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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XG851

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Portsmouth Naval Shipyard Dry Dock 1 Modification and Expansion

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that we have issued an incidental harassment authorization (IHA) to the U.S. Navy (Navy) to take small numbers of marine mammals, by harassment, incidental to Portsmouth Naval Shipyard Dry Dock 1 modification and expansion in Kittery, Maine.

DATES: This authorization is effective from October 1, 2019, through September 30, 2020.

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

SUPPLEMENTARY INFORMATION:

Background

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

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

Summary of Request

On November 1, 2018, NMFS received a request from the Navy for an IHA to take marine mammals incidental to modification and expansion of dry dock 1 at Portsmouth Naval Shipyard in Kittery, Maine. The application was deemed adequate and complete on March 11, 2019. The Navy's request is for take of harbor porpoises, harbor seals, gray seals, harp seals, and hooded seals by Level B harassment and Level A harassment. Neither the Navy nor NMFS

expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued two IHAs to the Navy for waterfront improvement work in 2017 (81 FR 85525; November 28, 2016) and 2018 (83 FR 3318; January 24, 2018). The Navy complied with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHAs and information regarding their monitoring results may be found in the Estimated Take section.

NMFS has issued an IHA to the Navy for the take by Level A and Level B harassment of harbor porpoise (*Phocoena phocoena*), harbor seal (*Phoca vitulina*), gray seal (*Halichoerus grypus*), harp seal (*Pagophilus groenlandicus*), and hooded seal (*Cystophora cristata*) incidental to its dry dock modification and expansion project.

Description of Proposed Activity

Overview

The purpose of the Navy's construction project is to modernize and maximize dry dock capabilities for performing current and future missions efficiently and with maximum flexibility. The need for the proposed action is to modify and expand Dry Dock 1 at the Portsmouth Naval Shipyard by constructing two new dry docking positions capable of servicing Virginia class submarines within the super flood basin of the dry dock.

The in-water portion of the dock modification and expansion work includes:

- Construction of the temporary structure for south closure wall;
- Construction of the super flood basin of the dry dock; and
- Extension of portal crane rail and utilities.

Construction activities that could affect marine mammals are limited to in-water pile driving and removal activities.

Dates and Duration

Construction activities are expected to begin in July 2019. In-water construction activities are expected to begin in October 2019, with an estimated total of 212 days for pile driving and pile removal. All in-water construction work will be limited to daylight hours.

Specific Geographic Region

The Shipyard is located in the Piscataqua River in Kittery, Maine. The Piscataqua River originates at the boundary of Dover, New Hampshire, and Elliot, Maine. The river flows in a southeasterly direction for 13 miles before entering Portsmouth Harbor and emptying into the Atlantic Ocean. The lower Piscataqua River is part of the Great Bay Estuary system and varies in width and depth. Many large and small islands break up the straight-line flow of the river as it continues toward the Atlantic Ocean. Seavey Island, the location of the proposed action, is located in the lower Piscataqua River approximately 547 yards from its southwest bank, 219 yards from its north bank, and approximately 2.5 miles upstream from the mouth of the river.

A map of the Portsmouth Naval Shipyard dock expansion action area is provided in Figure 1 below, and is also available in Figures 2 to 4 in the IHA application.

Water depths in the proposed project area range from 21 feet (ft) to 39 ft at Berths 11, 12, and 13. Water depths in the lower Piscataqua River near the proposed project area range from 15 ft in the shallowest areas to 69 ft in the deepest areas. The river is approximately 3,300 ft wide near the proposed project area, measured from the Kittery shoreline north of Wattlebury Island to the Portsmouth shoreline west of Peirce Island. The furthest direct line of sight from the proposed project area would be 0.8 mile to the southeast and 0.26 mile to the northwest.

