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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XA289

Takes of Marine Mammals Incidental to Specified Activities; Pile Driving in the Columbia River, WA

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 Marine Mammal Protection Act (MMPA) regulations, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to the Port of Vancouver, USA (Port), allowing the take of small numbers of marine mammals, by Level B harassment only, incidental to pile driving during construction of the Terminal 5 Bulk Potash Handling Facility.

DATES: Effective November 1, 2012, through October 31, 2013.

ADDRESSES: A copy of the IHA, the application, and the Environmental Assessment are available by writing to Tammy Adams, Acting Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3225 or by telephoning the contact listed here (see FOR FURTHER INFORMATION CONTACT), or visiting the Internet at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications. Documents cited in this

notice may be viewed, by appointment, during regular business hours, at the aforementioned address.

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

SUPPLEMENTARY INFORMATION:

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 specific 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 published in the Federal Register and 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" 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 United States can apply for an authorization to incidentally take small numbers of marine

mammals by harassment. Section 101(a)(5)(D) further established 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 22, 2011, NMFS received an application from the Port of Vancouver, USA (Port), requesting an IHA for the take, by Level B harassment, of small numbers of Pacific harbor seals (Phoca vitulina richardii), California sea lions (Zalophus californianus), and Steller sea lions (Eumatopius jubatus) incidental to pile driving activities conducted during the construction of the Terminal 5 Bulk Potash Handling Facility. In accordance with MMPA implementing regulations, NMFS issued a notice in the Federal Register on August 19, 2011 (76 FR 51947), requesting comments from the public on the proposed IHA.

Description of the Specified Activity

A complete description of the specified activity may be found in NMFS' proposed IHA document in the Federal Register (76 FR 51947, August 19, 2011). A summary of that document, along with some minor project changes, is provided here. The project will involve

construction of a potash handling facility at river mile 103.3 along the Columbia River in Vancouver, Washington. To support the new facility, a maximum of 195 (as opposed to the originally proposed 203) steel piles will be installed in the Columbia River at the project site (specifically, Terminal 5) using vibratory and impact pile driving. These piles are necessary for construction of a ship loading system and marine berthing facilities. The originally proposed installation of piles for stormwater outfall is no longer planned. A breakdown of pile size and associated activity are shown in Table 1.

Table 1. Summary of pile installation activities

Activity	Number of Piles (maximum)	Location
Installation of permanent piles for ship loader and berth	5, 54-in (1,372-mm) and 95 48-in (1,220-mm) steel pipe piles	River mile 103.3
Installation and removal of temporary piles during construction of ship loader and berth	95, 18- to 24-in (457- to 610-mm) steel pipe piles	
Removal of old piles	177, 16-in wood piles 31, 16-in wood piles	River mile 105 River mile 103.3

The 100 48-54-in (1,220-1,372-mm) steel pipe piles will be used for quadrant beams and pivot supports, the mooring dolphins and maintenance platform, access trestles, and as a contingency should additional piles be required. Approximately two piles will be installed per day over a four-month period. Although the exact duration of pile driving will vary depending on the installation procedures and geotechnical conditions, the applicant estimates that each permanent pile will require between two and three hours of vibratory installation and between one and two hours of impact driving to install. To the extent possible, all piles will be installed with an APE Model 200 (or similar) vibratory hammer; however, it may be necessary to seat a

pile using an impact hammer. The temporary piles (18- to 24-in diameter) will be driven solely with a vibratory hammer. Should an impact hammer be necessary for finishing the installation of permanent piles, the Port will use a DELMAG D46-32 with 60-80 maximum blows per foot, a DELMAG D80 with 20-30 maximum blows per foot, or a similar model. Sound attenuation devices, such as a bubble curtain, will be used during any impact hammering.

