E 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XC528]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to National Oceanic and Atmospheric Administration Office of Marine and Aviation Operations Research Vessel Relocation at Naval Station Newport, Rhode Island

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to NOAA Office of Marine Aviation Operations (OMAO) to incidentally harass, by Level A and Level B harassment, marine mammals during construction activities associated with vessel relocation at Naval Station Newport (NAVSTA) in Newport, Rhode Island.

DATES: This authorization is effective from February 1, 2024 to January 31, 2025.

FOR FURTHER INFORMATION CONTACT: Jessica Taylor, 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

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 proposed or, if the taking is limited to harassment, a notice of a proposed incidental harassment authorization is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) 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 the 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 the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On May 6, 2022, NMFS received a request from the U.S. Navy on behalf of OMAO for an IHA to take marine mammals incidental to construction activities associated with the relocation of NOAA research vessels to the Naval Station Newport in Rhode Island. NMFS reviewed the Navy's application and the Navy provided a revised application on July 14, 2022. The application was deemed adequate and complete on October 5, 2022. OMAO's request is for take of 7 species of marine mammals, by Level

B harassment and, for a subset of these species, Level A harassment. Neither OMAO nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate. OMAO plans to commence in-water construction activities on February 1, 2024 yet has requested the IHA in advance due to OMAO's NEPA requirements.

Description of Activity

OMAO plans to establish adequate pier, shore side, and support facilities for four NOAA research vessels in Coddington Cove at Naval Station (NAVSTA) Newport in Newport, Rhode Island. As part of the activity, a new pier, trestle, small boat floating dock, and bulkhead will be constructed in Coddington Cove in order to meet NOAA docking/berthing requirements for these four vessels. These construction activities will involve the use of impact and vibratory pile driving, vibratory pile extraction, rotary drilling, and down-the-hole (DTH) mono-hammer excavation events, which have the potential to take marine mammals, by Level A and Level B harassment. The project will also include shore side administrative, warehouse, and other support facilities.

Construction activities will last for approximately one year from February 1, 2024 to January 31, 2025 of which in-water work will take place over 343 non-consecutive days. OMAO anticipates that all work will be limited to daylight hours. Specific construction activities may occur concurrently over a period of approximately 138 days. A detailed description of the planned construction project is provided in the **Federal Register** notice for the proposed IHA (87 FR 66133, November 2, 2022). 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. 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 to OMAO was published in the **Federal Register** on November 2, 2022 (87 FR 66133). That notice described, in detail, OMAO'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, no public comments were received.

Changes from the Proposed to Final IHA

Two changes were made between publication of the proposed IHA and this final IHA. The Level B harassment zone for the vibratory extraction of 12" timber guide piles while demolishing the floating dock was changed from 3,500 m to 1,359 m. The original calculated distance of 3,500 m was an error. However, PSOs will monitor as far as they can see.

In addition, the final IHA requires OMAO to wait 15 minutes before commencing pile driving activity after a shutdown, rather than 30 minutes as stated in the proposed IHA. This change is consistent with monitoring methods for prior projects consisting of similar construction activities at NAVSTA Newport, RI (86 FR 71162, December 15, 2021) and other locations (87 FR 7128, February 2, 2022; 87 FR 19886, April 6, 2022).

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. NMFS fully considered all of this information, and we refer the reader to these descriptions, referenced here, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *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' website (*https://www.fisheries.noaa.gov/find-species)*.

Table 1 lists all species or stocks for which take is authorized for these activities, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. 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' SARs). While no serious injury or 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' stock abundance estimates 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' U.S. Atlantic and Gulf of Mexico SARs (*e.g.*, Hayes *et al.,* 2022). All values presented in Table 1 are the most recent available at the time of publication (available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*).

Table 1 -- Marine Mammal Species[1] Likely Impacted by the Specified Activities

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N)[2]	Stock abundance (CV, Nmin, most recent abundance survey)[3]	PBR	Annual M/SI[4]
Order Artiodactyla – Infraorder Cetacea– Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Atlantic white-sided dolphins	*Lagenorhynchus acutus*	Western North Atlantic	-, -, N	93,233 (0.71, 54,443, 2016)	544	27
Common dolphins	*Delphinus delphis*	Western North Atlantic	-, -, N	172,974 (0.21, 145,216, 2016)	1,452	390

Family Phocoenidae (porpoises)						
Harbor Porpoise	*Phocoena phocoena*	Gulf of Maine/ Bay of Fundy	-, -, N	95,543 (0.31, 74,034, 2016)	851	164
Order Carnivora – Pinnipedia						
Family Phocidae (earless seals)						
Harbor Seal	*Phoca vitulina*	Western North Atlantic	-, -, N	61,336 (0.08, 57,637, 2018)	1,729	339
Gray Seal	*Halichoerus grypus*	Western North Atlantic	-, -, N	27,300 (0.22, 22,785, 2016)	1,389	4,453
Harp Seal	*Pagophilus groenlandicus*	Western North Atlantic	-, -, N	7.6 M (UNK, 7.1, 2019)	426,000	178,573
Hooded Seal	*Cystophora cristata*	Western North Atlantic	-, -, N	593,500 (UNK, UNK, 2005)	UNK	1,680

[1] Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy's Committee on Taxonomy (*https://marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies/*; Committee on Taxonomy (2022)).
[2] 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.
[3] NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments/*. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance.
[4] 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.

As indicated above, all seven species (with seven managed stocks) in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. While several species of whales have been documented seasonally in New England waters, the spatial occurrence of these species is such that take is not expected to occur, and they are not discussed further beyond the explanation provided here. The humpback (*Megaptera novaeangliae*), fin (*Balaenoptera physalus*), sei (*Balaenoptera borealis*), sperm (*Physeter macrocephalus*) and North Atlantic right whales (*Eubaleana glacialis*) occur seasonally in the Atlantic Ocean, offshore of Rhode Island. However, due to the depths of Narragansett Bay and near shore location of the

project area, these marine mammals are unlikely to occur in the project area. Therefore, OMAO did not request, and NMFS is not authorizing takes of these species.

A detailed description of the species to be affected by OMAO's construction activities, 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 (87 FR 66133, November 2, 2022); 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 the NMFS' website (*https://www.fisheries.noaa.gov/find-species*) for generalized species accounts.

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. 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, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, etc.). 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 2.

Table 2-- 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.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from OMAO's activities have the potential to result in Level A and Level B harassment of marine mammals in the action area. The notice of the proposed IHA (87 FR 66133, November 2, 2022) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from OMAO's construction activities on marine mammals and their habitat. That information and analysis is referenced in this final IHA determination and is

not repeated here; please refer to the notice of the proposed IHA (87 FR 66133, November 2, 2022).

Estimated Take

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

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 will primarily be by Level B harassment, as use of the acoustic sources (*i.e.*, pile driving and removal, DTH, and rotary drilling) 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 and phocids because predicted auditory injury zones are larger than for mid-frequency species. Auditory injury is unlikely to occur for mid-frequency species. The mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable.

As described previously, no serious injury or mortality is authorized for this activity. Below we describe how the authorized take numbers are estimated.

For acoustic impacts, 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) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential 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 authorized take estimates.

Acoustic Thresholds

NMFS recommends the use of 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). Thresholds have also been developed identifying the received level of in-air sound above which exposed pinnipeds would likely be behaviorally harassed.

Level B Harassment – 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 or exposure context (*e.g.*, frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.*, bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.*, Southall *et al.,* 2007, 2021, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when

exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB (referenced to 1 micropascal (re 1 μPa)) for continuous (*e.g.,* vibratory pile-driving, drilling) and above RMS SPL 160 dB re 1 μPa for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by TTS as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur.