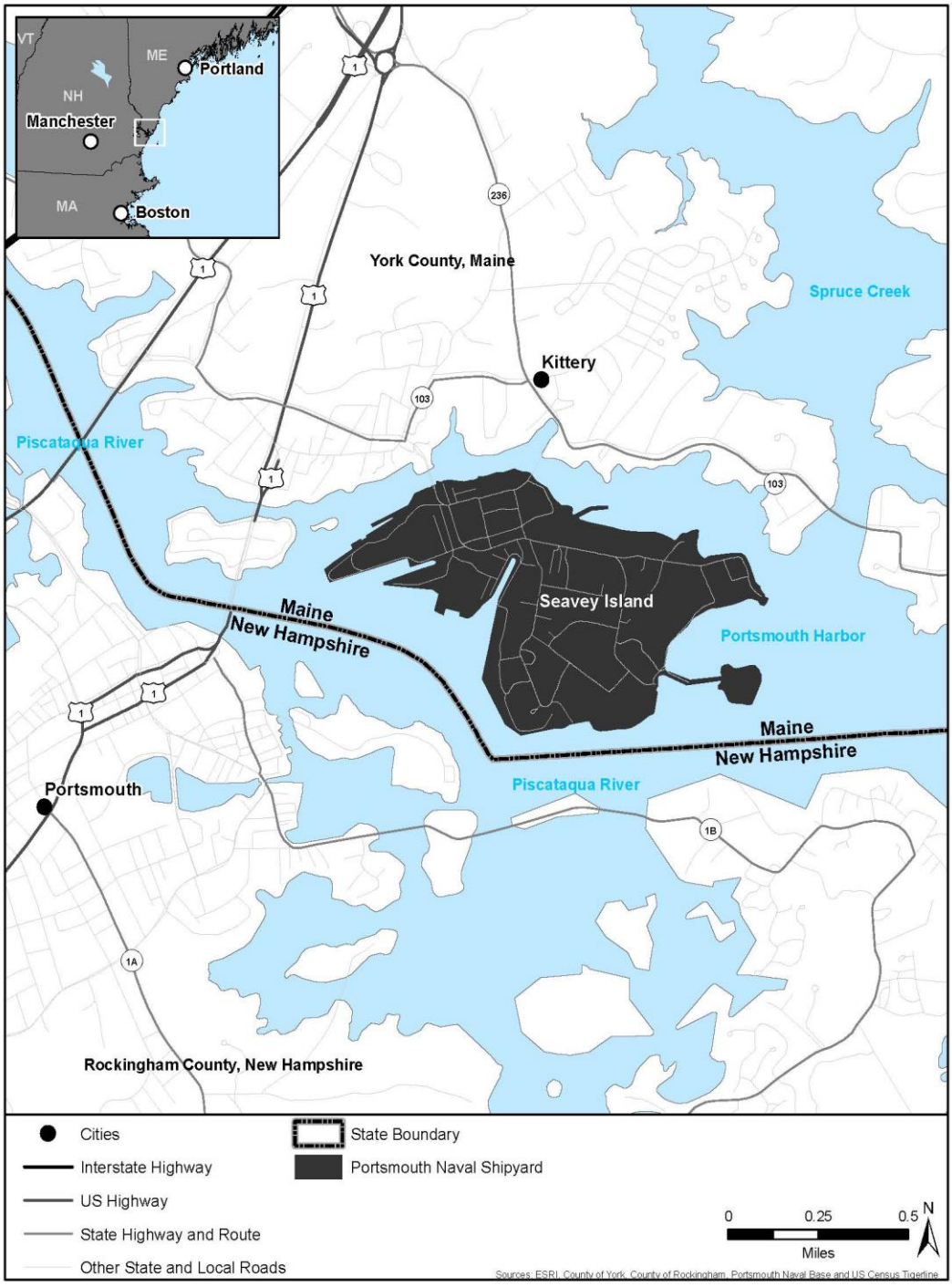

Figure 1. Site Location Map for Portsmouth Naval Ship Yard.

Detailed Description of Specific Activity

Under the planned action, the expansion and modification would occur as multiple construction projects. Prior to the start of construction, the entrance to Dry Dock 1 would be dredged to previously permitted maintenance dredge limits. This dredging effort is required to support the projects and additional project-related dredging would occur intermittently throughout the proposed action. Since dredging and disposal activities would be slow-moving and generate low noise levels, NMFS and the Navy do not consider its effects as likely to rise the level of take of marine mammals. Therefore, these activities are not further discussed in this document.

The proposed 2019 through 2020 activities include pile driving (vibratory and impact) and rock drilling associated with construction of the super flood basin and Berth 2 improvements of the dry dock. The action will take place in and adjacent to Dry Dock 1 in the Controlled Industrial Area (CIA) that occupies the western extent of the Portsmouth Naval Shipyard.

To begin the project, a super flood basin will be created in front of the entrance of Dry Dock 1 by constructing closure walls that span from Berth 1 to Berth 11B. The super flood basin would operate like a navigation lock- type structure: artificially raising the elevation of the water within the basin and dry dock above the tidally controlled river in order to lift the submarines to an elevation where they can be safely transferred into the dry dock without the use of buoyancy assist tanks. The super flood basin would be located between Berths 1 and 11 and extend approximately 580 ft from the existing outer seat of the dry dock (approximately 175 ft beyond the waterside end of Berth 1). The super flood basin would consist of three primary components: south closure wall, entrance structure, and west closure wall. The closure wall would be approximately 320 ft long and have an opening for a caisson gate. The Dry Dock 3 caisson

would be repurposed for use in the new closure wall. A weir structure or discharge pipe would be built into the closure wall or incorporated into the modified caisson to control over-topping and ensure the super flood elevation, which is the minimum water elevation required to provide sufficient depths and clearance to safely support transit of Los Angeles class submarines into Dry Dock 1, through the entire super flood evolution. The gross area of the super flood basin would be approximately 152,000 square feet (ft^2) (3.5 acres).

Concrete components for the closure walls, caisson seat, and sill would be cast in place or be pre-cast off-site then floated or hauled into place, as appropriate. The closure walls would be equipped with winches and mooring hardware on either side of the basin entrance to assist with vessel docking, and to support berthing of the caisson gate while not in place. Electrical utilities would be provided to support lighting along the closure wall and meet the electrical requirements of the caisson gate. Mooring hardware and electrical utilities would also support the berthing of ships force barges at the south closure wall. Ships force barges are where a group of sailors live and work during the overhaul. The south closure wall would consist of two, 70-ft diameter sheet pile cells that would be connected together and to the point of Berths 1 and 2 by interconnecting arcs. The sheeting for the two cells would be driven to bedrock to make up the shell of the structure south of the caisson and seat. By installing the sheets to bedrock, the cells would provide a barrier to exfiltration. Each of the cells would be filled with mass concrete and topped with a reinforced concrete cap that would act as the deck to the structure. To provide corrosion protection from the marine environment, a concrete facing would extend down the exterior of the sheets to below mudline. A sacrificial (*i.e.*, does not provide structural support) sheet pile wall would be installed outboard of the structural sheets and would remain for the life of the structure.

Before the closure walls are constructed, modifications to Berth 1 and Berth 11 are required. Improvements along Berth 1 includes driving steel sheet piles to create a bulkhead outboard of the existing quay wall, and placing concrete within the void between the sheet piles and the existing quay wall. This sheet pile bulkhead would provide a more impervious façade than the existing granite block quay wall to reduce water exfiltration from within the basin. The sheet pile bulkhead would be equipped with a concrete curb that would increase the height of Berth 1 by approximately 1 ft to an elevation of 15.6 ft above mean low-low-water (MLLW). To accommodate the super flood elevation improvements along Berth 11, bedrock grouting below the bulkhead from the west closure wall to the northwest corner of the basin would be installed to mitigate exfiltration along the berth. The stormwater drainage system at Berth 1 would be rerouted to a new outfall at the east end of Berth 2. The existing storm drain outfalls at Berth 11 within the limits of the basin have valves to prevent backflow of seawater into the storm drain collection system during super flood operations. The storm drain outlet piping would be modified to ensure landside drainage during super flood is accommodated.

