Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of a public meeting.

SUMMARY: The South Atlantic Fishery Management Council (Council) will hold a meeting via webinar of its Snapper Grouper Private Angler Advisory Panel (AP) to discuss permitting and education alternatives for the private recreational component of the snapper grouper fishery.

DATES: The AP meeting will be held from 2 p.m. until 4:30 p.m. on Tuesday, May 7, 2024.

ADDRESSES: The meeting will be held via webinar. Webinar registration is required. Details are included in **SUPPLEMENTARY INFORMATION**.

FOR FURTHER INFORMATION CONTACT: Kim Iverson, Public Information Officer, SAFMC; phone: (843) 302–8440 or toll free: (866) SAFMC–10; fax: (843) 769–4520; email: *kim.iverson@safmc.net.*

SUPPLEMENTARY INFORMATION: Meeting information, including the webinar registration link, online public comment form, agenda, and briefing book materials will be posted on the Council's website at: *https://safmc.net/advisory-council-meetings/.* Comments become part of the Administrative Record of the meeting and will automatically be posted to the website and available for Council consideration.

At this meeting, the AP will review guidance from the March 2024 Council meeting and further address a series of permit and education topics posed by the Council.

Although non-emergency issues not contained in this agenda may come before this group for discussion, those issues may not be the subject of formal action during this meeting. Action will be restricted to those issues specifically identified in this notice and any issues arising after publication of this notice that require emergency action under section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act, provided the public has been notified of the Council's intent to take final action to address the emergency.

Special Accommodations

The meeting is physically accessible to people with disabilities. Requests for auxiliary aids should be directed to the Council office (see **ADDRESSES**) 5 days prior to the meeting.

Note: The times and sequence specified in this agenda are subject to change.

Authority: 16 U.S.C. 1801 *et seq.*

Dated: April 15, 2024.

Rey Israel Marquez,

Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2024–08322 Filed 4–17–24; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD732]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the New London Pier Extension Project at the Naval Submarine Base

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

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from the U.S. Navy (Navy) for authorization to take marine mammals incidental to the New London Pier Extension Project at Naval Submarine Base (SUBASE) New London in Groton, Connecticut. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, 1-year renewal that could be issued under certain circumstances and if all requirements are met, as described in Request for Public Comments at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorization and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than May 20, 2024.

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be submitted via email to *ITP.wachtendonk@noaa.gov*. 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 below.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.,* name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Rachel Wachtendonk, Office of Protected Resources, NMFS, (301) 427–8401.

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 IHA 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.

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 NAO 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 preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review. We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On August 21, 2023, NMFS received a request from the Navy for an IHA to take marine mammals incidental to pile driving and removal activities associated with the New London Pier Extension Project at SUBASE New London in Groton, Connecticut. Following NMFS' review of the application, the Navy submitted a revised version on January 31, 2024. The application was deemed adequate and complete on February 2, 2024. The Navy's request is for take of six species of marine mammals by Level B harassment and for take of harbor seals, gray seals, and harp seals by Level A harassment. Neither the Navy nor NMFS expects serious injury or mortality to result from this activity; therefore, an IHA is appropriate.

Description of Proposed Activity

Overview

The Navy is proposing the partial demolition and extension of pier 31 at SUBASE New London in Groton, Connecticut (figure 1). The existing pier 31 would be partially demolished and then an 81-foot (ft), or 24.7-meter (m), extension would be constructed. This project would also include the demolition of an existing small access ramp for pier 17. The proposed project includes impact and vibratory pile installation and vibratory pile removal. For a portion of the piles, an auger drill would be used inside the pipe casing to lift sediment.

Sounds resulting from pile driving and removal may result in the incidental take of marine mammals by Level A and Level B harassment in the form of auditory injury or behavioral harassment. Underwater sound would be constrained to the Thames River and a small portion of the Long Island Sound and would be truncated by land masses in the river. The purpose of this project is to extend the existing pier 31 to provide two berths for a submarine platform that is approximately 80 ft (24.4 m) longer than the existing submarines. Construction activities would start in December 2024 and last 12 months.

Dates and Duration

The proposed IHA would be effective from December 1, 2024, through November 30, 2025. Vibratory and impact pile driving and auger drilling are expected to start in December 2024 and take 242 days over a span of 12 months. All pile driving and removal would be completed during daylight hours.

Specific Geographic Region

The project is located at SUBASE New London in Groton, Connecticut, which is located approximately 6 miles (mi), or 9.5 kilometers (km), up the Thames River from Long Island Sound. Project activities would occur at the existing piers 31 and 17.

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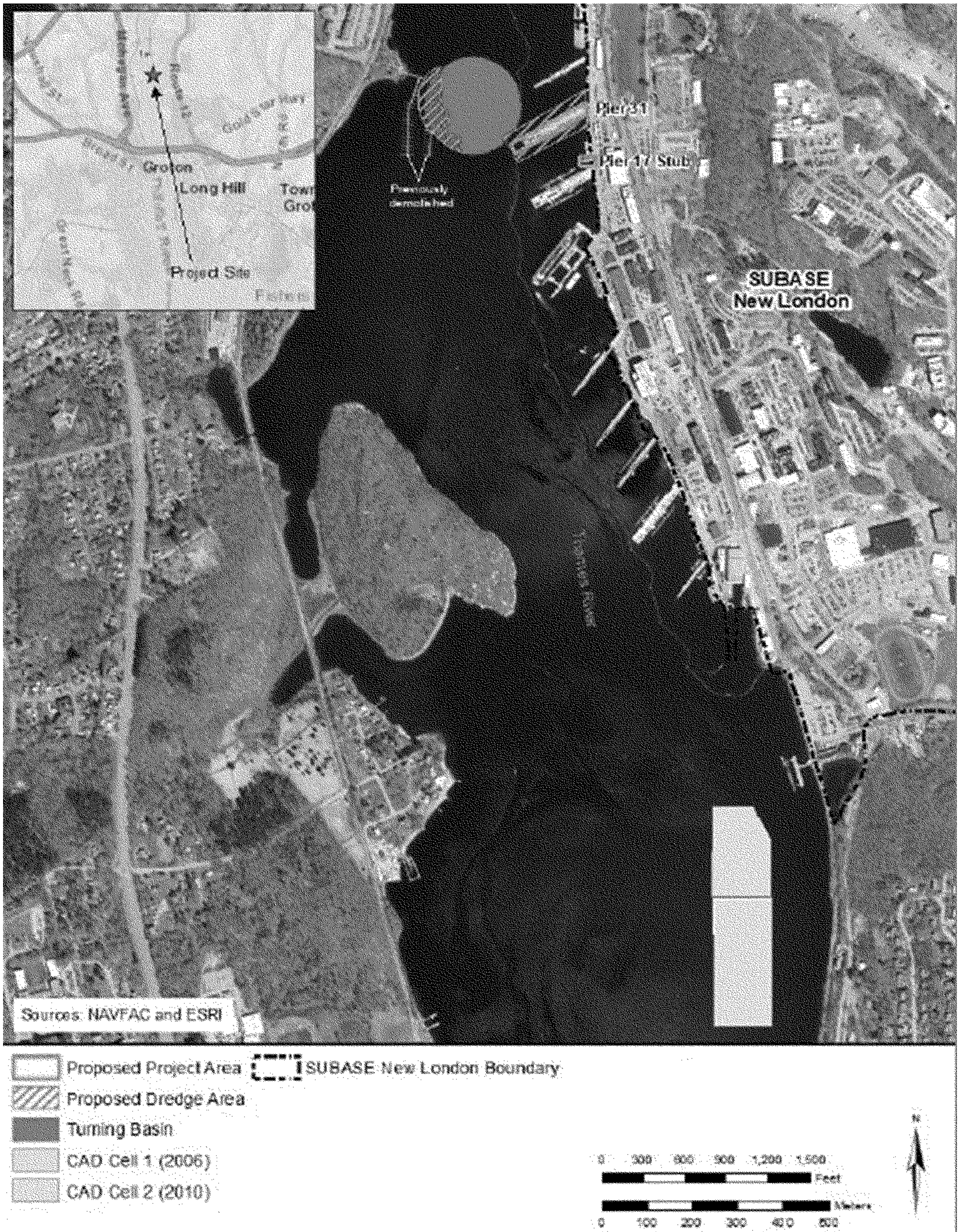

Figure 1 -- Map of Proposed Project Area in Groton, Connecticut

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Detailed Description of the Specified Activity

The pier 31 extension would include the removal of 28 16-inch (in), or 0.41-m, fiberglass reinforced plastic fender piles. The pier 17 demolition would include the removal of 20 14-in (0.36-m) concrete encased steel H-piles and 10 timber piles. Existing piles would be removed by the deadpull method, with timber piles being cut at the mudline and all other piles being removed with the vibratory hammer if deadpull is unsuccessful. Once the existing piles are removed, 20 36-in (0.91-m) steel pipe piles and 60 16-in (0.41-m) fiberglass reinforced plastic fender piles would be installed to support the pier 31 extension and pier 17 quaywall. The installation and removal of a temporary work trestle supported by 60 14-in (0.36-m) steel H-piles would be completed to support permanent pile installation. Temporary and permanent piles would be initially installed with a vibratory hammer followed by an impact hammer to embed them to their final depth. For a portion of the piles, an auger drill would be used inside the pipe casing to lift sediment. Table 1 provides a summary of the pile driving activities.

Concurrent Activities—In order to maintain project schedules, it is possible that multiple pieces of equipment would operate at the same time within the project area. Piles may be extracted and installed on the same day, with a maximum of three vibratory hammers operating simultaneously. The method of installation, and whether concurrent pile driving scenarios will be implemented, will be determined by the construction crew once the project has begun. Therefore, the total take estimate reflects the worst-case scenario for the proposed project. Table 2 provides a summary of concurrent pile driving scenarios.

TABLE 1—NUMBER AND TYPE OF PILES TO BE INSTALLED AND REMOVED

Activity	Structure	Type and size	Number of piles	Method	Piles per day	Total days
Demolition	Pier 31 partial demo	16-in fiberglass reinforced plastic fender.	28	Deadpull OR vibratory extract	2	14
	Pier 17	14-in concrete encased steel H-pile.	20	Vibratory extract	5	4
		Timber	10	Deadpull OR cut at mudline	5	2
	Temporary work trestle	14-in steel H-pile	60	Vibratory extract	5	12
Installation	Temporary work trestle	14-in steel H-pile	60	Vibratory installation	5	12
				Impact	4	15
	Pier 31 extension	36-in steel pipe pile	20	Vibratory installation	[a] 0.17	120
				Impact	2.5	8
				Auger drilling	1	20
	Piers 31 and 17 guaywall	16-in fiberglass reinforced plastic fender.	60	Vibratory installation	2	30
				Impact	2.5	24

[a] Assumes that each pile would be installed in increments of 0.17 per workday to allow for the welding, painting, and curing of pile sections and joins and repositioning of barges, resulting in a total installation rate of one pile per week.

