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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XB034

Takes of Marine Mammals Incidental to Specified Activities; Pile Placement for Fishermen's Offshore Wind Farm

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

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NMFS has received an application from AMEC Environment & Infrastructure, on behalf of Fishermen's Atlantic City Windfarm, LLC (Fishermen's) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to pile driving off the New Jersey coast. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is proposing to issue an IHA to take, by Level B harassment, bottlenose dolphins, harbor porpoises, and harbor seals during the specified activity within a specific geographic region and is requesting comments on its proposal.

DATES: Comments and information must be received no later than [insert date 30 days after date of publication in the FEDERAL REGISTER].

ADDRESSES: Comments on the application and this proposal should be addressed to Michael Payne, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. The mailbox address for providing email comments is ITP.Magliocca@noaa.gov. NMFS is not responsible

for e-mail comments sent to addresses other than the one provided here. Comments sent via e-mail, including all attachments, must not exceed a 10-megabyte file size.

Instructions: All comments received are a part of the public record and will generally be posted to http://www.nmfs.noaa.gov/pr/permits/incidental.htm without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

A copy of the application containing a list of the references used in this document may be obtained by writing to the address specified above, telephoning the contact listed below (see FOR FURTHER INFORMATION CONTACT), or visiting the internet at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm. Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

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

SUPPLEMENTARY INFORMATION:

Background

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

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Section 101(a)(5)(D) of the MMPA established an expedited process by which U.S. citizens can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) further established a 45-day time limit for NMFS' review of an application, followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny the authorization.

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as:

any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

Summary of Request

On August 30, 2011, NMFS received an application from AMEC Environment & Infrastructure, on behalf of Fishermen's, requesting an IHA for the take, by Level B harassment, of small numbers of bottlenose dolphins, harbor porpoises, and harbor seals incidental to pile driving activities off the New Jersey coast. Upon receipt of additional information and a revised application, NMFS determined the application complete and adequate on February 17, 2012.

Fishermen's plans to construct a 20 megawatt offshore wind farm 4.5 kilometers (km) off the New Jersey coast. The long-term project would comprise a single row of six electric generating windmills. Pile driving is required to construct a jacketed foundation on the sea floor for each turbine. Because elevated sound levels from pile driving have the potential to result in marine mammal harassment, NMFS is proposing to issue an IHA for take incidental to pile driving activities.

Description of the Specified Activity

Fishermen's proposes to install 18 piles to create six jacketed foundations for a row of wind turbines in the Atlantic Ocean. Each foundation would consist of a three-legged structure, made up of three hollow steel pipes with an outer diameter of about 132 centimeters (cm). Each leg, or pipe, would be driven to a depth of about 46 meters (m) below the sea floor. Cross braces, placed between each leg, would provide additional support to the foundation. Each side of the foundation would measure about 16 m at the sea floor. The foundations would extend through the water column to about 14 m above mean higher high water, depending on tide levels. The top of each foundation would connect to the turbine with a transition piece, which would be welded to the foundation at about 93 m above mean higher high water. A scour protection mat would be installed at the base of each foundation to prevent ocean currents from eroding the sea floor around the foundation.

Fishermen's would use a Delmag D-100 or equivalent hydraulic hammer to install the 18 piles. The hydraulic hammer would be positioned on a heavy lift crane barge along with the lift crane, which would be used to lift the foundation off a second barge and place it on the seafloor. Each pile would require 600 to 900 blows over a period of 1 to 2 hours. The foundations' jacket structure and design are expected to lessen the amount and intensity of sound propagation because each pile would be encased within a leg of the jacket during hammering. The planned distance between each foundation is about 1,080 m. One turbine would be constructed at a time.

Fishermen's would also install a submarine electric cable to transmit power from the turbines to the shore. The cable would make landfall at a point in Atlantic City and continue underground to the existing Huron Substation located along Absecon Avenue. The subsea cable would likely be arranged in a single string configuration and composed of three copper conductors, each 185 mm square, arranged within an insulated, single wire armored submarine electric composite cable. Fishermen's would use jet plowing to install the submarine electric cables, which is a common burial method that minimizes environmental impacts to water quality and aquatic natural resources. The jet plow device is hydraulically powered and requires a specially designed cable-laying vessel to tow it along the seafloor. As it is pulled forward, it fluidizes the sediment in such a way that the cable settles into the trench under its own weight. The subsea cable will be buried about 3 m deep from the turbine field to a point about 550 m from the shoreline. About 76 m^3 of bottom material may be displaced during the process and a 21 m^2 surface area may be disturbed. The remaining hole would be backfilled to the extent possible using previously removed material.