Construction of the basin closure wall would bisect the existing Berth 11B resulting in loss of a fitting-out pier. As such, Berth 2 would replace Berth 11B for submarine outfitting. To accommodate this function, the existing fender system on Berth 2 would be relocated and expanded to accommodate fitting-out activities on the berth. Approximately 4,000 ft^2 (surface area) of additional fender panel would be required, including 3,550 ft^2 (surface area) below MLLW. The new fender panels would be approximately 6 inches (0.5 ft) thick and their installation below MLLW would result in a total fill volume of approximately 65 cubic yard. No in-water pile driving would be required at Berth 2 to support pier outfitting.

Construction phasing would be required to minimize impacts on critical dry dock operations. Five notional construction phases were identified of which the first three would occur during the 2019 to 2020 period. This phasing schedule could change due to fleet mission requirements and boat schedules. The first phase of construction would occur when a boat is present and would be limited to site reconnaissance, field measurements, contractor submittals and general mobilization activities. Phase 2 would include construction of the southern closure wall and caisson seat foundation; Berth 1 and Berth 11 (A and B) improvements; Dry Dock 1 utility improvements; and dredging. Upland construction activities would include work on the Dry Dock 1 gallery improvements and commencement of the portal crane rail extension. Phase 3 would include construction of the west closure wall, caisson seat float-in, and additional Dry Dock 1 utility gallery improvements. Only the caisson seat float-in portion of Phase 3 would occur during year 1. Six temporary dolphins, comprised of eight, 14-inch H-Piles, would be installed to assist with float-in and placement of the caisson seat.

Overall, the construction work is estimated to take approximately 12 months to complete, of which pile driving/extraction/drilling would take 212 days.

A summary of in-water pile driving activity is provided in Table 1.

Table 1. Summary of in-water pile driving activities.

Pile purpose	Pile type	Pile size (inch)	Pile drive method	Total piles	Piles /day	Work days
Temporary structure	Steel H	14	Vibratory	32	2	16
			Impact		2	
Sheet pile wall along Berth 1	Steel sheet	24	Vibratory	320	12	27
			Impact		12	
South Closure wall construction	Steel sheet	18	Vibratory	310	12	31
			Impact		12	
	Steel H pile removal	14	Vibratory	32	8	4
	Steel sheet	24	Vibratory	52	12	5
			Impact		12	
	Steel H	14	Vibratory	17	1	17

			Impact		1	
	Steel sheet	24	Vibratory	280	12	24
			Impact		12	
	Steel pipe casing	96	Down hole	10	0.5	32
Caisson seat float-in	Steel pipe	36	Vibratory	48	1	48
			Impact	48	1	
Elevated deck support	Steel pipe	16	Vibratory	8	1	8
			Impact	8		
Total				**1,558**		**212**

Prescribed mitigation, monitoring, and reporting measures are described in detail later in this document (please see *Mitigation* and *Monitoring and Reporting*).

Comments and Responses

A notice of NMFS' proposal to issue an IHA was published in the **Federal Register** on April 4, 2019 (84 FR 13252). During the 30-day public comment period, NMFS received a comment letter from the Marine Mammal Commission (Commission). Specific comments and responses are provided below.

Comment 1: Commission recommends that NMFS (1) ensure the Navy is aware of the requirements of the final incidental harassment authorization, particularly the reporting requirements for the marine mammal and hydroacoustic monitoring reports, and (2) require that the Navy provide the information that is missing but was required in both the 2017 and 2018 monitoring reports.

Response: NMFS has contacted the Navy and emphasized the importance of following IHA requirements concerning marine mammal monitoring and hydroacoustic monitoring reports. NMFS has requested and received marine mammal monitoring information and data sheet required under the 2017 and 2018 IHAs.

Comment 2: The Commission recommends that NMFS authorize at least five harbor seal takes per day partitioned in the same proportions for Level A and B harassment as included in Table 8 of the **Federal Register** notice.

Response: NMFS accepted the Commission's recommendation and recalculated harbor seal harassment. The revised take analysis is provided later in this document and is included in the IHA NMFS issued.

Comment 3: The Commission recommends that NMFS require the Navy to implement full-time monitoring of the various Level A and B harassment zones during all proposed activities.

Response: In the IHA issued to the Navy, NMFS requires the Navy to implement full-time monitoring of all Level A harassment zones during all in-water pile driving activities. However, for Level B harassment, NMFS has authorized the employment of a minimum of two PSOs employed on two-thirds of driving days due to the extent of the pile driving activities. NMFS believes that the number of marine mammals potentially affected by Level B harassment can be extrapolated from the two-thirds of the monitoring days.

Comment 4: The Commission recommends that NMFS refrain from implementing its proposed renewal process and instead use abbreviated **Federal Register** notices and reference existing documents to streamline the IHA process. If NMFS adopts the proposed renewal process, the Commission recommends that NMFS provide the Commission and the public a legal analysis supporting its conclusion that the process is consistent with section 101(a)(5)(D) of the MMPA.