In addition to pile installation, a total of 303 piles will also be removed using vibratory extraction or a crane. These consist of the 95 temporary piles and 31 existing wood piles at Terminal 5 and 177 old wood piles upstream of Terminal 5 (Table 1). The 177 wood piles are located at Terminal 2, about two miles upstream from Terminal 5, and do not have much structural capacity. A pneumatic underwater chainsaw may be used if a pile breaks in the process, but associated noise is expected to be negligible. Above-water work will also be necessary to complete construction of each project component. There could be barges in the water to support construction activities; however, these will be concentrated in the direct vicinity of Terminal 5. Because pile repair, pile removal, and use of barges do not release loud sounds into the environment, marine mammal harassment from these activities is not anticipated.

Dates of Activity

The Washington Department of Fish and Wildlife's recommended in-water work window for this area is November 1 through February 28. Timing restrictions such as this are used to avoid in-water work when listed species are most likely to be present. Proposed pile installation and removal activities are scheduled to occur between November 1, 2012, and February 28, 2013, with the possible exception of the five 54-in (1,372-mm) piles. These five piles may be

installed outside of the in-water work window if they can be installed during low water periods under dry conditions.

Sound Propagation

For background, sound is a mechanical disturbance consisting of minute vibrations that travel through a medium, such as air or water, and is generally characterized by several variables. Frequency describes the sound's pitch and is measured in hertz (Hz) or kilohertz (kHz), while sound level describes the sound's loudness and is measured in decibels (dB). Sound level increases or decreases exponentially with each dB of change. For example, 10 dB yields a sound level 10 times more intense than 1 dB, while a 20 dB level equates to 100 times more intense, and a 30 dB level is 1,000 times more intense. Sound levels are compared to a reference sound pressure (micro-Pascal) to identify the medium. For air and water, these reference pressures are "re: 20 µPa" and "re: 1 µPa," respectively. Root mean square (RMS) is the quadratic mean sound pressure over the duration of an impulse. RMS is calculated by squaring all of the sound amplitudes, averaging the squares, and then taking the square root of the average (Urick, 1975). RMS accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels (Hastings and Popper, 2005). This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units rather than by peak pressures.

Data from a Washington State Department of Transportation (WSDOT) test pile project for the Columbia River Interstate 5 project (also known as the Columbia River Crossing project) was used for the impact and vibratory pile driving noise analysis for 48-in (1,220-mm) steel pipe

piles (DEA, 2011). There is a lack of information related to sound levels for 54-in (1,372-mm) pile installations; therefore, noise levels recorded for and the installation of 60-in (1,524-mm) piles (attenuated) at Port Townsend, Washington, using similar equipment were used to estimate sound levels (WSDOT, 2011). Based on the sound levels identified during this study, and a 10-dB reduction recommended by WSDOT for the use of a bubble curtain, it was determined that the estimated sound levels for a 60-in (1,524-mm) diameter pile in the dry during low water would be similar to the sound levels produced by a 48-in attenuated pile in the Columbia River for both impact and vibratory methods. Maximum sound levels for impact and vibratory pile driving are shown in Table 2. No reference underwater sound levels are available for this area, so 120 dB RMS (the lowest potential impact threshold for marine mammals) was used as a surrogate (WSDOT, 2010a). The Port applied a practical spreading loss model to calculate sound propagation, which assumes that noise attenuates at a rate of 4.5 dB per doubling distance, and this attenuation rate increases to 10 dB per doubling distance beyond 0.6 mile (1 km) (WSDOT, 2010a). Using this model, the largest noise impact zone is expected to result from vibratory pile driving of 48-in (1,220-mm) steel pipe piles. It may take up to 7 miles (11 km) for underwater sound to attenuate to below 120 dB. Because of the project area's location on a river bend and across from Hayden Island, sound transmission will be stopped by land masses much earlier in certain directions. In-air sound from pile driving also has the potential to affect marine mammals. However, in-air sound is not a concern here because there are no pinniped haul-out sites near the project area.

Table 2. Maximum sound levels for impact and vibratory installation of steel piles.

Pile Diameter	Sound Level (single strike)[1] with Attenuation	Sound Level (vibratory)[1]

48- to 54-inch (1,220- to 1,372-mm)	199 dB_{PEAK}	187 dB_{RMS}	173 dB_{SEL}	174 dB_{RMS}

[1] DEA, 2011

Comments and Responses

A notice of receipt and request for public comment on the application and proposed authorization was published on August 19, 2011 (76 FR 51947). During the 30-day public comment period, the Marine Mammal Commission (Commission) provided the only comments.