TABLE 2—POTENTIAL CONCURRENT PILE DRIVING SCENARIOS

Structure	Type and size	Method	Total potential days of overlap
Temporary work trestle installation and pier 17 demolition.	14-in steel H-pile AND 14-in concrete encased steel H-pile.	Vibratory installation and demolition	4
Temporary work trestle installation, pier 17 demolition, and pier 31 demolition.	14-in steel H-pile AND 14-in concrete encased steel H-pile AND 16-in fiberglass reinforced plastic fender.	Vibratory installation and demolition	4
Temporary work trestle installation and pier 31 demolition.	14-in steel H-pile AND 16-in fiberglass reinforced plastic fender.	Vibratory installation and demolition	12

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

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the IHA 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, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.,* physical and behavioral descriptions) may be found on NMFS' website (*https://www.fisheries.noaa.gov/find-species*).

Table 3 lists all species or stocks for which take is expected and proposed to be authorized for this activity 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 proposed to be authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species or stocks 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 for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. 2022 SARs. All values presented in table 3 are the most recent available at the time of publication (including from the draft 2023 SARs) and are available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments.*

TABLE 3—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, N_{min}, most recent abundance survey) [3]	PBR	Annual M/SI [4]
Order Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae:						
Atlantic White-Sided Dolphin	*Lagenorhynchus acutus*	Western N Atlantic	-, -, N	93,233 (0.71, 54,443, 2021)	544	28
Common Dolphin	*Delphinus delphis*	Western N Atlantic	-, -, N	93,100 (0.56, 59,897, 2021)	1,452	414
Family Phocoenidae (porpoises):						
Harbor Porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy	-, -, N	85,765 (0.53, 56,420, 2021)	649	145
Order Carnivora—Pinnipedia						
Family Phocidae (earless seals):						
Gray Seal	*Halichoerus grypus*	Western N Atlantic [5]	-, -, N	27,911 (0.20, 23,624, 2021)	1,512	4,570
Harbor Seal	*Phoca vitulina*	Western N Atlantic	-, -, N	61,336 (0.08, 57,637, 2018)	1,729	339
Harp Seal	*Pagophilus groenlandicus*	Western N Atlantic	-, -, N	7.6M (UNK, 7.1M, 2019)	426,000	178,573

[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] 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 SARs online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region.* CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable

[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.

[5] NMFS' stock abundance estimate (and associated PBR value) applies to the U.S. population only. Total stock abundance (including animals in Canada) is approximately 394,311. The annual M/SI value given is for the total stock.

As indicated above, all six species (with six managed stocks) in table 3 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. All species that could potentially occur in the proposed project area are included in table 3–1 of the IHA application. While North Atlantic right whale (*Eubalaena glacialis*), common minke whale (*Balaenoptera acutorostrata*), fin whale (*Balaenoptera physalus*), and humpback whale (*Megaptera novaeangliae*) have been documented in the area, the spatial and temporal occurrence of these species is such that take is not expected to occur, and they are not discussed further beyond the explanation provided here. These species occur at low densities at the mouth of the Thames River, extending into Long Island Sound, and do not occur in the Thames River. Sound from the project is only expected to propagate into the Long Island Sound during the vibratory driving of the 36-in steel pipe piles. Only a small portion of the Long Island Sound would be ensonified, and therefore incidental take of these species are not anticipated.

Atlantic White-sided Dolphin

White-sided dolphins of the Western North Atlantic Stock are found in temperate and sub-polar waters of the North Atlantic, primarily in continental shelf waters to the 100-m depth contour from central West Greenland to North Carolina (Hayes *et al.,* 2019). The Gulf of Maine population of the Western North Atlantic Stock is most common in continental shelf waters from Hudson Canyon to Georges Bank, and in the Gulf of Maine and lower Bay of Fundy. Sighting data indicate seasonal shifts in distribution (Northridge *et al.,* 1997). During January to May, low numbers of white-sided dolphins are found from Georges Bank to Jeffreys Ledge (off New Hampshire), with even lower numbers south of Georges Bank, as documented by a few strandings collected on beaches of Virginia to South Carolina. From June through September, large numbers of white-sided dolphins are found from Georges Bank to the lower Bay of Fundy. From October to December, white-sided dolphins occur at intermediate densities from southern Georges Bank to southern Gulf of Maine (Payne and Heinemann, 1990). Sightings south of Georges Bank, particularly around Hudson Canyon, occur year-round but at low densities. In the North Atlantic, Atlantic white-sided dolphins travel in pods with an average group size of 12 individuals (from AMAPPS (Palka *et al.,* 2017 and 2021)).

The Navy conducted a 3-year marine mammal survey from the mouth of Thames River to just north of SUBASE from 2017 through 2019, using line-transect methods. Atlantic white-sided dolphins were not documented (Tetra Tech, 2019) but are likely to occur near the mouth of the river and out into Long Island Sound during the fall, with peak abundance in October (Northeast Ocean Data, 2019).

Common Dolphin

The common dolphin is found worldwide in temperate to subtropical seas. In the North Atlantic, common dolphins are found over the continental shelf between the 100-m and 2,000-m isobaths and over prominent underwater topography and east to the mid-Atlantic Ridge (Hayes *et al.,* 2019), but may be found in shallower shelf waters as well. They can be found from Cape Hatteras northeast to Georges Bank from mid-January to May and in Gulf of Maine from mid-summer to autumn (Hayes *et al.,* 2019). In the North Atlantic, common dolphins travel in pods with an average group size of 30 individuals (from AMAPPS (Palka *et al.,* 2017 and 2021)).

Common dolphins are expected to occur in the vicinity of the project area in Long Island Sound in moderate numbers but were not found in the Navy's Thames River study (Tetra Tech, 2019).

Harbor Porpoise

Harbor porpoise occur along the US and Canadian east coast (Hayes *et al.,* 2019). They rarely occur in waters warmer than 62.6 °F (17 ° Celsius; Read, 1990). The Gulf of Maine/Bay of Fundy stock is found is concentrated in the northern Gulf of Maine and southern Bay of Fundy region, generally in waters less than 150 m deep (Waring *et al.,* 2017). During fall (October to December) and spring (April to June) harbor porpoises are widely dispersed from New Jersey to Maine. During winter (January to March), intermediate densities of harbor porpoises can be found in waters off New Jersey to North Carolina, and lower densities are found in waters off New York to New Brunswick, Canada. In the summer they are sighted primarily in the northern Gulf of Maine and southern Bay of Fundy. They are seen from the coastline to deep waters (>1,800 m; Westgate and Read, 1998), although the majority of the population is found over the continental shelf (Waring *et al.,* 2017). In most areas, harbor porpoise occur in small groups of just a few individuals. Harbor porpoise must forage nearly continuously to meet their high metabolic needs (Wisniewska *et al.,* 2016). They consume up to 550 small fish (1.2–3.9 in [3–10 cm]) per hour at a nearly 90 percent capture success rate (Wisniewska *et al.,* 2016).

Harbor porpoise have not been documented in the Thames River (Tetra Tech, 2019) but are likely to occur near the mouth of the river and out into Long Island Sound during the fall, with peak abundance in December (Northeast Ocean Data, 2019).

Gray Seal

Gray seals in the project area belong to the western North Atlantic stock. The range for this stock is from New Jersey to Labrador. Current population trends show that gray seal abundance is likely increasing in the U.S. Atlantic EEZ (Hayes *et al.,* 2019). In U.S. waters, year-round breeding of approximately 400 animals has been documented on areas of outer Cape Cod and Muskeget Island in Massachusetts. They are a coastal species that generally remains within the continental shelf region but do venture into deeper water to feed. Gray seals primarily feed on fish, squid, various crustacean species, and octopus.

Monthly observations over the 3-year marine mammal survey yielded a total of three sightings of individual gray seals (Tetra Tech, 2019). No seals were observed hauled out onshore (Tetra Tech, 2019) and there are no known haulout areas within the Thames River (Navy, 2018). Gray seals are common in Long Island Sound from September through June (Medic, 2005).

Harbor Seal

Harbor seals are found in all nearshore waters of the North Atlantic Ocean and adjoining seas above about lat. 30° N (Burns, 2009). In the western North Atlantic, harbor seals are distributed from the eastern Canadian Arctic and Greenland down the east coast of the United States (Hayes *et al.,* 2019). They occur seasonally along the coasts from southern New England to New Jersey from September through late May. Haulout and pupping sites are located off Manomet, MA, and the Isles of Shoals, ME (Waring *et al.,* 2016).

Harbor seals are central-place foragers (Orians and Pearson, 1979) and tend to exhibit strong site fidelity within season and across years, generally forage close to haulout sites, and repeatedly visit specific foraging areas (Grigg *et al.,* 2012; Suryan and Harvey, 1998; Thompson *et al.,* 1998). Harbor seals tend to forage at night and haul out during the day (Grigg *et al.,* 2012; London *et al.,* 2001; Stewart and Yochem, 1994; Yochem *et al.,* 1987). Tide levels affect the maximum number of seals hauled out, with the largest number of seals hauled out at low tide, but time of day and season have the greatest influence on haul out behavior (Manugian *et al.,* 2017; Patterson and Acevedo-Gutiérrez, 2008; Stewart and Yochem, 1994). Harbor seals molt from May through June. Peak numbers of harbor seals haul out in late May to early June, which coincides with the peak molt. During both pupping and molting seasons, the number of seals and the length of time hauled out per day increase, from an average of 7 to 10–12 hours per day (Harvey and Goley, 2011; Huber *et al.,* 2001; Stewart and Yochem, 1994).

Harbor seals are the most commonly observed marine mammals in the Thames River. Monthly observations over the 3-year marine mammal survey yielded a total of 12 sightings of individual harbor seals (Tetra Tech, 2019). Most of the sightings were in the inner portion of the river, north of the I–95 Bridge. No seals were observed hauled out onshore (Tetra Tech, 2019), and there are no known haulout areas within the Thames River (Navy, 2018). Harbor seal populations have increased in Connecticut since the 1980s and they are common in Long Island Sound from September through June (Medic, 2005).

