Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with NMFS' ESA Interagency Cooperation Division, whenever we authorize take for endangered or threatened species.

NMFS's ESA Interagency Cooperation Division issued a Biological Opinion on August 6, 2018 to NMFS Office of Protected Resources which concluded that the USGS's MATRIX survey is not likely to jeopardize the continued existence of the sei whale, fin whale, sperm whale, and north Atlantic right whale or adversely modify critical habitat.

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 incidental harassment authorization) with respect to potential impacts on the human environment. Accordingly, NMFS prepared an Environmental Assessment (EA) to consider the environmental impacts associated with the issuance of the IHA to USGS. We reviewed all comments submitted in response to the **Federal Register** notice for the proposed IHA (83 FR 25268; May 31, 2018) prior to concluding our NEPA process and deciding whether or not to issue a Finding of No Significant Impact (FONSI). NMFS concluded that issuance of an IHA to USGS will not significantly affect the quality of the human environment and prepared and issued a FONSI in accordance with NEPA and NAO 216–6A. NMFS's EA and FONSI for this activity are available on our website at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-research-and-other-activities.*

Authorization

As a result of these determinations, we have issued an IHA to USGS for conducting the described seismic survey activities from August 1, 2018 through July 31, 2019 provided the previously described mitigation, monitoring, and reporting requirements are incorporated.

Dated: August 7, 2018.

Donna S. Wieting,

Director, Office of Protected Resources, National Marine Fisheries Service.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XG291

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Pile Driving Activities for the Restoration of Pier 62, Seattle Waterfront, Elliott Bay

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: 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 Seattle Department of Transportation (DOT) to incidentally harass, by Level A and B harassment, marine mammals during pile driving and removal activities associated with the restoration of Pier 62, Seattle Waterfront, Elliott Bay in Seattle, Washington (Season 2).

DATES: This Authorization is applicable from August 1, 2018 through February 28, 2019.

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

SUPPLEMENTARY INFORMATION:

Background

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 authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

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

The MMPA states that the term ''take'' means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.

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).

National Environmental Policy Act

In compliance with NOAA policy, the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 *et seq.*), and the Council on Environmental Quality Regulations (40 CFR parts 1500–1508), NMFS determined the issuance of the IHA qualifies to be categorically excluded from further NEPA review. This action is consistent with categories of activities identified in CE B4 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.

Summary of Request

On January 27, 2018, NMFS received a request from the Seattle DOT for a second IHA to take marine mammals incidental to pile driving and removal activities for the restoration of Pier 62, Seattle Waterfront, Elliott Bay in Seattle, Washington. A revised request was submitted on May 18, 2018, which was deemed adequate and complete. Seattle DOT's request is for take of 12 species of marine mammals, by Level B harassment and Level A harassment (three species only). Neither Seattle DOT nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued an IHA to Seattle DOT for related work for Season 1 of this activity (82 FR 47176; October 11, 2017). Seattle DOT complied with all the requirements (*e.g.,* mitigation, monitoring, and reporting) of the previous IHA and information regarding their monitoring results may be found in the Description of Marine Mammals in the Area of Specified Activities and Estimated Take sections.

This IHA will cover the second season of work for the Seattle DOT Pier 62 project and provides take authorization for these subsequent facets of the project. The second season of the larger project is expected to primarily involve the remaining pile driving for Pier 62 and Pier 63. If the Seattle DOT encounters delays due to poor weather conditions, difficult pile driving, or other unanticipated challenges, an additional in-water work season may be necessary. If so, a separate IHA may be prepared for the third season of work.

Description of Specified Activities

The planned project will replace Pier 62 and make limited modifications to Pier 63 on the Seattle waterfront of Elliott Bay, Seattle, Washington. The existing piers are constructed of creosote-treated timber piles and treated timber decking, which are failing. The planned project would demolish and remove the existing timber piles and decking of Pier 62, and replace them with concrete deck planks, concrete pile caps, and steel piling. The majority of the timber pile removal required by the project occurred during the 2017–2018 in-water work season (Season 1).

A total of 831 piles were removed from Pier 62 and Pier 63 during Season 1 (see Table 1 below). Timber pile removal work in Season 2 (2018–2019 in-water work window) may occur for an estimated 10 days (49 remaining timber piles), if the contractor encounters deteriorated piles that pose a safety hazard or are within the area where grated decking or habitat improvements are to be installed. Pile installation will occur via vibratory and impact hammers. Seattle DOT estimates 10 days will be needed to remove the old timber piles, 53 days for vibratory installation of steel piles, and 64 days for impact installation of steel piles for a total of 127 in-water construction days for both Pier 62 and Pier 63 (see Table 1 below). Seattle DOT expects most days for vibratory and impact installation of steel piles will overlap, for a total of fewer than 127 days. The 14-inch (in) timber piles will be removed with a vibratory hammer or pulled with a clamshell bucket. The 30-in steel piles will be installed with a vibratory hammer to the extent possible. The maximum extent of pile removal and installation activities are described in Table 1. An impact hammer will be used for proofing steel piles or when encountering obstructions or difficult ground conditions. In addition, a pile template will be installed to ensure the piles are placed properly. It is anticipated that the contractor will complete the pile installation during the 2018–2019 in-water work window. In-water work may occur within a modified or shortened work window (September through February) to reduce or minimize effect on juvenile salmonids.

TABLE 1—PILE INSTALLATION AND REMOVAL PLAN

Activity	Pile type	Number of piles	Completed during Season 1	Actual duration Season 1 (days)	Remaining work Season 2	Anticipated duration Season 2	Hours per day	Hammer type	Single source sound levels (dB_{RMS})	Additive source sound levels (dB_{RMS})
Remove	Creosote-treated timber, 14-inch [1].	880	831 piles removed	19	49 timber piles	10 days	8	Vibratory	[2] 161 dB	
	Steel template pile, 24-inch	2			2	Daily [3]		Vibratory	[4] 177 dB	
Install	Steel pile, 30-inch	189	2 steel sheet piles installed.	1	189 steel piles	53 days	8	Vibratory	[6] 177 dB	[7] 180 dB
						64 days [8]	8	Impact	[9] 189 dB	[10] 189 dB
	Steel template pile, 24-inch	2			2	Daily [3]		Vibratory	[4] 177 dB	

Notes:
[1] Assumed to be 14-inch diameter.
[2] Hydroacoustic monitoring during Pier 62 Season 1 showed unweighted RMS ranging from 140 dB to 169 dB; the 75th percentile of these values is 161 dB_{RMS} and was used to calculate thresholds.
[3] The two template piles will be installed and removed daily. The time associated with this activity is included in the overall 8-hour pile driving day associated with installation of the 30-inch steel piles.
[4] Assumed to be no greater than vibratory installation of the 30-inch steel pile.
[6] Source sound from Port Townsend Test Pile Project (WSDOT 2010).
[7] For simultaneous operation of two vibratory hammers installing steel pipe piles, the 180 dB_{RMS} value is based on identical single-source levels, adding three dB based on WSDOT rules for decibel addition (2018).
[8] Approximately 20 percent of the pile driving effort is anticipated to require an impact hammer, which results in approximately 11 cumulative days of impact hammer activity. However, the impact hammer activity is sporadic, often occurring for short periods each day. A total of 64 days represents the number of days in which pile installation with an impact hammer could occur, with the anticipation that each day's impact hammer activity would be short.
[9] Source level from Colman Dock Test Pile Project (WSDOT 2016).
[10] For simultaneous operation of one impact hammer and one vibratory hammer installing 30-inch piles, the original dB_{RMS} estimates differ by more than 10 dB, so the higher value, 189 dB_{RMS}, is used based on WSDOT rules for decibel addition (2018).
RMS—root mean square: The square root of the energy divided by the impulse duration. This level is the mean square pressure level of the pulse. It has been used by NMFS to describe disturbance-related effects (*i.e.,* harassment) to marine mammals from underwater impulse-type noises.
WSDOT—Washington State Department of Transportation.

The contractor may elect to operate multiple pile crews for the Seattle DOT Pier 62 Project. As a result, more than one vibratory or impact hammer may be active at the same time. For the Pier 62 Project, there is a low likelihood that multiple impact hammers would operate in a manner that piles would be struck simultaneously; however, as a conservative approach we used a multiple-source decibel (dB) rule when determining the Level A and Level B harassment zones for this project. Table 2 provides guidance on adding dBs to account for multiple sources (WSDOT 2015a):

TABLE 2—MULTIPLE SOURCE DECIBEL ADDITION

When two decibel values differ by:	Add the following to the higher decibel value:
0–1 dB	3 dB
2–3 dB	2 dB
4–9 dB	1 dB

A detailed description of Seattle DOT's planned Pier 62 (Season 2) project is provided in the **Federal Register** notice for the proposed IHA (83 FR 30120; June 27, 2018). Since that time, no changes have been made to the planned activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity.

Comments and Responses

A notice of NMFS' proposal to issue an IHA was published in the **Federal Register** on June 27, 2018 (83 FR 30120). That notice described, in detail, Seattle DOT's 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 a comment letter from the Marine Mammal Commission (Commission). Specific comments and responses from the Commission's comment letter are provided below. The Commission recommended that NMFS issue the IHA, subject to inclusion of the proposed mitigation, monitoring, and reporting measures.

Comment 1: The Commission commented on errors regarding the Level B harassment calculations.