Date and Duration of Proposed Activity

Fishermen's plans to commence turbine installation and cable laying in the summer of 2012, pending final state and federal authorizations. Installation of all 18 piles would require a total of 12 to 15 hours of driving time. Construction of the entire wind farm is anticipated to take 4 months, but pile driving activities would occur for 15 to 24 days. Pile driving is expected to last a maximum of 24 days, during the months of May and June. NMFS would issue the IHA for a 4-month period (May-August) to allow for permitting and weather delays. Pile driving would only occur in weather that provides adequate visibility for marine mammal monitoring activities.

Region of Proposed Activity

The proposed activity would occur in state waters of New Jersey, about 4.5 km from Atlantic City. The future turbines would run roughly parallel to the coast in a single line. This location was chosen over alternative sites in New Jersey waters based on public support. Water depths at the proposed project location are 8 to 12 m at mean lower low water.

Sound Propagation

Sound is a mechanical disturbance consisting of minute vibrations that travel through a medium, such as air or water, and is generally characterized by several variables. Frequency describes the sound's pitch and is measured in hertz (Hz) or kilohertz (kHz), while sound level describes the sound's loudness and is measured in decibels (dB). Sound level increases or decreases exponentially with each dB of change. For example, 10 dB yields a sound level 10 times more intense than 1 dB, while a 20 dB level equates to 100 times more intense, and a 30 dB level is 1,000 times more intense. Sound levels are compared to a reference sound pressure (micro-Pascal) to identify the medium. For air and water, these reference pressures are "re: 20 μPa" and "re: 1 μPa," respectively. Root mean square (RMS) is the quadratic mean sound pressure over the duration of an impulse. RMS is calculated by squaring all of the sound

amplitudes, averaging the squares, and then taking the square root of the average (Urick, 1975). RMS accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels (Hastings and Popper, 2005). This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units rather than by peak pressures.

Based on measurements taken around impact hammers at other in-water locations, source levels during pile driving are estimated to reach about 185 dB RMS. Assuming a practical spreading loss of 15 log R, Fishermen's estimates that the 180-dB (Level A harassment threshold) isopleth for the impact hammer would be about 50 m from the source. The 160-dB (Level B harassment threshold) isopleth would be about 500 m from the source. The foundations' jacket structure and design are expected to lessen sound levels and intensity, but the amount of sound reduction afforded by the jacket is unknown. Noise associated with other construction activities (e.g,. cable laying) is expected to be minimal.

Description of Marine Mammals in the Area of the Specified Activity

There are 42 marine mammal species with confirmed or potential occurrence off the coast of New Jersey. Of these, 20 species are regular inhabitants to the northeast Atlantic Ocean and could occur in the proposed project area at some point during the year (Table 1).

Common Name	Scientific Name	ESA Status	Time of Year	Presence	Observance within Proposed Study Area
Mysticetes North Atlantic right whale	Eubalaena glacialis	E	Year round	Possible	Yes
Humpback whale	Megaptera novaeangliae	E	Year round	Possible	Yes
Minke whale	Balaenoptera acutorostrata	-	Winter/summer	Possible	Yes
Sei whale	Balaenoptera borealis	E	N/A	Uncommon	No
Fin whale	Balaenoptera physalus	E	Year round	Possible	Yes

Odontocetes Bottlenose dolphin	Tursiops truncatus	-	May-August	Possible	Yes
Atlantic spotted dolphin	Stenella frontalis	-	N/A	Uncommon	No
Common dolphin	Delphinus delphis	-	November-March	Possible	Yes
Atlantic white-sided dolphin	Lagenorhynchus acutus	-	N/A	Uncommon	No
Risso's dolphin	Grampus griseus	-	N/A	Uncommon	No
Long-finned pilot whale	Globicephala melas	-	N/A	Uncommon	No
Short-finned pilot whale	Globicephala macrorhynchus	-	N/A	Uncommon	No
Harbor porpoise	Phocoena phocoena	-	Fall-spring	Possible	Yes
Phocids Harbor seal	Phoca vitulina	-	Year round	Possible	Yes
Gray seal	Halichoerus grypus	-	N/A	Possible	No

Table 1. Marine mammal species considered a regular or normal part of the fauna in the northeast Atlantic Ocean, which could possibly occur in the project area. The "Observance within Proposed Study Area" denotes whether or not the species was observed within a 170-acre area during recent vessel or aerial surveys.