Comment 1: The Commission recommends that NMFS require the Port to measure in-situ sound propagation for driving and removing the various sizes and types of piles using the vibratory hammer, impact hammer, and both hammers concurrently at the beginning of the project and use that information to establish appropriate exclusion and buffer zones.

Response: The Port intends to conduct hydroacoustic monitoring to record the sound generated during impact pile driving. Hydroacoustic monitoring will take place while the first five piles are installed using an impact hammer at the Terminal 5 location. Information gained from this monitoring effort will be used to verify the exclusion and harassment zones.

Comment 2: The Commission recommends that NMFS require the presence of approved observers before, during, and after all soft-starts of pile driving activities, including when the vibratory hammer is used, to gather the data needed to determine the effectiveness of this technique as a mitigation measure.

Response: NMFS disagrees that the Port needs to monitor for marine mammals before, during, and after all soft-starts. Protected species observers will be on-site and monitoring for marine mammals at least 20 minutes prior to, during, and after all impact hammering (including during soft-starts) and at least two full days per week during all vibratory pile hammering.

NMFS believes that monitoring for at least two pile driving days per week will allow for adequate interpretation of how marine mammals are behaving in response to pile hammering, including during soft-starts.

Comment 3: The Commission recommends that NMFS require the Port to monitor the presence and behavior of marine mammals during all impact and vibratory pile driving and pile removal activities.

Response: As stated in the proposed IHA, marine mammal monitoring will occur 20 minutes before, during, and 20 minutes after all impact pile driving activities. In addition, at least two protected species observers will conduct behavioral monitoring at least two days per week during vibratory pile driving to estimate take and evaluate the behavioral impacts that pile driving has on marine mammals. NMFS believes this is an adequate effort of monitoring because sounds from vibratory pile driving will not exceed the Level A harassment threshold and sounds from impact pile driving only exceed the Level A harassment threshold 21 m (70 ft) from the source.

Comment 4: The Commission recommends that NMFS condition the IHA to require the Port to (1) immediately report all injured or dead marine mammals to NMFS and local stranding network and (2) suspend the construction activities if a marine mammal is seriously injured or killed and the injury or death could have been caused by those activities (e.g., a fresh carcass). If additional measures are not likely to reduce the risk of additional serious injuries or deaths to a very low level, the Commission recommends that NMFS require the Port to obtain the necessary authorization for such takings before resuming construction activities.

Response: NMFS includes language in Incidental Take Authorizations (ITAs) that requires the applicant to immediately report any taking of a marine mammal in a manner prohibited by the authorization. The applicant is required to postpone activities until NMFS is able to review the circumstances of the take. Furthermore, if the applicant discovers an injured or dead marine mammal, but the cause of such injury or death is not related to the specified activities, the applicant must contact NMFS within 24 hours of the discovery.

Description of Marine Mammals in the Area of the Specified Activity

Three marine mammal species have known distribution ranges that include the proposed project area: Pacific harbor seal, California sea lion, and Steller sea lion. These species may use the proposed project area as a seasonal transit corridor to and from the Bonneville Dam. Information on these species was provided in the August 19, 2011, Federal Register document (76 FR 51947). Since that notice published, NMFS has proposed to delist the eastern distinct population segment of Steller sea lions after determining that this distinct population segment has recovered and no longer meets the definition of a threatened species under the ESA (77 FR 23209, April 18, 2012).

Potential Effects on Marine Mammals

Pile driving and removal at the Terminal 5 site may temporarily impact marine mammal behavior within the action area due to elevated in-water noise levels. A detailed description of potential impacts to marine mammals can be found in NMFS' August 19, 2011, Federal Register document (76 FR 51947) and are summarized here.