OMAO's activities includes the use of continuous (vibratory hammer/rotary drill/DTH mono-hammer) and impulsive (impact hammer/DTH mono-hammer) sources, and therefore the RMS SPL thresholds of 120 and 160 dB re 1 μPa are applicable.

Level A harassment – 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). OMAO's activity includes the use of impulsive (impact hammer/DTH mono-hammer) and non-impulsive (vibratory hammer/rotary drill/DTH mono-hammer) 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: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance*.

Table 3 -- Thresholds Identifying the Onset of Permanent Threshold Shift

	PTS Onset Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1* $L_{p,0\text{-pk,flat}}$: 219 dB $L_{E,p,\text{ LF,24h}}$: 183 dB	*Cell 2* $L_{E,p,\text{ LF,24h}}$: 199 dB
Mid-Frequency (MF) Cetaceans	*Cell 3* $L_{p,0\text{-pk,flat}}$: 230 dB $L_{E,p,\text{ MF,24h}}$: 185 dB	*Cell 4* $L_{E,p,\text{ MF,24h}}$: 198 dB
High-Frequency (HF) Cetaceans	*Cell 5* $L_{p,0\text{-pk,flat}}$: 202 dB $L_{E,p,\text{HF,24h}}$: 155 dB	*Cell 6* $L_{E,p,\text{ HF,24h}}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	*Cell 7* $L_{p,0\text{-pk.flat}}$: 218 dB $L_{E,p,\text{PW,24h}}$: 185 dB	*Cell 8* $L_{E,p,\text{PW,24h}}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	*Cell 9* $L_{p,0\text{-pk,flat}}$: 232 dB $L_{E,p,\text{OW,24h}}$: 203 dB	*Cell 10* $L_{E,p,\text{OW,24h}}$: 219 dB

* Dual metric 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 are recommended for consideration.

Note: Peak sound pressure level ($L_{p,0\text{-pk}}$) has a reference value of 1 µPa, and weighted cumulative sound exposure level ($L_{E,p}$) has a reference value of 1µPa^{2}s. In this Table, thresholds are abbreviated to be more reflective of International Organization for Standardization standards (ISO 2017). The subscript "flat" is being included to indicate peak sound pressure are flat weighted or unweighted within the generalized hearing range of marine mammals (*i.e.*, 7 Hz to 160 kHz). 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 weighted 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 thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss coefficient.

The sound field in the project area is the existing background noise plus additional construction noise from the project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.,* impact pile driving, vibratory pile driving, vibratory pile removal, rotary drilling, and DTH).

The intensity of underwater sound is greatly influenced by factors, such as the size and type of piles, type of driver or drill, and the physical environment in which the

activity takes place. In order to calculate distances to the Level A harassment and Level B harassment thresholds for the methods and piles being used in this project, NMFS used representative source levels (Table 4) from acoustic monitoring at other locations.

Table 4 -- Source Levels for Construction Activities

Method	Pile Type	Pile Diameter	Peak (dB re 1 µPa)	RMS (dB re 1 µPa)	SEL (dB re 1 µPa 2-sec sec)	Reference
Vibratory Extraction	Steel pipe [1]	12"	171	155	155	Caltrans 2020, Table 1.2-1d
	Timber	12"	NA	152	NA	NMFS 2021a, Table 4
Vibratory Installation	Steel pipe	18"	NA	162[2]	162	NAVFAC Mid-Atlantic 2019, Table 6-4
	Sheet pile	Z26-700 [3]	NA	156	NA	Navy 2015
	Steel pipe	30"	NA	167	167	Navy 2015, p.14
	Casing/shaft for steel pipe	36"	NA	175	175	NAVFAC Mid-Atlantic 2019, Table 6-4
DTH Mono-hammer	Steel pipe	18"	172	167	146	Egger, 2021; Guan and Miner 2020; Heyvaert and Reyff, 2021
	Casing/shaft for steel pipe	36" [4]	194	167	164	Reyff and Heyvaert 2019; Reyff 2020; and Denes *et al*. 2019
Rotary Drilling	Steel pipe	18" and 30"	NA	154	NA	Dazey *et al*. 2012
Impact Install	Steel pipe [5]	18"	208	187	176	Caltrans 2020, Table 1.2-1a
	Steel pipe	30"	211	196	181	NAVFAC Southwest 2020, p.A-4
Vibratory Installation/Extraction	Steel pipe	16"	NA	162	162	NAVFAC Mid-Atlantic 2019, Table 6-4

[1] 13-inch steel pipe used as proxy because data were not available for vibratory install/extract of 12-inch steel pipe.
[2] Although conservative, this 162 dB RMS is consistent with source level value used for 18-inch steel pipe in for Dry Dock 1 at Portsmouth Naval Shipyard (84 FR 13252, April 4, 2019).
[3] 30-inch steel pipe pile used as the proxy source for vibratory driving of steel sheet piles because data were not available for Z26-700 (Navy 2015 [p. 14]).
[4] Guidance from NMFS states: For each metric, select the highest SL provided among these listed references (Reyff and Heyvaert, 2019); (Reyff J., 2020); (Denes *et al.,* 2019).
[5] Impact install of 20-inch steel pipe used as proxy because data were not available for 18-inch.
Notes: All SPLs are unattenuated; dB=decibels; NA = Not applicable/Not available; RMS = root mean square; SEL = sound exposure level; Caltrans = California Department of Transportation; NAVFAC = Naval Facilities Engineering Systems Command; dB re 1 µPa = dB referenced to a pressure of 1 microPascal, measures underwater SPL. dB re 1 µPa2-sec = dB referenced to a pressure of 1 microPascal squared per second, measures underwater SEL.

Single strike SEL are the proxy source levels presented for impact pile driving and were used to calculate distances to PTS. All data referenced at 10 meters.

NMFS recommends treating DTH systems as both impulsive and continuous, non-impulsive sound source types simultaneously. Thus, impulsive thresholds are used to evaluate Level A harassment, and continuous thresholds are used to evaluate Level B harassment. With regards to DTH mono-hammers, NMFS recommends proxy levels for Level A harassment based on available data regarding DTH systems of similar sized piles and holes (Denes *et al*., 2019; Guan and Miner, 2020; Reyff and Heyvaert, 2019; Reyff, 2020; Heyvaert and Reyff, 2021) (Table 1 in the **Federal Register** notice for the proposed IHA (87 FR 66133, November 2, 2022) includes number of piles and duration; Table 4 includes sound pressure levels for each pile type). At the time of the Navy's application submission, NMFS recommended a proxy RMS sound pressure level at 10 m of 167 dB when evaluating Level B harassment (Heyvaert and Reyff, 2021) for all DTH pile/hole sizes. However, since that time, NMFS has received additional clarifying information regarding DTH data presented in Reyff and Heyvaert (2019) and Reyff (2020) that allows NMFS to recommend different RMS sound pressure levels at 10 m for piles/holes of varying diameters. Therefore, NMFS proposes to use the following proxy RMS sound pressure levels at 10 m to evaluate Level B harassment from this sound source in this analysis (Table 5): 167 dB RMS for the 18 inch steel pipe piles (Heyvaert and Reyff, 2021) and 174 dB RMS for the 36 inch steel shafts (Reyff and Heyvaert, 2019; Reyff, 2020).

Level B Harassment Zones

Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water

chemistry, and bottom composition and topography. The general formula for underwater TL is:

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

Where

TL = transmission loss in dB

B = transmission loss coefficient; for practical spreading equals 15

R_1 = the distance of the modeled SPL from the driven pile, and

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

The recommended TL coefficient for most nearshore environments is the practical spreading value of 15. This value results in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions, known as practical spreading. As is common practice in coastal waters, here we assume practical spreading (4.5 dB reduction in sound level for each doubling of distance). Practical spreading was used to determine sound propagation for this project.