Harp Seal

Harp seals are highly migratory and occur throughout much of the North Atlantic and Arctic Oceans (Hayes *et al.,* 2019). Breeding occurs between late-February and April and adults then assemble on suitable pack ice to undergo the annual molt. The migration then continues north to Arctic summer feeding grounds. Harp seal occurrence in the project area is considered rare. However, since the early 1990s, numbers of sightings and strandings have been increasing off the east coast of the United States from Maine to New Jersey (Hayes *et al.,* 2019). These appearances usually occur in January through May (Harris *et al.,* 2002), when the western North Atlantic stock is at its most southern point of migration.

Harp seals are not known to regularly occur in the Thames River as previous surveys have not recorded their presence (Tetra Tech, 2019). However, two harp seals were identified in March and one harp seal in April 2019 by Mystic Aquarium staff. On both occasions they were observed hauled out on the finger piers of the marina at SUBASE (Navy, 2019a). Harp seals are also expected to occur within Long Island Sound from January through May (Hayes *et al.,* 2019).

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 4.

TABLE 4—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 *et al.,* 2013). This division between phocid and otariid pinnipeds is now reflected in the updated hearing groups proposed in Southall et al. (2019).

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

This section provides a discussion of the ways in which components of the specified activity may impact marine mammals and their habitat. The Estimated Take of Marine Mammals section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The Negligible Impact Analysis and Determination section considers the content of this section, the Estimated Take of Marine Mammals section, and the Proposed Mitigation section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and whether those impacts are reasonably expected to, or reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

Description of Sound Sources

The marine soundscape is comprised of both ambient and anthropogenic sounds. Ambient sound is defined as the all-encompassing sound in a given place and is usually a composite of sound from many sources both near and far. The sound level of an area is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.,* waves, wind, precipitation, earthquakes, ice, atmospheric sound), biological (*e.g.,* sounds produced by marine mammals, fish, and invertebrates), and anthropogenic sound (*e.g.,* vessels, dredging, aircraft, construction).

The sum of the various natural and anthropogenic sound sources at any given location and time—which comprise ''ambient'' or ''background'' sound—depends not only on the source levels (as determined by current weather conditions and levels of biological and shipping activity) but also on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10 to 20 dB from day to day (Richardson *et al.,* 1995). The result is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals.

In-water construction activities associated with the project would include vibratory pile removal, impact and vibratory pile driving, and auger drilling within pipe casings. The sounds produced by these activities fall into one of two general sound types: impulsive and non-impulsive. Impulsive sounds (*e.g.,* explosions, gunshots, sonic booms, impact pile driving) are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (ANSI, 1986; NIOSH, 1998; ANSI, 2005; NMFS, 2018). Non-impulsive sounds (*e.g.,* aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems) can be broadband, narrowband or tonal, brief or prolonged (continuous or intermittent), and typically do not have the high peak sound pressure with raid rise/decay time that impulsive sounds do (ANSI, 1995; NIOSH, 1998; NMFS, 2018). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.,* Ward, 1997 in Southall *et al.,* 2007).

Impact hammers operate by repeatedly dropping a heavy piston onto a pile to drive the pile into the substrate. Sound generated by impact hammers is characterized by rapid rise times and high peak levels, a potentially injurious combination (Hastings and Popper, 2005). Vibratory hammers install piles by vibrating them and allowing the weight of the hammer to push them into the sediment. The vibrations produced also cause liquefaction of the substrate surrounding the pile, enabling the pile to be extracted or driven into the ground more easily. Vibratory hammers produce significantly less sound than impact hammers. Peak sound pressure levels (SPLs) may be 180 dB or greater, but are generally 10 to 20 dB lower than SPLs generated during impact pile driving of the same-sized pile (Oestman *et al.,* 2009). Rise time is slower, reducing the probability and severity of injury, and sound energy is distributed over a greater amount of time (Nedwell and Edwards, 2002; Carlson *et al.,* 2005). For a portion of the piles, an auger drill (rotary drill with a spiral shaft that drills through loose rock or soft sediment) would be used inside the pipe casing to lift sediment; no rock drilling would be required.

The likely or possible impacts of the Navy's proposed activity on marine mammals could involve both non-acoustic and acoustic stressors. Potential non-acoustic stressors could result from the physical presence of the equipment and personnel; however, any impacts to marine mammals are expected to be primarily acoustic in nature. Acoustic stressors include effects of heavy equipment operation during pile installation and removal, and sediment removal during auger drilling.

Acoustic Impacts

The introduction of anthropogenic noise into the aquatic environment from pile driving is the primary means by which marine mammals may be harassed from the proposed activity. In general, animals exposed to natural or anthropogenic sound may experience physical and psychological effects, ranging in magnitude from none to severe (Southall *et al.,* 2007). In general, exposure to pile driving noise has the potential to result in auditory threshold shifts and behavioral reactions (*e.g.,* avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). Exposure to anthropogenic noise can also lead to non-observable physiological responses, such as an increase in stress hormones. Additional noise in a marine mammal's habitat can mask acoustic cues used by marine mammals to carry out daily functions such as communication and predator and prey detection. The effects of pile driving noise on marine mammals are dependent on several factors, including, but not limited to, sound type (*e.g.,* impulsive vs. non-impulsive), the species, age and sex class (*e.g.,* adult male vs. mom with calf), duration of exposure, the distance between the pile and the animal, received levels, behavior at time of exposure, and previous history with exposure (Wartzok *et al.,* 2004; Southall *et al.,* 2007). Here we discuss physical auditory effects (threshold shifts) followed by behavioral effects and potential impacts on habitat.

NMFS defines a noise-induced threshold shift (TS) as a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). The amount of threshold shift is customarily expressed in dB. A TS can be permanent or temporary. As described in NMFS (2018), there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.,* impulsive or non-impulsive), likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.,* spectral content), the hearing frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.,* how an animal uses sound within the frequency band of the signal; *e.g.,* Kastelein *et al.,* 2014), and the overlap between the animal and the source (*e.g.,* spatial, temporal, and spectral).

Permanent Threshold Shift (PTS)—NMFS defines PTS as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). Available data from humans and other terrestrial mammals indicate that a 40-dB threshold shift approximates PTS onset (see Ward *et al.,* 1958, 1959; Ward, 1960; Kryter *et al.,* 1966; Miller, 1974; Ahroon *et al.,* 1996; Henderson *et al.,* 2008). PTS levels for marine mammals are estimates, as with the exception of a single study unintentionally inducing PTS in a harbor seal (Kastak *et al.,* 2008), there are no empirical data measuring PTS in marine mammals largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing PTS are not typically pursued or authorized (NMFS, 2018).

Temporary Threshold Shift (TTS)—TTS is a temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). Based on data from cetacean TTS measurements (Southall *et al.,* 2007, 2019), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Schlundt *et al.,* 2000; Finneran *et al.,* 2000, 2002). As described in Finneran (2015), marine mammal studies have shown the amount of TTS increases with cumulative sound exposure level (SEL_{cum}) in an accelerating fashion: At low exposures with lower SEL_{cum}, the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher SEL_{cum}, the growth curves become steeper and approach linear relationships with the noise SEL.

Depending on the degree (elevation of threshold in dB), duration (*i.e.,* recovery time), and frequency range of TTS, and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to serious (similar to those discussed in auditory masking, below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animal is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during a time when communication is critical for successful mother/calf interactions could have more serious impacts. We note that reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall *et al.,* 2007), so we can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

Many studies have examined noise-induced hearing loss in marine mammals (see Finneran (2015) and Southall *et al.* (2019) for summaries). TTS is the mildest form of hearing impairment that can occur during exposure to sound (Kryter, 2013). While experiencing TTS, the hearing threshold rises, and a sound must be at a higher level in order to be heard. In terrestrial and marine mammals, TTS can last from minutes or hours to days (in cases of strong TTS). In many cases, hearing sensitivity recovers rapidly after exposure to the sound ends. For cetaceans, published data on the onset of TTS are limited to captive bottlenose dolphin (*Tursiops truncatus*), beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiaeorientalis*) (Southall *et al.,* 2019). For pinnipeds in water, measurements of TTS are limited to harbor seals, elephant seals (*Mirounga angustirostris*), bearded seals (*Erignathus barbatus*) and California sea lions (*Zalophus californianus*) (Kastak *et al.,* 1999, 2007; Kastelein *et al.,* 2019b, 2019c, 2021, 2022a, 2022b; Reichmuth *et al.,* 2019; Sills *et al.,* 2020). These studies examined hearing thresholds measured in marine mammals before and after exposure to intense or long-duration sound exposures. The difference between the pre-exposure and post-exposure thresholds can be used to determine the amount of threshold shift at various post-exposure times.

The amount and onset of TTS depends on the exposure frequency. Sounds at low frequencies, well below the region of best sensitivity for a species or hearing group, are less hazardous than those at higher frequencies, near the region of best sensitivity (Finneran and Schlundt, 2013). At low frequencies, onset-TTS exposure levels are higher compared to those in the region of best sensitivity (*i.e.,* a low frequency noise would need to be louder to cause TTS onset when TTS exposure level is higher), as shown for harbor porpoises and harbor seals (Kastelein *et al.,* 2019a;, 2019c). Note that in general, harbor seals and harbor porpoises have a lower TTS onset than other measured pinniped or cetacean species (Finneran, 2015). In addition, TTS can accumulate across multiple exposures, but the resulting TTS will be less than the TTS from a single, continuous exposure with the same SEL (Mooney *et al.,* 2009; Finneran *et al.,* 2010; Kastelein *et al.,* 2014; 2015). This means that TTS predictions based on the total, SEL_{cum} will overestimate the amount of TTS from intermittent exposures, such as sonars and impulsive sources. Nachtigall *et al.* (2018) describe measurements of hearing sensitivity of multiple odontocete species (bottlenose dolphin, harbor porpoise, beluga, and false killer whale (*Pseudorca crassidens*)) when a relatively loud sound was preceded by a warning sound. These captive animals were shown to reduce hearing sensitivity when warned of an impending intense sound. Based on these experimental observations of captive animals, the authors suggest that wild animals may dampen their hearing during prolonged exposures or if conditioned to anticipate intense sounds. Another study showed that echolocating animals (including odontocetes) might have anatomical specializations that might allow for conditioned hearing reduction and filtering of low-frequency ambient noise, including increased stiffness and control of middle ear structures and placement of inner ear structures (Ketten *et al.,* 2021). Data available on noise-induced hearing loss for mysticetes are currently lacking (NMFS, 2018). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species.