Fishermen's proposed project area was included in a large, comprehensive ecological baseline study of New Jersey's marine waters (NJDEP, 2010). From January 2008, through December 2009, transects totaling 18,183 km were surveyed in order to collect baseline information on the distribution, abundance, and migratory patterns of coastal and marine species. Within Fishermen's project area (a 170-acre area encompassing the future wind turbine array), 611 km of study transects were dedicated to surveying for marine mammals and sea turtles. Marine mammal data were collected over the 2-year period using shipboard surveys, aerial surveys, and passive acoustic monitoring. Records show that bottlenose dolphins and a single unidentified pinniped were the only marine mammal species observed in the project area.

In January 2011, marine mammal observers were onboard the vessels conducting geophysical and geotechnical surveys of the project area. No marine mammal species were sighted during that time. Fishermen's also conducted pre-construction monitoring of the project area in order to fulfill a New Jersey Department of Environmental Protection requirement. This

study was comprised of seven survey track lines, spaced about 2 km apart, and included a 2-km radius buffer zone around the proposed turbine locations. A total of 389 transects were surveyed totaling more than 140 survey hours over 2,601 km from May 2010, through May 2011. During this study, observers sighted bottlenose dolphins, fin whales, humpback whales, minke whales, harbor porpoises, and harbor seals. Bottlenose dolphins were most commonly seen and only six mysticetes (baleen whales) were observed during the study. Sightings of fin whales, humpback whales, minke whales, and harbor porpoises were only observed from late September to mid-April. Based on sightings data, habitat preference, seasonality, and the proposed project timeline, all species from Table 1 except bottlenose dolphins, harbor porpoises, and harbor seals are considered unlikely to be impacted by the proposed pile driving operations and are not discussed further. Detailed information on the species likely to be harassed during pile driving is provided below.

Bottlenose Dolphin

Bottlenose dolphins are found in a wide variety of habitats at both tropical and temperate latitudes. Depending on their habitat, they might feed on benthic fish, invertebrates, and pelagic or mesopelagic fish. They are often found in groups, most commonly of two to 15 individuals. NMFS currently recognizes 15 stocks of bottlenose dolphins in the Atlantic Ocean. Bottlenose dolphins in the proposed project area would likely be part of the Western North Atlantic Northern Migratory Coastal stock. The coastal stock is found along the inner continental shelf and around islands and often moves into or resides in bays, estuaries, and the lower reaches of rivers and has an estimated abundance of 9,604. There are insufficient data to determine the population trends for these stocks. Bottlenose dolphins are not listed under the Endangered Species Act (ESA), but the Western North Atlantic Northern Migratory Coastal stock is

considered depleted under the MMPA. More information, including stock assessment reports, can be found at: http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/bottlenosedolphin.htm. Bottlenose dolphins, like other dolphin species and most toothed whales, are in the mid-frequency hearing group, with an estimated functional hearing range of 150 Hz to 160 kHz (Southall et al., 2007).

Harbor Porpoises

Harbor porpoises reside in northern temperate and subarctic coastal and offshore waters. They are commonly found in bays, estuaries, harbors, and fjords less than 200 m deep. In the western North Atlantic, harbor porpoises range from west Greenland to Cape Hatteras, North Carolina. Harbor porpoises in U.S. waters are divided into 10 stocks, based on genetics, movement patterns, and management. During summer months, harbor porpoises are concentrated in the northern Gulf of Maine and southern Bay of Fundy region. Any harbor porpoises encountered during the proposed project would be part of the Gulf of Maine-Bay of Fundy stock, which has an estimated abundance of 89,054 animals. Population trends for all U.S. stocks of harbor porpoises are currently unknown. Gulf of Maine-Bay of Fundy harbor porpoises are not listed under the ESA nor considered depleted under the MMPA. More information, including stock assessment reports, can be found at: http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/harborporpoise.htm. Harbor porpoises are considered high-frequency cetaceans and their estimated auditory bandwidth (lower to upper frequency hearing cut-off) ranges from 200 Hz to 180 kHz (Southall et al., 2007).