The TL model described above was used to calculate the expected noise propagation from vibratory pile driving/extracting, impact pile driving, rotary drilling, and DTH mono-hammer excavation using representative source levels to estimate the harassment zones or area exceeding the noise criteria. Utilizing the described practical spreading model, NMFS calculated the Level B isopleths shown in Tables 5 and 6. The largest calculated Level B isopleth, with the exception of concurrent activities, discussed below, is 46,416 m for the vibratory installation of the 36" steel casing/shaft guide piles with rock socket to build the small boat floating dock; however, this distance is truncated by shoreline in all directions, so sound will not reach the full distance of the calculated Level B harassment isopleth. This activity will generate a maximum ensonified area of 3.31 km^2 (Table 6). The maximum ensonified area of 8.53 km^2 is generated by the vibratory installation of the 16" steel pipe pile, 18" steel pipe pile, and 30" steel pipe pile

as well as the vibratory installation/extraction of the 16" steel pipe template piles. This area represents the maximum area after which distances are truncated.

Level A Harassment Zones

The ensonified area associated with Level A harassment is technically more challenging to predict due to the need to account for a duration component. Therefore, NMFS developed an optional User Spreadsheet tool to accompany the Technical Guidance that can be used to relatively simply predict an isopleth distance for use in conjunction with marine mammal density or occurrence to help predict potential takes. We note that because of some of the assumptions included in the methods underlying this optional tool, we anticipate that the resulting isopleth estimates are typically going to be overestimates of some degree, which may result in an overestimate of potential take by Level A harassment. However, this optional tool offers the best way to estimate isopleth distances when more sophisticated modeling methods are not available or practical. For stationary sources such as pile driving, the optional User Spreadsheet tool predicts the distance at which, if a marine mammal remained at that distance for the duration of the activity, it would be expected to incur PTS. Inputs used in the optional User Spreadsheet tool are reported in Table 1 of the **Federal Register** notice announcing the proposed IHA (87 FR 66133, November 2, 2022) (number piles/day and duration to drive a single pile) and Table 4 (source levels/distance to source levels). The resulting estimated isopleths are reported below in Tables 5 and 6. The largest Level A isopleth will be generated by the impact driving of the 30" steel pipe pile at the pier for high-frequency cetaceans (3,500.3 m; Table 5). This activity will have a maximum ensonified area of 6.49 km^2 (Table 5).

Table 5 -- Maximum Distances to Level A Harassment and Level B Harassment Thresholds for Impulsive Sound (Impact Hammer and DTH Mono-hammer)

Structure	Pile Size and Type	Activity	Level A (PTS onset) harassment			Level B Harassment
			Maximum Distance to 185 dB SELcum Threshold(m)/ Area of Harassment Zone (km^2)	Maximum Distance to 155 dB SELcum Threshold(m)/ Area of Harassment Zone (km^2)	Maximum Distance to 185 dB SELcum Threshold(m)/Area of Harassment Zone (km^2)	Maximum Distance 160 dB RMS SPL (120 dB DTH) Threshold (m)/ Area of Harassment Zone (km^2)
			MF Cetacean	HF Cetacean	Phocid	All Marine Mammals
Bulkhead construction (Combination Pipe/Z-pile)	18" steel pipe	Impact Install	48.5/0.0037	1,624.7/0.66	729.9/0.21	631/0.16
		DTH Mono-Hammer	4.6/0.000033	154.2/0.028	69.3/0.0075	13,594/3.31
Trestle (Bents 1-18)	18" steel pipe	Impact Install	25.2/0.0020	844.9/1.21	379.6/0.38	631/0.82
Trestle (Bent 19)	30" steel pipe	Impact Install	65.8/0.014	2,205.0/3.72	990.7/1.47	2,512/4.44
Pier	30" steel pipe	Impact Install	104.5/0.034	3,500.3/6.49	1,572.6/2.50	2,512/4.44
Gangway support piles (small boat floating dock)	18" steel pipe	Impact Install	19.3/0.00058	644.8/0.17	289.7/0.049	631/0.16
Small Boat Floating Dock	36" Steel Casing/Shaft with Rock Socket (Guide Pile)	Impact Install	35.5/0.002	1,189.5/0.45	534.4/0.12	3,415/2.14
		DTH Mono-Hammer	73/0.0084	2,444.5/1.21	1,098.2/0.42	13,594/3.31

Notes: dB = decibel; DTH = down-the-hole; dB RMS SPL = decibel root mean square sound pressure level; dB SELcum = cumulative sound exposure level; m = meter; PTS = Permanent Threshold Shift; km^2 = square kilometer.

Table 6 -- Maximum Distances to Level A Harassment and Level B Harassment Thresholds for Continuous (Vibratory Hammer/Rotary Drill)

Structure	Pile Size and Type	Activity	Level A (PTS onset) Harassment	Level B Harassment

			Maximum Distance to 198 dB SELcum Threshold (m)/ Area of Harassment Zone (km^2)	Maximum Distance to 173 dB SELcum Threshold(m)/ Area of Harassment Zone (km^2)	Maximum Distance to 201 dB SELcum Threshold(m)/ Area of Harassment Zone (km^2)	Maximum Distance 120 dB RMS SPL Threshold (m)/ Area of Harassment Zone (km^2)
			MF Cetacean	HF Cetacean	Phocid	All Marine Mammals
Abandoned guide piles along bulkhead	12" steel pipe	Vibratory Extract	0.3/0	5.3/0.000044	2.2/0.000008	2,514/1.26
Floating dock demolition (Timber Guide Piles)	12" timber	Vibratory Extract	0.2/0	4/0.000025	1.7/0.000005	1,359/0.53
Bulkhead construction (Combination Pipe/Z-pile)	18" steel pipe	Vibratory Install	1.8/0.000005	29.7/0.0014	12.2/0.00023	6,310/3.31
	Steel sheet Z26-700	Vibratory Install	0.7/0.000001	11.8/0.00022	4.9/0.000038	2,512/1.26
	16" steel pipe template piles	Vibratory Install/Extract	1.1/0.000002	18.7/0.00055	7.7/0.000093	6,310/3.31
Trestle (Bents 1-18)	18" steel pipe	Vibratory Install	0.7/0.000002	11.8/0.00044	4.8/0.000072	6,310/8.53
	18" steel pipe hole	Rotary Drill	0.0/0	0.6/0.000001	0.4/0.000001	1,848/2.98
	16" steel pipe template piles	Vibratory Install/Extract	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Trestle (Bent 19)	30" steel pipe	Vibratory Install	2.0/0.000013	33.2/0.0034	13.7/0.00059	13,594/8.53
	16" steel pipe template piles	Vibratory Install/Extract	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Pier	30" steel pipe	Vibratory Install	3.2/0.000032	52.8/0.0087	21.7/0.0015	13,594/8.53
	30" hole	Rotary Drill	0.0/0	0.6/0.000001	0.4/0.000001	1,848/2.98
	16" steel pipe template piles	Vibratory Install/Extract	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Fender Piles	16" steel pipe	Vibratory Install	0.9/0.000003	14.3/0.00064	5.9/0.00011	6,310/8.53
	16" steel pipe template piles	Vibratory Install/Extract	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53

Gangway support piles (small boat floating dock)	18" steel pipe	Vibratory Install	0.7/0.000001	11.8/0.00022	4.8/0.000036	6,310/3.31
	36" Steel Casing/Shaft Guide Piles with Rock Socket	Vibratory Install	5.2/0.000042	86.6/0.012	35.6/0.002	46,416/3.31
Small Boat Floating Dock	16" steel pipe template piles	Vibratory Install/Extract	1.1/0.000002	18.7/0.00055	7.7/0.000093	6,310/3.31

Notes: dB = decibel; dB RMS SPL = decibel root mean square sound pressure level; dB SELcum = cumulative sound exposure level; m = meter; PTS = Permanent Threshold Shift; km^2 = square kilometer.