Response: 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 **Federal Register** notices that consider renewals, requesting input specifically on the possible renewal itself. NMFS appreciates the streamlining achieved by the use of abbreviated **Federal Register** 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 method for issuing renewals meets statutory requirements and maximizes efficiency. However, importantly, such renewals will 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 will consider only one renewal for a project at this time. In addition, notice of issuance or denial of a renewal IHA will be published in the **Federal Register**, as they are for all IHAs. The option for issuing renewal IHAs has been in NMFS' incidental take regulations since 1996.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-*

mammal-protection/marine-mammal-stock-assessments) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (*https://www.fisheries.noaa.gov/find*-species).

Table 2 lists all species with expected potential for occurrence in the Piscataqua River in Kittery, Maine, and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2018). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Atlantic Marine Mammal SARs. All values presented in Table 2 are the most recent available at the time of publication and are available in the 2017 SARs (Hayes *et al.*, 2018) and draft 2018 SARs (available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*).

Table 2. Marine mammals with potential presence within the proposed project area.

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 Odontoceti (toothed whales)						
Family Phocoenidae (porpoises)						
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy	-; N	79,833 (0.32, 61,415)	706	255
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Harbor seal	*Phoca vitulina*	Western North Atlantic	-; N	75,834 (0.15, 66,884)	2,006	345
Gray seal	*Halichoerus grypus*	Western North Atlantic	-; N	27,131 (0.19, 23,158)	5,688	1,389
Harp seal	*Pagophilus groenlandicus*	Western North Atlantic	-; N	7,411,000[4] (NA, NA)	NA	225,687
Hooded seal	*Cystophora cristata*	Western North Atlantic	-; N	593,500[5] (NA, NA)	NA	1,680

[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: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region#reports*. CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance.

[3]These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

[4]Based on the latest estimates made in 2012 in Bay of Fundy (Hayes *et al.* 2018).

[5]Based on the latest estimates made in 2005 (Hammill and Stenson 2006).

All species that could potentially occur in the proposed action area are included in Table 2. More detailed descriptions of marine mammals in the Portsmouth Naval Shipyard project area is provided in the **Federal Register** notice for the proposed IHA (84 FR 13252; April 4, 2019). Therefore, it is not repeated here.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal

hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

Table 3. Marine Mammal Hearing Groups (NMFS, 2018).

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz

***** Represents the generalized hearing range for the entire group as a composite (*i.e.*, all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended

frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Five marine mammal species (one cetacean and four pinniped (all phocid) species) have the reasonable potential to co-occur with the proposed survey activities. Please refer to Table 2. Of the cetacean species that may be present, the harbor porpoise is classified as a high-frequency cetacean.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The *Estimated Take* section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The *Negligible Impact Analysis and Determination* section considers the content of this section, the *Estimated Take* section, and the *Proposed Mitigation* section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Potential impacts to marine mammals from the Portsmouth Naval Shipyard modification and expansion project are from noise generated during in-water pile driving activities. Detailed analysis of the impacts is provided in the **Federal Register** notice for the proposed IHA (84 FR 13252; April 4, 2019). Therefore, it is not repeated here.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

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

Authorized takes would primarily be by Level B harassment, as noise generated from in-water pile driving (vibratory and impact) 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 for some harbor porpoises and harbor and gray seals. The proposed mitigation and monitoring measures are expected to minimize the severity of such taking to the extent practicable.

As described previously, no mortality is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated.

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

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

Acoustic Thresholds

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

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

The Navy's Portsmouth Naval Shipyard modification and expansion project includes the use of continuous (vibratory pile driving and down-the-hole driving by rock drilling) and

impulsive (impact pile driving) sources, and therefore the 120 and 160 dB re 1 µPa (rms) are applicable.

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

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

Table 4. Thresholds identifying the onset of Permanent Threshold Shift.

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

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

Ensonified Area

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

Source Levels

The project includes impact pile driving, vibratory pile driving and pile removal, and drilling for down-the-hole piling activities. Source levels of pile driving activities are based on reviews of measurements of the same or similar types and dimensions of piles available in the literature. Based on this review, the following source levels are assumed for the underwater noise produced by construction activities:

- Vibratory driving of 36-inch steel piles would be assumed to generate a root-mean-squared (rms) sound pressure level (SPL) and sound exposure level (SEL) of 175 dB re 1 μPa^2-sec at 10 m, based on the averaged source level of the same type of pile reported by

California Department of Transportation (Caltrans) in a pile driving source level compendium document (Caltrans, 2015);

- Impact driving of 36-inch steel piles would be assumed to generate an instantaneous peak SPL (SPL_{pk}) of 209 dB re 1 µPa, an rms SPL of 198 dB re 1 µPa, and single-strike SEL (SEL_{ss}) of 183 dB re 1 μPa^2-sec at the 10 m distance, based on the weighted average of similar pile driving at the Bangor Naval Base, Naval Base Point Loma, CA (NAVFAC 2012), Washington State Department of Transportation (WSDOT) Anacortes Ferry Terminal (Laughlin 2012), and WSDOT Mukilteo Ferry Terminal (Laughlin 2007) that was analyzed in the Navy New London Submarine Base dock construction IHA application (NAVFAC 2016);
- Vibratory removal of 14-inch steel H-piles is conservatively assumed to have rms SPL and SEL values of 158 dB re 1 μPa^2-sec at 10 m distance based on a relatively large set of measurements from the vibratory installation of 14-inch H-piles reported by Caltrans (2015);
- Impact driving of 14-inch steel H-piles is assumed to generate a SPL_{pk} of 194 dB re 1µPa, rms SPL of 177 dB re 1 µPa, and SEL_{ss} of 162 dB re 1 μPa^2-sec at 10 m distance based on measurements on the same piles conducted during the Portsmouth Naval Shipyard construction in 2018 (NAVFAC Mid-Atlantic, 2018);
- Vibratory driving of 18- and 24-inch sheet pile is assumed to have an rms SPL and SEL of 163 dB re 1 μPa^2-sec based on measurements conducted at 10 m by the NAVFAC Mid-Atlantic (2018);
- Impact driving of 18- and 24-inch sheet pile is assumed to have a SPL_{pk} of 205 dB re 1 µPa, an rms SPL of 190 dB re 1 µPa, and a SEL_{ss} of 180 dB re 1 μPa^2-sec based on data reported in the Caltrans compendium (Caltrans 2015) for the same piles;