Harbor Seals

Harbor seals are typically found in temperate coastal habitats and use rocks, reefs, beaches, and drifting glacial ice as haul outs and pupping sites. On the east coast, they range

from the Canadian Arctic to southern New England, New York, and occasionally the Carolinas. There are an estimated 91,000 harbor seals in the western North Atlantic stock and the population is increasing. There are three well known, long-term haul out sites in New Jersey: Sandy Hook, Barnegat Inlet, and Great Bay. However, the closest haul out (Great Bay) is about 21 km north of the proposed project area. Harbor seal abundance at this site has increased since 1994 and shows strong seasonality, with seals consistently present between November and April (Slocum et al., 1999; Slocum et al., 2005). No other haul out sites were identified during aerial surveys for the ecological baseline study. Harbor seals are considered the most common seal species present in New Jersey waters, although gray seals, harp seals, and hooded seals, also appear in winter months. Harbor seals are not listed under the ESA nor considered depleted under the MMPA. More information, including stock assessment reports, can be found at: http://www.nmfs.noaa.gov/pr/species/mammals/pinnipeds/harborseal.htm.

Pinnipeds produce a wide range of social signals, most occurring at relatively low frequencies (Southall et al., 2007), suggesting that hearing is keenest at these frequencies. Pinnipeds communicate acoustically both on land and underwater, but have different hearing capabilities dependent upon the medium (air or water). Based on numerous studies, as summarized in Southall et al. (2007), pinnipeds are more sensitive to a broader range of sound frequencies underwater than in air. Underwater, pinnipeds can hear frequencies from 75 Hz to 75 kHz. In air, pinnipeds can hear frequencies from 75 Hz to 30 kHz (Southall et al., 2007).

Potential Effects on Marine Mammals

Elevated in-water sound levels from pile driving in the proposed project area may temporarily impact marine mammal behavior. Elevated in-air sound levels are not a concern because the nearest significant pinniped haul-out is 21 km away. Marine mammals are

continually exposed to many sources of sound. For example, lightning, rain, sub-sea earthquakes, and animals are natural sound sources throughout the marine environment. Marine mammals produce sounds in various contexts and use sound for various biological functions including, but not limited to, (1) social interactions; (2) foraging; (3) orientation; and (4) predator detection. Interference with producing or receiving these sounds may result in adverse impacts. Audible distance or received levels will depend on the sound source, ambient noise, and the sensitivity of the receptor (Richardson et al., 1995). Marine mammal reactions to sound may depend on sound frequency, ambient sound, what the animal is doing, and the animal's distance from the sound source (Southall et al., 2007).

Hearing Impairment

Marine mammals may experience temporary or permanent hearing impairment when exposed to loud sounds. Hearing impairment is classified by temporary threshold shift (TTS) and permanent threshold shift (PTS). There are no empirical data for when PTS first occurs in marine mammals; therefore, it must be estimated from when TTS first occurs and from the rate of TTS growth with increasing exposure levels. PTS is likely if the animal's hearing threshold is reduced by $\geq$ 40 dB of TTS. PTS is considered auditory injury (Southall et al., 2007) and occurs in a specific frequency range and amount. Irreparable damage to the inner or outer cochlear hair cells may cause PTS; however, other mechanisms are also involved, such as exceeding the elastic limits of certain tissues and membranes in the middle and inner ears and resultant changes in the chemical composition of the inner ear fluids (Southall et al., 2007). Due to proposed mitigation measures and source levels in the proposed project area, NMFS does not expect marine mammals to be exposed to sound levels associated with PTS.

Temporary Threshold Shift (TTS)

TTS is the mildest form of hearing impairment that can occur during exposure to a loud sound (Kryter, 1985). While experiencing TTS, the hearing threshold rises and a sound must be louder in order to be heard. TTS can last from minutes or hours to days, but is recoverable. TTS also occurs in specific frequency ranges; therefore, an animal might experience a temporary loss of hearing sensitivity only between the frequencies of 1 and 10 kHz, for example. The amount of change in hearing sensitivity is also variable and could be reduced by 6 dB or 30 dB, for example. Recent literature highlights the inherent complexity of predicting TTS onset in marine mammals, as well as the importance of considering exposure duration when assessing potential impacts (Mooney et al., 2009a, 2009b; Kastak et al., 2007). Generally, with sound exposures of equal energy, quieter sounds (lower SPL) of longer duration were found to induce TTS onset more than louder sounds (higher SPL) of shorter duration (more similar to subbotom profilers). For sound exposures at or somewhat above the TTS-onset threshold, hearing sensitivity recovers rapidly after exposure to the sound ends. Southall et al. (2007) considers a 6 dB TTS (i.e., baseline thresholds are elevated by 6 dB) to be a sufficient definition of TTS-onset. NMFS considers TTS as Level B harassment that is mediated by physiological effects on the auditory system; however, NMFS does not consider onset TTS to be the lowest level at which Level B harassment may occur. A limited number of behavioral studies have been performed to assess the responses of mid-frequency cetaceans (such as bottlenose dolphins) to multiple pulses. Combined data show a range of behavioral responses, from temporary pauses in vocalization for received levels of 80 to 90 dB, to a lack of observable reactions for received levels of 120 to 180 dB (Southall, et al., 2007). Data on behavioral reactions of pinnipeds to multiple pulses is also limited, but suggests that exposures in the 150 to 180 dB range have limited potential to induce avoidance behavior (Southall et al., 2007). Some studies suggest that harbor porpoises may be