Concurrent Activities

Simultaneous use of two or three impact, vibratory, or DTH hammers, or rotary drills, could occur (potential combinations described in Table 1 of the **Federal Register** notice announcing the proposed IHA; 87 FR 66133, November 2, 2022) and may result in increased sound source levels and harassment zone sizes, given the proximity of the structure sites and the rules of decibel addition (Table 7).

NMFS (2018b) handles overlapping sound fields created by the use of more than one hammer differently for impulsive (impact hammer and Level A harassment zones for drilling with a DTH hammer) and continuous sound sources (vibratory hammer, rotary drill, and Level B harassment zones for drilling with a DTH hammer (Table 7) and differently for impulsive sources with rapid impulse rates of multiple strikes per second (DTH) and slow impulse rates (impact hammering) (NMFS, 2021c). It is unlikely that the two impact hammers will strike at the same instant, and therefore, the SPLs will not be adjusted regardless of the distance between impact hammers. In this case, each impact hammer will be considered to have its own independent Level A harassment and Level B harassment zones.

When two DTH hammers operate simultaneously their continuous sound components overlap completely in time. When the Level B isopleth of one DTH sound

source encompasses the isopleth of another DTH sound source, the sources are considered additive and combined using the rules for combining sound source levels generated during pile installation, described in Table 7.

Table 7 -- Rules for Combining Sound Source Levels Generated During Pile Installation

Hammer Types	Difference in SSL	Level A Zones	Level B Zones
Vibratory, Impact	Any	Use impact zones	Use largest zone
Impact, Impact	Any	Use zones for each pile size and number of strikes	Use zone for each pile size
Vibratory, Vibratory Rotary drill, or DTH, DTH	0 or 1 dB	Add 3 dB to the higher source level	Add 3 dB to the higher source level
	2 or 3 dB	Add 2 dB to the higher source level	Add 2 dB to the higher source level
	4 to 9 dB	Add 1 dB to the higher source level	Add 1 dB to the higher source level
	10 dB or more	Add 0 dB to the higher source level	Add 0 dB to the higher source level

Note: The method is based on a method created by Washington State Department of Transportation (WSDOT 2020) and has been updated and modified by NMFS.

When two continuous noise sources have overlapping sound fields, there is potential for higher sound levels than for non-overlapping sources. When two or more continuous noise sources are used simultaneously, and the isopleth of one sound source encompasses the isopleth of another sound source, the sources are considered additive and source levels are combined using the rules of decibel addition (Table 8; NMFS, 2021c).

For simultaneous use of three or more continuous sound sources, NMFS first identifies the three overlapping sources with the highest sound source level. Then, using the rules for combining sound source levels generated during pile installation (Table 8), NMFS determines the difference between the lower two source levels, and adds the appropriate number of decibels to the higher source level of the two. Then, NMFS calculates the difference between the newly calculated source level and the highest source

level of the three identified in the first step, and again, adds the appropriate number of decibels to the highest source level of the three.

For example, with overlapping isopleths from 24", 36", and 42" diameter steel pipe piles with sound source levels of 161, 167, and 168 dB RMS respectively, NMFS would first calculate the difference between the 24" and 36" source levels (167 dB – 161 dB = 6 dB. Then, given that the difference is 6 dB, as described in Table 8, NMFS would then add 1 dB to the highest of the two sound source levels (167 dB), for a combined noise level of 168 dB. Next, NMFS calculates the difference between the newly calculated 168 dB and the sound source level of the 42" steel pile (168 dB). Since 168 dB– 168 dB = 0 dB, 3 dB is added to the highest value (168 dB + 3 dB = 171 dB). Therefore, for the combination of 24", 36", and 42" steel pipe piles, zones would be calculated using a combined sound source level of 171 dB.

If an impact hammer and a vibratory hammer are used concurrently, the largest Level B harassment zone generated by either hammer would apply, and the Level A harassment zone generated by the impact hammer would apply. Simultaneous use of two or more impact hammers does not require source level additions as it is unlikely that two hammers would strike at the same exact instant. Thus, sound source levels are not adjusted regardless of distance, and the zones for each individual activity apply.

For activity combinations that do require sound source level adjustment, Table 9 shows the revised proxy source levels for concurrent activities based upon the rules for combining sound source levels generated during pile installation, described in Table 7. Resulting Level A harassment and Level B harassment zones for concurrent activities are summarized in Table 9. The maximum Level A harassment isopleth will be 2,444.5 m for high-frequency cetaceans generated by concurrent use of two vibratory pile drivers and DTH mono-hammer during installation of 36" shafts for the small boat floating dock (Table 9). The maximum Level B harassment isopleth will be 54,117 m for the

concurrent use of DTH mono-hammer and two vibratory pile drivers for installation of 36” shafts for the small boat floating dock (Table 9).

Table 8 -- Proxy Values for Simultaneous Use of Non-Impulsive Sources

Structure	Activity and Proxy	New Proxy
Bulkhead	Vibratory Install 16-inch steel pipe piles – 162 dB RMS	165 dB RMS
	Vibratory Install 18-inch steel pipe piles – 162 dB RMS	
	Vibratory Install 18-inch steel pipe piles – 162 dB	168 dB RMS
	DTH Install 18-inch steel pipe piles – 167 dB	
Bulkhead and Trestle	Vibratory Install/extract 16-inch steel pipe piles – 162 dB RMS	166 dB RMS
	Vibratory Install Z26-700 sheet piles – 156 dB RMS	
	Vibratory Install 18-inch steel pipe piles – 162 dB RMS	
	Vibratory Install/extract 16-inch steel pipe piles – 162 dB RMS	163 dB RMS
	Vibratory Install Z26-700 sheet piles – 156 dB RMS	
	Rotary Drill 18-inch steel pipe piles – 154 dB RMS	
Pier	Vibratory Install/extract 16-inch steel pipe piles – 162 dB RMS	168 dB RMS
	Vibratory Install 30-inch steel pipe piles – 167 dB RMS	
	Vibratory Install/extract 16-inch steel pipe piles– 162 dB RMS	163 dB RMS
	Rotary Drill 30-inch steel pipe piles – 154 dB RMS	
Pier Fender Piles and Small Boat Floating Dock	Vibratory Install/extract 16-inch steel pipe piles – 162 dB RMS	165 dB RMS
	Vibratory Install 18-inch steel pipe piles – 162 dB RMS	
	Vibratory Install/extract 16-inch steel pipe piles– 162 dB RMS	175 dB RMs
	Vibratory Install 36-inch steel pipe piles – 175 dB RMS	
	Vibratory Install 36-inch steel casing - 175 dB	176 dB
	DTH Install 36-inch steel casing – 167 dB	

Table 9 -- Maximum Distances to Level A and Level B Harassment Thresholds for Concurrent Activities