Relationships between TTS and PTS thresholds have not been studied in marine mammals, and there is no PTS data for cetaceans, but such relationships are assumed to be similar to those in humans and other terrestrial mammals. PTS typically occurs at exposure levels at least several decibels above that inducing mild TTS (*e.g.,* a 40-dB threshold shift approximates PTS onset (Kryter *et al.,* 1966; Miller, 1974), while a 6-dB threshold shift approximates TTS onset (Southall *et al.,* 2007; 2019). Based on data from terrestrial mammals, a precautionary assumption is that the PTS thresholds for impulsive sounds (such as impact pile driving pulses as received close to the source) are at least 6 dB higher than the TTS threshold on a peak-pressure basis and PTS cumulative sound exposure level thresholds are 15 to 20 dB higher than TTS cumulative sound exposure level thresholds (Southall *et al.,* 2007; 2019). Given the higher level of sound or longer exposure duration necessary to cause PTS as compared with TTS, it is considerably less likely that PTS could occur.

Installing piles for this project requires either impact pile driving or vibratory pile driving. For this project, these activities could occur at the same time, and there would be pauses in activities producing the sound during each day. Given these pauses, and that many marine mammals are likely moving through the ensonified area and not remaining for extended periods of time, the potential for TS declines.

Behavioral Harassment—Exposure to noise from pile driving and removal also has the potential to behaviorally disturb marine mammals. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.,* Lusseau and Bejder, 2007; Weilgart, 2007; NRC, 2005).

Disturbance may result in changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping); or avoidance of areas where sound sources are located. Pinnipeds may increase their haul out time, possibly to avoid in-water disturbance (Thorson and Reyff, 2006). Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.,* species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors (*e.g.,* Richardson *et al.,* 1995; Wartzok *et al.,* 2003; Southall *et al.,* 2007; Weilgart, 2007; Archer *et al.,* 2010). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.,* 2012), and can vary depending on characteristics associated with the sound source (*e.g.,* whether it is moving or stationary, number of sources, distance from the source). In general, pinnipeds seem more tolerant of, or at least habituate more quickly to, potentially disturbing underwater sound than do cetaceans, and generally seem to be less responsive to exposure to industrial sound than most cetaceans. Please see Appendices B–C of Southall *et al.* (2007) for a review of studies involving marine mammal behavioral responses to sound.

Disruption of feeding behavior can be difficult to correlate with anthropogenic sound exposure, so it is usually inferred by observed displacement from known foraging areas, the appearance of secondary indicators (*e.g.,* bubble nets or sediment plumes), or changes in dive behavior. As for other types of behavioral response, the frequency, duration, and temporal pattern of signal presentation, as well as differences in species sensitivity, are likely contributing factors to differences in response in any given circumstance (*e.g.,* Croll *et al.,* 2001; Nowacek *et al.,* 2004; Madsen *et al.,* 2006; Yazvenko *et al.,* 2007). A determination of whether foraging disruptions incur fitness consequences would require information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal.

Stress Responses—An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses (*e.g.,* Seyle, 1950; Moberg, 2000). In many cases, an animal's first and sometimes most economical (in terms of energetic costs) response is behavioral avoidance of the potential stressor. Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity. These responses have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness.

Neuroendocrine stress responses often involve the hypothalamus-pituitary-adrenal system. Virtually all neuroendocrine functions that are affected by stress—including immune competence, reproduction, metabolism, and behavior—are regulated by pituitary hormones. Stress-induced changes in the secretion of pituitary hormones have been implicated in failed reproduction, altered metabolism, reduced immune competence, and behavioral disturbance (*e.g.,* Moberg, 1987; Blecha, 2000). Increases in the circulation of glucocorticoids are also equated with stress (Romano *et al.,* 2004).

The primary distinction between stress (which is adaptive and does not normally place an animal at risk) and ''distress'' is the cost of the response. During a stress response, an animal uses glycogen stores that can be quickly replenished once the stress is alleviated. In such circumstances, the cost of the stress response would not pose serious fitness consequences. However, when an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other functions. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function.

Relationships between these physiological mechanisms, animal behavior, and the costs of stress responses are well studied through controlled experiments and for both laboratory and free-ranging animals (*e.g.,* Holberton *et al.,* 1996; Hood *et al.,* 1998; Jessop *et al.,* 2003; Krausman *et al.,* 2004; Lankford *et al.,* 2005). Stress responses due to exposure to anthropogenic sounds or other stressors and their effects on marine mammals have also been reviewed (Fair and Becker, 2000; Romano *et al.,* 2002b) and, more rarely, studied in wild populations (*e.g.,* Romano *et al.,* 2002a). For example, Rolland *et al.* (2012) found that noise reduction from reduced ship traffic in the Bay of Fundy was associated with decreased stress in North Atlantic right whales. These and other studies lead to a reasonable expectation that some marine mammals will experience physiological stress responses upon exposure to acoustic stressors and that it is possible that some of these would be classified as ''distress.'' In addition, any animal experiencing TTS would likely also experience stress responses (NRC, 2003), however distress is an unlikely result of this project based on observations of marine mammals during previous, similar projects in the area.

Masking—Sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.,* those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation) (Richardson *et al.,* 1995). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.,* snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.,* pile driving, shipping, sonar, seismic exploration) in origin. The ability of a noise source to mask biologically important sounds depends on the characteristics of both the noise source and the signal of interest (*e.g.,* signal-to-noise ratio, temporal variability, direction), in relation to each other and to an animal's hearing abilities (*e.g.,* sensitivity, frequency range, critical ratios, frequency discrimination, directional discrimination, age or TTS hearing loss), and existing ambient noise and propagation conditions. Masking of natural sounds can result when human activities produce high levels of background sound at frequencies important to marine mammals. Conversely, if the background level of underwater sound is high (*e.g.,* on a day with strong wind and high waves), an anthropogenic sound source would not be detectable as far away as would be possible under quieter conditions and would itself be masked.

Airborne Acoustic Effects—Although pinnipeds are known to haul out regularly on manmade objects, we believe that incidents of take resulting solely from airborne sound are unlikely because there are no known haulouts in the Thames River. The closest haulout site for harbor and gray seals is 10 miles south of pier 31 at Fishers Island in Long Island Sound. There is a possibility that an animal could surface in-water, but with head out, within the area in which airborne sound exceeds relevant thresholds and thereby be exposed to levels of airborne sound that we associate with harassment, but any such occurrence would likely be accounted for in our estimation of incidental take from underwater sound. Therefore, authorization of incidental take resulting from airborne sound for pinnipeds is not warranted, and airborne sound is not discussed further here.

Marine Mammal Habitat Effects

The Navy's construction activities could have localized, temporary impacts on marine mammal habitat by increasing in-water sound pressure levels and slightly decreasing water quality. However, since the focus of the proposed action is pile driving, a minimal amount of net habitat loss is expected, as pier 31 would only be extended 87 ft (26.5 m). Construction activities are localized and would likely have temporary impacts on marine mammal habitat through increases in underwater sounds. Increased noise levels may affect acoustic habitat (see masking discussion above) and adversely affect marine mammal prey in the vicinity of the project area (see discussion below). During pile driving activities, elevated levels of underwater noise would ensonify the project area where both fishes and marine mammals may occur and could affect foraging success. Additionally, marine mammals may avoid the area during construction; however, displacement due to noise is expected to be temporary and is not expected to result in long-term effects to the individuals or populations.

Temporary and localized reduction in water quality would occur because of in-water construction activities as well. Most of this effect would occur during the installation and removal of piles when bottom sediments are disturbed. The installation of piles would disturb bottom sediments and may cause a temporary increase in suspended sediment in the project area. In general, turbidity associated with pile installation is localized to about 25-ft (7.6-m) radius around the pile (Everitt *et al.,* 1980). Pinnipeds are not expected to be close enough to the pile driving areas to experience effects of turbidity, and could avoid localized areas of turbidity. Therefore, we expect the impact from increased turbidity levels to be discountable to marine mammals and do not discuss it further.

In-Water Construction Effects on Potential Foraging Habitat

The proposed activities would not result in permanent impacts to habitats used directly by marine mammals outside of the actual footprint of the extended pier 31. The total seafloor area affected by pile installation and removal is a very small area compared to the vast foraging area available to marine mammals in the Thames River and Long Island Sound. Pile extraction and installation may have impacts on benthic invertebrate species primarily associated with disturbance of sediments that may cover or displace some invertebrates. The impacts would be temporary and highly localized, and no habitat would be permanently displaced by construction. Therefore, it is expected that impacts on foraging opportunities for marine mammals due to the demolition and expansion of pier 31 would be minimal.

It is possible that avoidance by potential prey (*i.e.,* fish) in the immediate area may occur due to temporary loss of this foraging habitat. The duration of fish avoidance of this area after pile driving stops is unknown, but we anticipate a rapid return to normal recruitment, distribution and behavior. Any behavioral avoidance by fish of the disturbed area would still leave large areas of fish and marine mammal foraging habitat in the nearby vicinity in the in the project area, Thames River, and Long Island Sound.

Effects on Potential Prey

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.,* fish). Marine mammal prey varies by species, season, and location. Here, we describe studies regarding the effects of noise on known marine mammal prey.

Fish utilize the soundscape and components of sound in their environment to perform important functions such as foraging, predator avoidance, mating, and spawning (*e.g.,* Zelick *et al.,* 1999; Fay, 2009). Depending on their hearing anatomy and peripheral sensory structures, which vary among species, fishes hear sounds using pressure and particle motion sensitivity capabilities and detect the motion of surrounding water (Fay *et al.,* 2008). The potential effects of noise on fishes depends on the overlapping frequency range, distance from the sound source, water depth of exposure, and species-specific hearing sensitivity, anatomy, and physiology. Key impacts to fishes may include behavioral responses, hearing damage, barotrauma (pressure-related injuries), and mortality.

Fish react to sounds which are especially strong and/or intermittent low-frequency sounds, and behavioral responses, such as flight or avoidance are the most likely effects. Short duration, sharp sounds can cause overt or subtle changes in fish behavior and local distribution. The reaction of fish to noise depends on the physiological state of the fish, past exposures, motivation (*e.g.,* feeding, spawning, migration), and other environmental factors. Hastings and Popper (2005) identified several studies that suggest fish may relocate to avoid certain areas of sound energy. Additional studies have documented effects of pile driving on fish, although several are based on studies in support of large, multiyear bridge construction projects (*e.g.,* Scholik and Yan, 2001, 2002; Popper and Hastings, 2009). Several studies have demonstrated that impulse sounds might affect the distribution and behavior of some fishes, potentially impacting foraging opportunities or increasing energetic costs (*e.g.,* Fewtrell and McCauley, 2012; Pearson *et al.,* 1992; Skalski *et al.,* 1992; Santulli *et al.,* 1999; Paxton *et al.,* 2017). However, some studies have shown no or slight reaction to impulse sounds (*e.g.,* Pena *et al.,* 2013; Wardle *et al.,* 2001; Jorgenson and Gyselman, 2009; Cott *et al.,* 2012).