NMFS Response: NMFS acknowledges these errors and has corrected them in this notice and in the final IHA.

Comment 2: The Commission asserts that NMFS underestimated take estimates for harbor seals by Level A harassment and take estimates for long-beaked common dolphin, bottlenose dolphin, and Northern elephant seal by Level B harassment.

NMFS Response: NMFS does not believe the take estimates were incorrect in the proposed IHA for these species. However, NMFS increased the take estimates as suggested, which provides more conservative coverage for some species.

Comment 3: The Commission commented that NMFS should use the Smultea *et al.,* 2017 report rather than the Jefferson *et al.,* 2016 density estimates for harbor porpoise. The Commission also commented on an error for the density estimate for minke whales.

NMFS response: NMFS agrees and updated the density estimate for harbor porpoise by Smultea *et al.,* 2017 and accordingly the estimated takes by Level A and Level B harassment of harbor porpoise decreased. NMFS also corrected the density estimate for minke whales.

Comment 4: The Commission requested clarification regarding certain issues associated with NMFS' notice that one-year renewals could be issued in certain limited circumstances and expressed concern that the process would bypass the public notice and comment requirements. The Commission also suggested that NMFS should discuss the possibility of renewals through a more general route, such as a rulemaking, instead of notice in a specific authorization. The Commission further recommended that if NMFS did not pursue a more general route, that the agency provide the Commission and the public with a legal analysis supporting our conclusion that this process is consistent with the requirements of section 101(a)(5)(D) of the MMPA. The Commission also noted that NMFS had recently begun utilizing abbreviated notices, referencing relevant documents, to solicit public input and suggested that NMFS use these notices and solicit review in lieu of the currently proposed renewal process.

NMFS Response: The process of issuing a renewal IHA does not bypass the public notice and comment requirements of the MMPA. The notice of the proposed IHA expressly notifies the public that under certain, limited conditions an applicant could seek a renewal IHA for an additional year. The notice describes the conditions under which such a renewal request could be considered and expressly seeks public comment in the event such a renewal is sought. Additional reference to this solicitation of public comment has recently been added at the beginning of the FR notices that consider renewals, requesting input specifically on the possible renewal itself. NMFS appreciates the streamlining achieved by the use of abbreviated FR notices and intends to continue using them for proposed IHAs that include minor changes from previously issued IHAs, but which do not satisfy the renewal requirements. However, we believe our proposed method for issuing renewals meets statutory requirements and maximizes efficiency.

Importantly, such renewals would be limited to circumstances where: The activities are identical or nearly identical to those analyzed in the proposed IHA; monitoring does not indicate impacts that were not previously analyzed and authorized; and, the mitigation and monitoring requirements remain the same, all of which allow the public to comment on the appropriateness and effects of a renewal at the same time the public provides comments on the initial IHA. NMFS has, however, modified the language for future proposed IHAs to clarify that all IHAs, including renewal IHAs, are valid for no more than one year and that the agency would consider only one renewal for a project at this time. In addition, notice of issuance or denial of a renewal IHA would be published in the **Federal Register**, as they are for all IHAs. The option for issuing renewal IHAs has been in NMFS's incidental take regulations since 1996. *See* 50 CFR 216.107(e). We will provide any additional information to the Commission and consider posting a description of the renewal process on our website before any renewal is issued utilizing this process.

Description of Marine Mammals in the Area of Specified Activities

The marine mammal species under NMFS's jurisdiction that have the potential to occur in the construction area include Pacific harbor seal (*Phoca vitulina*), northern elephant seal (*Mirounga angustirostris*), California sea lion (*Zalophus californianus*), Steller sea lion (*Eumetopias jubatus*), harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), long-beaked common dolphin (*Delphinus capensis*), common bottlenose dolphin (*Tursiops truncatus*), both southern resident and transient killer whales (*Orcinus orca*), humpback whale (*Megaptera novaengliae*), gray whale (*Eschrichtius robustus*), and minke whale (*Balaenoptera acutorostrata*) (Table 3). Of these, the southern resident killer whale (SRKW) and humpback whale are protected under the Endangered Species Act (ESA). Pertinent information for each of these species is presented in this document to provide the necessary background to understand their demographics and distribution in the area.

TABLE 3—MARINE MAMMAL SPECIES POTENTIALLY PRESENT IN REGION OF ACTIVITY

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 Cetartiodactyla—Cetacea—Superfamily Mysticeti (baleen whales) Family Eschrichtiidae						
Gray whale	*Eschrichtius robustus*	Eastern North Pacific	-; N	20,990 (0.05; 20,125; 2011)	624	132
Family Balaenidae						
Humpback whale	*Megaptera novaeangliae novaeangliae.*	California/Oregon/Washington.	E; D	1,918 (0.03; 1,876; 2017)	11.0	≥9.2
Minke whale	*Balaenoptera acutorostrata scammoni.*	California/Oregon/Washington.	-; N	636 (0.72, 369, 2014)	3.5	≥1.3
Superfamily Odontoceti (toothed whales, dolphins, and porpoises) Family Delphinidae						
Killer whale	*Orcinus orca*	Eastern North Pacific Offshore.	-; N	240 (0.49, 162, 2014)	1.6	0
Killer whale	*Orcinus orca*	Eastern North Pacific Southern Resident.	E; D	83 (na, 83, 2016)	0.14	0
Long-beaked common dolphin.	*Dephinus capensis*	California	-; N	101,305 (0.49; 68,432, 2014)	657	≥35.4
Bottlenose dolphin	*Tursiops truncatus*	California/Oregon/Washington Offshore.	-; N	1,924 (0.54; 1,255, 2014)	11	≥1.6
Family Phocoenidae (porpoises)						
Harbor Porpoise	*Phocoena phocoena*	Washington Inland Waters	-; N	11,233 (0.37; 8,308; 2015)	66	≥7.2
Dall's Porpoise	*Phocoenoides dalli*	California/Oregon/Washington.	-; N	25,750 (0.45, 17,954, 2014)	172	0.3
Order Carnivora—Superfamily Pinnipedia Family Otariidae (eared seals and sea lions)						
California sea lion	*Zalophus californianus*	U.S.	-; N	296,750 (na, 153,337, 2011)	9,200	389
Steller sea lion	*Eumetopias jubatus*	Eastern DPS	-; N	41,638 (-; 41,638; 2015)	2,498	108
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina*	Washington Northern Inland Waters stock.	-; N	11,036 (0.15, -, 1,999)	Undet.	9.8
Northern elephant seal	*Mirounga angustirostris*	California breeding	-; N	179,000 (na; 81,368, 2010)	4,882	8.8

[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 mortality/serious injury (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

A detailed description of the species likely to be affected by the Seattle DOT Pier 62 (Season 2) project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (83 FR 30120; June 27, 2018); 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 websites for generalized species accounts for whales (*https://www.fisheries.noaa.gov/whales*), dolphins and porpoises (*https://www.fisheries.noaa.gov/dolphins-porpoises*), and pinnipeds (*https://www.fisheries.noaa.gov/seals-sea-lions*).

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

The effects of underwater noise from the planned activities for the Seattle DOT Pier 62 (Season 2) project have the potential to result in Level B behavioral harassment of marine mammals in the vicinity of the action area. There is also some potential for auditory injury (Level A harassment) to result, primarily for high frequency species, due to larger predicted auditory injury zones. Auditory injury is unlikely to occur for mid-frequency species and most pinnipeds. The mitigation and monitoring measures (*i.e.,* exclusion zones, use of a bubble curtain, etc. as discussed in detail below in ''Mitigation'' section), are expected to minimize the severity of such taking to the extent practicable.

The project would not result in permanent impacts to habitats used directly by marine mammals, such as haulout sites, but may have potential short-term impacts to food sources such as marine invertebrates and fish species. Construction will also have temporary effects on salmonids and other fish species in the project area due to disturbance, turbidity, noise, and the potential resuspension of contaminants during the Pier 62 project. The **Federal Register** notice for the proposed IHA (83 FR 30120 June 27, 2018) included a detailed discussion of the effects of

anthropogenic noise on marine mammals and their habitat, and therefore, that information is not repeated here; please refer to that **Federal Register** notice for that information.

Estimated Take

This section provides an estimate of the number of incidental takes authorized through this IHA, which informed both NMFS's consideration of whether the number of takes is ''small'' and the negligible impact determination. Based on public comment, since the Proposed Notice, a few minor changes have been made to this section, including modifications to the density and take estimates for species. These changes are reflected in the tables and narrative below.

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

Authorized takes would primarily be by Level B harassment, as exposure to pile driving and removal activities has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) to result, primarily for high frequency species due to larger predicted auditory injury zones. Auditory injury is unlikely to occur for mid-frequency species and most pinnipeds. The planned mitigation and monitoring measures (*i.e.,* shutdown zones, use of a bubble curtain, etc. as discussed in detail below in ''Mitigation'' section), are expected to minimize the severity of such taking to the extent practicable. 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. Below, we describe these components in more detail and present the take estimates.

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 permanent threshold shift (PTS) of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources—Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.,* frequency, predictability, duty cycle), the environment (*e.g.,* bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.* 2007, Ellison *et al.* 2011). 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 root mean square (rms) for continuous (*e.g.,* vibratory pile-driving, drilling) sources and above 160 dB re 1 µPa (rms) for non-explosive impulsive (*e.g.,* impact pile driving sources). Seattle DOT's planned activity includes the use of continuous (vibratory pile driving and removal) 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's Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NMFS, 2016a) 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). Seattle DOT's planned activity includes the use of continuous (vibratory pile driving and removal) and impulsive (impact pile driving) sources.