Structure	Pile Sizes and Type	Activity	Total Production Days	Level A (PTS Onset) Harassment			Level B Harassment
				Maximum Distance to Continuous 198 dB SEL_{cum}; DTH 185 dB SEL_{cum} Thresholds (m)/ Area of Harassment Zone (km^2)	Maximum Distance to Continuous 173 dB SEL_{cum}; DTH 155 dB SEL_{cum} Thresholds (m)/Area of Harassment Zone (km^2)	Maximum Distance to Continuous 201 dB SEL_{cum}; DTH 185 dB SEL_{cum} Thresholds (m)/Area of Harassment Zone (km^2)	Maximum Distance 120 dB RMS SPL Threshold (m)/ Area of Harassment Zone (km^2) (Continuous and DTH)
				MF Cetacean	HF Cetacean	Phocid	
Bulkhead	Install of 16-inch and 18-inch steel pipe piles	Install/Extract using two Vibratory Pile Drivers	15	3.7/0.000021	61.6/0.0060	25.3/0.001	10,000/3.31
	Install of 18-inch steel pile	Install using two Vibratory Pile Drivers and DTH mono-hammer	12	Vibratory: 1.8/0.000005 DTH: 4.6/0.000033	Vibratory: 29.7/0.0014 DTH: 154.2/0.028	Vibratory: 12.2/0.00023 DTH: 69.3/0.0075	15,848.93/3.31
Bulkhead and Trestle	Install of 16-inch and 18-inch steel pipe and Z26-700 steel sheet piles	Install/Extract using three Vibratory Pile Drivers	15	4.1/0.000026	68.3/0.0073	28.1/0.0012	10,000/3.31
		Install/Extract using two Vibratory Pile Drivers and a Rotary Drill	14	2.9/0.000013	47.8/0.0036	19.7/0.00061	7,356/3.31
Pier	Install of 16- and 30-inch steel pipe	Install/Extract using two Vibratory Pile Drivers	30	5.9/0.00011	97.6/0.030	40.1/0.0050	15,849/8.53
		Install/Extract using a vibratory pile driver and rotary drill	27	2.0/0.0031	33.1/0.0034	13.6/0.00058	7,356/8.53
Pier Fender Piles and Gangway Support	Install of 16- and 18-inch	Install/Extract using two Vibratory Pile Drivers	17	2.3/0.000017	38.8/0.0047	16.0/0.0008	10,000/8.53

for Small Boat Floating Dock	steel pipe						
	Install of 16-inch steel pipe and 36-inch shafts	Install using two Vibratory Pile Drivers	20	9.6/0.00029	159.5/0.080	65.6/0.013	46,416/8.53
	Install of 36-inch shafts	Install using two Vibratory Pile Drivers and DTH mono-hammer	2	Vibratory: 5.2/0.000042 DTH: 73/0.0084	Vibratory: 86.6/0.012 DTH: 2,444.5/1.21	Vibratory: 35.6/0.002 DTH: 1,098.2/0.42	DTH: 54,117/8.53

dB RMS SPL = decibel root mean square sound pressure level; dB SEL_{cum} = cumulative sound exposure level; m = meter; PTS = Permanent Threshold Shift; km^2 = square kilometer.

The Level B harassment zones in Table 9 were calculated based upon the adjusted source levels for simultaneous construction activities (Table 8). OMAO has not planned any scenarios for concurrent work in which the Level A harassment isopleths would need to be adjusted from that calculated for single sources. Regarding implications for Level A harassment zones when multiple vibratory hammers, or vibratory hammers and rotary drills, are operating concurrently, given the small size of the estimated Level A harassment isopleths for all hearing groups during vibratory pile driving, the zones of any two hammers or hammer and drill are not expected to overlap. Therefore, compounding effects of multiple vibratory hammers operating concurrently are not anticipated, and NMFS has treated each source independently.

Regarding implications for Level A harassment zones when vibratory hammers are operating concurrently with a DTH hammer, combining isopleths for these sources is difficult for a variety of reasons. First, vibratory pile driving relies upon non-impulsive PTS thresholds, while DTH hammers use impulsive thresholds. Second, vibratory pile driving accounts for the duration to drive a pile, while DTH account for strikes per pile. Thus, it is difficult to measure sound on the same scale and combine isopleths from these

impulsive and non-impulsive, continuous sources. Therefore, NMFS has treated each source independently at this time.

Regarding implications for impact hammers used in combination with a vibratory hammer or DTH hammer, the likelihood of these multiple sources' isopleths completely overlapping in time is slim primarily because impact pile driving is intermittent. Furthermore, non-impulsive, continuous sources rely upon non-impulsive TTS/PTS thresholds, while impact pile driving uses impulsive thresholds, making it difficult to calculate isopleths that may overlap from impact driving and the simultaneous action of a non-impulsive continuous source or one with multiple strikes per second. Thus, with such slim potential for multiple different sources' isopleths to overlap in space and time, specifications should be entered as "normal" into the User Spreadsheet for each individual source separately.

Marine Mammal Occurrence

In this section we provide information about the occurrence of marine mammals, including density or other relevant information that will inform the take calculations. Potential exposures to construction noise for each acoustic threshold were estimated using marine mammal density estimates (N) from the Navy Marine Species Density Database (NMSDD) (Navy, 2017a). OMAO evaluated data reflecting monthly densities of each species to determine minimum, maximum, and average annual densities within Narragansett Bay. Table 10 summarizes the average annual densities of species that may be impacted by the construction activities, with the exception of harbor seals as the density value for this species in the table represents the maximum density value for seals.

Table 10 -- Average Densities by Species Used in Exposure Analysis

Species	Average Density in Project Area (species per km^2)
Atlantic White-sided Dolphin	0.003
Common Dolphin	0.011

Harbor Porpoise	0.012
Harbor Seal	0.623
Gray Seal	0.131
Harp Seal	0.05
Hooded Seal	0.001

The NMSDD models reflect densities for seals as a guild due to difficulty in distinguishing these species at sea. Harbor seal is expected to be the most common pinniped in Narragansett Bay with year-round occurrence (Kenney and Vigness-Raposa, 2010). Therefore, OMAO used the maximum density for the seal guild for harbor seal. Gray seals are the second most common seal to be observed in Rhode Island waters and, based on stranding records, are commonly observed during the spring to early summer and occasionally observed during other months of the year (Kenney, 2020). Therefore, the average density for the seal guild was used for gray seal occurrence in Narragansett Bay. Minimum densities for the seal guild were used for harp seal and hooded seals as they are considered occasional visitors in Narragansett Bay but are rare in comparison to harbor and gray seals (Kenney, 2015). NMFS has carefully reviewed and concurs with the use of these densities used by OMAO.

Take Estimation

Here we describe how the information provided above is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and authorized.

For each species, OMAO multiplied the average annual density by the largest ensonified area (Tables 5, 6, 9) and the maximum days of activity (Tables 5, 6, 9) (take estimate = N × ensonified area × days of pile driving) in order to calculate estimated take by Level A harassment and Level B harassment. OMAO used the pile type, size, and construction method that produce the largest isopleth to estimate exposure of marine mammals to noise impacts. The exposure estimate was rounded to the nearest whole

number at the end of the calculation. Table 11 shows the total estimated number of takes for each species by Level A harassment and Level B harassment for individual and concurrent activities as well as estimated take as a percent of stock abundance. Estimated take by activity type for individual and concurrent equipment use for each species is shown in Tables 6-12 through 6-17 in the application. OMAO requested take by Level A harassment of four species (harbor porpoise, harbor seal, gray seal, and harp seal) incidental to construction activities using one equipment type. In addition, OMAO requested one take of harbor seals by Level A harassment during concurrent use of a DTH mono-hammer and two vibratory hammers for installation of 36" shafts for the small boat floating dock.

To account for group size, OMAO conservatively increased the estimated take by Level B harassment from 9 to 16 Atlantic white-sided dolphins, as the calculated take was less than the documented average group size (NUWC, 2017). NMFS agrees with this approach, and is authorizing 16 takes by Level B harassment of Atlantic white-sided dolphins. The species density for the hooded seal was too low to result in any calculated estimated takes. In order to be conservative, OMAO requested, and NMFS authorized, one take by Level B harassment of hooded seals for each month of construction activity when this species may occur in the project area. Hooded seals may occur in the project area from January through May, which is a total of 5 months. Therefore, OMAO requested, and NMFS authorized, five takes by Level B harassment of hooded seals for individual construction activities and five takes by Level B harassment of hooded seals for concurrent construction activities for a total of 10 takes by Level B harassment of hooded seals.