SPLs of sufficient strength have been known to cause injury to fishes and fish mortality (summarized in Popper *et al.,* (2014)). However, in most fish species, hair cells in the ear continuously regenerate and loss of auditory function likely is restored when damaged cells are replaced with new cells. Halvorsen *et al.* (2012b) showed that a TTS of 4 to 6 dB was recoverable within 24 hours for one species. Impacts would be most severe when the individual fish is close to the source and when the duration of exposure is long. Injury caused by barotrauma can range from slight to severe and can cause death, and is most likely for fish with swim bladders. Barotrauma injuries have been documented during controlled exposure to impact pile driving (Halvorsen *et al.,* 2012a; Casper *et al.,* 2013; 2017).

Fish populations in the proposed project area that serve as marine mammal prey could be temporarily affected by noise from pile installation and removal. The frequency range in which fishes generally perceive underwater sounds is 50 to 2,000 Hz, with peak sensitivities below 800 Hz (Popper and Hastings, 2009). Fish behavior or distribution may change, especially with strong and/or intermittent sounds that could harm fishes. High underwater SPLs have been documented to alter behavior, cause hearing loss, and injure or kill individual fish by causing serious internal injury (Hastings and Popper, 2005).

The greatest potential impact to fishes during construction would occur during impact pile driving. However, the duration of impact pile driving would be limited to the final stage of installation (''proofing'') after the pile has been driven as close as practicable to the design depth with a vibratory driver. In-water construction activities would only occur during daylight hours, allowing fish to forage and transit the project area in the evening. Vibratory pile driving and auger drilling could elicit behavioral reactions from fishes such as temporary avoidance of the area but is unlikely to cause injuries to fishes or have persistent effects on local fish populations. Construction also would have minimal permanent and temporary impacts on benthic invertebrate species, a marine mammal prey source. In addition, it should be noted that the area in question is low-quality habitat since it is already highly developed and experiences a high level of anthropogenic noise from normal SUBASE operations and other vessel traffic.

The area impacted by the project is relatively small compared to the available habitat in the remainder of the Thames River and Long Island Sound, and there are no areas of particular importance that would be impacted by this project. Any behavioral avoidance by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity. As described in the preceding, the potential for the Navy's construction to affect the availability of prey to marine mammals or to meaningfully impact the quality of physical or acoustic habitat is considered to be insignificant.

Estimated Take of Marine Mammals

This section provides an estimate of the number of incidental takes proposed for authorization through the IHA, which will inform NMFS' consideration of ''small numbers,'' the negligible impact determinations, and impacts on subsistence uses.

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

Authorized takes would primarily be by Level B harassment, as use of the acoustic (*i.e.,* pile driving 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 phocids because no other species have been observed within the Thames River adjacent to the project site, and the Level A harassment isopleths do not extend to the Long Island Sound. The proposed 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 anticipated or proposed to be authorized for this activity. Below we describe how the proposed 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 proposed 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).

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.

The Navy's proposed activity includes the use of continuous (vibratory pile driving and auger drilling) and impulsive (impact pile driving) 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). The Navy's proposed activity includes the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving and auger drilling) sources.

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

TABLE 5—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing group	PTS onset thresholds* (received level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1:* $L_{p,0\text{-}pk,flat}$: 219 dB; $L_{E,p,LF,24h}$: 183 dB	*Cell 2:* $L_{E,p,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	*Cell 3:* $L_{p,0\text{-}pk,flat}$: 230 dB; $L_{E,p,MF,24h}$: 185 dB	*Cell 4:* $L_{E,p,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	*Cell 5:* $L_{p,0\text{-}pk,flat}$: 202 dB; $L_{E,p,HF,24h}$: 155 dB	*Cell 6:* $L_{E,p,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	*Cell 7:* $L_{p,0\text{-}pk,flat}$: 218 dB; $L_{E,p,PW,24h}$: 185 dB	*Cell 8:* $L_{E,p,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW) (Underwater)	*Cell 9:* $L_{p,0\text{-}pk,flat}$: 232 dB; $L_{E,p,OW,24h}$: 203 dB	*Cell 10:* $L_{E,p,OW,24h}$: 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^2s. 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 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 proposed project. Pile driving generates underwater noise that can potentially result in disturbance to marine mammals in the project area. The maximum (underwater) area ensonified is determined by the topography of the Thames River, including intersecting land masses that will reduce the overall area of potential impact. Additionally, vessel traffic, including large vessels and ferries, in the project area may contribute to elevated background noise levels, which may mask sounds produced by the project.

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:

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

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.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source is dependent on a variety of factors, most notably the water bathymetry and presence or absence of reflective or absorptive conditions including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6-dB reduction in sound level for each doubling of distance from the source ($20 \times \log_{10}$[range]). Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source ($10 \times \log_{10}$[range]). A practical spreading value of 15 is often used under conditions, such as the project site, where water increases with depth as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions. Practical spreading loss is assumed here.

The intensity of pile driving sounds is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the activity takes place. In order to calculate the distances to the Level A harassment and the Level B harassment sound thresholds for the methods and piles being used in this project, NMFS used acoustic monitoring data from other locations to develop proxy source levels for the various pile types, sizes and methods (table 6). Generally, we choose source levels from similar pile types from locations (*e.g.,* geology, bathymetry) similar to the project.

TABLE 6—PROXY SOUND SOURCE LEVELS FOR PILE SIZES, DRIVING METHODS, AND AUGER DRILLING

Pile type	Pile size	Method	Peak SPL (re 1 μPa (rms))	RMS SPL (re 1 μPa (rms))	SEL (re 1 μPa (rms))	Source
Steel	14-in H-pile	Vibratory	NA	158	158	Navy, 2019b.
		Impact	194	177	162	Navy, 2019b.
	36-in pipe pile	Vibratory	NA	168	168	Navy, 2018.
		Impact	209	198	183	Navy, 2019b.
		Auger drilling	NA	154	NA	Dazey *et al.,* 2012.
Concrete encased steel	14-in H-pile	Vibratory	185	162	157	Caltrans, 2020.
Fiberglass reinforced plastic	16-in fender	Vibratory	NA	158	NA	Illingworth and Rodkin, 2017.
		Impact	177	165	157	California Department of Transportation, 2015.

For this project, up to three vibratory hammers may operate simultaneously. When two noise sources have overlapping sound fields, there is potential for higher sound levels than for non-overlapping sources because the isopleth of one sound source encompasses the sound source of another isopleth. In such instances, the sources are considered additive and combined using the rules of decibel addition. For addition of two simultaneous sources, the difference between the two sound source levels is calculated, and if that difference is between 0 and 1 dB, 3 dB are added to the higher sound source levels; if the difference is between 2 and 3 dB, 2 dB are added to the highest sound source levels; if the difference is between 4 and 9 dB, 1 dB is added to the highest sound source levels; and with differences of 10 or more dB, there is no addition. For simultaneous usage of three or more continuous sound sources, the three overlapping sources with the highest sound source levels are identified. Of the three highest sound source levels, the lower two are combined using the above rules; then, the combination of the lower two is combined with the highest of the three. The calculated proxy source levels for the different potential concurrent pile driving scenarios are shown in table 7.

TABLE 7—CALCULATED PROXY SOUND SOURCE LEVELS FOR POTENTIAL CONCURRENT PILE DRIVING SCENARIOS

Structure	Pile type and proxy	Calculated proxy sound source level (dB RMS)
Temporary work trestle installation and pier 17 demolition	Vibratory installation of 14-in steel H-pile: 158 dB RMS Vibratory demolition of 14-in concrete encased steel H-pile: 162 dB RMS.	163
Temporary work trestle installation, pier 17 demolition, and pier 31 demolition.	Vibratory installation of 14-in steel H-pile: 158 dB RMS Vibratory demolition of 14-in concrete encased steel H-pile: 162 dB RMS. Vibratory demolition of 16-in fiberglass reinforced plastic fender: 158 dB RMS.	165

TABLE 7—CALCULATED PROXY SOUND SOURCE LEVELS FOR POTENTIAL CONCURRENT PILE DRIVING SCENARIOS—Continued

Structure	Pile type and proxy	Calculated proxy sound source level (dB RMS)
Temporary work trestle installation and pier 31 demolition	Vibratory installation of 14-in steel H-pile: 158 dB RMS Vibratory demolition of 16-in fiberglass reinforced plastic fender: 158 dB RMS.	161

The ensonified area associated with Level A harassment is more technically 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, like 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, and the resulting estimated isopleths, are reported below.