more sensitive to sound than other odontocetes (Lucke et al., 2009 and Kastelein et al., 2011). Although TTS onset may occur in harbor porpoises at lower received levels (when compared to other odontocetes), NMFS' Level B harassment threshold is based on the onset of behavioral harassment, not TTS. However, the potential for TTS is considered in NMFS' analysis of potential impacts from Level B harassment.

Behavioral Disturbance

Behavioral responses to sound are highly variable and context-specific. An animal's perception of and response to (in both nature and magnitude) an acoustic event can be influenced by prior experience, perceived proximity, bearing of the sound, familiarity of the sound, etc. (Southall et al., 2007). 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 populations. 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). Given the many uncertainties in predicting the quantity and types of impacts of noise on marine mammals, it is common practice to estimate how many mammals would be present within a particular distance of activities and/or exposed to a particular level of sound. In most cases, this approach likely overestimates the numbers of marine mammals that would be affected in some biologically-important manner.

Impulse Sounds

The only sounds from the proposed activity expected to result in the harassment of marine mammals are impulse sounds associated with impact pile driving. Southall et al. (2007) addresses behavioral responses of marine mammals to impulse sounds (like impact pile driving).

The studies that address the responses of mid-frequency cetaceans to impulse sounds include data gathered both in the field and the laboratory and related to several different sound sources (of varying similarity to boomers), including: small explosives, airgun arrays, pulse sequences, and natural and artificial pulses. The data show no clear indication of increasing probability and severity of response with increasing received level. Behavioral responses seem to vary depending on species and stimuli. Data on behavioral responses of high-frequency cetaceans to multiple pulses is not available. Although individual elements of some non-pulse sources (such as pingers) could be considered pulses, it is believed that some mammalian auditory systems perceive them as non-pulse sounds (Southall et al., 2007).

The studies that address the responses of pinnipeds in water to impulse sounds include data gathered in the field and related to several different sources, including: small explosives, impact pile driving, and airgun arrays. Quantitative data on reactions of pinnipeds to impulse sounds is limited, but a general finding is that exposures in the 150 to 180 dB range generally have limited potential to induce avoidance behavior (Southall et al., 2007).

No impacts to marine mammal reproduction are anticipated because there are no known pinniped rookeries or cetacean breeding grounds within the proposed project area. Marine mammals may avoid the area around the hammer, thereby reducing their exposure to elevated sound levels. NMFS expects any impacts to marine mammal behavior to be temporary, Level B harassment (for example, avoidance or alteration of behavior). Fishermen's conservatively assumes a maximum of 24 pile driving days may occur over the validity of the IHA. Marine mammal injury or mortality is not likely, as the 180 dB isopleth (NMFS' Level A harassment threshold for cetaceans) for the impact hammer is expected to be less than a 50-m radius.

Fishermen's proposes to continuously monitor a 1,000-m area around the sound source and reduce or cease all pile driving to prevent Level A harassment to marine mammals.

Anticipated Effects on Habitat

The installation of piles and submarine electric cable would result in both temporary disturbance and limited, but permanent, loss of benthic habitat. These effects would be limited to the area within the project footprint and along the cable route where sediment disturbing activities would occur. The cable installation process would temporarily affect benthic resources and habitat by entrainment of microorganisms and displacement or burial of other benthic resources. However, since the jetting and cable laying process occurs very slowly (less than 1 knot speed by the vessel), most mobile organisms are likely to avoid the area. Installation may result in a temporary loss of forage items and a temporary reduction in the amount of benthic habitat available for foraging marine mammals. However, there are no known foraging grounds around the project area, so marine mammals in the area would likely be foraging opportunistically. The cable route has been designed to avoid submerged aquatic vegetation. Impacts associated with cable installation and vessel anchoring would be temporary and localized.