- Down-the-hole drilling of 96-inch steel pile casing is assumed to have an rms SPL and SEL of 166.2 dB re 1 µPa^2-sec based on measurements conducted at the Kodiak Ferry Terminal, AK (Austin *et al.*, 2016);
- Vibratory pile driving of 16-inch steel pile is assumed to have an rms SPL and SEL of 162 dB re 1 µPa^2-sec based on measurements for the same piles at Naval Base Kitsap at Bangor, WA (Illingworth and Rodkin 2013); and
- Impact driving of 16-inch steel pile is assumed to have a SPL_{pk} of 182 dB re 1 µPa, an rms SPL of 163 dB re 1 µPa, and a SEL_{ss} of 158 dB re 1 µPa^2-sec based on levels from the same pile reported in the Caltrans compendium (Caltrans 2015).

A summary of source levels from different pile driving activities is provided in Table 5.

Table 5. Summary of in-water pile driving source levels (at 10 m from source).

Method	Pile type / size (inch)	SEL, dB re 1 µPa^2-s	SPL_{rms}, dB re 1 µPa	SPL_{pk}, dB re 1 µPa	Measured distance	Origin
Vibratory pile driving	Steel, 36-inch	175	175	NA	10 m	Caltrans
Impact pile driving	Steel, 36-inch	183	198	209	10 m	Navy New London
Vibratory pile driving	Steel H, 14-inch	158	158	NA	10 m	Caltrans
Impact pile driving	Steel H, 14-inch	162	177	194	10 m	Navy Portsmouth SSV
Vibratory pile driving	Steel sheet, 24-inch & 18-inch	163	163	NA	10 m	NAVFAC Atlantic Fleet
Impact pile driving	Steel sheet, 24-inch & 18-inch	180	190	205	10 m	Caltrans
Down-the-hole piling	Steel pile casing 96-inch	166.2	166.2	NA	10 m	Kodiak, AK
Vibratory pile driving	Steel, 16-inch	162	162	NA	10 m	Naval Base Kitsap Bangor, WA

Impact pile driving	Steel, 16-inch	158	163	182	10 m	Caltrans

These source levels are used to compute the Level A harassment zones and to estimate the Level B harassment zones. For Level A harassment zones, since the peak source levels for are below the injury thresholds, cumulative SEL were used to do the calculations using the NMFS acoustic guidance (NMFS 2018).

The Level B harassment distances for pile driving are calculated using practical spreading with source levels provided in Table 5. Ensonified areas (A) are calculated using the following equation.

$$A = \pi R^2 \quad (1)$$

where R is the harassment distance.

For some pile driving activities, up to two vibratory hammers could be operating concurrently. Given that specific arrangements of concurrent pile driving are unknown until pile driving starts, there is no way to calculate the exact distances and combined source levels. For Level B harassment, the impact zone distance from concurrent pile driving from more than one hammer would only be affected if the driving methods are vibratory and/or drilling running concurrently. In most cases, the vibratory distance would win out due to the higher source level, if they are closely located. If they are some distance apart (> 30m), separate zones from each hammer can be used.

For Level A harassment, energy summation is impossible to predict. However, the current method that treats each source independently, *i.e.*, with its own Level A harassment zone, is more conservative than one larger zone assuming combined sources.

Finally, the relatively small, closed area of the construction site means that ensonified zones (particularly for Level B harassment) will be capped to a maximum distance of 10,000 m

(6.2 miles) due to landmass interception in the surrounding area. For this reason, the maximum area that could be ensonified by noise from pile driving activities is mapped at 0.8544 km^2 (0.33 square miles) Therefore, all calculated Level B harassment areas that are larger than 0.8544 km^2 based on Equation (1) are corrected to this maximum value.

When the original NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, NMFS developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of Level A harassment take. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as in-water vibratory and impact pile driving, NMFS 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 (pile driving duration or number of strikes for each pile, and the number of piles installed or removed per day), and the resulting isopleths are reported below in Table 6.

For all calculations, the results based on SEL_{ss} are larger than SPL_{pk}, therefore, distances calculated using SEL_{ss} are used to calculate the areas. The Level A harassment areas are calculated using the same Equation (1), with corrections to reflect the largest possible area of 0.8544 km^2 if the calculation value was larger.

The modeled distances to Level A and Level B harassment zones for various marine mammals are provided in Table 6. As discussed above, the only marine mammals that could occur in the vicinity of the project area are harbor porpoise (high-frequency cetacean) and four species of true seals (phocid).

Table 6. Distances and Areas of Harassment Zones.