TABLE 8—NMFS USER SPREADSHEET INPUTS

Method	Pile size and type	Spreadsheet tab used	Weighting factor adjustment (kHz)	Number of piles per day	Duration of sound production within 24-h period (sec)	Number of strikes per pile
Vibratory	16-in fiberglass reinforced plastic fender piles install and removal.	A.1. Vibratory pile driving	2.5	2	2400	NA
	14-in steel H-pile (temporary) install and removal.	A.1. Vibratory pile driving	2.5	5	6000	NA
	14-in concrete encased steel H-pile removal	A.1. Vibratory pile driving	2.5	5	6000	NA
	36-in steel pipe pile install	A.1 Vibratory pile driving	2.5	0.17	428.4	NA
Impact	16-in fiberglass reinforced plastic fender piles	E.1. Impact pile driving	2	2.5	NA	1000
	14-in steel H-pile (temporary) install	E.1. Impact pile driving	2	4	NA	1000
	36-in steel pipe pile install	E.1. Impact pile driving	2	2.5	NA	1000
Auger drilling	36-in steel pipe pile install	A. Stationary source: non-impulsive, continuous.	2	1	28800	NA
Concurrent pile driving	14-in steel H-pile AND 14-in concrete encased steel H-pile.	A.1. Vibratory pile driving	2.5	5	6000	NA
	14-in steel H-pile AND 14-in concrete encased steel H-pile AND 16-in fiberglass reinforced plastic fender.	A.1. Vibratory pile driving	2.5	5	6000	NA
	14-in steel H-pile AND 16-in fiberglass reinforced plastic fender.	A.1. Vibratory pile driving	2.5	7	8400	NA

TABLE 9—CALCULATED LEVEL A AND LEVEL B HARASSMENT ISOPLETHS

Method	Pile size and type	Level A harassment zone (m/km²)			Level B harassment zone (m/km²)
		MF-cetaceans	HF-cetaceans	Phocid	
Vibratory	16-in fiberglass reinforced plastic fender piles install and removal.	0.3/0	4.9/0.000075	2.0/0.00013	3,415/2.47916
	14-in steel H-pile (temporary) install and removal.	0.5/0.000001	9.0/0.000253	3.7/0.000043	....
	14-in concrete encased steel H-pile removal	1.0/0.000003	16.5/0.000851	6.8/0.000145	6,310/2.620145
	36-in steel pipe pile install	0.4/0.000001	7.2/0.000162	2.9/0.00026	15,849/3.435273
Impact	16-in fiberglass reinforced plastic fender piles	1.2/0.00005	40.5/0.005136	18.2/0.001035	22/0.001513
	14-in steel H-pile (temporary) install	3.6/0.000041	119.3/0.044565	53.6/0.009004	136/0.056637
	36-in steel pipe pile install	65.4/0.01341	2,191/1.588304	984.4/0.86872	3,415/2.620145
Auger drilling	36-in steel pipe pile install	0.1/0	0.8/0.000002	0.5/0.000001	1,848/1.359058
Concurrent pile driving	14-in steel H-pile AND 14-in concrete encased steel H-pile.	[a b] 1.2/0.000005	[a] 19.3/0.001164 [b] 19.3/0.001134	[a b] 7.9/0.000195	[a] 7,356/3.121835 [b] 7,356/0.205166
	14-in steel H-pile AND 14-in concrete encased steel H-pile AND 16-in fiberglass reinforced plastic fender.	[a b c] 1.6/0.000008	[a c] 26.2/0.002146 [b] 26.2/0.001807	[a b c] 10.8/0.000365	[a] 10,000/3.197942 [b] 10,000/0.205166 [c] 10,000/2.822399
	14-in steel H-pile AND 16-in fiberglass reinforced plastic fender.	[a b] 1.10.000004	[a b] 7.8/0.00099	[a b] 7.3/0.000167	[a] 5,412/3.078261 [b] 5,412/2.822399

[a] Harassment zones mapped from pier 31.
[b] Harassment zones mapped from pier 17.
[c] Harassment zones mapped from existing pier 31 for fender pile extraction.

Marine Mammal Occurrence and Take Estimation

In this section, we provide information about the occurrence of marine mammals, including density or other relevant information that will inform the take calculations, and describe how the information provided is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and proposed for authorization. Density estimates come from Northeast Ocean Data (2023) for cetaceans and from the U.S. Navy Marine Species Density Database (Navy, 2017) for pinnipeds. To determine the incidental take estimate within each harassment zone, the following equation was used:

Incidental take estimate = (harassment zone [km^2] × estimated density [individuals/km^2]) × days of pile driving activity

A subset of the species (Atlantic white-sided dolphin, common dolphin, and harbor porpoise) do not occur within the Thames River and have only been observed in the Long Island Sound. For these species, the area from the mouth of the Thames River to the furthest extent of the harassment zone in the Long Island Sound was used to determine the incidental take estimate within that zone.

Atlantic White-Sided Dolphin

Atlantic white-sided dolphins do not occur within the Thames River but they occur occasionally in the Long Island Sound. Monthly surveys conducted in the Thames River from 2017 through 2019 did not record the presence of Atlantic white-sided dolphins (Tetra Tech, 2019). The average density of Atlantic white-sided dolphins in the Long Island Sound is 0.022 individuals per km^2. Only vibratory pile driving activities would generate a harassment zone that extends into the Long Island Sound so for those activities the area from the mouth of the Thames River to the furthest extent in the Long Island Sound (0.24 km^2) was used to calculate take (table 10). Therefore, using the equation given above, the calculated estimate take by Level B harassment for Atlantic white-sided dolphins would be one. However, a solitary dolphin is unlikely to be encountered, so the estimated take by Level B harassment was increased to the average group size of 12 (NMFS, 2023b).

The largest Level A harassment zone for Atlantic white-sided dolphins extends 65 m from the sound source (table 9) and is entirely contained within the Thames River. Therefore, no take by Level A harassment is anticipated or proposed for authorization.

Common Dolphin

Common dolphins do not occur within the Thames River but they occur occasionally in the Long Island Sound. Monthly surveys conducted in the Thames River from 2017 through 2019 did not record the presence of common dolphins (Tetra Tech, 2019). The average density of common dolphins in the Long Island Sound is 0.15 individuals per km^2. Only vibratory pile driving activities would generate a harassment zone that extends into the Long Island Sound so for those activities the area from the mouth of the Thames River to the furthest extent in the Long Island Sound (0.24 km^2) was used to calculate take (table 10). Therefore, using the equation given above, the calculated estimate of take by Level B harassment for common dolphins would be four. However, common dolphins generally travel in pods, so the estimated take by Level B harassment was increased to an assumed average group size of 30 (NMFS, 2023b).

The largest Level A harassment zone for common dolphins extends 65 m from the sound source (table 9) and is entirely contained within the Thames River. Therefore, no take by Level A harassment is anticipated or proposed for authorization.

Harbor Porpoise

Harbor porpoises do not occur within the Thames River but they occur occasionally in the Long Island Sound. Monthly surveys conducted in the Thames River from 2017 through 2019 did not record the presence of harbor porpoises (Tetra Tech, 2019). The average density of harbor porpoises in the Long Island Sound is 0.32 individuals per km^2. Only vibratory pile driving activities would generate a harassment zone that extends into the Long Island Sound so for those activities the area from the mouth of the Thames River to the furthest extent in the Long Island Sound (0.24 km^2) was used to calculate take (table 10). Therefore, using the equation given above, the estimated take by Level B harassment for harbor porpoises would be nine.

The largest Level A harassment zone for harbor porpoises extends 2,191 m from the sound source (table 9) and is entirely contained within the Thames River. Therefore, no take by Level A harassment is anticipated or proposed for authorization.

For concurrent activities, the largest Level A harassment zone for harbor porpoises extends 26.2 m from the sound source and the largest Level B harassment zone extends 10,000 m from the sound source (table 9), and is contained within the Thames River. Therefore, no take by Level A or Level B harassment is anticipated or proposed for authorization from concurrent activities.

TABLE 10—ESTIMATED TAKE BY LEVEL B HARASSMENT FOR SPECIES OBSERVED ONLY IN THE LONG ISLAND SOUND PORTION OF THE PROPOSED PROJECT AREA

Method	Pile size and type	Total ensonified area (km^2)	Ensonfied area within the Long Island Sound (km^2)	Species	Density (individuals/ km^2)	Calculated estimated take by Level B harassment	Group size	Total proposed take by Level B harassment
Impact ...	36-in steel pipe pile install ...	3.435273	0.24	Atlantic white-sided dolphin	0.022	1	12	12
				Common dolphin	0.15	4	30	30
				Harbor porpoise	0.32	9	3	9

Harbor Seal

Harbor seals are present in the project vicinity including the Thames River from September through May. Monthly surveys conducted in the Thames River from 2017 through 2019 recorded 12 sightings of individual harbor seals (Tetra Tech, 2019). Seals were not observed on the shore and there are no harbor seal haulouts within the project vicinity. Two different density estimates were used to calculate harbor seal take. A density of 0.049 individuals per km^2 was used in the Thames River and a density of 0.07 individuals per km^2 was used in the Long Island Sound (Navy, 2017). Therefore, using the equation given above, the estimated number of takes by Level B harassment for harbor seals would be 44.

The largest Level A harassment zone for harbor seals extends 984 m from the sound source (table 9). Using the equation given above, the calculated estimated take by Level A harassment for harbor seals would be 1. However, due to the consistent presence of phocid pinnipeds at the SUBASE over the last several years, NMFS conservatively proposed increasing the estimated take by Level A harassment to one per 30 days of pile driving resulting in an estimated 8 harbor seals by Level A harassment over the course of the project.

Gray Seal

Gray seals are present in the project vicinity including the Thames River from March through June. Monthly surveys conducted in the Thames River from 2017 through 2019 recorded three sightings of individual gray seals (Tetra Tech, 2019). Seals were not observed on the shore and there are no gray seal haulouts within the project vicinity. Two different density estimates were used to calculate take of gray seals. A density of 0.049 individuals per km^2 was used in the Thames River and a density of 0.07 individuals per km^2 was used in the Long Island Sound (Navy, 2017). Therefore, using the equation given above, the calculated estimated take by Level B harassment for gray seals would be 44.

The largest Level A harassment zone for gray seals extends 984 m from the sound source (table 9). Using the equation given above, the calculated estimated take by Level A harassment for gray seals would be 1. However, due to the consistent presence of phocid pinnipeds at the SUBASE over the last several years, NMFS conservatively proposed increasing the estimated take by Level A harassment to one per 30 days of pile driving resulting in an estimate of 8 takes of harbor seals by Level A harassment over the course of the project.

Harp Seal

Harp seals are present in the project vicinity from January through May and are much rarer in the Thames River then the other two seal species. Harp seals were not observed during monthly surveys conducted in the Thames River from 2017 through 2019 (Tetra Tech, 2019). However, two harp seals were identified in March 2019 and one harp seal in April 2019 by Mystic Aquarium staff. On both occasions they were hauled out on the finger piers of the marina at SUBASE (Navy, 2019a). The average density of harp seals in the Long Island Sound is 0.278 individuals per km^2. Only vibratory pile driving activities would generate a harassment zone that extends into the Long Island Sound so for those activities the area from the mouth of the Thames River to the furthest extent in the Long Island Sound was used to calculate take. Therefore, using the equation given above, the estimated take by Level B harassment for harp seals would be seven. However, it was determined that up to one take by Level B harassment of harp seals could occur within the Thames River during each months they are present (January to May) resulting in an estimate of 12 takes of harp seals by Level B harassment.

The largest Level A harassment zone for harp seals extends 984 m from the sound source (table 9) and is entirely contained within the Thames River. Harp seals do not have a density estimate for within the Thames River; therefore, given the sightings of this species hauled out at SUBASE, NMFS proposes increasing the estimated take by Level A harassment to one per 30 days of pile driving during the period in which harp seals could occur in the river. This results in an estimate of 5 takes of harp seals by Level A harassment over the course of the project.