Pile driving (resulting in temporary ensonification) may impact prey species and marine mammals by causing avoidance or abandonment of the area; however these impacts are expected to be local and temporary. Installation of the jacketed foundations and associated scour protection would result in the permanent loss of less than one acre of benthic habitat. However, this loss is not likely to have a measurable adverse impact on marine mammal foraging activity due to the limited size and lack of known or significant foraging grounds in the proposed project area. The total impacted area represents less than one percent of similar bottom habitat in the

proposed project area. Furthermore, the vertical foundation structure that would be added to the environment may provide additional habitat and foraging opportunities to marine species. The effects of habitat loss or modification to marine mammals are expected to be insignificant or discountable.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth, where applicable, the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses. Fishermen's proposed the following mitigation measures to minimize adverse impacts to marine mammals:

Exclusion Zone

The purpose of an exclusion zone is to prevent Level A harassment (injury) of any marine mammal species. Fishermen's proposes to establish a radius around each pile driving site that would be continuously monitored for marine mammals. If a marine mammal is observed nearing or entering this perimeter, Fishermen's would reduce hammering power (or stop hammering) to reduce the sound pressure levels. More specifically, Fishermen's would establish a preliminary 1,000-m exclusion zone around each pile driving site, based on the estimated rates of sound attenuation discussed earlier in this notice. This distance is considered conservative because it would encompass the estimated 180-dB isopleth, within which injury could occur, plus an additional 950 –m buffer. The 1,000-m exclusion zone would also encompass the estimated 160-dB isopleth (less than 500 m), within which behavioral harassment could occur. Fishermen's would perform field verification of the impact hammer's resulting sound pressure

levels to ensure that estimated distances to the 180-dB (Level A) and 160-dB (Level B) isopleths are accurate. Once hydroacoustic monitoring is conducted, the exclusion zone may be adjusted accordingly so that marine mammals are not exposed to Level A harassment sound pressure levels. Any new exclusion zone would encompass the 180-dB and 160-dB isopleth to avoid any takes of ESA-listed species. The exclusion zone would be monitored continuously during impact pile driving to ensure that no marine mammals enter the area. If a marine mammal is nearing or enters the 1,000-m zone, hammering would be reduced to 50 percent capacity, which would reduce the 160 dB isopleth to about 300 m. If a marine mammal continues to move toward the Level B harassment zone, Fishermen's is prepared to stop all pile driving activities in order to prevent Level A harassment to marine mammals. Fishermen's initially proposed having a single protected species observer (PSO) to monitor the exclusion zone. However, following NMFS recommendation, Fishermen's plans to use two PSOs, each responsible for monitoring a 180-degree field of vision. The PSOs would be stationed aboard a dedicated support vessel that would patrol the exclusion zone throughout pile driving.

Pile Driving Shut Down and Delay Procedures

If a PSO sees a marine mammal within or approaching the exclusion zone (1,000 m) prior to start of impact pile driving, the observer would notify the construction manager (or other authorized individual) who would then be required to delay pile driving until the marine mammal has moved outside of the exclusion zone or if the animal has not been resighted within 30 minutes. If a marine mammal is sighted within or on a path toward the exclusion zone during pile driving, pile driving would be reduced to 50 percent capacity (a soft start level), which would reduce the size of the harassment zones. If an animal continues to move toward the sound

source, then pile driving operations will be stopped until the animal has moved outside of the exclusion zone or 30 minutes have lapsed since the last sighting.

Soft-start Procedures

A "soft-start" technique would be used at the beginning of each pile installation to allow any marine mammal that may be in the immediate area to leave before the pile hammer reaches full energy. The soft start requires an initial set of three strikes from the impact hammer at 40 percent energy with a 1-minute waiting period between subsequent three-strike sets. If a marine mammal is observed within the exclusion zone prior to pile driving, or during the soft start, the resident engineer (or other authorized individual) would delay pile driving until the animal has move outside of the exclusion zone or 30 minutes have lapsed since the last sighting. Soft-start procedures would be conducted any time hammering ceases for more than 30 minutes.

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 IHAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present.