Table 11 -- Total authorized take by Level A harassment and Level B harassment for individual and concurrent activities

Species	Individual Activities		Concurrent Activities		Total Authorized Take	% of stock
	Level A Harassment	Level B Harassment	Level A Harassment	Level B Harassment		
Atlantic white-sided dolphin	0	6	0	3	16 [1]	0.2
Short-beaked common dolphin	0	26	0	13	39	0.2
Harbor Porpoise	2	27	0	13	42	0.044
Harbor Seal	55	1,478	1	589	2,123	3.46
Gray Seal	11	312	0	125	448	1.64
Harp Seal	4	117	0	47	168	0.002
Hooded Seal	0	5 [2]	0	5 [2]	10	0.002

[1] Authorized take has been increased to mean group size (NUWC, 2017). Mean group size was not used for those take estimates that exceeded the mean group size.
[2] OMAO conservatively requested 1 take by Level B harassment of hooded seal per month of construction when this species may occur in the project area (January through May).

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 the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the 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 the 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, NMFS considers 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 and impact on operations.

Shutdown Zones

OMAO will establish shutdown zones for all pile driving activities. The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Shutdown zones will be based upon the Level A harassment zone for each pile size/type and driving method, as shown in Table 12. If the Level A harassment zone is too large to monitor, the shutdown zone will be limited to a radial distance of 200 m from the acoustic source (86 FR 71162, December 15, 2021; 87 FR 19886, April 6, 2022). For example, the largest Level A harassment zone for high-frequency cetaceans extends approximately 2,444.5 m from the source during DTH mono-hammer excavation

while installing the 36 in steel shafts for the small boat floating dock (Table 5). OMAO plans to maintain maximum shutdown zone of 200 m for that activity, consistent with prior projects in the area (87 FR 11860, March 2, 2022).

A minimum shutdown zone of 10 m will be applied for all in-water construction activities if the Level A harassment zone is less than 10 m (*i.e.,* vibratory pile driving, drilling). The 10 m shutdown zone will also serve to protect marine mammals from collisions with project vessels during pile driving and other construction activities, such as barge positioning or drilling. If an activity is delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the shutdown zone indicated in Table 12 or 15 minutes have passed without re-detection of the animal. Construction activities must be halted upon observation of a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met entering or within the harassment zone.

If a marine mammal enters the Level B harassment zone, in-water work will proceed and PSOs will document the marine mammal's presence and behavior.

Table 12 -- Shutdown Zones and Level B Harassment Zones by Activity

		Shutdown Zone (m)		Level B Harassment Zone (m)
Pile type/size	Driving Method	Cetaceans	Pinnipeds	All Marine Mammals
12" steel pipe	Vibratory extraction	10	10	2,600
12" timber	Vibratory extraction	15	10	1,359
16" steel pipe	Vibratory install/extract	20	10	6,400
	Impact install	200 [1]	200 [1]	640
	Vibratory install	30	15	6,400
	DTH Mono-hammer	200 [1]	200 [1]	Maximum harassment zone [2]
18" steel pipe	Rotary drilling 18" holes	10	10	1,900
Z26-700 steel sheets	Vibratory install	15	10	2,600
30" steel pipe	Impact install	200 [1]	200 [1]	2,600

	Vibratory install	55	25	Maximum harassment zone [2]
30” steel pipe	Rotary drilling	10	10	1,900
36" steel pipe	Impact install	200 [1]	200 [1]	3,400
	Vibratory install	90	40	Maximum harassment zone [2]
36" shafts	DTH Mono-hammer	200 [1]	200 [1]	Maximum harassment zone [2]

[1] Distance to shutdown zone distances implemented for other similar projects in the region (NAVFAC, 2019).
[2] Harassment zone will be truncated due to the presence of intersecting land masses and will encompass a maximum area of 3.31 km^2.

Protected Species Observers

The placement of protected species observers (PSOs) during all construction activities (described in the **Monitoring and Reporting** section) will ensure that the entire shutdown zone is visible. Should environmental conditions deteriorate such that the entire shutdown zone will not be visible (*e.g.,* fog, heavy rain), pile driving will be delayed until the PSO is confident marine mammals within the shutdown zone could be detected.

Monitoring for Level A harassment and Level B harassment

PSOs will monitor the full shutdown zones and the remaining Level A harassment and Level B harassment zones to the extent practicable. Monitoring zones provide utility for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project areas outside the shutdown zones and thus prepare for a potential cessation of activity should the animal enter the shutdown zone.

Pre-activity Monitoring

Prior to the start of daily in-water construction activity, or whenever a break in pile driving of 30 minutes or longer occurs, PSOs will observe the shutdown, Level A harassment, and Level B harassment for a period of 30 minutes. Pile driving may commence following 30 minutes of observation when the determination is made that the shutdown zones are clear of marine mammals. If a marine mammal is observed within

the shutdown zones listed in Table 13, construction activity will be delayed until the animal has voluntarily exited and been visually confirmed beyond the shutdown zone indicated in Table 13 or has not been observed for 15 minutes. When a marine mammal for which Level B harassment take is authorized is present in the Level B harassment zone, activities will begin and Level B harassment take will be recorded. 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 are visible). If the shutdown zone is obscured by fog or poor lighting conditions, in-water construction activity will not be initiated until the entire shutdown zone is visible.

Soft-Start

Soft-start procedures are used to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the hammer operating at full capacity. For impact pile driving, contractors will be required to provide an initial set of three strikes from the hammer at reduced energy, followed by a 30-second waiting period, then two subsequent reduced-energy strike sets. Soft start will 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 30 minutes or longer.

Based on our evaluation of OMAO's measures, 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 while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

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

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

Visual Monitoring

Marine mammal monitoring during in-water construction activities will be conducted by PSOs meeting NMFS' standards and in a manner consistent with the following:

- Independent PSOs (*i.e.,* employees of the entity conducting construction activities may not serve as PSOs) who have no other assigned tasks during monitoring periods will be used;
- At least one PSO will have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization;
- Other PSOs may substitute education (degree in biological science or related field) or training for experience; and
- Where a team of three or more PSOs is required, a lead observer or monitoring coordinator will be designated. The lead observer will be required to have prior experience working as a marine mammal observer during construction.

PSOs will have the following additional qualifications:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including, but not limited to, the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and

- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

Visual monitoring will be conducted by a minimum of two trained PSOs positioned at suitable vantage points. Any activity for which the Level B harassment isopleth will exceed 1,900 meters will require a minimum of three PSOs to effectively monitor the entire Level B harassment zone. PSOs will likely be located on Gould Island South, Gould Island Pier, Coddington Point, Bishop Rock, Breakwater, or Taylor Point as shown in Figure 11-1 in the application. All PSOs will have access to high-quality binoculars, range finders to monitor distances, and a compass to record bearing to animals as well as radios or cells phones for maintaining contact with work crews.

Monitoring will be conducted 30 minutes before, during, and 30 minutes after all in water construction activities. In addition, PSOs will record all incidents of marine mammal occurrence, regardless of distance from activity, and will document any behavioral reactions in concert with distance from piles being driven or removed. 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 30 minutes.

OMAO and the Navy shall conduct briefings between construction supervisors and crews, PSOs, OMAO and Navy staff prior to the start of all pile driving activities and when new personnel join the work. These briefings will explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

Hydro-acoustic Monitoring

OMAO will implement in situ acoustic monitoring efforts to measure SPLs from in-water construction activities by collecting and evaluating acoustic sound recording

levels during activities. Stationary hydrophones will be placed 33 ft (10 m) from the noise source, in accordance with NMFS' most recent guidance for the collection of source levels. If there is the potential for Level A harassment, a second monitoring location will be set up at an intermediate distance between cetacean/phocid shutdown zones and Level A harassment zones. Hydrophones will be deployed with a static line from a stationary vessel. Locations of hydro-acoustic recordings will be collected via GPS. A depth sounder and/or weighted tape measure will be used to determine the depth of the water. The hydrophone will be attached to a weighted nylon cord or chain to maintain a constant depth and distance from the pile area. The nylon cord or chain will be attached to a float or tied to a static line.