Marine mammals produce sounds in various contexts and use sound for various biological functions including, but not limited to, (1) social interactions; (2) foraging; (3)

orientation; and (4) predator detection. Interference with producing or receiving these sounds may result in adverse impacts. Audible distance or received levels will depend on the sound source, ambient noise, and the sensitivity of the receptor (Richardson et al., 1995). Marine mammal reactions to sound may depend on sound frequency, ambient sound, what the animal is doing, and the animal's distance from the sound source (Southall et al., 2007).

Hearing Impairment

Marine mammals may experience temporary or permanent hearing impairment when exposed to loud sounds. Hearing impairment is classified by temporary threshold shift (TTS) and permanent threshold shift (PTS). There are no empirical data for when PTS first occurs in marine mammals; therefore, it must be estimated from when TTS first occurs and from the rate of TTS growth with increasing exposure levels. PTS is likely if the animal's hearing threshold is reduced by $\geq$ 40 dB of TTS. PTS is considered auditory injury (Southall et al., 2007) and occurs in a specific frequency range and amount. Due to proposed mitigation measures and source levels in the proposed project area, NMFS does not expect marine mammals to be exposed to PTS levels.

Temporary Threshold Shift (TTS)

TTS is the mildest form of hearing impairment that can occur during exposure to a loud sound (Kryter, 1985). While experiencing TTS, the hearing threshold rises and a sound must be louder in order to be heard. TTS can last from minutes or hours to days, occurs in specific frequency ranges (i.e., an animal might only have a temporary loss of hearing sensitivity between the frequencies of 1 and 10 kHz), and can occur to varying degrees (e.g., an animal's hearing sensitivity might be reduced by 6 dB or by 30 dB). For sound exposures at or somewhat above

the TTS-onset threshold, hearing sensitivity recovers rapidly after exposure to the sound ends. Few data on sound levels and durations necessary to elicit mild TTS have been obtained for marine mammals. Southall et al. (2007) considers a 6 dB TTS (i.e., baseline thresholds are elevated by 6 dB) sufficient to be recognized as an unequivocal deviation and thus a sufficient definition of TTS-onset. Because it is non-injurious, NMFS considers TTS as Level B harassment that is mediated by physiological effects on the auditory system; however, NMFS does not consider onset TTS to be the lowest level at which Level B harassment may occur. Southall et al. (2007) summarizes underwater pinniped data from Kastak et al. (2005), indicating that a tested harbor seal showed a TTS of around 6 dB when exposed to a non-pulse noise at SPL 152 dB re: 1 µPa for 25 minutes. In contrast, a tested sea lion exhibited TTS-onset at 174 dB re: 1 µPa under the same conditions as the harbor seal. Data from a single study on underwater pulses found no signs of TTS-onset in sea lions at exposures up to 183 dB re: 1 µPa (peak-to-peak) (Finneran et al., 2003).

There are limited data available on the effects of non-pulse noise (for example, vibratory pile driving) on pinnipeds while underwater; however, field and captive studies to date collectively suggest that pinnipeds do not react strongly to exposures between 90 and 140 dB re: 1 microPa; no data exist from exposures at higher levels. Jacobs and Terhune (2002) observed wild harbor seal reactions to high-frequency acoustic harassment devices around nine sites. Seals came within 44 m of the active acoustic harassment devices and failed to demonstrate any behavioral response when received SPLs were estimated at 120-130 dB. In a captive study (Kastelein, 2006), scientists subjected a group of seals to non-pulse sounds between 8 and 16 kHz. Exposures between 80 and 107 dB did not induce strong behavioral responses; however, a

single observation from 100 to 110 dB indicated an avoidance response. The seals returned to baseline conditions shortly following exposure. Southall et al. (2007) notes contextual differences between these two studies; the captive animals were not reinforced with food for remaining in the noise fields, whereas free-ranging animals may have been more tolerant of exposures because of motivation to return to a safe location or approach enclosures holding prey items. While most of the pile driving at the proposed project site would be vibratory, an impact hammer (pulse noise) may be used to complete installation and to verify the piles' strength. Vibratory and impact pile driving may result in anticipated hydroacoustic levels between 174 and 195 dB root mean square. Southall et al. (2007) reviewed relevant data from studies involving pinnipeds exposed to pulse noise and concluded that exposures to 150 to 180 dB generally have limited potential to induce avoidance behavior.