These thresholds were developed by compiling and synthesizing the best available science and soliciting input multiple times from both the public and peer reviewers to inform the final product, and are provided in Table 4 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2016 Technical Guidance, which may be accessed at: *https://www.fisheries.noaa.gov/resource/document/underwater-acoustic-thresholds-onset-permanent-and-temporary-threshold-shiftshttp://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm.*

TABLE 4—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing group	PTS onset thresholds	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	$L_{pk,flat}$: 219 dB; $L_{E,LF,24h}$: 183 dB	$L_{E,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	$L_{pk,flat}$: 230 dB; $L_{E,MF,24h}$: 185 dB	$L_{E,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	$L_{pk,flat}$: 202 dB; $L_{E,HF,24h}$: 155 dB	$L_{E,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	$L_{pk,flat}$: 218 dB; $L_{E,PW,24h}$: 185 dB	$L_{E,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW) (Underwater)	$L_{pk,flat}$: 232 dB; $L_{E,OW,24h}$: 203 dB	$L_{E,OW,24h}$: 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 fed into identifying the area ensonified above the acoustic thresholds.

Background noise is the sound level that would exist without the planned activity (pile driving and removal, in this case), while ambient sound levels are those without human activity (NOAA 2009). The marine waterway of Elliott Bay is very active, and human factors that may contribute to background noise levels include ship traffic. Natural actions that contribute to ambient noise include waves, wind, rainfall, current fluctuations, chemical composition, and biological sound sources (*e.g.,* marine mammals, fish, and shrimp; Carr *et al.* 2006). Background noise levels were compared to the relevant threshold levels designed to protect marine mammals to determine the Level B Harassment Zones for noise sources. Based on hydroacoustic monitoring conducted during Season 1 of the Pier 62 Project to determine background noise in the vicinity of the project, the background level of 124 dB rms was used to calculate the attenuation for vibratory pile driving and removal in Season 2 (Greenbusch Group 2018). Although NMFS's harassment threshold is typically 120 dB for continuous noise, recent site-specific measurements collected by The Greenbusch Group (2018) as required by the Season 1 IHA indicate that ambient sound levels are typically higher than this sound level and ranged from 117 dB to 145 dB. Therefore, we used the 124 dB rms (also the same noise level as Season 1), as the relevant threshold for Season 2 of the Seattle DOT Pier 62 project, assuming that any noise generated by the project below 124 dB would be subsumed by the existing background noise and have little likelihood of causing additional behavioral disturbance.

The source level of vibratory removal of 14-in timber piles is based on hydroacoustic monitoring measurements conducted at the Pier 62 project site during Season 1 vibratory removal (Greenbusch Group 2018). The recorded source level ranged from 140 to 169 dB rms re 1 micropascal (µPa) at 10 meters (m) from the pile, with the 75th percentile at 161 dB rms. This level, 161 dB rms, was chosen as the source value for vibratory timber removal in Season 2 because it is a conservative estimate of potential noise generation; 75 percent of the timber pile removal noise generated in Season 1 was on average lower than 161 dB rms. The sound source levels for installation of the 30-in steel piles and 24-in template piles are based on surrogate data compiled by the Washington State Department of Transportation (WSDOT). This value was also used for other pile driving projects (*e.g.,* WSDOT Seattle Multimodal Construction Project—Colman Dock (82 FR 31579; July 7, 2017)) in the same area as the Seattle Pier 62 project. In February of 2016, WSDOT conducted a test pile project at Colman Dock. The measured results from Colman Dock were used for that project and also here to provide source levels for the prediction of isopleths ensonified over thresholds for the Seattle Pier 62 project. The results showed that the sound pressure level (SPL) root-mean-square (rms) for impact pile driving of a 36-in steel pile is 189 dB re 1 µPa at 14 m from the pile (WSDOT 2016b). This value is also used for impact driving of the 30-in steel piles, which is a precautionary approach. Source level of vibratory pile driving of 36-in steel piles is based on test pile driving at Port Townsend in 2010 (Laughlin 2011). Recordings of vibratory pile driving were made at a distance of 10 m from the pile. The results show that the SPL rms for vibratory pile driving of 36-in steel pile was 177 dB re 1 µPa (WSDOT 2016a). The source sound level of 177 dB is used for vibratory steel installation of 30-in piles and 24-in template piles. The template pile activity occurs in conjunction with vibratory installation of 30-in steel piles. As such, the template pile activity is conservatively included as part of 30-in vibratory steel installation for the purposes of estimating take and monitoring the project activities. Sound generated by template pile activity (removal and installation of 24-in steel piles) is expected to be quieter than sound generated during vibratory steel installation of 30-in piles, because the piles are smaller and do not need to be driven as deep as structural, permanent 30-in steel piles.

The method of incidental take requested is Level B acoustical harassment of marine mammals within the 160 dB rms disturbance threshold (impact pile driving); the 120 dB rms disturbance threshold (vibratory pile driving); and the 120 dB rms disturbance threshold for vibratory removal of piles. Therefore, three different Level B Harassment/Monitoring Zones were established and must be in place during pile driving installation or removal (Table 5).

For the Level B Harassment/Monitoring Zones, sound waves propagate in all directions when they travel through water until they dissipate to background levels or encounter barriers that absorb or reflect their energy, such as a landmass. Therefore, the area of the Level B Harassment/Monitoring Zones was determined using land as the boundary on the north, east and south sides of the project. On the west, land was also used to establish the zone for vibratory driving. From Alki on the south and Magnolia on the north, a straight line of transmission was established out to Bainbridge Island. For impact driving (and vibratory removal), sound dissipates much quicker and the impact zone stays within Elliott Bay. Pile-related construction noise would extend throughout the nearshore and open water environments to just west of Alki Point and a limited distance into the East Waterway of the Lower Duwamish River, a highly industrialized waterway. Because landmasses block in-water construction noise, a ''noise shadow'' created by Alki Point is expected to be present immediately west of this feature (refer to Seattle DOT's application for maps depicting the Level B Harassment/Monitoring Zones).

TABLE 5—LEVEL B ZONE HARASSMENT/MONITORING ZONES DESCRIPTIONS AND DURATION OF ACTIVITY

Sound source	Activity	Construction method	Level B threshold (m)	Level B harassment zones (km^2) [2]	Days of activity
1	Removal of 14-in Timber Piles	Vibratory [1]	2,929	10.5	10
2	Installation of 30-in Steel Piles and Temporary 24-in Template Steel Piles.	Vibratory [1]	54,117	91	53
3	Installation of 30-in Steel Piles	Impact	1,201	2.3	64

Notes:
[1] The Level B thresholds for vibratory installation and removal were calculated to 124 dB rms as the actual ambient noise level rather than 120 dB.
[2] The Level B Harassment Zones are not based on the distances given but represent actual ensonified area given the surrounding land configuration of Elliott Bay.

When NMFS Technical Guidance (NMFS 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 will 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 vibratory and impact pile driving, NMFS's User Spreadsheet predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would not incur PTS. Inputs used in the User Spreadsheet, and the resulting isopleths/Level A Harassment Zones are reported below.

The PTS isopleths were identified for each hearing group for impact and vibratory installation and removal methods that must be used in the Pier 62 Project. The PTS isopleth distances were calculated using the NMFS acoustic threshold calculator (NMFS 2016), with inputs based on measured and surrogate noise measurements taken during the Elillott Bay Seawall Project and from WSDOT, and estimating conservative working durations (Table 6 and Table 7).

TABLE 6—NMFS TECHNICAL ACOUSTIC GUIDANCE USER SPREADSHEET INPUT TO PREDICT PTS ISOPLETHS/LEVEL A HARASSMENT

[User Spreadsheet Input]

Spreadsheet tab used	Sound source 1	Sound source 2	Sound source 3
	(A) Vibratory pile driving (removal)	(A) Vibratory pile driving (installation)	(E.1) Impact pile driving (installation)
Source Level (rms SPL)	[a] 161 dB	[b] 180 dB	.....
Source Level (Single Strike/shot SEL)	.....	.....	[c] 176 dB
Weighting Factor Adjustment (kHz)	2.5	2.5	2
(a) Number of strikes in 1 h	.....	.....	20
(a) Activity Duration (h) within 24-h period	8	8	4
Propagation (xLogR)	15	15	15
Distance of source level measurement (meters) +	10	10	14

[a] Greenbusch Group 2018. Pier 62 Project—Draft Acoustic Monitoring Season 1 (2017/2018) Report. Prepared for City of Seattle Department of Transportation. April 9, 2018.
[b] Source level for 30-in steel piles was from test pile driving at Port Townsend Ferry Terminal in 2010. SPL_{rms} for vibratory pile driving was 177 dB re 1 µPa and 3 dB was added for use of two hammers.
[c] Source information is from the Underwater Sound Level Report: Colman Dock Test Pile Project 2016.