Each hydrophone will be calibrated at the start of each action and will be checked frequently to the applicable standards of the hydrophone manufacturer. Environmental data will be collected, including but not limited to, the following: wind speed and direction, air temperature, humidity, surface water temperature, water depth, wave height, weather conditions, and other factors that could contribute to influencing the airborne and underwater sound levels (*e.g.,* aircraft, boats, *etc.*). The chief inspector will supply the acoustics specialist with the substrate composition, hammer or drill model and size, hammer or drill energy settings and any changes to those settings during the piles being monitored, depth of the pile being driven or shaft excavated, and blows per foot for the piles monitored. For acoustically monitored piles and shafts, data from the monitoring locations will be post-processed to obtain the following sound measures:

- Maximum peak pressure level recorded for all the strikes associated with each pile or shaft, expressed in dB re 1 µPa. For pile driving and DTH mono-hammer excavation, this maximum value will originate from the phase of pile driving/drilling during which hammer/drill energy was also at maximum (referred to as Level 4).

- From all the strikes associated with each pile occurring during the Level 4 phase these additional measures will be made:
    1) mean, median, minimum, and maximum RMS pressure level in [dB re 1 µPa];
    2) mean duration of a pile strike (based on the 90 percent energy criterion);
    3) number of hammer strikes;
    4) mean, median, minimum, and maximum single strike SEL in [dB re µPa2 s];
- Cumulative SEL as defined by the mean single strike SEL + 10*log10 (number of hammer strikes) in [dB re µPa2 s];
- Median integration time used to calculate SPL RMS;
- A frequency spectrum (pressure spectral density) in [dB re µPa2 per Hertz {Hz}] based on the average of up to eight successive strikes with similar sound. Spectral resolution will be 1 Hz, and the spectrum will cover nominal range from 7 Hz to 20 kHz;
- Finally, the cumulative SEL will be computed from all the strikes associated with each pile occurring during all phases, i.e., soft-start, Level 1 to Level 4. This measure is defined as the sum of all single strike SEL values. The sum is taken of the antilog, with log10 taken of result to express in [dB re µPa2 s].

Hydro-acoustic monitoring will be conducted for at least 10 percent and up to 10 of each different pile type for each method of installation as shown in Table 13-1 in the application. All acoustic data will be analyzed after the project period for pile driving, rotary drilling, and DTH mono-hammer excavation events to confirm SPLs and rate of transmission loss for each construction activity.

Reporting

OMAO will submit a draft marine mammal monitoring report to NMFS within 90 days after the completion of pile driving activities, or 60 days prior to a requested date of issuance of any future IHAs for the project, or other projects at the same location, whichever comes first. The marine mammal monitoring report will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the report will include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including:
    1) The number and type of piles that were driven and the method (*e.g.,* impact, vibratory, down-the-hole, *etc.*);
    2) Total duration of time for each pile (vibratory driving) number of strikes for each pile (impact driving); and
    3) For down-the-hole drilling, duration of operation for both impulsive and non-pulse components.
- PSO locations during marine mammal monitoring; and
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance.

For each observation of a marine mammal, the following will be reported:

- Name of PSO who sighted the animal(s) and PSO location and activity at time of sighting;
- Time of sighting;
- Identification of the animal(s) (*e.g.,* genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species;

- Distance and location of each observed marine mammal relative to the pile being driven or hole being drilled for each sighting;
- Estimated number of animals (min/max/best estimate);
- Estimated number of animals by cohort (adults, juveniles, neonates, group composition, etc.);
- Animal's closest point of approach and amount of time spent in harassment zone;
- Description of any marine mammal behavioral observations (*e.g.,* observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (*e.g.,* no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);
- Number of marine mammals detected within the harassment zones, by species; and
- Detailed information about implementation of any mitigation (*e.g.,* shutdowns and delays), a description of specified actions that ensued, and resulting changes in behavior of the animal(s), if any.

If no comments are received from NMFS within 30 days, the draft report will constitute the final report. If comments are received, a final report addressing NMFS' comments will be required to be submitted within 30 days after receipt of comments. All PSO datasheets and/or raw sighting data will be submitted with the draft marine mammal report.

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, OMAO will report the incident to the Office of Protected Resources (OPR) (*PR.ITP.MonitoringReports@noaa.g*ov), NMFS and to the Northeast Region (GARFO) regional stranding coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, OMAO will immediately

cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHAs. OMAO will not resume their activities until notified by NMFS.

The report will include the following information:

1. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);

2. Species identification (if known) or description of the animal(s) involved;

3. Condition of the animal(s) (including carcass condition if the animal is dead);

4. Observed behaviors of the animal(s), if alive;

5. If available, photographs or video footage of the animal(s); and

6. General circumstances under which the animal was discovered.

OMAO will also provide a hydro-acoustic monitoring report based upon hydro-acoustic monitoring conducted during construction activities. The hydro-acoustic monitoring report will include:

- Hydrophone equipment and methods: recording device, sampling rate, distance (meter) from the pile where recordings were made; depth of water and recording device(s);
- Type and size of pile being driven, substrate type, method of driving during recordings (*e.g.*, hammer model and energy), and total pile driving duration;
- Whether a sound attenuation device is used and, if so, a detailed description of the device used and the duration of its use per pile;
- For impact pile driving and/or DTH mono-hammer excavation (per pile): Number of strikes and strike rate; depth of substrate to penetrate; pulse duration and mean, median, and maximum sound levels (dB re: 1 μPa): root mean square sound

pressure level (SPL_{rms}); cumulative sound exposure level (SEL_{cum}), peak sound pressure level (SPL_{peak}), and single-strike sound exposure level (SEL_{s-s});

- For vibratory driving/removal and/or DTH mono-hammer excavation (per pile): Duration of driving per pile; mean, median, and maximum sound levels (dB re: 1 μPa): root mean square sound pressure level (SPL_{rms}), cumulative sound exposure level (SEL_{cum}) (and timeframe over which the sound is averaged);
- One-third octave band spectrum and power spectral density plot; and
- General daily site conditions, including date and time of activities, water conditions (*e.g.,* sea state, tidal state), and weather conditions (*e.g.,* percent cover, visibility.

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 impacts or responses (*e.g.*, intensity, duration), the context of any impacts or responses (*e.g.*, critical reproductive time or location, foraging impacts affecting energetics), 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' 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 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, the majority of our analysis applies to all the species listed in Table 1, given that many of the anticipated effects of this project on different marine mammal stocks are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are described independently in the analysis below.

Pile driving activities associated with the OMAO vessel relocation project have the potential to disturb or displace marine mammals. Specifically, the project activities may result in take, in the form of Level B harassment, and for harbor porpoise, harbor seal, gray seal, and harp seal, Level A harassment, from underwater sounds generated from pile driving and removal, DTH, and rotary drilling. Potential takes could occur if individuals are present in zones ensonified above the thresholds for Level B harassment, identified above, when these activities are underway.

No serious injury or mortality is expected, even in the absence of required mitigation measures, given the nature of the activities. Further, no take by Level A harassment is anticipated for Atlantic white-sided dolphins, short-beaked common dolphins, and harp seals due to the application of planned mitigation measures, such as shutdown zones that encompass the Level A harassment zones for these species. The potential for harassment will be minimized through the construction method and the implementation of the planned mitigation measures (see **Mitigation** section).