Vibratory pile driving emits low-frequency broadband noise, which may be detectable by marine mammals within the proposed project area. The average value of 174 dB RMS from a Washington State Department of Transportation (WSDOT) monitoring project of vibratory installation of a 48-inch (1,220-mm) steel pipe pile for the Columbia River Crossing test pile project was used in the noise analysis for vibratory and impact pile installation (DEA, 2011). There is a lack of information for the 54-inch (1,372-mm) pile installations. However, available data from WSDOT suggests that noise levels from driving of 60-in (1,524-mm) steel piles (with 10-dB reduction for the use of attenuation for impact pile driving) in the dry will be similar to that for 48-in (1,220-mm) piles installed in the Columbia River for both impact and vibratory methods (WSDOT, 2011).

No impacts to pinniped reproduction are anticipated because there are no known haul-outs or rookeries within the proposed project area. NMFS expects any impacts to marine mammal behavior to be temporary, Level B harassment, for two reasons: first, animals may avoid the area around the hammer, thereby reducing their exposure to elevated sound levels; and second, pile driving will not occur continuously throughout the day; the vibratory hammer will operate for about 2-3 hours per pile and the impact hammer will operate for about 1-2 hours per pile. Pile driving activities will only occur during daylight hours. The applicant anticipates an average of two pilings to be driven per day, resulting in a total of 6-10 hours of pile driving within a 24-hour period. Disturbance to marine mammal behavior may be in the form of temporary avoidance or alteration of transiting near the pile driving location. In addition, because a vibratory hammer will be used as much as possible, and the 190 dB isopleth for the impact hammer is 10 ft (3 m), marine mammal injury or mortality is not likely. Impact pile driving will cease if a marine mammal is observed nearing or within the 190 dB isopleth. For these reasons, NMFS expects any changes to marine mammal behavior to be temporary and result in a negligible impact to affected species and stocks.

Anticipated Effects on Habitat

A small area of shallow water habitat with silt/sand substrate will be shaded (possibly affecting if/how the area is used by marine mammal prey species) by the proposed structure, but this will be minimized by placing the structure at a height which will allow for some light penetration and by lessening the width of the structure. A deep water area and shallow water area with riprap substrate will also be shaded, but these habitats provide few functions and are plentiful in the surrounding ecosystem. Pile installation and removal will result in some

disturbance of the river substrate; however, this disturbance is expected to be local and temporary. Pile driving activities (i.e., temporary ensonification) may impact prey species and marine mammals by resulting in avoidance or abandonment of the area; however these impacts are also expected to be local and temporary. Overall, the proposed activity is not expected to cause significant or long-term impacts on marine mammal habitat.

The U.S. Army Corps of Engineers, Portland District, consulted with the NMFS Northwest Region on both Essential Fish Habitat and the Endangered Species Act (ESA). NMFS Northwest Region believes that the ESA Terms and Conditions are necessary and sufficient to avoid, mitigate, or offset the impact of the proposed actions on designated Essential Fish Habitat (EFH) for Pacific salmon.

Mitigation Measures

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse 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. There are no subsistence hunting grounds within the action area and since the activity will not result in marine mammal mortality, the availability of marine mammals for subsistence uses will not be impacted.

Temporal Restrictions

The Washington Department of Fish and Wildlife recommends an in-water work window of November 1 through February 28, annually. This work window was designed to protect fish species, particularly salmonid eggs and fry. However, by limiting pile driving activities to this

period of time, the peak sea lion run to and from the Bonneville Dam is also avoided. The Port will install at least 95 of their 100 piles during this in-water work window. The remaining five piles may be installed outside of the in-water work window if they can be installed during low water periods under dry conditions.

Limited Use of an Impact Hammer

To the extent possible, a vibratory hammer will be used to drive all piles. In the event that an impact hammer is necessary, a bubble curtain or similar noise attenuation method will be used as an attenuation device to reduce hydroacoustic sound levels to avoid the potential for injury.