TABLE 7—NMFS TECHNICAL ACOUSTIC GUIDANCE USER SPREADSHEET OUTPUT FOR PREDICTED PTS ISOPLETHS AND LEVEL A HARASSMENT DAILY ENSONIFIED AREAS

[User Spreadsheet Output]

Sound source type	Low-frequency cetaceans	Mid-frequency cetaceans	High-frequency cetaceans	Phocid pinnipeds	Otariid pinnipeds
	PTS Isopleth (meters)				
1—Vibratory (pile removal)	27.3	2.4	40.4	16.6	1.2
2—Vibratory (installation)	504.8	44.7	746.4	306.8	21.5
3—Impact (installation)	88.6	3.2	105.6	47.4	3.5

TABLE 7—NMFS TECHNICAL ACOUSTIC GUIDANCE USER SPREADSHEET OUTPUT FOR PREDICTED PTS ISOPLETHS AND LEVEL A HARASSMENT DAILY ENSONIFIED AREAS—Continued

[User Spreadsheet Output]

Sound source type	Low-frequency cetaceans	Mid-frequency cetaceans	High-frequency cetaceans	Phocid pinnipeds	Otariid pinnipeds
	Level A Harassment Daily ensonified area (km²) [a]				
Vibratory (pile removal)	0.00	0.0	0.00	0.00	0.0
Vibratory (installation)	0.400	0.00	0.875	0.148	0.00
Impact (installation)	0.01	0.0	0.018	0.00	0.0

Note:
[a] Daily ensonified areas were divided by two to only account for the ensonified area within the water and not over land.

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 informed the take calculation and we describe how the marine mammal occurrence information is brought together to produce a quantitative take estimate. In some cases (*e.g.,* harbor seals and California sea lions) we used local monitoring to calculate estimated take; however, we also present take estimates (where available) using the species density data from the 2015 Pacific Navy Marine Species Density Database (U.S. Navy 2015), as a comparison for estimated take of marine mammals. For harbor porpoise, we estimated take using the density estimates provided in Smultea *et al.,* 2017, as this is the best available density information for this species.

Where species density is available, take estimates are based on average marine mammal density in the project area multiplied by the area size of ensonified zones within which received noise levels exceed certain thresholds (*i.e.,* Level A and Level B harassment) from specific activities, then multiplied by the total number of days such activities would occur.

Unless otherwise described, incidental take is estimated by the following equation:

Incidental take estimate = species density * zone of influence * days of pile-related activity

However, adjustments were made for nearly every marine mammal species, whenever their local abundance is known through monitoring during Season 1 activities and other monitoring efforts. In those cases, the local abundance data was used for take calculations for the authorized take instead of general animal density (see below).

Harbor Seal

The take estimate for harbor seals for Pier 62 is based on local seal abundance information using the maximum number of seals (13) sighted in one day during the 2016 Seattle Test Pile project multiplied by the total of 127 pile driving and removal days for the Seattle DOT Pier 62 Project Season 2 for 1,651 seals. Fifty-three of the 127 days of activity would involve installation by vibratory pile driving, which has a much larger Level A Harassment Zone (306.8 m) than the Level A Harassment Zones for vibratory removal (16.6 m) and impact pile driving (47.4 m). Harbor seals may be difficult to observe at greater distances, therefore, during vibratory pile driving, it may not be known how long a seal is present in the Level A Harassment Zone. We conservatively estimate that 53 instances of take by Level A harassment may occur during these 53 days. Fifty-three instances of potential take by Level A harassment was calculated as follows: 1 harbor seal per day × 53 days of vibratory pile driving within the 307 m Level A Harassment Zone. The instances of take by Level B harassment (1,651 seals) was adjusted to exclude those already counted for instances of take by Level A harassment, so the authorized instances of take by Level B harassment is 1,598 harbor seals.

As a comparison, using U.S. Navy species density estimates (U.S. Navy 2015) for the inland waters of Puget Sound, potential take of harbor seal is shown in Table 8. Based on these calculations, instances of take by Level A harassment is estimated at 10 harbor seals from vibratory pile driving and instances of take by Level B harassment is estimated at 6,177 harbor seals from all sound sources. However, observational data from previous projects on the Seattle waterfront have documented only a fraction of what is calculated using the Navy density estimates for Puget Sound. For example, between zero and seven seals were observed daily for the EBSP and 56 harbor seals were observed over 10 days in the area with the maximum number of 13 harbor seals sighted during the 2016 Seattle Test Pile project (WSF 2016). During marine mammal monitoring for Season 1 of the Seattle DOT Pier 62 Project, 10 harbor seals were observed within the Level B Harassment/Monitoring Zone during vibratory activity. Project activities in Season 1, primarily timber vibratory removal, had a smaller Level B Harassment/Monitoring Zone than vibratory steel installation (the primary activity for Seasons 2), so it is expected that harbor seal observations and takes in Season 2 will be greater and will more closely resemble observational data from other monitoring efforts such as EBSP and Seattle Test Pile Project.

TABLE 8—HARBOR SEAL ESTIMATED TAKE BASED ON NMSDD PRESENTED FOR COMPARISON

Sound source	Species density	Level A harassment ZOI (km²)	Level B harassment ZOI (km²)	Days of activity	Estimated take Level A harassment	Estimated take Level B harassment
1	1.219	0.00	10.5	10	0	128
2	1.219	0.148	91	53	10	*5,879
3	1.219	0.00	2.3	64	0	180

Note:
km^2—square kilometers.
* Number of Level B harassment takes was adjusted to exclude those already counted for Level A harassment takes. Adjusted 5,869.

Northern Elephant Seal

For the Northern elephant seal, the Whale Museum (as cited in WSDOT 2016a) reported one sighting in the relevant area between 2008 and 2014. In addition, based on U.S. Navy species density estimates (U.S. Navy 2015), potential take of northern elephant seal is expected to be zero. Therefore, to be conservative. NMFS is authorizing two instances of take by Level B harassment of northern elephant seals.

California Sea Lion

The take estimate of California sea lions for Pier 62 is based on Season 1 marine mammal monitoring for the Seattle DOT Pier 62 Project and four seasons of local sea lion abundance information from the EBSP. Marine mammal visual monitoring during the EBSP indicates that a maximum of 15 sea lions were observed in a day during 4 years of project monitoring (Anchor QEA 2014, 2015, 2016, 2017). Based on a total of 127 pile driving and removal days for the Seattle Pier 62 project Season 2, it is estimated that up to 1,905 California sea lions (15 sea lions multiplied by 127 days) could be exposed to noise levels associated with ''take.'' Since the calculated Level A Harassment Zones of otariids are all very small (Table 7), we do not consider it likely that any sea lions would be taken by Level A harassment. Therefore, all California sea lion takes estimated here are expected to be takes by Level B harassment and NMFS is authorizing instances of take by Level B harassment of 1,905 California sea lions.

As a comparison, using the U.S. Navy species density estimates (U.S. Navy 2015) for the inland waters of Washington, including Eastern Bays and Puget Sound, potential take of California sea lion is shown in Table 9. The estimated instances of take by Level B harassment is 643 California sea lions. However, the Seattle DOT believes that this estimate is unrealistically low, based on local marine mammal monitoring.

TABLE 9—CALIFORNIA SEA LION ESTIMATED TAKE BASED ON NMSDD PRESENTED FOR COMPARISON

Sound source	Species density	Level A harassment ZOI (km^2)	Level B harassment ZOI (km^2)	Days of activity	Estimated Level A harassment take	Estimated Level B harassment take
1	0.1266	0.0	10.5	10	0	13
2	0.1266	0.00	91	53	0	611
3	0.1266	0.0	2.3	64	0	19

Note:
km^2—square kilometers.

Steller Sea Lion

No local monitoring data of Steller sea lions is available. Therefore, the estimated take for Steller sea lions is based on U.S. Navy species density estimates (U.S. Navy 2015), and is shown in Table 10. Since the calculated Level A Harassment Zones of otariids are all very small (Table 7), we do not consider it likely that any Steller sea lions would be taken by Level A harassment. NMFS is authorizing instances of take by Level B harassment of 187 Steller sea lions.

TABLE 10—STELLER SEA LION ESTIMATED TAKE BASED ON NMSDD PRESENTED FOR COMPARISON

Sound source	Species density	Level A harassment ZOI (km^2)	Level B harassment ZOI (km^2)	Days of activity	Estimated Level A harassment take	Estimated Level B harassment take
1	0.0368	0.0	10.5	10	0	4
2	0.0368	0.00	91	53	0	178
3	0.0368	0.0	2.3	64	0	5

Note:
km^2—square kilometers.

Southern Resident Killer Whale

The take estimate of SRKW for Pier 62 is based on local data and information from the Center for Whale Research (CWR). J-pod is the pod most likely to appear in the lower Puget Sound near Seattle with a group size of approximately 23 SRKW in 2017, 24 in 2016, and 29 in 2015. (CWR 2017). Therefore, NMFS is authorizing instances of take by Level B harassment of 23 SRKW based on a single occurrence of one pod (*i.e.,* J Pod—23 individuals) that would be most likely to be seen near Seattle. Since the Level A Harassment Zones of mid-frequency cetaceans are small (Table 7), we do not consider it likely that any SRKW would be taken by Level A harassment.

The Seattle DOT must coordinate with the Orca Network and the CWR in an attempt to avoid all take of SRKW, but it may be possible that a group may enter the Level B Harassment/Monitoring Zones before Seattle DOT could shut down due to the larger size of the Level B Harassment/Monitoring Zones particularly during vibratory pile driving (installation).