Fishermen's proposes to conduct field verification of the exclusion zone during pile driving of the first three jacket foundations to ensure that the estimated harassment isopleths are accurate. Fishermen's proposes taking acoustic measurements during the last half (deepest segment) of pile driving for any given jacket foundation leg. NMFS further proposes that acoustic measurements be taken during the entire duration of pile driving of the first three jacket

foundations (as opposed to the last half of pile driving) to ensure that the highest sound pressure levels are measured. Fishermen's proposes establishing one reference location at a distance of 100 m from the sound source. They would take sound measurements at the reference location at two depths (one near the middle of the water column and one near the bottom of the water column). Two additional in-water spot measurements would be taken in two different directions of the pile driving site. Sound measurements would also be made at locations closer to or farther from the sound source, as necessary, to establish the distances to the Level B and Level A harassment zones. NMFS further proposes that sound measurements be taken 10 m from the pile, so the measurements can be treated considered "source level" and compared with other industry-collected data. NMFS also proposes that 90 percent of the energy window from each blow be integrated into Fishermen's sound analysis when computing RMS sound pressure levels.

As explained in the Proposed Mitigation section of this notice, there would be two PSOs monitoring the exclusion zone (1,000 m). Because the exclusion zone encompasses both the Level B and Level A harassment isopleths, PSOs can record behavioral information of animals visible outside of the exclusion zone. PSOs would monitor the exclusion zone for at least 30 minutes prior to soft start, during pile driving, and for 30 minutes after pile driving is completed. Protected species observers would be provided with the equipment necessary to effectively monitor for marine mammals (for example, high-quality binoculars, compass, and range-finder) in order to determine if animals have entered into the exclusion zone and to record species, behaviors, and responses to pile driving. Fishermen's would provide weekly status reports to NMFS that include a summary of the previous week's monitoring activities and an estimate of the number of marine mammals that may have been harassed as a result of pile driving. PSOs would submit a comprehensive report to NMFS within 90 days of completion of pile driving.

The report would include data from marine mammal sightings (such as date, time, location, species, group size, and behavior), any observed reactions to construction, distance to operating pile hammer, and construction activities occurring at time of sighting and environmental data for the period (wind speed and direction, Beaufort sea state, cloud cover, and visibility).

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury (Level A harassment), serious injury, or mortality, Fishermen's would immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Michael.Payne@noaa.gov and Michelle.Magliocca@noaa.gov and the Northeast Regional Stranding Coordinator (Mendy.Garron@noaa.gov). The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hrs preceding the incident;
- Water depth;
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hrs preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and

● Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with Fishermen's to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Fishermen's may not resume their activities until notified by NMFS via letter, email, or telephone.

In the event that Fishermen's discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), Fishermen's would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Michael.Payne@noaa.gov and Michelle.Magliocca@noaa.gov and the Northeast Regional Stranding Coordinator at 978-281-9300 (Mendy.Garron@noaa.gov). The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS would work with Fishermen's to determine whether modifications in the activities are appropriate.

In the event that Fishermen's discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Fishermen's would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Michael.Payne@noaa.gov and Michelle.Magliocca@noaa.gov and the NMFS Northeast Stranding Hotline (866-755-6622) and/or by email to the Northeast Regional Stranding Coordinator (Mendy.Garron@noaa.gov), within 24 hrs of the discovery. Fishermen's

would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Activities may continue while NMFS reviews the circumstances of the incident.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as:

any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

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

Distances to NMFS' harassment thresholds were calculated based on the expected sound levels at each source and the expected attenuation rate of sound. Fishermen's proposed 1,000-m exclusion zone is larger than both the Level A and Level B harassment zones. This mitigation measure minimizes potential impacts to marine mammals from increased sound exposures and

means that Fishermen's would significantly reduce sound exposures before an animal ever enters the Level B harassment zone (less than 500 m). The difference between the exclusion zone (1,000 m) and the Level A harassment threshold (less than 50 m) provides PSOs additional time and adequate visibility to prevent marine mammals from being exposed to injurious sound levels if an animal (e.g., a small dolphin or pinniped) enters the exclusion zone undetected.