Establishment of an Exclusion Zone

During all in-water impact pile driving, the Port will establish a preliminary marine mammal exclusion zone of 10 ft (3 m) around each pile to avoid exposure to sounds at or above 190 dB. The exclusion zone will be monitored during all impact pile driving to ensure that no marine mammals enter the 10 ft (3 m) radius. The purpose of this area is to prevent Level A harassment (injury) of any marine mammal species. An exclusion zone for vibratory pile driving is unnecessary to prevent Level A harassment as source levels will not exceed the Level A harassment threshold. The exclusion zone will be increased if hydroacoustic monitoring at the beginning of installation shows that the 190 dB isopleth is farther than 10 ft (3 m).

Pile Driving Shut Down and Delay Procedures

If a protected species observer sees a marine mammal within or approaching the exclusion zone prior to start of impact pile driving, the observer will notify the on-site construction manager (or other authorized individual), who will then be required to delay pile

driving until the marine mammal has moved outside of the exclusion zone or if the animal has not been resighted within 15 minutes. If a marine mammal is sighted within or on a path toward the exclusion zone during pile driving, pile driving will cease until that animal has cleared and is on a path away from the exclusion zone or 15 minutes has lapsed since the last sighting.

Soft-start Procedures

A "soft-start" technique will be used at the beginning of each pile installation to allow any marine mammal that may be in the immediate area to leave before the pile hammer reaches full energy. For vibratory pile driving, the soft-start procedure requires contractors to initiate noise from the vibratory hammer for 15 seconds at 40-60 percent reduced energy followed by a 1-minute waiting period. The procedure will be repeated two additional times before full energy may be achieved. For impact hammering, contractors will be required to provide an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 1-minute waiting period, then two subsequent three-strike sets. The soft-start procedure will be conducted prior to driving each pile if vibratory hammering ceases for more than 30 minutes.

NMFS has carefully evaluated the above mitigation measures and considered a range of other measures in the context of ensuring that NMFS prescribes the means of effecting the least practicable adverse 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, including consideration of personnel safety, and practicality of implementation.

Based on our evaluation of the applicant's proposed measures and the Commission's comments, NMFS has determined that the above mitigation measures provide the means of effecting the least practicable adverse impacts on marine mammals 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 indicate that requests for IHAs 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.

The Port must designate at least one biologically-trained, on-site individual, approved in advance by NMFS, to monitor the area for marine mammals 20 minutes before, during, and 20 minutes after all impact pile driving activities and call for shut down if any marine mammal is observed within or approaching the designated exclusion zone (preliminarily set at 10 ft [3 m]). In addition, at least two NMFS-approved protected species observers will conduct behavioral monitoring at least 2 days per week to estimate take and evaluate the behavioral impacts pile driving has on marine mammals out to the Level B harassment isopleths. Note that for impact hammering, this distance is about 2,070 ft (631 m). For vibratory hammering, this estimated

distance is about 7 mi (11 km); however, sound will dissipate before then (in about 6 mi [9.7 km]) due to the shape and configuration of the river. Protected species observers will be provided with the equipment necessary to effectively monitor for marine mammals (for example, high-quality binoculars, spotting scopes, compass, and range-finder) in order to determine if animals have entered into the exclusion zone or Level B harassment isopleth and to record species, behaviors, and responses to pile driving. In addition to visual monitoring, the Port will conduct hydroacoustic monitoring during impact hammering of the first five piles at the Terminal 5 location. This information will be used to verify the Level A exclusion zone as well as the Level B harassment isopleths.

Protected species observers will be required to submit a report to NMFS within 120 days of expiration of the IHA or completion of pile driving, whichever comes first. The report will include data from marine mammal sightings (such as species, group size, and behavior), any observed reactions to construction, distance to operating pile hammer, and construction activities occurring at time of sighting. Furthermore, the report will include data from the hydroacoustic monitoring program to help NMFS accurately analyze future pile driving activities.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA, such as an injury (Level A harassment), serious injury, or mortality (e.g., ship-strike, gear interaction, and/or entanglement), the Port shall immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Michael.Payne@noaa.gov and Michelle.Magliocca@noaa.gov and the Northwest Regional

Stranding Coordinator at 206-526-6550 (Brent.Norberg@noaa.gov). The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hours preceding the incident;
- Water depth;
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and 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 will not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with the Port to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The Port may not resume their activities until notified by NMFS via letter, email, or telephone.