Pile type, size & driving method	Duration (sec) or # strikes per pile	Level A harassment				Level B harassment	
		HF cetacean		Phocid			
		Dist. (m)	Area (km^2)	Dist. (m)	Area (km^2)	Dist. (m)	Area (km^2)
Vibratory drive 14-inch H-pile (2 pile/day)	300	1.9	0.000	0.8	0.000	3414.5	0.854*
Impact drive 14-inch H-pile (2 pile/day)	300	33.7	0.036	15.1	0.007	135.9	0.06
Vibratory drive 24-inch sheet pile (12 pile/day)	300	13.7	0.001	5.6	0.001	7356.4	0.854
Impact drive 18-inch & 24-inch sheet pile (12 pile/day)	300	1763	0.854	792	0.854	1000	0.854
Vibratory removal 14-inch H-pile (8 pile/day)	300	4.9	0.001	2	0.000	3414	0.854
Vibratory drive 14-inch H-pile (1 pile/day)	300	1.2	0.000	0.5	0.000	3414	0.854
Impact drive 14-inch H-pile (1 pile/day)	300	21.2	0.001	9.5	0.000	135.9	0.06
Down-hole drive 96-inch steel casing (0.5 pile/day)	28800	56.5	0.010	23.2	0.002	10000	0.854
Vibratory drive 36-inch steel pipe pile (1 pile/day)	300	16.5	0.001	6.8	0.000	10000	0.854
Impact drive 36-inch steel pipe pile (1 pile/day)	300	533.1	0.439	239.5	0.123	3414.5	0.854
Vibratory drive 16-inch steel pipe pile (1 pile/day)	300	2.2	0.000	0.9	0.000	6310	0.854
Impact drive 16-	300	11.5	0.000	5.2	0.000	15.8	0.008

inch steel pipe pile (1 pile/day)							

* 0.854 km^2 is the maximum ensonified area in the project area due to landmass that blocks sound propagation.

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Marine mammal density estimates for harbor porpoise and gray seal are derived based on marine mammal monitoring during 2017 and 2018 (CIANBRO 2018a, b). Density values were calculated from visual sightings of all marine mammals divided by the monitoring days (a total of 154 days) and the total ensonified area in the 2017 and 2018 activities (0.8401 km^2). Details used for calculations are provided in Table 7 and described below.

For harbor seal, due to its high abundance, based on discussion with the Marine Mammal Commission, we have determined it more appropriate to use the maximum observation of 5 seals from marine mammal monitoring during 2017 and 2018 (CIANBRO 2018a, b) as the basis for estimating potential takes per day. The take number is then calculated by multiplying the assumed daily take by total in-water construction days in the 2019 season (212 days). Further, takes by Level A and Level B harassment of harbor seals are prorated based on the Level A and Level B harassment ensonified areas.

Table 7. Marine mammal sightings and resulting density in the vicinity of Portsmouth Naval Shipyard project area.

Species	2017 sighting (96 days)	2018 sighting (58 days)	Total sighting	Density (animal/day/km^2)
Harbor porpoise	3	2	5	0.04
Harbor seal	199	122	321	2.48*
Gray seal	24	2	26	0.20

* For harbor seals, due to its much higher abundance and habituation to human activities, its maximum observation (5 seals/day) was used for take calculation (see below).

During construction monitoring in the project area 3 harbor porpoise were sighted between April and December of 2017 and 2 harbor porpoise were sighted in early August of 2018. From this data, density of harbor porpoise for the largest ensonified zone was determined to be 0.04/km^2. Sightings of gray seals were recorded during monthly surveys conducted in 2017 as well as during Berth 11 construction monitoring in 2017 and 2018. Density for harbor seals was based on the Berth 11 Waterfront Improvement Construction monitoring and was determined to be 0.20/km^2. Harbor seals are the most common pinniped in the Piscataqua River near the Shipyard. Sightings of this species were recorded during monthly surveys conducted in 2017 as well as during Berth 11 construction monitoring in 2017 and 2018. Density for harbor seals based on the Berth 11 Waterfront Improvement Construction was determined to be 2.48 /km^2. However, due to its much higher occurrence in the project area, based on discussion with the Commission, its maximum daily sighting was used in take calculation (see below).

Hooded and harp seals are much rarer than the harbor and gray seals in the Piscataqua River, and no density information for these two species is available. To date, marine mammal monitoring during prior IHAs has not recorded a sighting of a hooded or harp seal in the project area.

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

For marine mammals with calculated density information (*i.e.*, harbor porpoise and gray seal), in general, estimated Level A harassment take numbers are calculated using the following equation:

Estimated take (harbor porpoise and gray seal) = animal density × ensonified area × operating days (2)

For Level B harassment takes, the same equation (2) was used but then adjusted by subtracting the estimated Level A harassment takes. However, the estimated takes are calculated assuming the animals are uniformly distributed within the action area without forming groups. In reality, porpoises and seals are often active in small groups of two to three animals. Therefore, to account for potential group encounters during the construction activity, the estimated Level B harassment takes are adjusted upwards to form the basis of the proposed take authorization.

For harbor seal, the total calculated take is calculated using the following equation:

Estimated take (harbor seal) = maximum observed seals in a day × operating days

= 5 × 212 = 1060 (3)

Further, the Level A and Level B harassment takes are prorated based on the sizes of Level A and Level B harassment zones.

NMFS authorized one Level B harassment take per month each of a hooded seal and a harp seal for the Berth 11 Waterfront Improvements Construction project in 2018. The Navy is requesting authorization of one Level B harassment take each of hooded seal and harp seal per month of construction from January through May when these species may occur (Total of 5 Level B harassment takes for each species).

A summary of estimated and proposed takes is presented in Table 8.

Table 8. Estimated and proposed takes of marine mammals.

Species	Estimated Level A take	Estimated Level B take	Estimated total take	Percent population
Harbor porpoise	5	12	17	0.02%
Harbor seal	284	776	1060	1.40%
Gray seal	25	35	60	0.21%

Hooded seal	0	5	5	0.00%
Harp seal	0	5	5	0.00%

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. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

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

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

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

personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

1. Time Restriction.

Work would occur only during daylight hours, when visual monitoring of marine mammals can be conducted.

2. Establishing and Monitoring Level A and Level B Harassment Zones and Shutdown Zones.

Before the commencement of in-water construction activities, which include impact pile driving, vibratory pile driving and pile removal, and down-the-hole drilling, the Navy shall establish Level A harassment zones where received underwater SEL_{cum} could cause PTS (see Table 6 above).