As a comparison, using the U.S. Navy species density estimates (U.S. Navy 2015) the density for the SRKW is variable across seasons and across the range. The inland water density estimates vary from 0.000000 to 0.000090/km^2 in summer, 0.001461 to 0.004760/km^2 in fall, and 0.004761–0.020240/km^2 in winter. Therefore, estimated takes as shown in Table 11 are based on the highest density estimated during the winter season

(0.020240/km²) for the SRKW population. With the variable winter density, the estimate can range from 24 to 103 SRKW, with the upper take estimate greater than the estimated population size.

TABLE 11—SOUTHERN RESIDENT KILLER WHALE ESTIMATED TAKE BASED ON NMSDD PRESENTED FOR COMPARISON

Sound source	Species density	Level A harassment ZOI (km²)	Level B harassment ZOI (km²)	Days of activity	Estimated Level A harassment take	Estimated Level B harassment take
1	0.020240	0.0	10.5	10	0	2
2	0.020240	0.00	91	53	0	98
3	0.020240	0.0	2.3	64	0	3

Note:
km²—square kilometers.

Transient Killer Whale

The take estimate of transient killer whales for Pier 62 is based on local data. Seven transients were reported in the project area (Orca Network Archive Report 2016a). Therefore, NMFS is authorizing instances of take by Level B harassment of 42 transient killer whales, which would cover up to 2 groups of up to 7 transient whales entering into the project area and remaining there for three days. Since the Level A Harassment Zones of mid-frequency cetaceans are small (Table 7), we do not consider it likely that any transient killer whales would be taken by Level A harassment.

As a comparison, based on U.S. Navy species density estimates (U.S. Navy 2015), potential take of transient killer whale is shown in Table 12. As with the SRKW, the density estimate of transient killer whales is variable between seasons and regions. Density estimates range from 0.000575 to 0.001582/km² in summer, from 0.001583 to 0.002373/km² in fall, and from 0.000575 to 0.001582/km² in winter. Work could occur throughout summer, fall and winter, so the highest estimate, fall density, was used to conservatively estimate take. For instances of take by Level B harassment, this results in a take estimate of twelve transient killer whales. However, the Seattle DOT believes that this estimate is low based on local data of seven transients that were reported in the area (Orca Network Archive Report 2016a).

TABLE 12—TRANSIENT KILLER WHALE ESTIMATED TAKE BASED ON NMSDD PRESENTED FOR COMPARISON

Sound source	Species density	Level A harassment ZOI (km²)	Level B harassment ZOI (km²)	Days of activity	Estimated Level A harassment take	Estimated Level B harassment take
1	0.002373	0.0	10.5	10	0	0
2	0.002373	0.00	91	53	0	12
3	0.002373	0.0	2.3	64	0	0

Note:
km²—square kilometers.

Long-Beaked Common Dolphin

The take estimate of long-beaked common dolphin for Pier 62 is based on local monitoring data. The earliest documented sighting of long-beaked common dolphins in Puget Sound was July 2003. In June 2011, two long-beaked common dolphins were sighted in South Puget Sound. Sightings continued in 2012, and in 2016–17. Four to twelve sightings were reported regularly, with confirmed sightings of up to 30 individuals. Four to six dolphins have remained in Puget Sound since June 2016 and four animals with distinct markings have been seen multiple times and in every season of the year as of October 2017 (CRC 2017b). In 2016, the Orca Network (2016c) reported a pod of up to 20 long-beaked common dolphins. Therefore, NMFS is authorizing instances of take by Level B harassment of 7 long-beaked common dolphins per month for a total of 49 dolphins. Since the Level A Harassment Zones of mid-frequency cetaceans are all very small (Table 7), we do not consider it likely that the long-beaked common dolphin would be taken by Level A harassment. Based on U.S. Navy species density estimates (U.S. Navy 2015), potential instances of take of long-beaked common dolphin is expected to be zero; therefore, we believe it more appropriate to use local monitoring data.

Bottlenose Dolphin

The take estimate of bottlenose dolphin for Pier 62 is based on local monitoring data. In 2017 the Orca Network (2017) reported sightings of a bottlenose dolphin in Puget Sound and in Elliott Bay, and WSDOT observed two bottlenose dolphins in one week during monitoring for the Colman Dock Multimodal Project (WSDOT 2017). In addition, a group of seven dolphins were observed in 2017 and were positively identified as part of the CA coastal stock (Cascadia Research Collective, 2017). Bottlenose dolphins typically travel in groups of 2 to 15 in coastal waters (NOAA 2017). Therefore, NMFS is authorizing instances of takes by Level B harassment of 7 bottlenose dolphins per month for a total of 49 dolphins. Since the Level A Harassment Zones of mid-frequency cetaceans are all very small (Table 7), we do not consider it likely that the common bottlenose dolphin would be taken by Level A harassment. Based on U.S. Navy species density estimates (U.S. Navy 2015), instances of potential take by Level B harassment of bottlenose dolphin is expected to be zero; therefore, we believe it more appropriate to use local monitoring data.

Harbor Porpoise

Species density estimates from Smultea *et al.* (2017), is the best density data available for the potential take of harbor porpoise and is shown in Table 13. Instances of take by Level A

harassment is estimated at 25 harbor porpoises and instances of take by Level B harassment is estimated at 2,716 harbor porpoises. Therefore, NMFS is authorizing instances of take by Level A harassment of 25 harbor porpoises and instances of take by Level B harassment of 2,716 harbor porpoises.

TABLE 13—HARBOR PORPOISE ESTIMATED TAKE BASED ON SMULTEA et al., 2017

Sound source	Species density	Level A harassment ZOI (km^2)	Level B harassment ZOI (km^2)	Days of activity	Estimated Level A harassment take	Estimated Level B harassment take
1	0.54	0.00	10.5	10	0	57
2	0.54	0.875	91	53	25	*2,604
3	0.54	0.018	2.3	64	0	80

Note:
km^2—square kilometers.
*Number of Level B harassment takes was adjusted to exclude those already counted for Level A harassment takes. Take is instances not individuals. Adjusted 2,579.

Dall's Porpoise

No local monitoring data of Dall's porpoise is available. Therefore, the estimated instances of take for Dall's porpoise is based on U.S. Navy species density estimates (U.S. Navy 2015), as shown in Table 14. Based on these calculations, NMFS is authorizing instances of take by Level A harassment of two Dall's porpoise and instances of take by Level B harassment of 196 Dall's porpoise.

TABLE 14—DALL'S PORPOISE ESTIMATED TAKE BASED ON NMSDD PRESENTED FOR COMPARISON

Sound source	Species density	Level A harassment ZOI (km^2)	Level B harassment ZOI (km^2)	Days of activity	Estimated Level A harassment take	Estimated Level B harassment take
1	0.039	0.00	10.5	10	0	4
2	0.039	0.875	91	53	2	*188
3	0.039	0.018	2.3	64	0	6

Note:
km^2—square kilometers.
*Number of Level B harassment takes was adjusted to exclude those already counted for Level A harassment takes. Adjusted 186.

Humpback Whale

Based on U.S. Navy species density estimates (U.S. Navy 2015), potential take of humpback whale is shown in Table 15. Although the standard take calculations would result in an estimated take of less than one humpback whale, to be conservative, NMFS is authorizing instances of take by Level B harassment of five humpback whales based on take during previous work in Elliott Bay where two humpback whales were observed, including one take, during the 175 days of work during the previous four years (Anchor QEA 2014, 2015, 2016, and 2017). Since the Level A Harassment Zones of low-frequency cetaceans are smaller during vibratory removal (27.3 m) or impact installation (88.6 m) compared to the Level A Harassment Zone for vibratory installation (504.8 m) (Table 7), we do not consider it likely that any humpbacks would be taken by Level A harassment during removal or impact installation. We also do not believe any humpbacks would be taken during vibratory installation due to the ability to see humpbacks easily during monitoring and additional coordination with the Orca Network and the CWR which would enable the work to be shut down before a humpback would be taken by Level A harassment.

TABLE 15—HUMPBACK WHALE ESTIMATED TAKE BASED ON NMSDD PRESENTED FOR COMPARISON

Sound source	Species density	Level A harassment ZOI (km^2)	Level B harassment ZOI (km^2)	Days of activity	Estimated Level A harassment take	Estimated Level B harassment take
1	0.00001	0.00	10.5	10	0	0
2	0.00001	0.400	91	53	0	0
3	0.00001	0.01	2.3	64	0	0

Note:
km^2—square kilometers.

Gray Whale

No local monitoring data of gray whales is available. Therefore, the instances of estimated take for gray whales is based on U.S. Navy species density estimates (U.S. Navy 2015), as shown in Table 16. Therefore, NMFS is authorizing instances of take by Level B harassment of four gray whales. Since the Level A Harassment Zones of low-frequency cetaceans are smaller during vibratory removal (27.3 m) or impact installation (88.6 m) compared to the Level A Harassment Zone for vibratory installation (504.8 m) (Table 7), we do

not consider it likely that any gray whales would be taken by Level A harassment during removal or impact installation. We also do not believe any gray whales would be taken by Level A harassment during vibratory installation due to the ability to see gray whales easily during monitoring and additional coordination with the Orca Network and the CWR, which would enable the work to be shut down before a gray whale would be taken by Level A harassment.