In the event that the Port 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 (i.e., in less than a moderate state of decomposition as described in the next paragraph), the Port will immediately report the incident to the Chief of the Permits and Conservation Division, Office of

Protected Resources, NMFS, at 301-427-8401 and/or by email to Michael.Payne@noaa.gov and Michelle.Magliocca@noaa.gov and the Northwest Regional Stranding Coordinator at 206-526-6550 (Brent.Norberg@noaa.gov). The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with the Port to determine whether modifications in the activities are appropriate.

In the event that the Port 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 the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the Port will report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Michael.Payne@noaa.gov and Michelle.Magliocca@noaa.gov and the Northwest Regional Stranding Coordinator at 206-526-6550 (Brent.Norberg@noaa.gov), within 24 hours of the discovery. The Port will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS.

Estimated Take by Incidental Harassment

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].

Based on the Port's application and subsequent analysis, the impact of the described pile driving operations may result in, at most, short-term modification of behavior by small numbers of marine mammals within the action area. Marine mammals may avoid the area or temporarily alter their behavior at time of exposure.

Current NMFS practice regarding exposure of marine mammals to anthropogenic noise is that in order to avoid the potential for injury (PTS), cetaceans and pinnipeds should not be exposed to impulsive sounds of 180 and 190 dB or above, respectively. This level is considered precautionary as it is likely that more intense sounds would be required before injury would actually occur (Southall et al., 2007). Potential for behavioral harassment (Level B) is considered to have occurred when marine mammals are exposed to sounds at or above 160 dB for impulse sounds (such as impact pile driving) and 120 dB for non-pulse noise (such as vibratory pile driving), but below the aforementioned thresholds. These levels are also considered precautionary.

Based on empirical measurements taken by WSDOT and Caltrans (which are presented in the Description of Specified Activities section above), estimated distances to NMFS' current threshold sound levels from pile driving during the proposed construction activities are presented in Table 3. Effects from the removal of the 177 wood piles upstream from the main construction site are included in the 6-mi (9.7 km) Level B isopleth (based at Terminal 5) due to the river bend. The 10-ft (3-m) distance to the Level A harassment threshold provides protected species observers plenty of time and adequate visibility to prevent marine mammals from entering the area during impact pile driving. This will prevent marine mammals from being exposed to sound levels that reach the Level A harassment threshold.

Table 3. Modeled underwater distances to NMFS' marine mammal harassment threshold levels.

	Level A (190/180 dB)	Level B harassment (160 dB)	Level B harassment (120 dB)
Impact hammering with attenuation	10 ft (3 m)	2,070 ft (631 m)	n/a
Vibratory hammering (no attenuation)	n/a	n/a	7 mi (11 km)

The estimated number of marine mammals that could be harassed is based on the Army Corps of Engineers' evaluation of pinniped predation on fish near the Bonneville Dam in 2010. Based on the 2010 Steller sea lion counts at Bonneville Dam, the Port requested a total take of 50 Steller sea lions. This number was reached based on the estimated 75 individuals that passed through the action area in 2010 during their migration to and from Bonneville Dam, for a total of 150 individual trips through the action area. Since almost all pile installation would occur between November 1 and February 28, the peak of the run in April and May will be avoided. The only piles that may be installed outside of this window would be installed in the dry at low water. Steller sea lion presence at the dam in January and February 2010 represented (conservatively) less than a third of the total run for the year. Therefore, the Port estimated that no more than one-third of the total run of Steller sea lions (approximately 25 individuals) could be exposed to Level B harassment. Since each individual could potentially be exposed on both the upstream and downstream trip, a total of 50 takes of Steller sea lions could occur. Upon further consultation with NMFS Northwest Regional Office, and in consideration of steadily increasing numbers of Steller sea lions since 2008, NMFS is increasing the number of Steller sea lions that could be exposed to Level B harassment. This is based on the fact that abundance estimates increased three-fold between 2009 and 2010, and may continue. Therefore, it is