The Navy shall also establish Level B harassment zones where received underwater SPLs are higher than 160 dB_{rms} re 1 µPa for impulsive noise sources (impact pile driving) and 120 dB_{rms} re 1 µPa for continuous noise sources (vibratory pile driving, pile removal, and down-the-hole drilling) (see Table 6 above).

The Navy shall establish shutdown zones based on Level A harassment distance up to a maximum of 110 m for harbor porpoise and 50 m for seals from the source but no less than 10 m for all in-water construction work. A summary of the shutdown zones is provided in Table 9.

Table 9. Shutdown distances for various pile driving activities and marine mammal hearing groups.

Pile type, size & driving method	Shutdown distance (m)	
	HF cetacean	Phocid
Vibratory drive 14-inch H-pile (2 pile/day)	10	10
Impact drive 14-inch H-pile (2 pile/day)	35	20
Vibratory drive 24-inch sheet pile (12 pile/day)	20	10
Impact drive 18-inch & 24-inch sheet pile (12 pile/day)	110	50

Vibratory removal 14-inch H-pile (8 pile/day)	10	10
Vibratory drive 14-inch H-pile (1 pile/day)	10	10
Impact drive 14-inch H-pile (1 pile/day)	25	10
Down-the-hole drilling 96-inch steel casing (0.5 pile/day)	60	25
Vibratory drive 36-inch steel pipe pile (1 pile/day)	20	10
Impact drive 36-inch steel pipe pile (1 pile/day)	110	50
Vibratory drive 16-inch steel pipe pile (1 pile/day)	10	10
Impact drive 16-inch steel pipe pile (1 pile/day)	15	10

If marine mammals are found within the exclusion zone, pile driving of the segment would be delayed until they move out of the area. If a marine mammal is seen above water and then dives below, the contractor would wait 15 minutes. If no marine mammals are seen by the observer in that time it can be assumed that the animal has moved beyond the exclusion zone.

If pile driving of a segment ceases for 30 minutes or more and a marine mammal is sighted within the designated exclusion zone prior to commencement of pile driving, the observer(s) must notify the pile driving operator (or other authorized individual) immediately and continue to monitor the exclusion zone. Operations may not resume until the marine mammal has exited the exclusion zone or 15 minutes have elapsed since the last sighting.

3. Shutdown Measures

The Navy shall implement shutdown measures if a marine mammal is detected within the shutdown zones listed in Table 9.

Further, the Navy shall implement shutdown measures if the number of authorized takes for any particular species reaches the limit under the IHA (if issued) and such marine mammals are sighted within the vicinity of the project area and are approaching the Level B harassment zone during in-water construction activities.

4. Soft Start

The Navy shall implement soft start techniques for impact pile driving. The Navy shall conduct an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 1-minute waiting period, then two subsequent three strike sets. Soft start shall be required for any impact driving, including at the beginning of the day, and at any time following a cessation of impact pile driving of thirty minutes or longer.

Whenever there has been downtime of 30 minutes or more without impact driving, the contractor shall initiate impact driving with soft-start procedures described above.

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

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 proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

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

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

Monitoring Measures

The Navy shall employ trained protected species observers (PSOs) to conduct marine mammal monitoring for its Portsmouth Naval Shipyard modification and expansion project. The purposes of marine mammal monitoring are to implement mitigation measures and learn more about impacts to marine mammals from the Navy's construction activities. The PSOs will 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.

Protected Species Observer Qualifications

NMFS-approved PSOs shall meet the following requirements:

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

2. At least one observer must have prior experience working as an observer;

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

4. Where a team of three or more observers are required, one observer should be designated as lead observer or monitoring coordinator. The lead observer must have prior experience working as an observer; and

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

Marine Mammal Monitoring Protocols

The Navy shall conduct briefings between construction supervisors and crews and the PSO team prior to the start of all pile driving activities, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures. All personnel working in the project area shall watch the Navy's Marine Species Awareness Training video. An informal guide shall be included with the monitoring plan to aid in identifying species if they are observed in the vicinity of the project area.

The Navy will monitor all Level A harassment zones and at least two-thirds of the Level B harassment zones before, during, and after pile driving activities. The Marine Mammal Monitoring Plan would include the following procedures:

- PSOs will be primarily located on docks and piers at the best vantage point(s) in order to properly see the entire shutdown zone(s);

- PSOs will be located at the best vantage point(s) to observe the zone associated with behavioral impact thresholds;
- During all observation periods, PSOs will use high-magnification (25X), as well as standard handheld (7X) binoculars, and the naked eye to search continuously for marine mammals;
- Monitoring distances will be measured with range finders. Distances to animals will be based on the best estimate of the PSO, relative to known distances to objects in the vicinity of the PSO;
- Bearings to animals will be determined using a compass;
- Pile driving shall only take place when the shutdown zones are visible and can be adequately monitored. If conditions (*e.g.*, fog) prevent the visual detection of marine mammals, activities with the potential to result in Level A harassment shall not be initiated. If such conditions arise after the activity has begun, impact pile driving would be halted but vibratory pile driving or extraction would be allowed to continue;
- At least two (2) PSOs shall be posted to monitor marine mammals during in-water pile driving and pile removal;
- Pre-Activity Monitoring:

The shutdown zones will be monitored for 30 minutes prior to in-water construction/demolition activities. If a marine mammal is present within a shutdown zone, the activity will be delayed until the animal(s) leaves the shutdown zone. Activity will resume only after the PSO has determined that, through sighting or by waiting 15 minutes, the animal(s) has moved outside the shutdown zone. If a marine mammal is observed approaching the shutdown zone, the PSO who sighted that animal will notify all other PSOs of its presence.