TABLE 11—ESTIMATED TAKE BY LEVEL A AND LEVEL B HARASSMENT

Common name	Stock	Stock abundance [a]	Level A harassment	Level B harassment	Total proposed take	Proposed take as a percentage of stock
Atlantic white-sided dolphin	Western North Atlantic	93,233	0	[2] 12	12	0.01
Common dolphin	Western North Atlantic	93,100	0	[2] 30	30	0.03
Harbor porpoise	Gulf of Maine/Bay of Fundy	87,765	0	9	9	0.01
Harbor seal	Western North Atlantic	61,336	8	44	52	0.08
Gray seal	Western North Atlantic	27,911	8	44	52	0.19
Harp seal	Western North Atlantic	7,600,000	5	12	17	0.00002

[1] Stock size is N_{best} according to NMFS 2023a draft SARs.
[2] Proposed take increased to mean group size from AMAPPS (Palka et al., 2017 and 2021).

Proposed 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 (see 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.

In addition to the measures described later in this section, the Navy proposes to employ the following mitigation measures:

• The Navy would ensure that construction supervisors and crews, the monitoring team, and relevant Navy staff are trained prior to the start of activities subject to the proposed IHA, so that responsibilities, communication procedures, monitoring protocols, and operational procedures are clearly understood. New personnel joining during the project must be trained prior to commencing work.

• For those marine mammals for which incidental take has not been authorized, in-water pile installation/removal would shut down immediately if such species are observed within or entering the Level B harassment zone.

• If take reaches the authorized limit for any species, pile installation/removal will shut down immediately if these species approach the Level B harassment zone to avoid additional take.

The following proposed mitigation measures would apply to the Navy's in-water construction activities:

Proposed Shutdown and Monitoring Zones

The Navy must establish shutdown zones and Level B harassment monitoring 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 animal (or in anticipation of an animal entering the defined area). Shutdown zones are based on the largest Level A harassment zone for each pile size/type and driving method, and behavioral monitoring zones are meant to encompass Level B harassment zones for each pile size/type and driving method, as shown in table 12. A minimum shutdown zone of 10 m would be required for all in-water construction activities to avoid physical interaction with marine mammals. Proposed shutdown zones for each activity type are shown in table 12.

Prior to pile driving, shutdown zones and monitoring zones would be established based on zones represented in table 9. Protected Species Observers (PSOs) would survey the shutdown zones and surrounding areas for at least 30 minutes before pile driving activities start. If marine mammals are found within the shutdown zone, pile driving would be delayed until the animal has moved out of the shutdown zone, either verified by an observer or by waiting until 15 minutes has elapsed without a sighting. If a marine mammal approaches or enters the shutdown zone during pile driving, the activity would be halted. Pile driving may resume after the animal has moved out of and is moving away from the shutdown zone or after at least 15 minutes has passed since the last observation of the animal.

All marine mammals would be monitored in the Level B harassment to the extent of visibility for the on-duty PSOs. If a marine mammal for which take is authorized enters the Level B harassment zone, in-water activities would continue and PSOs would document the animal's presence within the estimated harassment zone.

If a species for which authorization has not been granted, or for which the authorized takes are met, is observed approaching or within the Level B harassment zone, pile driving activities would be shut down immediately. Activities would not resume until the animal has been confirmed to have left the area or 15 minutes has elapsed with no sighting of the animal.

TABLE 12—PROPOSED SHUTDOWN AND LEVEL B MONITORING ZONES BY ACTIVITY

Method	Pile size and type	Minimum shutdown zone (m)			Level B monitoring zone (m)
		MF-cetaceans	HF-cetaceans	Phocid	
Vibratory	16-in fiberglass reinforced plastic fender piles install and removal.	10	10	10	3,415
	14-in steel H-pile (temporary) install and removal	10	10	10	
	14-in concrete encased steel H-pile removal	10	25	15	6,310
	36-in steel pipe pile install	10	10	10	15,849
Impact	16-in fiberglass reinforced plastic fender piles	10	40	20	22
	14-in steel H-pile (temporary) install	10	120	55	136
	36-in steel pipe pile install	70	200	200	3,415
Auger drilling	36-in steel pipe pile install	10	10	10	1,848
Concurrent pile driving	14-in steel H-pile AND 14-in concrete encased steel H-pile	10	35	15	7,356
	14-in steel H-pile AND 14-in concrete encased steel H-pile AND 16-in fiberglass reinforced plastic fender.	10	30	15	10,000
	14-in steel H-pile AND 16-in fiberglass reinforced plastic fender.	10	20	10	5,412

Protected Species Observers

The placement of PSOs during all pile driving and removal activities (described in detail in the Proposed Monitoring and Reporting section) will ensure that the Thames River and portion of the Long Island Sound is visible during pile installation.

Pre- and Post-Activity Monitoring

Monitoring must take place from 30 minutes prior to initiation of pile driving activities (*i.e.,* pre-clearance monitoring) through 30 minutes post-completion of pile driving. Prior to the start of daily in-water construction activity, or whenever a break in pile driving of 30 minutes or longer occurs, PSOs would observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone would be considered cleared when a marine mammal has not been observed within the zone for a 30-minute period. If a marine mammal is observed within the shutdown zones, pile driving activity would be delayed or halted. If work ceases for more than 30 minutes, the pre-activity monitoring of the shutdown zones would commence. A determination that the shutdown zone is clear must be made during a period of good visibility (*i.e.,* the entire shutdown zone and surrounding waters must be visible to the naked eye).

Soft Start

Soft-start procedures are believed to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to the impact hammer operating at full capacity. For impact driving, an initial set of three strikes will be made by the hammer at reduced energy, followed by a 30-second waiting period, then two subsequent three-strike sets before initiating continuous driving. 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 the applicant's proposed measures, NMFS has preliminarily determined that the proposed 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.

Proposed 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 activity; 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 must be conducted in accordance with the Monitoring Plan and section 5 of the IHA. A Marine Mammal Monitoring Plan would be submitted to NMFS for approval prior to commencement of project activities. Marine mammal monitoring during pile driving and removal must be conducted by NMFS-approved PSOs in a manner consistent with the following:

- PSOs must be independent of the activity contractor (for example, employed by a subcontractor) and have no other assigned tasks during monitoring periods;
- At least one PSO must 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
- The Navy must submit PSO Curriculum Vitae for approval by NMFS prior to the onset of pile driving.

PSOs must 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. The Navy will employ up to five PSOs. PSO locations will provide an unobstructed view of all water within the shutdown zone(s), and as much of the Level A harassment and Level B harassment zones as possible. PSO locations may include the pile installation/extraction barge, shore-based locations (such as pier 17 or pier 32), small boats, and the mouth of the Thames River.

Monitoring would be conducted 30 minutes before, during, and 30 minutes after pile driving/removal activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven or removed. Pile driving/removal activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than 30 minutes.

Data Collection

PSOs would use approved data forms to record the following information:

- Dates and times (beginning and end) of all marine mammal monitoring.
- PSO locations during marine mammal monitoring.

Construction activities occurring during each daily observation period, including how many and what type of piles were driven or removed and by what method (*i.e.,* vibratory, impact, or auger drilling).

- Weather parameters and water conditions.
- The number of marine mammals observed, by species, relative to the pile location and if pile driving or removal was occurring at time of sighting.
- Distance and bearings of each marine mammal observed to the pile being driven or removed.
- Description of marine mammal behavior patterns, including direction of travel.
- Age and sex class, if possible, of all marine mammals observed.
- Detailed information about implementation of any mitigation triggered (such as shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal if any.

Hydroacoustic Monitoring

The Navy proposes to conduct hydroacoustic monitoring, or sound source verification (SSV), of all pile installation and removal methods. Data will be collected for a representative number of piles (at least 10 percent and up to 10 of each different type of pile) for each installation or removal method. Hydrophones would be placed at locations 10 m (33 ft) from the noise source and, where the potential for Level A harassment exists, at a second representative monitoring location at an intermediate distance between the cetacean and phocid shutdown zones. Hydroacoustic monitoring results may be used to adjust the size of the Level A and Level B harassment and monitoring zones after a request is made and approved by NMFS. At minimum, the methodology includes:

• For underwater recordings, a stationary hydrophone system with the ability to measure SPLs will be placed in accordance with NMFS most recent guidance for the collection of source levels.

• Hydroacoustic monitoring would be successfully conducted for at least 10 percent and up to 10 of each different type of pile and each method of installation (table 13). Monitoring would occur at 33 feet (10 m) from the noise; at a location intermediate of the pinniped and cetacean Level A (PTS onset) zones; and occasionally near the predicted harassment zones for Level B (Behavioral) harassment. The resulting data set would be analyzed to examine and confirm SPLs and rates of transmission loss for each separate in-water construction activity. With NMFS concurrence, these metrics may be used to recalculate the limits of the shutdown, Level A (PTS onset), and Level B (Behavioral) disturbance zones, and to make corresponding adjustments in marine mammal monitoring of these zones. Hydrophones would be placed using a static line deployed from a stationary (temporarily moored) vessel. Locations of hydroacoustic recordings would be collected via global positioning system. A depth sounder and/or weighted tape measure would be used to determine the depth of the water. The hydrophone would 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 would be attached to a float or tied to a static line.

• Each hydrophone (underwater) 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/drill model and size, hammer/drill energy settings, depth of drilling, and boring rates and any changes to those settings during the monitoring.

• For acoustically monitored construction activities, data from the continuous monitoring locations will be post-processed to obtain the following sound measures:

○ Maximum peak pressure level recorded for all activities, expressed in dB re 1 µPa.

▪ Mean, median, minimum, and maximum RMS pressure level in [dB re 1 µPa].

▪ Mean duration of a pile strike (based on 90 percent energy criterion).

▪ Number of hammer strikes

▪ Mean, median, minimum, and maximum single strike SEL in [dB re µPa^2 sec].

○ Cumulative SEL as defined by the mean single strike SEL + 10*$\log_{10}$ (number of hammer strikes) (dB re µPa^2 sec).

○ Median integration time used to calculate SPL RMS.

○ A frequency spectrum (pressure spectral density) (dB re µPa^2 per 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 $\log_{10}$ taken of result to express (dB re µPa^2 sec).

• For vibratory driving/extraction/drilling: duration and frequency spectrum of vibratory driving per pile; mean, median, and maximum sound levels (dB re: 1 µPa): root mean square sound pressure level (SPL_{rms}), SEL_{cum} (and timeframe over which the sound is averaged).