Fishermen's estimated the number of marine mammals potentially taken by using their 2010-2011 pre-construction survey data as site-specific density estimates for the project area over a 12-month period. During that survey, Fishermen's observed 260 bottlenose dolphins, three humpback whales, two fin whales, one minke whale, two harbor seals, and five harbor porpoises. However, the survey was performed over a 12-month period, whereas pile driving would only take place between May and June. The only marine mammal species observed during May and June were bottlenose dolphins and an unidentified harbor seal. Fishermen's considered the expected number of pile driving days and requested authorization for the Level B incidental take of five bottlenose dolphins. NMFS determined that this number does not adequately account for the likelihood that numerous animals went undetected during visual surveys. To account for this, NMFS multiplied species group size by the maximum number of pile driving days. More specifically, NMFS used the average group size of bottlenose dolphins observed between May and June during the pre-construction survey and multiplied this number by 24 (the maximum number of pile driving days. Because harbor porpoises were never observed during the months of May and June, NMFS conservatively used the maximum group size (two) of harbor porpoises observed during the entire pre-construction survey. NMFS also used the maximum group size (two) of harbor seals observed during the entire pre-construction survey. These calculations are illustrated below in Table 2.

Species	Group Size	Maximum Number of Pile Driving Days	Proposed Take[1]
Bottlenose dolphin	5[2]	24	120
Harbor porpoise	2[3]	24	48
Harbor seal	2[3]	24	48

Table 2. NMFS' method for calculating potential take of marine mammals during Fishermen's proposed activity.

[1]Proposed take was calculated by multiplying group size and the maximum number of pile driving days.
[2]NMFS used the average group size of bottlenose dolphins observed during the pre-construction survey for the months of May and June (when pile driving would occur).
[3]NMFS conservatively used the maximum group size of harbor porpoises and harbor seals observed during the entire pre-construction survey.

NMFS is proposing to authorize the take of 120 bottlenose dolphins, 48 harbor porpoises, and 48 harbor seals. The increase in proposed take is based on the likelihood that smaller animals may not have been detected during surveys, but may be present in the proposed project area during pile driving. These numbers are conservative, do not account for mitigation measures, and indicate the maximum number of animals expected to occur within proposed project area – an area much larger than the 1,000-m exclusion zone isopleth. Takes of other species (e.g., humpback whale, fin whale, minke whale) were not proposed because they are highly likely to be sighted before entering the exclusion zone. Furthermore, the proposed activity is planned to occur primarily during summer months when these species are unlikely to be in the area.

Negligible Impact and Small Numbers Analysis and Determination

NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival." In making a negligible impact determination, NMFS considers a number of factors which include, but are not limited to, the number of anticipated injuries or mortalities (none of which

would be authorized here), number, nature, intensity, and duration of Level B harassment, and the context in which takes occur.

As described above, marine mammals would not be exposed to activities or sound levels which would result in injury (PTS), serious injury, or mortality. The proposed project area is not considered significant habitat for marine mammals. The closest significant pinniped haul out is 21 km away, which is well outside the project area's largest harassment zone. Marine mammals approaching the action area would likely be traveling or opportunistically foraging. The amount of take NMFS proposes to authorize is considered small (less than three percent) relative to the estimated populations of 9,604 bottlenose dolphins, 89,054 harbor porpoises, and 91,000 harbor seals. Marine mammals may be temporarily impacted by pile driving noise. However, marine mammals may avoid the area, thereby reducing exposure and impacts, and mitigation measures would minimize any impacts and further reduce the risk of injury or mortality prevent injury. Pile driving activities are expected to occur for about 15-24 days total. There is no anticipated effect on annual rates of recruitment or survival of affected marine mammals. Based on the application and subsequent analysis, the impact of the described pile driving operations may result in, at most, short-term modification of behavior by small numbers of marine mammals within the action area. Marine mammals may avoid the area or temporarily alter their behavior at time of exposure.

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 mitigation and monitoring measures, NMFS preliminarily determines that Fishermen's proposed pile driving operations would result in the incidental take of small numbers of marine mammals,

by Level B harassment only, and that the total taking would have a negligible impact on the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

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

Endangered Species Act (ESA)

Fishermen's is not requesting, nor is NMFS proposing, take of ESA-listed species; therefore, ESA consultation is not necessary for issuance of the proposed IHA.

National Environmental Policy Act (NEPA)

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), as implemented by the regulations published by the Council on Environmental Quality (40 CFR parts 1500-1508), and NOAA Administrative Order 216-6, NMFS is preparing an Environmental Assessment (EA) to consider the environmental impacts of issuance of a 1-year IHA. Upon completion, this EA will be available on the NMFS website listed in the beginning of this document (see ADDRESSES).

Dated: March 7, 2012.

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

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