- During Activity Monitoring:

If a marine mammal is observed entering the Level A or Level B harassment zones outside the shutdown zone, the pile segment being worked on will be completed without cessation, unless the animal enters or approaches the shutdown zone, at which point all pile driving activities will be halted. If an animal is observed within the exclusion zone during pile driving, then pile driving will be stopped as soon as it is safe to do so. Pile driving can only resume once the animal has left the shutdown zone of its own volition or has not been re-sighted for a period of 15 minutes.

- Post-Activity Monitoring:

Monitoring of all Level A harassment zones and two-thirds of the Level B harassment zones will continue for 30 minutes following the completion of the activity.

Information Collection

PSOs shall collect the following information during marine mammal monitoring:

- Date and time that monitored activity begins and ends for each day conducted (monitoring period);
- Construction activities occurring during each daily observation period, including how many and what type of piles driven;
- Deviation from initial proposal in pile numbers, pile types, average driving times, etc.;
- Weather parameters in each monitoring period (*e.g.*, wind speed, percent cloud cover, visibility);
- Water conditions in each monitoring period (*e.g.*, sea state, tide state);
- For each marine mammal sighting:

- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
- Location and distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point; and
- Estimated amount of time that the animals remained in the Level B zone;

- Description of implementation of mitigation measures within each monitoring period (*e.g.*, shutdown or delay);
- Other human activity in the area within each monitoring period

To verify the required monitoring distance, the shutdown zones and harassment zones will be determined by using a range finder or hand-held global positioning system device.

Reporting Measures

The Navy is required to submit a draft monitoring report within 90 days after completion of the construction work or the expiration of the IHA (if issued), whichever comes earlier. If Navy intends to renew the IHA (if issued) in a subsequent year, a monitoring report should be submitted no less than 60 days before the expiration of the current IHA (if issued). This report would detail the monitoring protocol, summarize the data recorded during monitoring, and estimate the number of marine mammals that may have been harassed. NMFS would have an opportunity to provide comments on the report, and if NMFS has comments, The Navy would address the comments and submit a final report to NMFS within 30 days.

In addition, NMFS would require the Navy to notify NMFS' Office of Protected Resources and NMFS' Greater Atlantic Stranding Coordinator within 48 hours of sighting an injured or dead marine mammal in the construction site. The Navy shall provide NMFS and the

Stranding Network with the species or description of the animal(s), the condition of the animal(s) (including carcass condition, if the animal is dead), location, time of first discovery, observed behaviors (if alive), and photo or video (if available).

In the event that the Navy finds an injured or dead marine mammal that is not in the construction area, the Navy would report the same information as listed above to NMFS as soon as operationally feasible.

Negligible Impact Analysis and Determination

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

To avoid repetition, this introductory discussion of our analysis applies to all of the species listed in Table 2, given that the anticipated effects of the Navy's Portsmouth Naval Shipyard modification and expansion construction project activities involving pile driving and pile removal on marine mammals are expected to be relatively similar in nature. There is no information about the nature or severity of the impacts, or the size, status, or structure of any species or stock that would lead to a different analysis by species for this activity, or else species-specific factors would be identified and analyzed.

Although some individual harbor porpoises and harbor and gray seals are estimated to experience Level A harassment in the form of PTS if they stay within the Level A harassment zone during the entire pile driving for the day, the degree of injury is expected to be mild and is not likely to affect the reproduction or survival of the individual animals. It is expected that, if hearing impairments occurs, most likely the affected animal would lose a few dB in its hearing sensitivity, which in most cases is not likely to affect its survival and recruitment. Hearing impairment that might occur for these individual animals would be limited to the dominant frequency of the noise sources, *i.e.*, in the low-frequency region below 2 kHz. Nevertheless, as for all marine mammal species, it is known that in general these pinnipeds will avoid areas where sound levels could cause hearing impairment. Therefore it is not likely that an animal would stay in an area with intense noise that could cause severe levels of hearing damage.

Under the majority of the circumstances, anticipated takes are expected to be limited to short-term Level B harassment. Marine mammals present in the vicinity of the action area and taken by 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. Given the limited estimated number of incidents of Level A and Level B harassment and the limited,

short-term nature of the responses by the individuals, the impacts of the estimated take cannot be reasonably expected to, and are not reasonably likely to, rise to the level that they would adversely affect either species at the population level, through effects on annual rates of recruitment or survival.

There are no known important habitats, such as rookeries or haulouts, in the vicinity of the Navy's proposed Portsmouth Naval Shipyard modification and expansion construction project. The project also is not expected to have significant adverse effects on affected marine mammals' habitat, including prey, as analyzed in detail in the *Anticipated Effects on Marine Mammal Habitat* section.

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

- No mortality is anticipated or authorized;
- Some individual marine mammals are anticipated to experience a mild level of PTS, but the degree of PTS is not expected to affect their survival;
- Most adverse effects to marine mammals are temporary behavioral harassment; and
- No biologically important area is present in or near the proposed construction area.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS finds that the total marine mammal take

from the proposed 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)(A) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, 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.

The estimated takes are below 1.5 percent of the population for all marine mammals (Table 8).

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

Unmitigable Adverse Impact Analysis and Determination

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

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.

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

Endangered Species Act (ESA)

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

Authorization

As a result of these determinations, NMFS has issued an IHA to the Navy for conducting Portsmouth Naval Shipyard Dry Dock 1 Modification and Expansion in Kittery, Maine, between October 1, 2019, and September 30, 2010, provided the previously prescribed mitigation, monitoring, and reporting requirements are incorporated.

Dated: May 21, 2019.

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Catherine Marzin,

Acting Director, Office of Protected Resources,

National Marine Fisheries Service.

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