TABLE 13—HYDROACOUSTIC MONITORING SUMMARY

Pile type	Count	Method of install/extract	Number monitored
14-in steel H-pile	60	Impact	10
14-in steel H-pile	60	Vibratory	10
36-in steel pipe pile	20	Impact	10
36-in steel pipe pile	20	Vibratory	10
36-in steel pipe pile	20	Auger (rotary) drill	10
16-in fiberglass reinforced plastic fender pile	60	Impact	10
16-in fiberglass reinforced plastic fender pile	60	Vibratory	10
14-in concrete encased steel H-pile	20	Vibratory	10

Reporting

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

• Dates and times (begin and end) of all marine mammal monitoring.

• Construction activities occurring during each daily observation period, including the number and type of piles driven or removed and by what method (*i.e.,* vibratory driving) and the total equipment duration for cutting for each pile.

• PSO locations during marine mammal monitoring.

• 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.

• Upon observation of a marine mammal, the following information: (1) name of PSO who sighted the animal(s) and PSO location and activity at time of sighting; (2) time of sighting; (3) 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; (4) distance and bearing of each marine mammal observed relative to the pile being driven for each sighting (if pile driving was occurring at time of sighting); (5) estimated number of animals (min/max/best estimate); (6) estimated number of animals by cohort (adults, juveniles, neonates, group composition, *etc.*); (7) animal's closest point of approach and estimated time spent within the harassment zone; and (8) 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.

• Detailed information about any implementation of any mitigation triggered (*e.g.,* shutdowns and delays), a description of specific 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 final report would constitute the final report. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

Reporting of Hydroacoustic Monitoring

The Navy shall also submit a draft hydroacoustic monitoring report to NMFS within 90 days of the completion of required monitoring at the end of the project, including data in a tabular spreadsheet format (Microsoft Excel or similar). The report will detail the hydroacoustic monitoring protocol and summarize the data recorded during monitoring. The final report must be prepared and submitted within 30 days following resolution of any NMFS comments on the draft report. If no comments are received from NMFS within 30 days of receipt of the draft report, the report shall be considered final. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments. All draft and final hydroacoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Wachtendonk@noaa.gov.* The hydroacoustic monitoring report will contain the informational elements described in the Hydroacoustic Monitoring Plan and, at minimum, will include:

• Hydrophone equipment and methods: recording device, sampling rate, distance (m) from the pile where recordings were made; depth of 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: number of strikes and strike rate; depth of substrate to penetrate; pulse duration and mean, median, and maximum sound levels (dB re: 1 μPa); SPL_{rms}; SEL_{cum}; peak sound pressure level (SPL_{peak}); and single-strike sound exposure level ($SEL_{s\text{-}s}$).

• For vibratory driving/extraction/drilling: duration and frequency spectrum of vibratory driving per pile; mean, median, and maximum sound levels (dB re: 1 μPa): SPL_{rms}, SEL_{cum} (and timeframe over which the sound is averaged).

• One-third octave band spectrum and power spectral density plot.

• General Daily Site Conditions

  ○ Date and time of activities.

  ○ Water conditions (*e.g.,* sea state, tidal state).

  ○ Weather conditions (*e.g.,* percent cover, visibility).

Reporting Injured or Dead Marine Mammals

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the Navy shall report the incident to the Office of Protected Resources (OPR), NMFS and to the regional stranding coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, the Navy must 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 IHA. The IHA-holder must not resume their activities until notified by NMFS. The report must include the following information:

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

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

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

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

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

• General circumstances under which the animal was discovered.

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 discussion of our analysis applies to all the species listed in table 3, given that the anticipated effects of this activity on these different marine mammal stocks are expected to be similar. There is little information about the nature or severity of the impacts, or the size, status, or structure of any of these species or stocks that would lead to a different analysis for this activity.

Pile driving activities have the potential to disturb or displace marine mammals. Specifically, the project activities may result in take, in the form of Level A harassment and Level B harassment from underwater sounds generated from pile driving and removal. Potential takes could occur if individuals are present in the ensonified zone when these activities are underway.

The takes from Level B harassment would be due to potential behavioral disturbance, and TTS. Level A harassment takes would be due to PTS. No mortality or serious injury is anticipated given the nature of the activity, even in the absence of the required mitigation. The potential for harassment is minimized through the construction method and the implementation of the proposed mitigation measures (see Proposed Mitigation section).

Take would occur within a limited, confined area (the Thames River and a small section of the Long Island Sound) of the stocks' ranges. Level A harassment and Level B harassment would be reduced to the level of least practicable adverse impact through use of mitigation measures described herein. Further, the amount of take proposed to be authorized is extremely small when compared to stock abundance, and the project is not anticipated to impact any known important habitat areas for any marine mammal species.

Take by Level A harassment is authorized to account for the potential that an animal could enter and remain within the area between a Level A harassment zone and the shutdown zone for a duration long enough to be taken by Level A harassment. Any take by Level A harassment is expected to arise from, at most, a small degree of PTS because 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. Additionally, and as noted previously, some subset of the individuals that are behaviorally harassed could also simultaneously incur some small degree of TTS for a short duration of time. Because of the small degree anticipated, though, any PTS or TTS potentially incurred here would not be expected to adversely impact individual fitness, let alone annual rates of recruitment or survival.

Behavioral responses of marine mammals to pile driving at the project site, if any, are expected to be mild and temporary. Marine mammals within the Level B harassment zone may not show any visual cues they are disturbed by activities or could become alert, avoid the area, leave the area, or display other mild responses that are not observable such as changes in vocalization patterns. Given the limited number of piles to be installed or extracted per day and that pile driving and removal would occur across a maximum of 242 days within the 12-month authorization period, any harassment would be temporary.

Any impacts on marine mammal prey that would occur during the Navy's proposed activity would have, at most, short-term effects on foraging of individual marine mammals, and likely no effect on the populations of marine mammals as a whole. Indirect effects on marine mammal prey during the construction are expected to be minor, and these effects are unlikely to cause substantial effects on marine mammals at the individual level, with no expected effect on annual rates of recruitment or survival.

In addition, it is unlikely that minor noise effects in a small, localized area of habitat would have any effect on the stocks' annual rates of recruitment or survival. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activities will have only minor, short-term effects on individuals. The specified activities are not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts.

In summary and as described above, the following factors primarily support our preliminary 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;
- The intensity of anticipated takes by Level B harassment is relatively low for all stocks and would not be of a duration or intensity expected to result in impacts on reproduction or survival;
- No important habitat areas have been identified within the project area;
- For all species, the Thames River and Long Island Sound are a very small and peripheral part of their range and anticipated habitat impacts are minor; and
- The Navy would implement mitigation measures, such as soft-starts for impact pile driving and shut downs to minimize the numbers of marine mammals exposed to injurious levels of sound, and to ensure that take by Level A harassment, is at most, a small degree of PTS.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted previously, only take of small numbers of marine mammals 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.

Table 11 demonstrates the number of animals that could be exposed to received noise levels that could cause Level B harassment for the proposed work at SUBASE. Our analysis shows that less than 1 percent of each affected stock could be taken by harassment. The numbers of animals proposed to be taken for these stocks would be considered small relative to the relevant stock's abundances, even if each estimated taking occurred to a new individual—an extremely unlikely scenario.

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

Unmitigable Adverse Impact Analysis and Determination

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

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 proposed for authorization or expected to result from this activity.

Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to the Navy for conducting the New London Pier Extension Project at SUBASE in Groton, Connecticut, between December 1, 2024, and November 30, 2025, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.*

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed New London Pier Extension Project. We also request comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, 1-year renewal IHA following notice to the public providing an additional 15 days for public comments when: (1) up to another year of identical or nearly identical activities as described in the Description of Proposed Activity section of this notice is planned; or (2) the activities as described in the Description of Proposed Activity section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed renewal IHA effective date (recognizing that the renewal IHA expiration date cannot extend beyond 1 year from expiration of the initial IHA).
- The request for renewal must include the following:

(1) An explanation that the activities to be conducted under the requested renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.,* reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

- Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: April 11, 2024.

Catherine Marzin,

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

[FR Doc. 2024–08284 Filed 4–17–24; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD867]

South Atlantic Fishery Management Council; Public Meeting

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

ACTION: Notice of a public meeting.

SUMMARY: The South Atlantic Fishery Management Council (Council) will hold a meeting via webinar of its Outreach and Communications Advisory Panel (AP) to discuss the educational component of Amendment 46 to the Snapper Grouper Fishery Management Plan for the South Atlantic. The amendment addresses permitting and education requirements for private recreational anglers targeting species in the snapper grouper management complex.

DATES: The AP meeting will be held from 10 a.m. until 12 p.m., EST on Wednesday, May 8, 2024.

ADDRESSES: The meeting will be held via webinar. Webinar registration is required. Details are included in **SUPPLEMENTARY INFORMATION**.

FOR FURTHER INFORMATION CONTACT: Kim Iverson, Public Information Officer, SAFMC; phone: (843) 302–8440 or toll free: (866) SAFMC–10; fax: (843) 769–4520; email: *kim.iverson@safmc.net.*

SUPPLEMENTARY INFORMATION: Meeting information, including the webinar registration link, online public comment form, agenda, and briefing book materials will be posted on the Council's website at: *https://safmc.net/advisory-panel-meetings/.* Comments become part of the Administrative Record of the meeting and will automatically be posted to the website and available for Council consideration.

During the meeting, the AP will review guidance from the March 2024 Council meeting, further address the education component of Snapper Grouper Amendment 46 addressing permitting and education requirements for private recreational fishermen targeting snapper grouper species, and provide recommendations for Council consideration.

Although non-emergency issues not contained in this agenda may come before this group for discussion, those issues may not be the subject of formal action during this meeting. Action will be restricted to those issues specifically identified in this notice and any issues arising after publication of this notice that require emergency action under section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act, provided the public has been notified of the Council's intent to take final action to address the emergency.

Special Accommodations

The meeting is physically accessible to people with disabilities. Requests for auxiliary aids should be directed to the Council office (see **ADDRESSES**) 5 days prior to the meeting.

Note: The times and sequence specified in this agenda are subject to change.

Authority: 16 U.S.C. 1801 *et seq.*

Dated: April 15, 2024.

Rey Israel Marquez,

Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2024–08325 Filed 4–17–24; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD873]

Gulf of Mexico Fishery Management Council; Public Meeting

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

ACTION: Notice of a public meeting.

SUMMARY: The Gulf of Mexico Fishery Management Council (Council) will