reasonable to assume that 2,025 individuals may make the trip to and from the dam during the proposed activity (based on a conservative three-fold increase in 2011, 2012, and again in 2013). Considering the avoidance of the peak run and potential exposure during the upstream and downstream migration, NMFS is authorizing the incidental take, by Level B harassment only, of 1,350 Steller sea lion exposures (accounting for one-third of the total run – about 675 animals – traveling to and from the dam). In addition, the Port requested take of 60 California sea lions (based on the same analysis that was applied for Steller sea lions) and six harbor seals (the maximum number of harbor seals documented at Bonneville Dam since 2002). These numbers take the proposed mitigation measures into consideration, but are conservative and represent the maximum number of animals expected to occur within the Level B harassment isopleth. The actual number of animals that may be harassed is likely to be significantly less.

Negligible Impact and Small Numbers Analysis and Determination

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." In making a negligible impact determination, NMFS considers a number of factors which include, but are not limited to, number of anticipated injuries or mortalities (none of which would be authorized here), number, nature, intensity, and duration of Level B harassment, and the context in which takes occur.

As described above, marine mammals will not be exposed to activities or sound levels which would result in injury (PTS), serious injury, or mortality. Pile driving will occur in shallow coastal waters of the Columbia River. The action area (waters around Terminal 5) is not

considered significant habitat for pinnipeds. The closest haul-out is 50 mi (80 km) away, which is outside the project area's largest harassment zone. Marine mammals approaching the action area will likely be traveling or opportunistically foraging. The amount of take the Port requested for each species, and NMFS is authorizing, is considered small (less than five percent) relative to the estimated populations of 22,380 Pacific harbor seals, 238,000 California sea lions, and 30,403 Steller sea lions. Marine mammals may be temporarily impacted by pile driving noise. However, marine mammals are expected to avoid the area, thereby reducing exposure and impacts. Pile driving activities are expected to occur for approximately 101 days. Furthermore, this section of the Columbia River is a highly industrialized area, so animals are likely tolerant or habituated to anthropogenic disturbance, including low level vibratory pile driving operations, and noise from other anthropogenic sources (such as vessels) may mask construction related sounds. There is no anticipated effect on annual rates of recruitment or survival of affected marine mammals.

Based on the analysis contained in this notice, the proposed IHA document (76 FR 51947, August 19, 2011), and the IHA application, and taking into consideration the implementation of the mitigation and monitoring measures, NMFS has determined that pile driving in the project area will result in the incidental take of small numbers of marine mammals, by Level B harassment only, and that the total taking will have a negligible impact on the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action.

Endangered Species Act (ESA)

The Steller sea lion is listed as endangered under the ESA with confirmed occurrence within the action area. However, on April 18, 2012, NMFS published a proposed rule to delist the eastern distinct population segment of Steller sea lions (77 FR 23209). A public comment period is open until June 18, 2012. The U.S. Army Corps of Engineers initiated Essential Fish Habitat and section 7 consultations with the NMFS Northwest Region. NMFS also consulted internally on the issuance of an IHA under section 101(a)(5)(A) of the MMPA for the take of Steller sea lions incidental to the proposed activity. The NMFS Northwest Region concluded that the action is not likely to jeopardize the continued existence of Steller sea lions or result in the destruction or adverse modification of critical habitat.

National Environmental Policy Act (NEPA)

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), as implemented by the regulations published by the Council on Environmental Quality (40 CFR parts 1500-1508), and NOAA Administrative Order 216-6, NMFS released an Environmental Assessment and Finding of No Significant Impact (FONSI) for the Terminal 5 project. NMFS determined that issuance of the IHA will not significantly impact the quality of the human environment and that preparation of an Environmental Impact Statement is not required.

Dated: May 29, 2012.

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