TABLE 16—GRAY WHALE ESTIMATED TAKE BASED ON NMSDD PRESENTED FOR COMPARISON

Sound source	Species density	Level A harassment ZOI (km^2)	Level B harassment ZOI (km^2)	Days of activity	Estimated Level A harassment take	Estimated Level B harassment take
1	0.00051	0.00	10.5	10	0	0
2	0.00051	0.400	91	53	0	3
3	0.00051	0.01	2.3	64	0	1

Note:
km^2—square kilometers.

Minke Whale

Between 2008 and 2014, the Whale Museum (as cited in WSDOT 2016a) reported one sighting of a minke whale in the relevant area. As a comparison, based on U.S. Navy species density estimates (U.S. Navy 2015), the instance of potential take of minke whales is expected to be ten (Table 17). To be conservative NMFS is authorizing the take of 10 minkes by Level B harassment. Based on the low probability that a minke whale would be observed during the project and then also enter into a Level A zone, we do not consider it likely that any minke whales would be taken by Level A harassment.

TABLE 17—MINKE WHALE ESTIMATED TAKE BASED ON NMSDD PRESENTED FOR COMPARISON

Level B zone	Species density	Level A harassment ZOI (km^2)	Level B harassment ZOI (km^2)	Days of activity	Estimated Level A harassment take	Estimated Level B harassment take
1	0.002	0.00	10.5	10	0	0
2	0.002	0.400	91	53	0	10
3	0.002	0.01	2.3	64	0	0

Note:
km^2—square kilometers.

The summary of the authorized take by Level A and Level B Harassment is described below in Table 18.

TABLE 18—SUMMARY OF AUTHORIZED INCIDENTAL TAKE BY LEVEL A AND LEVEL B HARASSMENT

Species	Stock size	Authorized Level A harassment take	Authorized Level B harassment take	Authorized total take	% of Population
Pacific harbor seal (*Phoca vitulina*)	11,036	53	1,598[a]	1,651	14.96.
Northern elephant seal (*Mirounga angustirostris*)	179,000	0	2[b]	2	Less than 1.
California sea lion (*Zalophus californianus*)	296,750	0	1,905[c]	1,905	Less than 1.
Steller sea lion (*Eumetopias jubatus*)	41,638	0	187	187	Less than 1.
Southern resident killer whale DPS (*Orcinus orca*)	83	0	23 (single occurrence of one pod)[d].	23 (single occurrence of one pod).	27.71.
Transient killer whale (*Orcinus orca*)	240	0	42[e]	42	17.5.
Long-beaked common dolphin (*Dephinus capensis)*	101,305	0	49[f]	49	Less than 1.
Bottlenose dolphin (*Tursiops truncatus*)	1,924	0	49[g]	49	Less than 1.
Harbor porpoise (*Phocoena phocoena*)	11,233	25	2,716	2,741	24.4.
Dall's porpoise (*Phocoenoides dalli*)	25,750	2	196	198	Less than 1.
Humpback whale (*Megaptera novaengliae*)	1,918	0	5[h]	5	Less than 1.
Gray whale (*Eschrichtius robustus*)	20,990	0	4	4	Less than 1.
Minke whale (*Balaenoptera acutorostrata*)	636	0	10	10	Less than 1.

Note:
[a] The take estimate is based on a maximum of 13 seals observed on a given day during the 2016 Seattle Test Pile project. The number of Level B harassment takes was adjusted to exclude those already counted for Level A harassment takes.
[b] The take estimate is based on The Whale Museum (as cited in WSDOT 2016a) reporting one sighting of a northern elephant seal in the area between 2008 and 2014, but conservatively NMFS estimated two takes.
[c] The take estimate is based on a maximum of 15 California sea lions observed on a given day during 4 monitoring seasons of the EBSP project.
[d] The take estimate is based on a single occurrence of one pod of SRKW (*i.e.,* J-pod of 23 SRKW) that would be most likely to be seen near Seattle.
[e] The take estimate is based on local data which is greater than the estimates produced using the Navy density estimates.
[f] The take estimate is based on the local data from several sources including Cascadia Research Collective and the Orca Network for long-beaked common dolphins.
[g] The take estimate is based on local data. A group of seven dolphins were observed in Puget Sound in 2017 and were positively identified as part of the CA coastal stock (Cascadia Research Collective, 2017).
[h] The take estimate is based on take during previous work in Elliott Bay, where two humpback whales were observed and is greater than what was calculated using 2015 Navy density estimates.

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) and 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 and impact on operations.

Several measures for mitigating effects on marine mammals and their habitat from the pile installation and removal activities at Pier 62 are described below.

Timing Restrictions

All work must be conducted during daylight hours.

Pre-Construction Briefing

Seattle DOT must conduct briefings for construction supervisors and crews, the monitoring team, and Seattle DOT staff prior to the start of all pile driving and removal activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.

Bubble Curtain

A bubble curtain must be used during pile driving activities with an impact hammer to reduce sound levels. Seattle DOT has stated as part of their specified activity that they have agreed to employ a bubble curtain during impact pile driving of steel piles and must implement the following bubble curtain performance standards:

(i) The bubble curtain must distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column.

(ii) The lowest bubble curtain ring must be deployed on or as close to the mudline for the full circumference of the ring as possible, without causing turbidity.

(iii) Seattle DOT must require that construction contractors train personnel in the proper balancing of air flow to the bubblers, and must require that construction contractors submit an inspection/performance report for approval by Seattle DOT within 72 hours following the performance test. Corrections to the attenuation device to meet the performance standards must occur prior to impact driving.

Shutdown Zones

Shutdown Zones must be implemented to protect marine mammals from Level A harassment (Table 19 below). The PTS isopleths described in Table 7 were used as a starting point for calculating the shutdown zones; however, Seattle DOT must implement a minimum shutdown zone of a 10 m radius around each pile for all construction methods for all marine mammals. Therefore, in some cases the shutdown zone must be slightly larger than was calculated for the PTS isopleths as described in Table 7 (*i.e.,* for mid-frequency cetaceans and otariid pinnipeds). Outside of any Level A harassment take authorized, if a marine mammal is observed at or within the Shutdown Zone, work must shut down (stop work) until the individual has been observed outside of the zone, or has not been observed for at least 15 minutes for all marine mammals. A determination that the Shutdown Zone is clear must be made during a period of good visibility (*i.e.,* the entire Shutdown Zone and surrounding waters must be visible to the naked eye). If a marine mammal approaches or enters the Shutdown Zone during activities or pre-activity monitoring, all pile driving and removal activities at that location must be halted or delayed, respectively. If pile driving or removal is halted or delayed due to the presence of a marine mammal, the activity may not resume or commence until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or 15 minutes have passed without re-detection of the animal. Pile driving and removal activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than thirty minutes.

TABLE 19—SHUTDOWN ZONES FOR VARIOUS PILE DRIVING AND REMOVAL ACTIVITIES FOR MARINE MAMMAL HEARING GROUPS

Sound source type	Low-frequency cetaceans	Mid-frequency cetaceans	High-frequency cetaceans	Phocid pinnipeds	Otariid pinnipeds
			Shutdown Zones (meters)		
1—Vibratory (pile removal)	28	10	41	17	10
2—Vibratory (installation)	505	45	747	307	22
3—Impact (installation)	89	10	106	48	10

Additional Shutdown Measures

For in-water heavy machinery activities other than pile driving, if a marine mammal comes within 10 m, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions.

Seattle DOT must implement shutdown measures if the cumulative total number of individuals observed within the Level B Harassment/

Monitoring Zones (below in Table 20) for any particular species reaches the number authorized under the IHA and if such marine mammals are sighted within the vicinity of the project area and are approaching the Level B Harassment/Monitoring Zone during in-water construction activities.

Level B Harassment/Monitoring Zones

Seattle DOT must monitor the Level B Harassment/Monitoring Zones as described in Table 20.

TABLE 20—LEVEL B HARASSMENT/MONITORING ZONES FOR VARIOUS PILE DRIVING AND REMOVAL ACTIVITIES

Activity	Construction method	Level B threshold (m)	Level B ZOI (km^2)
Removal of 14-in Timber Piles	Vibratory	2,929	10.5
Installation of 30-in Steel Piles	Vibratory	54,117	91
Installation of 30-in Steel Piles	Impact	1,201	2.3

Soft-Start for Impact Pile Driving

Each day at the beginning of impact pile driving or any time there has been cessation or downtime of 30 minutes or more without impact pile driving, Seattle DOT must use the soft-start technique by providing an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 30-second waiting period, then two subsequent three-strike sets. 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.

Additional Coordination

The project team must monitor and coordinate with local marine mammal networks on a daily basis (*i.e.,* Orca Network and/or the CWR) for sightings data and acoustic detection data to gather information on the location of whales prior to pile removal or pile driving activities. The project team must also coordinate with Washington State Ferries to discuss marine mammal sightings on days when pile driving and removal activities are occurring on their nearby projects. Marine mammal monitoring must be conducted to collect information on the presence of marine mammals within the Level B Harassment/Monitoring Zones for this project. In addition, reports must be made available to interested parties upon request. With this level of coordination in the region of activity, Seattle DOT must get real-time information on the presence or absence of whales before starting any pile driving or removal activities.