Take by Level A harassment is authorized for four species (harbor porpoise, harbor seal, gray seal, and harp seal) as the Level A harassment zones exceed the size of

the shutdown zones for specific construction scenarios. Therefore, there is the possibility that an animal could enter a Level A harassment zone without being detected, and remain within that zone for a duration long enough to incur PTS. Any take by Level A harassment is expected to arise from, at most, a small degree of PTS (*i.e.,* minor degradation of hearing capabilities within regions of hearing that align most completely with the energy produced by impact pile driving such as the low-frequency region below 2 kHz), not severe hearing impairment or impairment within the ranges of greatest hearing sensitivity. Animals would need to be exposed to higher levels and/or longer duration than are expected to occur here in order to incur any more than a small degree of PTS.

Further, the amount of take authorized by Level A harassment is very low for all marine mammal stocks and species. For three species, Atlantic white-sided dolphin, short-beaked common dolphin, and harp seal, NMFS neither anticipates nor authorized Level A harassment take over the duration of OMAO's planned activities; for the other four stocks, NMFS authorized no more than 56 takes by Level A harassment for any stock. If hearing impairment occurs, it is most likely that the affected animal would lose only a few decibels in its hearing sensitivity. Due to the small degree anticipated, any PTS potential incurred would not be expected to affect the reproductive success or survival of any individuals, much less result in adverse impacts on the species or stock.

Additionally, some subset of the individuals that are behaviorally harassed could also simultaneously incur some small degree of TTS for a short duration of time. However, since the hearing sensitivity of individuals that incur TTS is expected to recover completely within minutes to hours, it is unlikely that the brief hearing impairment would affect the individual's long-term ability to forage and communicate with conspecifics, and will therefore not likely impact reproduction or survival of any

individual marine mammal, let alone adversely affect rates of recruitment or survival of the species or stock.

As described above, NMFS expects that marine mammals will likely move away from an aversive stimulus, especially at levels that would be expected to result in PTS, given sufficient notice through use of soft start. OMAO will also shut down pile driving activities if marine mammals enter the shutdown zones (see Table 12) further minimizing the likelihood and degree of PTS that would be incurred.

Effects on individuals that are taken by Level B harassment in the form of behavioral disruption, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as avoidance, increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.,* Thorson and Reyff, 2006). Most likely, individuals will simply move away from the sound source and temporarily avoid the area where pile driving is occurring. If sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the area while the activities are occurring. We expect that any avoidance of the project areas by marine mammals will be temporary in nature and that any marine mammals that avoid the project areas during construction will not be permanently displaced. Short-term avoidance of the project areas and energetic impacts of interrupted foraging or other important behaviors is unlikely to affect the reproduction or survival of individual marine mammals, and the effects of behavioral disturbance on individuals is not likely to accrue in a manner that will affect the rates of recruitment or survival of any affected stock.

Since June 2022, an Unusual Mortality Event (UME) has been declared for Northeast pinnipeds in which elevated numbers of sick and dead harbor seals and gray seals have been documented along the southern and central coast of Maine (NOAA Fisheries, 2022). Currently, 25 gray seals and 258 harbor seals have stranded. However,

we do not expect the takes authorized by this IHA to exacerbate or compound upon this ongoing UME. As noted previously, no non-auditory injury, serious injury, or mortality is expected or authorized, and takes of harbor seal and gray seal will be reduced to the level of least practicable adverse impact through the incorporation of the required mitigation measures. For the WNA stock of gray seal, the estimated U.S. stock abundance is 27,300 animals (estimated 424,300 animals in the Canadian portion of the stock). Given that only 448 takes are authorized for this stock, we do not expect this authorization to exacerbate or compound upon the ongoing UME. For the WNA stock of harbor seals, the estimated abundance is 61,336 individuals. The estimated M/SI for this stock (339) is well below the PBR (1,729) (Hayes *et al.,* 2020). As such, the authorized takes of harbor seal are not expected to exacerbate or compound upon the ongoing UME.

The project is also not expected to have significant adverse effects on affected marine mammals' habitats. No ESA-designated critical habitat or biologically important areas (BIAs) are located within the project area. The project activities will not modify existing marine mammal habitat for a significant amount of time. The activities may cause a low level of turbidity in the water column and some fish may leave the area of disturbance, thus temporarily impacting marine mammals' foraging opportunities in a limited portion of the foraging range; but, because of the short duration of the activities and the relatively small area of the habitat that may be affected (with no known particular importance to marine mammals), the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences. Seasonal nearshore marine mammal surveys were conducted at NAVSTA Newport from May 2016 to February 2017, and several harbor seal haul outs were identified in Narragansett Bay, but no pupping was observed.

For all species and stocks, take will occur within a limited, relatively confined area (Coddington Cove) of the stock's range. Given the availability of suitable habitat

nearby, any displacement of marine mammals from the project areas is not expected to affect marine mammals' fitness, survival, and reproduction due to the limited geographic area that will be affected in comparison to the much larger habitat for marine mammals within Narragansett Bay and outside the bay along the Rhode Island coasts. Level A harassment and Level B harassment will be reduced to the level of least practicable adverse impact to the marine mammal species or stocks and their habitat through use of mitigation measures described herein.

Some individual marine mammals in the project area, such as harbor seals, may be present and be subject to repeated exposure to sound from pile driving activities on multiple days. However, pile driving and extraction is not expected to occur on every day, and these individuals will likely return to normal behavior during gaps in pile driving activity within each day of construction and in between workdays. As discussed above, there is similar transit and haul out habitat available for marine mammals within and outside of the Narragansett Bay along the Rhode Island coast, outside of the project area, where individuals could temporarily relocate during construction activities to reduce exposure to elevated sound levels from the project. Therefore, any behavioral effects of repeated or long duration exposures are not expected to negatively affect survival or reproductive success of any individuals. Thus, even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any effects on rates of reproduction and survival of the stock.

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 any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;

- No Level A harassment of Atlantic white-sided dolphins, short-beaked common dolphins, or harp seals is authorized;
- The small Level A harassment takes of harbor porpoises, harbor seals, gray seals, and hooded seals authorized are expected to be of a small degree;
- The intensity of anticipated takes by Level B harassment is relatively low for all stocks. Level B harassment will be primarily in the form of behavioral disturbance, resulting in avoidance of the project areas around where impact or vibratory pile driving is occurring, with some low-level TTS that may limit the detection of acoustic cues for relatively brief amounts of time in relatively confined footprints of the activities;
- Nearby areas of similar habitat value (*e.g.,* transit and haul out habitats) within and outside of Narragansett Bay are available for marine mammals that may temporarily vacate the project area during construction activities;
- The specified activity and associated ensonified areas do not include habitat areas known to be of special significance (BIAs or ESA-designated critical habitat);
- Effects on species that serve as prey for marine mammals from the activities are expected to be short-term and, therefore, any associated impacts on marine mammal feeding are not expected to result in significant or long-term consequences for individuals, or to accrue to adverse impacts on their populations;
- The ensonified areas are very small relative to the overall habitat ranges of all species and stocks, and will not adversely affect ESA-designated critical habitat for any species or any areas of known biological importance;
- The lack of anticipated significant or long-term negative effects to marine mammal habitat; and
- The efficacy of the mitigation measures in reducing the effects of the specified activities on all species and stocks.

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

The instances of take NMFS proposes to authorize is below one-third of the estimated stock abundance for all impacted stocks (Table 12). (In fact, take of individuals is less than 4 percent of the abundance for all affected stocks.) The number of animals that we are authorizing to be taken is considered small relative to the relevant stocks or populations, even if each estimated take occurred to a new individual. Furthermore, these takes are likely to only occur within a small portion of the each stock's range and the likelihood that each take will occur to a new individual is low.

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 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 will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

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 whenever we propose to authorize take for endangered or threatened species.

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

National Environmental Policy Act

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

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human

environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

Authorization

NMFS has issued an IHA to OMAO for the potential harassment of small numbers of seven marine mammal species incidental to construction activities at Naval Station Newport, in Newport, RI, provided the previously mentioned mitigation, monitoring, and reporting requirements are followed.

Dated: December 15, 2022.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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