mammal is present within the shutdown zone, soft start will be delayed until the animal is observed leaving the shutdown zone. Soft start will begin only after the PSO has determined, through sighting, that the animal has moved outside the shutdown zone or 15

minutes have passed without being seen in the zone. If a marine mammal is present in the Level B harassment zone, soft start may begin and a Level B take will be recorded for authorized species. Soft start up may occur whether animals enter the Level B zone from the shutdown zone or from outside the monitoring area.

Pre-Activity Monitoring—Prior to the start of daily in-water construction activity, or whenever a break in pile driving of 30 minutes or longer occurs, PSOs will observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone will be cleared when a marine mammal has not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zone, a soft-start cannot proceed until the animal has left the zone or has not been observed for 15 minutes. If the Level B harassment zone has been observed for 30 minutes and marine mammals are not present within the zone, soft start procedures can commence and work can continue even if visibility becomes impaired within the Level B harassment zone. When a marine mammal permitted for take by Level B harassment is present in the Level B harassment zone, pile driving activities may begin and take by Level B will be recorded. If work ceases for more than 30 minutes, the pre-activity monitoring of both the Level B harassment and shutdown zone will commence.

Based on our evaluation of the applicant's required measures, NMFS has determined that the mitigation measures provide the means effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking.

The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

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

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

Visual Monitoring

Monitoring would be conducted 30 minutes before, during, and 30 minutes 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. Pile driving activities include the time to install a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

There will be at least one PSO employed at all king pile installation locations during all pile driving activities. PSO will not perform duties for more than 12 hours in a 24-hour period. The PSO would be positioned close to pile driving activities at the best practical vantage point.

As part of monitoring, PSOs would scan the waters using binoculars, and/or spotting scopes, and would use a handheld GPS or range-finder device to verify the distance to each sighting from the project site. All PSOs would be trained in marine mammal identification and behaviors and are required to have no other project-related tasks while conducting monitoring. In addition, PSOs will monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. Qualified observers are trained and/or experienced professionals, 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;
- Independent observers (*i.e.*, not construction personnel);
- Observers must have their CVs/resumes submitted to and approved by NMFS;

- Advanced education in biological science or related field (*i.e.*, undergraduate degree or higher). Observers may substitute education or training for experience;
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);
- At least one observer must have prior experience working as an observer;
- 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.

Due to the large size of the Level B harassment zones at each pile, it is impracticable for the PSO to consistently view the entire harassment area. Therefore, takes by Level B harassment will be recorded and extrapolated based upon the number of observed takes and the percentage of the Level B harassment zone that was not visible. Distances to the Level B harassment zones are depicted in Table 5.

Reporting

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

- 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;
- An estimate of total take based on proportion of the monitoring zone that was observed;
- Other human activity in the area; and
- Marine mammal PSO observational datasheets or raw data.

If no comments are received from NMFS within 30 days, that phase's draft final report will constitute the final report. If comments are received, a final report for the given phase addressing NMFS comments must be submitted within 30 days after receipt of comments.
In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHAs (if issued), such as an injury, serious injury or mortality, the

Corps would immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator. The report would include the following information:

- Description of the incident;
- Environmental conditions (*e.g.*, Beaufort sea state, visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with the Corps to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The Corps would not be able to resume their activities until notified by NMFS via letter, email, or telephone.

In the event that the Corps discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition as described in the next paragraph), the Corps would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator. The report would include the same information identified in the paragraph above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with the Corps to determine whether modifications in the activities are appropriate.

In the event that the Corps discovers an injured or dead marine mammal and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in these IHAs (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the Corps would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator, within 24 hours of the discovery. The Corps would provide photographs, video footage (if available), or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected

in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all species listed in Table 6, given that NMFS expects the anticipated effects of the planned pile driving to be similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, NMFS has identified species-specific factors to inform the analysis.

NMFS does not anticipate that serious injury or mortality would occur as a result of the Corps' planned activity. As stated in the planned mitigation section, shutdown zones will be established and monitored that equal or exceed calculated Level A harassment isopleths during all pile driving activities.

Behavioral responses of marine mammals to pile driving during the King Pile Marker Project are expected to be mild, short term, and temporary. Marine mammals within the Level B harassment zones may not show any visual cues they are disturbed by activities or they could become alert, avoid the area, leave the area, or display other mild responses that are not observable such as changes in vocalization patterns. Given the short duration of noise-generating activities (less than 90 minutes of combined daily impact and vibratory driving at 68 separate locations over 61 days, any harassment would be likely be intermittent and temporary.

In addition, for all species there are no known biologically important areas (BIAs) within the lower Columbia River and no ESA-designated marine mammal critical habitat. The lower Columbia River represents a very small portion of the total habitat available to the pinniped species for which NMFS is proposing to authorize take. More generally, there are no known

calving or rookery grounds within the project area, the project area represents a small portion of available foraging habitat, and the duration of noise-producing activities relatively is short, meaning impacts on marine mammal feeding for all species should be minimal.

Any impacts on marine mammal prey that would occur during the Corps' planned activity would have at most short-terms effects on foraging of individual marine mammals while transiting between the South Jetty at the Mouth of the Columbia River and Bonneville Dam located 146 miles upstream. Better feeding opportunities exist at these two locations which is why pinnipeds tend to congregate in these areas. Therefore, indirect effects on marine mammal prey during the construction are not expected to be substantial, and these insubstantial effects would therefore be unlikely to cause substantial effects on individual marine mammals or the populations of marine mammals as a whole.

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

- No mortality is anticipated or authorized;
- The Corps would implement mitigation measures including bubble curtains and soft-starts during impact pile driving as well as shutdown zones that exceed Level A harassment zones for authorized species, such that Level A harassment is neither anticipated nor authorized;
- Anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior;
- There are no BIAs or other known areas of particular biological importance to any of the affected stocks impacted by the activity within the Columbia River estuary or lower Columbia River; and

- The project area represents a very small portion of the available foraging area for all marine mammal species and anticipated habitat impacts are minimal.

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, NMFS finds that the total marine mammal take from the planned activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Table 6 in the *Marine Mammal Occurrence and Take Calculation and Estimation* section presents the number of animals that could be exposed to received noise levels that may result in take by Level B harassment from the Corps' planned activities. Our analysis shows that less than 9 percent of the Steller sea lion stock could be taken. Less than three percent of harbor seal and less than one percent of California sea lion are expected to be taken. Given that numbers for Steller sea lions were derived from limited observation at Bonneville Dam, it is likely that many of these takes will be repeated takes of the same animals over multiple days. As such, the take estimate serves as a good estimate of instances of take, but is likely an overestimate of

individuals taken, so actual percentage of stocks taken would be even lower. We also emphasize the fact that the lower Columbia River represents a very small portion of the stock's large range, which extends from southeast Alaska to southern California. It is unlikely that one quarter of the entire stock would travel in excess of 137 miles upstream to forage at Bonneville Dam on the Columbia River.

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

Unmitigable Adverse Impact Analysis and Determination

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

National Environmental Policy Act

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

This action is consistent with categories of activities identified in Categorical Exclusion B4 (incidental harassment authorizations with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

Endangered Species Act (ESA)

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

Authorization

NMFS has issued an IHA to the Corps for the harassment of small numbers of marine mammals incidental to the King Marker Project on the Columbia River provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: September 30, 2019.

Catherine Marzin,

Deputy Director, Office of Protected Resources,

National Marine Fisheries Service.

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