During Season 1, Seattle DOT carried out additional voluntary mitigation measures during pile driving and removal activities to minimize impacts from noise on the Seattle Aquarium's captive marine mammals as well as for air and water quality concerns. These measures were successfully coordinated and implemented, and Seattle DOT will implement the same measures during Season 2 work, as follows:

1. If aquarium animals are determined by the Aquarium veterinarian to be distressed, Seattle DOT will coordinate with Aquarium staff to determine appropriate next steps, which may include suspending pile driving work for 30 minutes, provided that suspension does not pose a safety issue for the Pier 62 project construction crews.
2. Seattle DOT will make reasonable efforts to take at least one regularly scheduled 20-minute break in pile driving each day.
3. Seattle DOT will regularly communicate with the Aquarium staff when pile driving is occurring.
4. Seattle DOT will further coordinate with the Aquarium to determine appropriate methods to avoid and minimize impacts to water quality.
5. Seattle DOT does not anticipate the project resulting in impacts associated with airborne dust. If, during construction, odors associated with the project are an issue, Seattle DOT will coordinate with its contractor to determine appropriate mitigation measures.

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

Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth, requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

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

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

Marine mammal monitoring must be conducted at all times during in-water pile driving and pile removal activities

in strategic locations around the area of potential effects as described below:

- During pile removal or installation with a vibratory hammer, three to four monitors would be used, positioned such that each monitor has a distinct view-shed and the monitors collectively have overlapping view-sheds (refer to Appendix A, Figures 1–3 of the Seattle DOT's application).
- During pile driving activities with an impact hammer, one monitor must be based at or near the construction site, and in addition, two to three additional monitors would be used, positioned such that each monitor has a distinct view-shed and the monitors collectively have overlapping view-sheds (refer to Appendix A, Figures 1–3 of the Seattle DOT's application).
- In the case(s) where visibility becomes limited, additional land-based monitors and/or boat-based monitors may be deployed.
- Monitors must record take when marine mammals enter the relevant Level B Harassment/Monitoring Zones based on type of construction activity.

If a marine mammal approaches or enters the Shutdown Zone during activities or pre-activity monitoring, all pile driving or removal activities at that location must be halted or delayed, respectively. If pile driving or removal is halted or delayed due to the presence of a marine mammal, the activity may not resume or commence until either the animal has voluntarily left and been visually confirmed beyond the Shutdown Zone or 15 minutes have passed without re-detection of the animal. Pile driving activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than thirty minutes.

Protected Species Observers

Seattle DOT must employ NMFS-approved protected species observers (PSOs) to conduct marine mammal monitoring for its Pier 62 Project. The PSOs must observe and collect data on marine mammals in and around the project area for 30 minutes before, during, and for 30 minutes after all pile removal and pile installation work. NMFS-approved PSOs must meet the following requirements:

1. Independent PSOs (*i.e.,* not construction personnel) are required.

2. At least one PSO must have prior experience working as a marine mammal observer during construction activities.

3. Other PSOs may substitute education (degree in biological science or related field) or training for experience.

4. Where a team of three or more PSOs are required, one observer should be designated as lead observer or monitoring coordinator. The lead observer must have prior experience working as a marine mammal observer during construction.

5. NMFS must require submission and approval of observer CVs.

Seattle DOT must ensure that observers have the following additional qualifications:

1. Ability to conduct field observations and collect data according to assigned protocols.

2. Experience or training in the field identification of marine mammals, including the identification of behaviors.

3. Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.

4. Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior.

5. 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.

PSOs must monitor marine mammals around the construction site using high-quality binoculars (*e.g.,* Zeiss, 10 x 42 power) and/or spotting scopes. Due to the different sizes of the Level B Harassment/Monitoring Zones from different pile sizes, several different Level B Harassment/Monitoring Zones and different monitoring protocols corresponding to a specific pile size must be established. If marine mammals are observed, the following information must be documented:

1. Date and time that monitored activity begins or ends for each day conducted (monitoring period);

2. Construction activities occurring during each observation period, including how many and what type of piles driven;

3. Deviation from initial proposal in pile numbers, pile types, average driving times, etc.

4. Weather parameters in each monitoring period (*e.g.,* wind speed, percent cover, visibility);

5. Water conditions in each monitoring period (*e.g.,* sea state, tide state);

6. For each marine mammal sighting:

a. Species, numbers, and, if possible, sex and age class of marine mammals;

b. Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving or removal activity;

c. Location and distance from pile driving or removal activities to marine mammals and distance from the marine mammals to the observation point; and

d. Estimated amount of time that the animals remained in the Level B Harassment Zone.

7. Description of implementation of mitigation measures within each monitoring period (*e.g.,* shutdown or delay);

8. Other human activity in the area within each monitoring period

9. A summary of the following:

a. Total number of individuals of each species detected within the Level B Harassment/Monitoring Zone, and estimated as taken if correction factor appropriate.

b. Total number of individuals of each species detected within the Shutdown Zone and the average amount of time that they remained in that zone.

c. Daily average number of individuals of each species (differentiated by month as appropriate) detected within the Level B Harassment/Monitoring Zone, and estimated as taken, if appropriate.

Acoustic Monitoring

In addition, acoustic monitoring must occur on up to six days per in-water work season to evaluate, in real time, sound production from construction activities and must capture all hammering scenarios that may occur under the planned project.

The results and conclusions of the acoustic monitoring must be summarized and presented to NMFS with recommendations on any modifications to this plan or Shutdown Zones.

Reporting Measures

Marine Mammal Monitoring Report

Seattle DOT must submit a draft marine mammal monitoring report within 90 days after completion of the in-water construction work, the expiration of the IHA, or 60 days prior to the requested date of issuance of any subsequent IHA, whichever is earliest. The report would include data from marine mammal sightings as described: Date, time, location, species, group size, and behavior, any observed reactions to construction, distance to operating pile hammer, and construction activities

occurring at time of sighting and environmental data for the period (*i.e.,* wind speed and direction, sea state, tidal state, cloud cover, and visibility). The marine mammal monitoring report must also include total takes, takes by day, and stop-work orders for each species. NMFS must have an opportunity to provide comments on the report, and if NMFS has comments, Seattle DOT must address the comments and submit a final report to NMFS within 30 days. If no comments are received from NMFS within 30 days, the draft report must be considered final. Any comments received during that time must be addressed in full prior to finalization of the report.

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, Seattle DOT would immediately cease the specified activities and immediately report the incident to the Permits and Conservation Division, Office of Protected Resources, NMFS and the NMFS' West Coast Stranding Coordinator. 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 hrs preceding the incident;
- Water depth;
- Environmental conditions (*e.g.,* wind speed and direction, sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hrs 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 Seattle DOT to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Seattle DOT may not resume their activities until notified by NMFS via letter, email, or telephone.

Reporting of Injured or Dead Marine Mammals

In the event that Seattle DOT 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), Seattle DOT must immediately report the incident to the Permits and Conservation Division, Office of Protected Resources, NMFS and the NMFS' West Coast Stranding Coordinator. The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS would work with Seattle DOT to determine whether modifications in the activities are appropriate.

In the event that Seattle DOT 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), Seattle DOT must report the incident to the Permits and Conservation Division, Office of Protected Resources, NMFS and the NMFS Stranding Hotline and/or by email to the NMFS' West Coast Stranding Coordinator within 24 hrs of the discovery. Seattle DOT would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS. Activities may continue while NMFS reviews the circumstances of the incident.

Acoustic Monitoring Report

Seattle DOT must submit an Acoustic Monitoring Report within 90 days after completion of the in-water construction work or the expiration of the IHA, whichever comes earlier. The report must provide details on the monitored piles, method of installation, monitoring equipment, and sound levels documented during both the sound source measurements and the background monitoring. NMFS must have an opportunity to provide comments on the report or changes in monitoring for a third season (if needed), and if NMFS has comments, Seattle DOT must address the comments and submit a final report to NMFS within 30 days. If no comments are received from NMFS within 30 days, the draft report must be considered final. Any comments received during that time must be addressed in full prior to finalization of the report.

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).

No serious injury or mortality is anticipated or authorized for the Pier 62 Project (Season 2). Takes that are anticipated and authorized are expected to be limited to short-term Level A and Level B (behavioral) harassment. Marine mammals present in the vicinity of the action area and taken by Level A and Level B harassment would most likely show overt brief disturbance (startle reaction) and avoidance of the area from elevated noise levels during pile driving and pile removal. However, many marine mammals showed no observable changes during Season 1 of the Pier 62 project and similar project activities for the EBSP.

A fair number of instances of takes are expected to be repeat takes of the same animals. This is particularly true for harbor porpoise, because they generally use sub-regions of Puget Sound, and the abundance of the Seattle sub-region from the Puget Sound Study was estimated to be 147 animals, which is much lower than the calculated take. Very few harbor porpoises have been observed during past projects in Elliott Bay (ranging from one to five harbor porpoises).

There are two endangered species that may occur in the project area,

humpback whales and SRKW. However, few humpbacks are expected to occur in the project area and few have been observed during previous projects in Elliott Bay. SRKW have occurred in small numbers in the project area. Seattle DOT must shut down in the Level B Harassment/Monitoring Zones should they meet or exceed the take of one occurrence of one pod (J-pod, 23 whales).

There is ESA-designated critical habitat in the vicinity of Seattle DOT's Pier 62 Project for SRKW. However, this IHA is authorizing the harassment of marine mammals, not the production of sound, which is what would result in adverse effects to critical habitat for SRKW.

There is one documented harbor seal haulout area near Bainbridge Island, approximately 6 miles (9.66 km) from Pier 62. The haulout, which is estimated at less than 100 animals, consists of intertidal rocks and reef areas around Blakely Rocks and is at the outer edge of potential effects at the outer extent near Bainbridge Island (Jefferies *et al.* 2000). The recent level of use of this haulout is unknown. Harbor seals also make use of docks, buoys, and beaches in the project area, as noted in marine mammal monitoring reports for Season 1 of the Pier 62 Project and for the EBSP (Anchor QEA 2014, 2015, 2016, and 2017). Similarly, the nearest Steller sea lion haulout to the project area is located approximately 6 miles away (9.66 km) and is also on the outer edge of potential effects. This haulout is composed of net pens offshore of the south end of Bainbridge Island. There are four documented California sea lion haulout areas near Bainbridge Island as well, approximately six miles from Pier 62, and two documented haulout areas between Bainbridge Island and Magnolia (Jefferies *et al.* 2000). The haulouts consist of buoys and floats, and some are within the area of potential effects, but at the outer extent, and some are just outside the area of potential effects (Jefferies *et al.* 2000). California sea lions were also frequently observed during marine mammal monitoring for Season 1 of the Pier 62 project (average of eight sea lions) at the Alki monitoring site and were frequently observed resting on two buoys in the southwest area of Elliott Bay. California sea lions were also frequently observed during the EBSP (average seven per day in 2014 and 2015, and three per day in 2016 and 2017; Anchor QEA 2014, 2015, 2016, and 2017), resting on two navigational buoys within the project area (near Alki Point) and swimming along the shoreline near the project.

The project also is not expected to have significant adverse effects on affected marine mammal habitat, as analyzed in the ''Potential Effects of Specified Activities on Marine Mammals and their Habitat'' section. Project activities would not permanently modify existing marine mammal habitat. The activities may kill some fish and cause other fish to leave the area temporarily, thus impacting marine mammals' foraging opportunities in a limited portion of the foraging range; but, because of the short duration of the activities and the relatively small area of the habitat that may be affected, the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences. Therefore, given the consideration of potential impacts to marine mammal prey species and their physical environment, Seattle DOT's Pier 62 Project would not adversely affect marine mammal habitat.

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 stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized.
- Takes that are anticipated and authorized are expected to be limited to short-term Level B harassment (behavioral) and a small number of takes of Level A harassment for three species.
- The project also is not expected to have significant adverse effects on affected marine mammals' habitat.
- There are no known important feeding or pupping areas. There are haulouts for California sea lions, harbor seals and Steller sea lions. However, they are at the most outer edge of the potential effects and approximately 6.6 miles from Pier 62. There are no other known important areas for marine mammals.
- For nine of the twelve species, take is less than one percent of the stock abundance. Instances of take for the other three species (harbor seals, killer whales, and harbor porpoise) range from about 15–28 percent of the stock abundance. One occurrence of J-pod of SRKW would account for 28 percent of the stock abundance. However, when the fact that a fair number of these instances are expected to be repeat takes of the same animals is considered, particularly for harbor porpoise, the number of individual marine mammals taken is significantly lower.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total marine mammal take from the 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 Section 101(a)(5)(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 factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

Take of nine of the twelve species is less than one percent of the stock abundance. Instances of take for the SRKW and transient killer whales, harbor seals, and harbor porpoise ranges from about 15–28 percent of the stock abundance, all of which NMFS has determined comprise small numbers of these stocks. Additionally, when the fact that a fair number of these instances are expected to be repeat takes of the same animals is considered, the number of individual marine mammals taken is significantly lower. Specifically, Smultea *et al.* 2017 conducted harbor porpoise surveys in eight regions of Puget Sound, and estimated an abundance of 168 harbor porpoise in the Seattle area (100 in Bainbridge (just west of Seattle) and 265 in Southern Puget Sound). While individuals do move between regions, we would not realistically expect that 2,500+ harbor porpoise individuals would be exposed around the pile driving and removal activities for the Seattle DOT's Pier 62 Project. Considering these factors, as well as the general small size of the project area as compared to the range of the species affected, the numbers of marine mammals estimated to be taken are small proportions of the total populations of the affected species or stocks. Further, for SRKW, 27.71 percent of the stock is authorized to be taken by Level B harassment, but we also believe that a single, brief incident of take of one group of any species represents take of small numbers for that species. Based on the analysis contained herein of the planned activity

(including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population sizes 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. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

Section 7(a)(2) of the ESA of 1973 (16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with the West Coast Regional Office (WCRO), whenever we propose to authorize take for endangered or threatened species.

The Permit and Conservation Division consulted under section 7 of the ESA with the WCRO for the issuance of this IHA. The WCRO concluded that the take of marine mammals authorized here is not likely to jeopardize the continued existence of SRKW and humpback whales and will not result in the destruction or adverse modification of designated critical habitat.

Authorization

NMFS has issued an IHA to the Seattle DOT for the harassment of small numbers of marine mammals incidental to pile driving and removal activities for the Pier 62 Project (Season 2) within Elliott Bay, Seattle, Washington from August 1, 2018 to February 28, 2019, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: August 7, 2018.

Donna S. Wieting,

Director, Office of Protected Resources, National Marine Fisheries Service.

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DEPARTMENT OF DEFENSE

Department of the Army

Advisory Committee on Arlington National Cemetery; Notice of Federal Advisory Committee Meeting

AGENCY: Department of the Army, DoD.

ACTION: Notice of Federal Advisory Committee meeting.

SUMMARY: The Department of Defense is publishing this notice to announce that the following Federal Advisory Committee meeting of the Advisory Committee on Arlington National Cemetery will take place.

DATES: The Committee will meet on Friday, September 7, 2018 from 10:30 a.m. to 2:00 p.m.

ADDRESSES: The Committee will meet in the Welcome Center Conference Room, Arlington National Cemetery, Arlington, VA 22211.

FOR FURTHER INFORMATION CONTACT: Mr. Timothy Keating, Alternate Designated Federal Officer for the Committee, 1–877–907–8585 (Voice), (703) 607–8551 (Facsimile), *timothy.p.keating.civ@mail.mil* (Email). Mailing address is Arlington National Cemetery, Arlington, VA 22211. Website: *http://www.arlingtoncemetery.mil/About/Advisory-Committee-on-Arlington-National-Cemetery/Charter.* The most up-to-date changes to the meeting agenda can be found on the website.

SUPPLEMENTARY INFORMATION: This meeting is being held under the provisions of the Federal Advisory Committee Act (FACA) of 1972 (5 U.S.C., Appendix, as amended), the Government in the Sunshine Act of 1976 (5 U.S.C. 552b, as amended), and 41 CFR 102–3.140 and 102–3.150.

Purpose of the Meeting: The Advisory Committee on Arlington National Cemetery is an independent federal advisory committee chartered to provide the Secretary of the Army independent advice and recommendations on Arlington National Cemetery, including, but not limited to, cemetery administration, the erection of memorials at the cemetery, and master planning for the cemetery. The Secretary of the Army may act on the Committee's advice and recommendations.

Agenda: The Committee will receive a report by the Remember and Explore Subcommittee regarding a proposal to erect a commemorative monument within ANC and may deliberate a recommendation to the sponsor. Additionally, the Committee will receive a report from the Honor Subcommittee regarding fact-finding to develop possible courses of action regarding the future of ANC to present in a roundtable forum with representatives of Veteran and Military Service Organizations. The subcommittee will also report any proposed recommendations as a result of that roundtable discussion. The Committee will study and deliberate any recommendations and may formally report recommendations to the sponsor for keeping ANC open well in to the future.

Meeting Accessibility: Pursuant to 5 U.S.C. 552b and 41 CFR 102–3.140 through 102–3.165, and the availability of space, this meeting is open to the public. Seating is on a first-come basis. The Arlington National Cemetery conference room is readily accessible to and usable by persons with disabilities. For additional information about public access procedures, contact Mr. Timothy Keating, the Alternate Designated Federal Officer, at the email address or telephone number listed in the **FOR FURTHER INFORMATION CONTACT** section.

Written Statements: Pursuant to 41 CFR 102–3.105(j) and 102–3.140 and section 10(a)(3) of the Federal Advisory Committee Act, the public or interested organizations may submit written comments or statements to the Committee, in response to the stated agenda of the open meeting or in regard to the Committee's mission in general. Written comments or statements should be submitted to Mr. Timothy Keating, the Alternate Designated Federal Officer, via electronic mail, the preferred mode of submission, at the address listed in the **FOR FURTHER INFORMATION CONTACT** section. Each page of the comment or statement must include the author's name, title or affiliation, address, and daytime phone number. Written comments or statements being submitted in response to the agenda set forth in this notice must be received by the Designated Federal Officer at least seven business days prior to the meeting to be considered by the Committee. The Designated Federal Officer will review all timely submitted written comments or statements with the Committee Chairperson, and ensure the comments are provided to all members of the Committee before the meeting. Written comments or statements received after this date may not be provided to the Committee until its next meeting. Pursuant to 41 CFR 102–3.140d, the Committee is not obligated to allow a member of the public to speak or otherwise address the Committee during the meeting. Members of the public will be permitted to make verbal comments during the Committee meeting only at